Youth Sexual Behaviour in South Africa:

Social Disorganisation as an Alternative Explanation

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DECLARATION

I, Ugwu Nebechukwu Henry, declare that this research is my own original work. It is being submitted for the degree of Doctor of Philosophy in Demography and Population Studies of the University of the Witwatersrand, Johannesburg. To the best of my knowledge, it has not been submitted before in part or in full for any degree or examination at this or any other University.

Date: 19th October 2022

DEDICATION

I dedicate this research work to the glory of the Almighty God who provided the means for this research work to be completed. Also, to my mother who did not live to witness this milestone achievement.

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LIST OF ABBREVIATIONS

AIC	Akaike Information Criterion
ART	Antiretroviral therapy
HSRC	Human Science Research Council
ICC	Intra-class correlation
ICPD	International Conference on Population and Development
MSP	Multiple sexual partnerships
NDoH	National Department of Health
PCV	Proportional change in variance
PSU	Primary sampling unit
RSB	Risky sexual behaviour
SADHS	South Africa Demographic and Health Survey
SAMRC	South African Medical Research Council
SRH	Sexual Reproductive Health
STI	Sexually transmitted infections
VCT	Voluntary Counselling and Testing
VPC	Variance Partition Coefficient
WHO	World Health Organization
SDT	Social Disorganisation Theory

ABSTRACT

Introduction

Youths' consistent engagements in risky sexual behaviour continue to be a source of concern for parents, researchers, practitioners and policymakers. Several researchers argue that a high proportion of youths that engaged in risky sexual behaviours were influenced by risk factors at the individual, household/family and community/neighbourhood levels. However, very few studies have explored the influence of community-level factors associated with risky sexual behaviour among young people across genders in South Africa. Currently, most efforts are directed towards addressing individual-level factors at the expense of not addressing community-level issues such as social disorganisation, contributing to risky sexual behaviours among youths across genders in South Africa. The question of how socially disorganised societies/communities create adolescents' unfavourable sexual behaviour in the modern world has remained less explored across genders in South Africa. Specifically, the purpose of this study was to understand adolescents' sexual behaviour of youths aged between 15–24 years across genders in South Africa and explain the risk factors associated with them through the lens of social disorganisation-related factors. Further, it was to explore possible pathways through which some of these social disorganisation factors led to adolescents' risky sexual behaviour in South Africa. The risky sexual behaviours explored in this study were multiple sexual behaviours and inconsistent/lack of condom use.

Theoretical Framework

The study was situated within the confines of the social disorganisation theory. The theory argues that social disorganisation factors such as community poverty, residential instability, family dysfunction and race/ethnic heterogeneity in certain neighbourhoods diminish community attachments, including social norms and social ties, by weakening community-level social control of crime devices. Although the social disorganisation theory was originally applied to crime and delinquency, researchers have applied the theory to different behavioural studies such as risk behaviours among adolescents and youths, sexual and gender-based violence, rape and educational

behaviour. The theory identifies places and community structures responsible for the creation of conditions that are favourable or unfavourable to adolescents' behaviour. Specifically, the study would have been better explored through a concurrent triangulation approach, but due to the terrain of South African communities and available resources to carry out the research, I decided to adopt an analytical cross-sectional method that made use of a quantitative approach to examine the influence of social disorganisation factors that are associated with risky sexual behaviours among youths across genders in South Africa,

Data and Methods

The data source that was used in this study was the 2016 South Africa Demographic and Health Survey (SADHS) which provides adequate information on knowledge, perceptions and sexual behaviours of youths aged between 15–24 years in South Africa. Specifically, the SADHS obtained information on the knowledge and perceptions of the Human Immuno-Deficiency Virus, sexual debut, patterns and partner characteristics and condom use. The 2016 SADHS was nationally representative and adopted a multistage cluster sampling design. The survey made use of the sampling frame from the Statistics South Africa Master Sample Frame, which was created using census 2011 enumeration areas. Due to the geographical hierarchy structure of the census that linked enumeration areas to administrative boundaries, information was available at the municipal, district and provincial levels in the survey. The surveys involved a multistage cluster sampling design, with clusters selected from the enumeration areas, and households selected from the clusters. For instance, there were 750 clusters also known as primary sampling units (PSUs), selected from the 26 sampling strata, which included 468 urban, 224 traditional and 58 farm areas. The selected sample of youths was 2 621 females and 1 268 males, giving a total of 3 889 youths who had never married aged between 15–24 years of age.

Key findings

Objective 1: Individual and family-level correlates of risky sexual behaviour

The frequency distribution showed that risky sexual behaviours were found to operate at both micro and macro levels. The findings showed that at the micro level, the impact of demographic and socioeconomic characteristics on young people's involvement in risky sexual behaviour was

evident across genders. Although differences were minor, young males were shown to be more exposed to risky sexual behaviour than females. In addition, the independent effect of age on risky sexual behaviour indicates that young people between the ages of 20–24 years were found to engage in risky sexual behaviour more than those between the ages of 15–19 years. The findings showed that becoming older was not a protective factor for engaging in risky sexual behaviour for both male and female youths. Several studies have documented the relationship between peoples' age and their exposure to risky sexual behaviour. The possible explanations for the results could be attributed to the fact that older youth tend to have more confidence as well as better knowledge and experience about risks in a sexual relationship, which might influence their action to engage in risky sexual behaviour. They are also capable of withstanding any sociocultural norms and values preventing them from engaging in risky sexual behaviour that exists in the environment in which they live.

Objective 2: Effects of community social disorganisation-level factors and risky sexual behaviour among young people

Overall, the findings supported the social disorganisation theory (model) based on explaining variations that exist across neighbourhoods where young people live. The theory identifies neighbourhood poverty, residential mobility due to migration, family dysfunction, race/ethnic diversity and community literacy level as the main structural factors that reduce communities' ability to regulate themselves, most especially the activities of young people, which in turn leads to risky sexual behaviour. For instance, individuals who reside in disadvantaged communities may experience these specific elements to the degree that they may influence them to engage in risky sexual behaviour. Previous studies have consistently found that some factors such as family dysfunction, residential mobility, neighbourhood poverty and ethnic and racial diversities in disorganised communities can influence an individual to engage in risky sexual behaviour. This study found that female adolescents living in a community with a high proportion of literate parents, tend to engage in RSB, unlike male youths that have fewer chances of engaging in risky sexual behaviour. This indicates that residing in a community with a high proportion of literate parents does not prevent RSB among female youths in South Africa.

Objective 3: Pathways through which social disorganisation factors influence RSB among young people in South Africa

What is noteworthy in this study was the investigation of the independent association between social disorganisation-related factors and the outcome variables (multiple sexual partnerships and inconsistent condom use) to see how other variables (individual and family-level factors) influence this relationship. In each of the social disorganisation models, age, educational attainments, employment status and household size were the highly significant influences of RSB among youths. The study indicates that adolescent sexual risk behaviours in South Africa may worsen because of the link between family dysfunction, neighbourhood poverty and community literacy levels. Such a pattern of associations could be explained by the probability of adolescents from intact families (presence of father and mother) living in a low-poverty neighbourhood and also engaging in RSB even with the presence of both parents. Despite the high literacy level in the community (a high proportion can read and write), which should have provided better access to contraceptive information (through radio, the internet, TV etc), inadequate parental control over media use can make it more likely that youths will engage in RSB. These findings may not be entirely surprising given the proportion of youths congregating in the neighbourhood who have adequate media access (internet, radio, TV) without proper control, either from their father or mother, who should provide strong positive support for protection against risky behaviours. The findings showed that a lack of a stable relationship with their parents could affect positive decisions in exercising safer and healthier sexual practices. Therefore, when there is a stable relationship with parents that leads to regulation of media access among children, the odds of engaging in RSB among youths will reduce. Notwithstanding, there is indeed a high level of awareness of sexual and reproductive health safety and preventive actions, such as low condom use and sexual risk partnering. Due to the limited regulation over media content in such a highly literate South African community, this knowledge is not adequate among youths.

Conclusions

The study is of high value from the academic and programme design perspectives. The findings of the study are critical to making the different relevant responsible bodies in South Africa alert and responsive – at the individual and community levels – to designing flexible programmes to respond to the high risks that youths are exposed to and their vulnerabilities. The study has also indicated potential areas of future interventions for the possible reduction of risks – unemployment, dysfunctional communities and family – and provides some directions on how to reduce RSB among youths in South Africa.

Implications of findings

The results imply that intervention programmes are needed for young people in South Africa to support them and help them avoid engaging in RSB because of community/neighbourhood defects existing in some of their communities. The findings also showed that existing sexuality programmes/policies are not very effective in addressing HIV prevention. They are also not effective in tackling the interplay between ethnic diversity and cultural norms and values that expose young people to engage in RSB. Therefore, specific programmes should be implemented that address community or neighbourhood factors that have exposed young people to many sexual and reproductive health challenges including sexually transmitted infections such as HIV; unintended pregnancies which could lead to unsafe abortions and consequently, morbidity and even mortality; other non-consensual sexual experiences; unprotected sex; and multiple partnerships.

Frontier of future research

Future qualitative investigations may be conducted to test the association between social disorganisation factors and youths' RSBs in South Africa. Also, further qualitative/quantitative studies may explore the effects of extended family members on adolescent engagement in RSB among youths. Future research may also investigate the direct impacts of role models on sexual behaviour among youths. For instance, residing in a community where there are few role models/adult supervisors may not only offer youth sexual opportunities but may also provide them with the resources (eg money, time, energy, etc) by which to do so.

Keywords: Adolescents; risky sexual behaviour; social disorganisation factors, South Africa, quantitative methods

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Globally, youths constitute nearly half of the population, and their sexual behaviours largely depend on knowledge of the risks and positive behaviours towards sexually transmitted infections (STIs) (Tarkang, van der Wal, & Ehlers, 2011). Sexually Transmitted Infections (STIs), including HIV/AIDS, are a few of the most common causes of death and morbidity among youths (Karim et al., 2017; Ivanova et al., 2018). Recent estimates from the United Nations Population Fund show that about 4 million youths aged between 15–24 years are infected with HIV/AIDS, 2.9 million of whom are from sub-Saharan Africa (World Health Organization [WHO], 2019). Similarly, in 2019, the youth contributed to 39% of all infections globally (WHO, 2019). Consequently, public health experts have become more concerned about sexual and reproductive health (SRH) in adolescents. The cause for concern is that the total population of young people aged between 10 and 24 years is expected to be 1.8 million, accounting for approximately 18% of the world's population (UNPF, 2019). The concern is further intensified due to the challenge of risky behaviours developed during adolescence that compromise the well-being of youth in their later lives (Odimegwu & Somefun, 2017).

The SRH issues such as maternal mortality due to pregnancy complications and unsafe abortions have been linked to unprotected sex due to a lack of understanding about protection and proper use of contraceptive methods among youths in a variety of locations around the world (Bosire et al., 2021; Hayer et al., 2021). According to statistics, over 30% of pregnant teenagers in the United States reported being forced to engage in sexual activity with their partners. About 33% admitted to being ready for sex but were forced into sex regardless of their choice (Perkins & Ruiz, 2017). As a result, a small percentage of teenage pregnancies emanate from sexual abuse or rape by an older partner. For instance, in 2020, of an estimated 7 858 babies born in Canada to women aged between 15–19 years, more than 70% were unintended, and about 51% ended in induced abortion, due to sexual abuse or rape by an older partner (Norman & Munro, 2018; Wong et al., 2020). Despite being one of the world's most developed countries, the number of unintended pregnancies continues to rise. In sub-Saharan Africa, an estimated 21 million young women aged between 15–19 become pregnant, with approximately 49% of pregnancies being unintended (WHO, 2018),

with more than half of these resulting in induced abortions and miscarriages. (Darroch et al., 2016). Over half of all abortions in sub-Saharan Africa are performed on adolescents and young women under the age of 25 (Mutua et al., 2021). Reports indicate that approximately 4 million adolescents living with HIV/AIDS, of whom 2.9 million are between 15–24 years old, are from sub-Saharan Africa (UNAIDS, 2019).

The WHO classifies teenagers as those aged between 10–19, young people as those aged between 20–24, and youth as those aged between 15–24 (WHO, 2020). In South Africa, the term youths include people aged between 14–35 years (National Youth Policy 2014-2019), even though the policy does acknowledge international definitions for intervening purposes. The term "youth" relates to those between 15–24 years of age for this study. Both adolescence and early adulthood are crucial stages of life that occur between childhood and adulthood (Brumley et al., 2017). Puberty occurs during this time, and many have their first sexual encounters and sexual risk-taking which begins with highly significant peer influence (Gottfredson et al., 2021; Steinberg, 2004). Youths can find it difficult because they may rely heavily on their classmates, friends and family members as they make the journey to adulthood (Fatusi, 2008). At this stage, adolescents and young adults are under pressure to begin sexual relationships, putting them at risk of unintended pregnancy and STIs, such as HIV/AIDS (Envuladu et al., 2017). Many factors are connected to the significance given to adolescents' SRH. Several life-long health behaviours emerge at this time, which may or may not be beneficial to this age group (Patton et al., 2016). Adopting a protective approach to adolescent health and well-being is an important opportunity for an improved healthy population with a structure of mostly young people (Deogan et al., 2012). Adolescent prevention offers great prospects for a healthier population with a predominantly young population (Govender & Poku, n.d).

Concerns about youths in South Africa are the same as global and regional concerns. South Africa has a young population of between 14 and 35 years old, according to Statistics South Africa, and this group accounts for roughly one-third of the country's population (Stats SA, 2019). Scientists and researchers in South Africa have attributed this increase in the youth population "youth bulge" to a lower infant mortality rate and improvement in health care access and use (Omoju & Abraham, 2014). Moreover, South Africa may not be able to achieve its demographic dividend due to increased morbidity and mortality owing to the HIV/AIDS pandemic and other infections affecting this young population that has also over-stretched the healthcare systems in the last few decades (Stats SA, 2019). Reddy and colleagues believe that even though the fertility rate in South Africa is low, a large proportion of adolescents in the country become pregnant before the age of 20 years (Reddy, Sewpaul, & Jonas, 2016). In addition, a high rate of adolescent pregnancy exists in South Africa among schoolgirls which disrupts their education, lowering future work options and earning potential (Singh & Naiker, 2019). In 2021, for example, approximately 60% of 15 to 19 years old females were pregnant (Stats SA, 2021).

Reports indicate there were 139 000 new HIV infections among South African youths, resulting in a 1.49% incidence; however, the prevalence of HIV/AIDS among people aged between 15–24 years was 7.1% in 2012 (Shishana, 2014). For teenagers and youngsters in South Africa to successfully transition into adulthood, it is critical to have a detailed plan to invest in their health and well-being. To achieve a demographic dividend, it is critical in South Africa to understand the issues of SRH among adolescents and young adults and create effective interventions that bring about the contribution of neighbourhood factors leading them to RSB.

Several programmes at the global, regional and national levels to improve the health needs of youth have been developed. The International Conference on Population and Development (ICPD) was among the first conferences on adolescent SRH that looked at addressing the SRH of young persons in 1994 (Chandra-Mouli et al., 2015; Idowu et al., 2021). In the last two decades, global interest and commitments have increased, including internationally agreed objectives for adolescents' health (Buse et al., 2017). The United Nations General Assembly Special Session (UNGASS, 2001) on HIV/AIDS is one of them. Others include the ICPD Beyond 2014, and the 64th World Health Assembly Resolutions on youth and health risks, WHA 64.28. At the national

level, the National Youth Policy 2015-2019, the Adolescent and Youth Policy (2012) and the National Strategic Framework for HIV/AIDS, STIs, and TB 2012-2016 are vital national policies in South Africa that address youth health, sexuality and SRH. As part of a strategy to increase HIV discussion and encourage positive sexual behavioural change in the country, the South African government implemented HIV counselling and testing, media campaigns and made condoms available in many public places since 2010 at no cost (Mokgatle & Madiba, 2017). Barriers to contraceptive access and public awareness of contraception have improved. In 2014, more than two-thirds of sexually active females aged between 15–19 years in South Africa used modern contraception (SADHS, 2016). The government has also scaled up an antiretroviral therapy (ART) treatment programme with comprehensive provincial coverage since 2014 (Naidoo et al., 2017). Despite government efforts, youth condom use is low, with only 21% of 15 to 19-year-olds and 17% of 20 to 24-year-olds using condoms during their most recent sexual engagement in 2018, and more than 41.1% of youth reporting more than two sexual partners in 2019 (Govender et al., 2020). However, despite high levels of HIV education and condom use, perceived vulnerabilities were relatively low. Evidence shows that there are persistent engagements of youth in RSB in South Africa, necessitating the need for further investigation into the factors responsible for this high rise of RSB among the youth.

Individual and family-level-related characteristics leading to risky behaviours among the youth such as gender, age, education, employment status, ethnicity, household size, religion, etc have been the focus of most studies in South Africa (Francis et al., 2019). Few studies have offered plausible data that studied the community context in which youths live that may affect their behaviour, notably RSB, which is moulded not only by individual factors but also by community factors such as poverty (Murudi, 2016; Steinet et al., 2017).

Many of the places where youths live are impoverished, with 55.5% of households in 2019 living below the national poverty level (Stats SA, 2020). In 2018, about four out of 10 families (39.8%) were led by women, including 20 980 divorces (Stats SA, 2020). In 2020, the general population unemployment rate was 28.74% while 32.4% of youth aged between 15–24 years were not employed, educated or trained (Stats SA, 2021). Internal and international migration and residential mobility are comparatively widespread in South African communities (Andreason et

al., 2017). In 2017, the crime rate was likewise exceptionally high: murder (932.2/100000), sexual offences (118.2/100000 population), street and public robbery (130.7/100000) and residential burglary (491.6/1000000 population) (SA Police, 2018).

In communities with such structural qualities described above, such as poverty, ethnic diversity, residential instability and family disruption, there is a corresponding breakdown or disruption of social relations, norms, values, social disorganisation and a lack of trust among members (Bellair & Browning, 2010; Berg et al., 2012). As a result, community members are unable to supervise and control youth actions, leisure activities, interactions in street corner congregations and participation in community official and informal voluntary groups, all of which serve the community's common benefits. Socially disorganised communities with structural characteristics such as poverty, residential mobility, single-parent households, low literacy levels, a lack of social processes (social networks and relations, standards and values, local participation in formal and informal activities) and the incapacity to supervise and control the behaviour of young people all contribute to adolescent sexual behaviour that is risky (Amoah & Jorgensen, 2014). Therefore, understanding factors that lead adolescents to RSB at the community level is essential in influencing programmes and policies aimed at reducing infectious diseases and unwanted pregnancy. The high HIV infections and unwanted pregnancies among youth in South Africa indicate that young people engage in RSB. Early sexual debut, multiple sexual relationships and inconsistent or non-use of condoms during sexual intercourse were factors discovered by researchers (Barragan et al., 2014; Petifor et al. 2009; Smith et al., 2020; Zuma et al., 2011). It is, therefore, necessary to investigate whether social disorganisation factors are responsible for youth engagement in RSB to add to the existing knowledge of RSB in South Africa.

Using the lens of social disorganisation theory (SDT), this study sought to investigate the critical factors of community social disorganisation that are associated with RSB among South African youth.

1.2 Perceptions of RSB among South African youth

The health belief model and social cognitive theory reiterate the perceptions about health risks, perils and the individual understanding to reduce risk in their life course (Babbit, 2020; Konkor et

al., 2021). The outcomes of intervention studies (see Corneli et al., 2014; Joan, 2017; Shiferaw et al., 2014) relating to risk perception and adolescents' sexual behaviour are inconclusive within South African communities. While other young people perceived that HIV/AIDS challenges (de Viries et al., 2014; Govender, Naido, & Taylor, 2020; Mthembu, Maharaj, & Rademeyer, 2019) could influence their sexuality and condom use which could complicate their developmental outcomes. Others perceived vulnerability and anxiety about the personal risks of an intended positive behaviour towards a behavioural change (Jemmott et al., 2014; Larsman, Eklof, & Torner, 2012; Sheeran, Harris, & Epton, 2014). Several studies have proposed that a high prevalence of perceived vulnerability to personal risk connects to an intentional act such as engaging in RSB (Adekola & Mavhamdu-Mudzusi, 2021; Govender, Naido, & Taylor, 2020). They argue that if perceptions of HIV/AIDS risks are established to be very low among young people they led to a high rate of sexual activity and lack of condom use. They also claimed that one of the factors that reduced perceived vulnerability to HIV/AIDS was the denial of its existence in some South African communities.

Research findings have attributed the inability of some South African youths to use a condom during sexual relationships to an unplanned sexual encounter where they are not ready for the sexual act (Toska et al., 2015; Mgwaba & Maharaj, 2021; Layland et al., 2021). Others believed that only engaging in sexual intercourse a few times protects an individual from the risks of STIs, including HIV/AIDS (Devine-Wright et al., 2015; Psaros et al., 2018). Likewise, research findings showed that condom usage was associated with decreased sexual enjoyment and a lack of faith in the faithfulness of one's partner (Osuafor et al., 2018; Ajayi, Omonaiye, & Nwogwugwu, 2021). Research findings in the Eastern Cape posit that in established relationships with trust and long-term relationships, condom use is less common (Jama, 2006, Cain, 2007; Qabaka-Dybooi, 2018).

Adolescents' risky sexual behaviours are shaped by complex sociocultural factors. In previous studies, no adequate research attention relative to sociocultural factors has been paid to some of these factors on adolescent sexuality and condom use. Therefore, examining the factors influencing adolescents' sexuality is imperative for youth and community development. The youth phase is ideal for determining the importance of social and environmental contexts in the design of an effective intervention programme. This is because reducing the prevalence of infectious

diseases affecting youths in the context in which they live will help to decrease the consequences of morbidity in their life course.

1.3 Problem statement

The sexual and reproductive health of youths remains an important issue within the global health sector. Increased attention has been given to this age group globally because it is a period of growth, transition and preparation for maturity (Jacob et al., 2017; Moreau et al., 2021). Recognising the importance of this discourse in South Africa, several vital national programmes and policies to address youth sexual health have been established, such as the National Youth Policy 2015-2019, the Adolescent and Youth Policy 2012 and the National Strategic Plan for HIV/STIs and Tuberculosis. The objectives of these policies have been to address the health needs of young people and their SRH and improve condom access in addition to communication at the national level about the outcomes of RSB. Yet RSB remains a silent plague contributing to some of the leading causes of death as a result of youths not taking advantage of the Adolescent and Youth Policy 2012 in South Africa. Literature is scarce on community social disorganisation factors that are associated with risky sexual behaviours among youths.

In South African communities, studies have documented the influence of non/inconsistent condom use and multiple sexual partnering, with a significant increase in STIs rates, HIV/AIDS, undesired pregnancy and unsafe/induced abortions among youth (Panday, Makiwane, Ranchod, & Letsoala, 2009; Hoque, 2011; Madiba et al., 2017; Closson et al., 2018). For instance, among the youth, 22.4% reported having more than two sexual partners 12 months before the SADHS was carried out and 19.9% of respondents aged between 15–19 years, reported having sexual partners with older persons such as those who were five years older than they were (Fennie & Laas, 2014; National Department of Health (NDoH), Stats SA, South African Medical Research Council (SAMRC), & ICF, 2018). Despite the positive impacts of condoms, only 45.7% of youths reported consistent condom use during sex, about 20% reported inconsistent condom use and 27.8% reported that they never used condoms. Another nationally representative study of sexual risk behaviour showed that 12% of school-going youths from Grade 8 to 11 reported having had sex before 14 years of age, and 47.4% of sexually active learners revealed having two or more sexual partners (Reddy et al., 2013; James et al., 2017). Only one-third, about 32.9% of sexually active

learners, reported consistent condom use, while 22.2% of females identified that they had been pregnant, and 14% admitted that they had a child or children. According to a report based on the results of a nationally representative survey conducted in South Africa from 2002 to 2018, 13.1% of the total population of HIV-positive people, 5.5% were young people (Stats SA, 2019). Such levels and unfavourable health consequences related to adolescents' engagement in RSB suggest that its phenomenon remains a national concern. It indicates that subsequent efforts towards preventing the burden in South Africa remain inadequate. Furthermore, RSB is still a current problem that needs research attention, using theories such as social disorganisation theory that have not been sufficiently used by previous research with national data.

The factors influencing RSBs at the individual and interpersonal level using theories and models are well-established. For example, Jemmott and colleagues applied the theory of planned behaviour in the Eastern Cape among Xhosa adolescents aged between 10 and 16 years and found that attitude and perceived behavioural control were associated with a desire to be a consistent condom user (Jemmott et al., 2007; Thabang et al., 2017; Usadolo & Usadolo, 2018). More so, Sayles and colleagues used the social cognitive theory and found that the parent-child relationship was correlated with a high level of self-efficacy in condom use (Sayles et al., 2006; O'Leary et al., 2012; Mahat, Scoloveno, & Scoloveno, 2016). Similarly, an investigation of gender and partner ages influence condom use at last sexual encounter among school-based adolescents was dne using the social cognitive theory (Harrison et al., 2015; Nyembezi et al., 2014). The findings of these studies suggest that discussion about contraception was associated with condom use among boys and girls

In South Africa, few studies have employed neighbourhood theories to investigate the influence of contextual variables that are associated with sexual behaviour among youth (Burgard & Lee-Rife, 2009; Jensen, 2011; Sidze & Defo, 2010; Somefun & Odimegwu, 2018). Using the social capital theory when exploring the associated factors of risk-taking among youths aged 14-22 years (Kaufman et al., 2004), education, employment opportunities and the awareness of sexual risk-taking in a community increase the chances of condom use for young people (Toska, 2017). The mechanisms through which education and employment opportunities in the communities can influence youth sexual behaviour are through the provision of SRH information and the resources

to access any contraceptive methods they desire. The risks associated with a disadvantaged community with a high percentage of youths, not in any education or employment, could lead to a lack of trust and destroy social relations, social norms and social networks. The disadvantages of communities with a high percentage of youths not in any education or any employment were established in a quantitative study conducted in South Africa (Burgard & Lee-Rife, 2009; Romero et al., 2018). The study found unprotected sexual intercourse and multiple sexual partnerships among the youths. These studies identify the need to employ community-level variables and this study proposes that the social disorganisation hypothesis be applied to study young people's involvement in RSB in South Africa.

Regardless of these recommendations, very little research (see Mkwananzi, 2017; Ward-Peterson et al., 2018) has examined the mechanisms through which social disorganisation factors at the community level influence RSBs among the youth. These studies defined social disorganisation as a community's inability to comprehend its residents' values and exercise effective social controls. They found that in a socially disorganised society, there is a tendency for a high level of community poverty, family disruption due to single-parent families, female-headed households, high rates of divorce, residential instability due to migration and urbanisation and racial/ethnic heterogeneity. These community mechanisms increase the complexity of community social organisation while undermining informal social networks, social norms and social relations and control, thereby reducing the ability of communities to monitor youth behaviours, especially sexual risk behaviours. These factors could also lead to a loss of sense of communal supervision, monitoring and control of deviant behaviour among youths, which consequently leads to high-risk behaviours. In addition, limited studies have looked at how these community factors influence adolescent males and females to engage in risky sexual behaviours. Fewer studies have examined teenage pregnancy outcomes through the lens of household and community characteristics. These studies could not explain other possible sexual risk behavioural outcomes (such as multiple sexual partnerships and inconsistent condom use that exposed youths to STIs, including HIV/AIDS and unsafe abortions) that youths may face as they transition. It has opened some gaps which require further interrogation.

Studies on youth's risky sexual behaviours are vital to equip young people with positive developmental approaches. The purpose of this study was to identify and investigate the pathways by which social disorganisation factors are linked to youths' engagement in risky sexual behaviour in South African communities. It will help in planning context-specific intervention programmes that take the youth's social and structural contexts into consideration.

1.4 Statement of purpose

This analytical cross-sectional research intended to test the social disorganisation theory in examining the association between social disorganisation factors and risky sexual behaviours among youth in South Africa. The SADHS – 2016) was analysed for youths aged between 15–24 to examine adolescents' risky sexual behaviours in correlation with household/community factors. The dependent variable will be defined as risky sexual behaviours to be measured with inconsistent condom use and multiple sexual partners. The independent variables are defined as households/community characteristics and include community poverty, family dysfunction, residential mobility, race/ethnic heterogeneity, household composition and main source of household income. The study examined factors of social disorganisation and explored the pathways through which factors of social disorganisation at household and community levels are related to the sexual behaviour of young people. The study clearly shows that understanding pathways through which household and community-level social disorganisation factors influence youth's risky sexual behaviours with the lens of social disorganisation theory in South Africa will help in designing context-specific intervention programmes. It will help to locate issues of risky behaviours within broader social and structural contexts.

1.5 Research questions

Main research question: What are the social disorganisation-related factors that influence youths to engage in risky sexual behaviours in South Africa?

1. What are the individual and household factors that influence risky sexual behaviours among South African youths?
2. Is there a relationship between community social disorganisation-related factors and risky sexual behaviours among youths in South Africa?

3. What are the pathways through which factors of social disorganisation influence RSB in South Africa?

1.6 Research objectives

1.6.1 General objective

To examine the influence of social disorganisation factors on risky sexual behaviour among youths in South Africa.

1.6.2 Specific objectives

1. To identify the individual and household factors that influence risky sexual behaviours among South African youths.
2. To determine the relationship between the community's social disorganisation-related factors and youth's risky sexual behaviours in South Africa.
3. To explore the pathways through which factors of social disorganisation influence RSB in South Africa.

1.7 Definitions

Socially disorganised community: This is conceptualised as a community with structural characteristics such as poverty, residential instability, single-parent households and race/ethnic heterogeneity, which also lacks social processes (such as social networks and relations, norms and values, local participation in formal and informal activities and inability to supervise and control youths' behaviour) (Sampson & Groves, 1989; Shaw & McKay, 1969).

Community: These are groups of people with varying characteristics who are linked by social ties, share common perspectives and live in the same geographical area.

Household: It is defined as persons living in the same dwelling unit who cook and eat together whether they are related or not (United Nations, 2011).

Youth: In this study, youth is defined as individuals (male and female) aged 15–24 years. In South Africa, the term 'youth' refers to people between 14 and 35 years of age. However, the NDoH aligns with the international definition of youth (Department of Health, 2012).

Community/neighbourhood characteristics: These include neighbourhood poverty, ethnic/racial composition, residential mobility, community family disruption, place of residence and the province of residence. It is also referred to as people living in a particular area. In the 2016 SADHS, the primary sampling units were considered proxies for neighbourhoods/communities.

Risky sexual behaviour: These sexual behaviours include inconsistent condom use and multiple sexual partnerships.

1.8 Significance of the study

I considered adolescents and young adults aged 15-24 years in this study because their sexual behaviour will have an immense effect on the flow of epidemics in the following decade. And considering the prevailing structural characteristics such as poverty, residential instability, single-parent households and racial and ethnic heterogeneity and social processes (social networks and relations, norms and values, local participation in formal and informal activities and inability to supervise and control youth's behaviour) in South African communities, the importance of a study that uses the social disorganisation theory in the understanding of RSB among the youth cannot be overemphasised. When youth's SRH are prioritised through effective implementation of promotional programmes, they can make informed decisions about marriage and childbearing age. Young people can be restricted from achieving their life goals by various factors, such as lack of use of contraceptive methods, unintended pregnancies and early marriage. Context-specific prevention and intervention programmes that consider youth's physical, social and structural contexts are the areas this research aimed to contribute to in the aspect of planning. Though communities in South Africa differ by race, geographically, socially, economically and culturally, they are heterogeneous. This study describes the effects of these differences on RSBs amongst the youth. Governments and policymakers will be able to access insights from this research to develop interventions and context-specific planning to assist in the planned reduction of RSB among the youth.

Adolescents make up a large percentage of the population which affects the achievement of sustainable development goals. The first global strategy that explicitly addresses adolescent health and well-being is the global strategy for women's, children's and adolescent health.

The youth SRH field does not consider the presence of risk factors as a new concept because it has been accessed by various literature for years. There is still a research gap in the aspect of understanding the influence of social disorganisation-related factors on risks in youth development, whether they are significant or not. To develop programmes and policies for youth who were previously not considered, there must be an exploration of the risk factors for youth development that would be beneficial.

An association between RSBs among youths and interventions has been identified in that the knowledge of risk factors can inform the development of the targeted intervention (Olsson et al., 2003). Though there is a common goal of prevention of negative outcomes between the positive development approach and risk reduction, the emphasis of both is different in a way. Building skills and capacities that would facilitate successful negotiation in a high-risk environment are emphasised in a positive approach. Young people's assets and agencies are focused on and not solely on their deficits. The risk reduction approach emphasises removing or avoiding factors or processes implicated in the development of problematic outcomes. Both methods are essential to have an effectively sustained effect. There is a need to assess and understand studies on risk factors among young people. Critical studies on risk factors can challenge and inspire essential remodifications. To ensure the promotion of the economic future of nations and individuals, with a serious emphasis on resilience, global economic agencies like the World Bank and United Nations are investing in children as their main strategy. To help young people adopt healthy coping responses to multi-systemic stressors, insights on risk factor interventions will be beneficial. Policymakers can also benefit from the outcomes of this thesis because they will be given surveillance data and crucial areas for policy intervention targeting.

1.9 Overview of the study

This thesis is divided into sections. Chapter One was the introduction to the study and it contained the background of the study, problem statement, purpose statement, research questions, research objectives, definitions, the significance of the study and the organisation of the study.

Chapter Two is divided into four sections as follows: A review of literature, theoretical framework, conceptual framework and test of hypotheses.

Chapter Three discusses the sources of data sets used for analysis in the study. This chapter is divided into eight sections as follows: Introduction, study setting, study design and research approach, study population and sample, variable measurements and identification, procedures in the analysis of data and ethical clearance.

Chapter Four presents the characteristics of the study population, the prevalence of RSB among young people in South Africa, and a bivariate analysis of RSBs among young people (multiple partnerships and lack or inconsistent condom use) in South Africa.

Chapter Five presents the results of the multilevel analyses. The chapter is divided into four main parts: Analysis of individual and neighbourhood-level factors and multiple sexual partnerships (MSP) among female youths, analysis of independent effects of individual and neighbourhood factors on the risks of inconsistent condom use among female adolescents, and analysis of the independent effects of individual and neighbourhood factors influencing MSP among male youths, and analysis of the independent influences of individual and neighbourhood factors.

Chapter Six is divided into six parts: Introduction, hypothesis one, hypothesis two, hypothesis three, hypothesis four and hypothesis five.

Chapter Seven discusses the main findings of the study before presenting the conclusion and recommendations. The chapter is divided into four main sections: An introduction, a summary of discussions, a conclusion and recommendations.

CHAPTER TWO: LITERATURE REVIEW AND THEORIES AND CONCEPTUAL MODELS

2.1 Introduction

This section investigates what is known about RSBs among young people, with a particular interest in adolescents in South Africa. It is divided into three sub-sections: global, sub-Saharan African and South African-specific reviews.

2.1.1 Global reviews of adolescent RSB

Studies in developed and developing countries argue that factors relating to societal and individual levels appear to be key determinants of adverse outcomes among adolescents. In addition, previous research on youth RSBs looked at theories and models to explain what exposes youths to RSB at the individual level (Babalola, Tambashe, & Vondrasek, 2005; Agaije et al., 2015; Cassidy et al., 2018). In Canada, Boisland and Poulin (2011) used problem behaviour theory to discover that not being in an intact family, low parental control, high antisocial behaviours are linked to early sexual debut and multiple sexual partners among 13-year-olds. In addition, Pilgrim and colleagues (2012) used Bronfenbrenner's ecological system theory to examine studies on youth's engagement in sexual risk behaviours among the English-speaking Caribbean. Findings from the research established that sexual risks and protective factors operate at multiple levels. These results suggest that a more in-depth examination of various neighbourhood variables, such as community poverty, family structure and ethnic diversity, especially in the South African contexts, is needed to understand how neighbourhoods may contribute to STIs, including HIV/AIDS risks among young people.

Reports of condom use and multiple sexual partnerships among adolescents in the United States indicate an increase in STIs including HIV/AIDS through racial/ethnic disparities (Miranda-Mendizábal et al., 2017; Mimi et al., 2018). The study shows that neighbourhood prevailing circumstances are predictive causes of RSBs (Kogan et al., 2017). In the United States, there is a research report on neighbourhood disadvantage and condom use among African Americans, using

a framework of social disorganisation (Bauermeister et al., 2010). It was discovered that youth living in disadvantaged areas frequently use condoms more than youth living in advantaged communities (Bauermeister et al., 2010; Frye et al., 2010) and suggest an association between neighbourhood disadvantages and RSBs among youths (Frye et al., 2010; Johns et al., 2010 cited in Bauermeister et al., 2010). Therefore, it is necessary to address the neighbourhood determinants of sexual behaviour, with a particular interest in those related to socio-structural issues (Mkwananzi, 2017) in South Africa. A research report among young people in developed societies indicates that a breakdown in the community norms and values regulating adolescents' sexual behaviour has a connection to some community variables (Mancini & Bowen, 2013; Lee et al., 2018; Adekola & Mavhandu-Mudzusi, 2021). Such community factors included the place of residence, community unemployment rates, residential instability, family dysfunction and ethnic/racial disparities (Hayes-Smith & Whaley, 2009; Molina, Alegría, & Chen, 2012). For example, a report on Chinese youth's use of condoms showed that patterns of migration and sex were the significant determinants of condom use (Sudhinaraset, Robert, & Blum, 2011; Wang et al., 2019).

In addition, another research finding reported that place of residence is associated with sexual behaviour among youths. Reports by Burgard and Lee-Rife (2009) posit that youths from rural residential neighbourhoods were most likely to report early sexual initiation, inconsistent condom use and MSPs. Also, adolescents living in rural areas with no lack of social services such as electricity and access to clinics/youth-friendly centres increased the risk of RSBs (Poon & Saewyc, 2009; Kogan et al., 2017). Other factors, such as social class status and the province of residence, have been shown to have an impact on the environment in which young people live (Strauss et al., 2010; Yao, 2010; Lee, 2013), although the significance of these factors varies across countries, they could encourage young people to engage in RSBs that have serious consequences for their well-being. Studies confirmed that high-risk sexual activities among young people are not linked to the colour of their skin or place of residence; however, some studies alluded that RSBs are associated withthese factors (Kailchman et al., 1996; Burgard & Lee-Rife, 2009; Yao, 2010; Derefinko et al., 2014).

Findings from other research have established a link between high social class position and RSBs among Brazilian youth (Juarez & LeGrand, 2005; Oliveira-Campos; Giatti, Malta, & Barreto, 2013). The study indicates that more research into adolescent SRH behaviours is needed. Adolescent sexual activity has proven to be influenced by educational attainments (Stanger-hall et al., 2011). For example, doing well in school has been connected to high hopes, especially for the future of American Indian/Alaska youths residing in the United Kingdom, which was associated with RSB (O'Keefe & Wingate, 2013). A study that looked at an association between employment, first sexual encounters and condom use among young people in the United States (Bozick, 2006; Sanders et al., 2010) discovered that working for extra hours was linked to a higher likelihood of early sexual intercourse and non-condom use.

Studies in Asia and Latin America suggest that living in a household with both parents present was discovered to protect youths against RSBs (Sirikantraporn, 2013; Germán, Gonzales, & Dumka, 2009). Another study in Brazil correlates MSPs among youths aged 15–24 years with youth in households with highly educated parents and well-off families (Oliveira-Campos et al., 2013). The research by Simak, Fitriyani, and Setiawan (2019) using a cross-sectional observation strategy in Indonesia found that relationships in the family could explain over 50% of risk factors for adolescent involvement in RSBs. In addition, in China, a study among school-going pupils aged 14–16 years old found family structure and parental history of drug use were predictors of RSBs (Peres et al., 2008; Farid et al., 2014). Studies have connected youth residing in a female-headed home with low-income earnings to an increased risk of HIV infections because young females in such conditions will not be capable of safe sex (Gilmore et al., 2011; Tong et al., 2018). A family within a community's environment where young people congregate is a source of health and well-being as well as a mediator of health and well-being (Gidlow & Ellis, 2011; Cicognani, Mazzoni, Albanesi, & Zanni, 2014). It is related to the notion of social capital (McPherson et al., 2013), which is a resource for community health promotion since it reflects community members' social processes, norms and trust (Poortinga, 2012). Overall, these findings imply that disparities in RSBs are due to unequal access to financial resources in a community that should encourage youth involvement. This economic opportunity is critical in reducing the negative consequences of poverty on young people's health. As a result, youths in socioeconomically advantaged

communities with high social capital are safeguarded from adverse health outcomes like engaging in dangerous sexual behaviours.

Although some researchers (see Catalano et al., 2012; Jackson, Henderson, Frank, & Haw, 2012) have highlighted progress in the reduction of RSBs among youths; research in the Bahamas, for example, discovered a high significant rate of adolescent engagement in high-risk sexual behaviours (Wang et al., 2015). According to Oliveira-Campos and colleagues (2013), poor child/parental relationships appear to predict RSBs across gender, despite the role of both parents as protective factors in Scotland. In the United States, other studies showed that male youths among African Americans reported being sexually active (Levy et al., 2014; Coakley et al., 2017), with African American females likely to report unwanted pregnancies compared to White females (Hoskins & Simons, 2015). Adolescents residing in two-parent families are also more likely to postpone sexual activities than those from single-parent households (Somefun & Odimegwu, 2019). Thus, it is due to a high amount of parental supervision, support and control that restricts adolescent sexual behaviours.

In many sexuality studies of adolescence, conflicts of findings have emerged on the linkage between household income or household poverty and RSBs among the youth. Some researchers, for example, have found that using wealth as a proxy for socioeconomic status can lower the odds of HIV infections among individuals of higher socioeconomic status (Currie et al., 1997; Fox, 2010; Kasirye, 2012). Other authors posit that wealthy individuals were more at risk of HIV infection as a result of non-condom use and the proclivity for more than two sexual partners (Adefuye et al., 2011; Lopman et al., 2017). Some argued that adolescents' decision to engage in RSBs does not have any relationship with being wealthy or poor (Awusabo-Asare & Annim, 2008; Lucas & Wilson, 2019). However, these factors have been established to operate at the individual level due to a lack of power and skills in negotiating safe sex (Shrestha, Karki, & Copenhaver, 2016), which accounts for a hundred HIV infections among young people globally (Karim, Baxter, & Birx, 2017). Global interests in adolescent sexual and reproductive health have kept growing since the ICPD conference in Cairo, Egypt. This is mainly due to unprotected sexual activity, such as the inability to use a condom and an increase in the number of STIs (Hussain et al., 2018).

A report from nationally representative research on HIV infection with the sexual behaviour of youths in India showed that individual/family factors were likely to reduce high-risk behaviour among youths in disorganised neighbourhoods (Mehra et al., 2018). The study found that understanding the neighbourhood context was necessary for developing preventive measures for the youth population. In contrast, there has been little attention to neighbourhood influences that expose young people to inconsistent condom use and MSPs in developing countries, despite the numerous benefits it provides in formulating effective policies and designing effective intervention programmes. As a result, the purpose of this research was to investigate the social disorganisation factors that influence young people'' sexual and reproductive behaviours in South Africa.

2.1.2 Sub-Saharan Africa review

Adolescent sexual behaviour in Africa has been linked to the social, economic and contextual circumstances prevailing in many communities in sub-Saharan African countries (Odimegwu et al. 2002; Magadi, 2017; Svanemyr et al., 2021). However, some of the findings in sub-Saharan African studies are like those of the research done in developed countries. According to a study of young people's sexual behaviour in 24 countries across sub-Saharan Africa, roughly 25% of young people aged 15–19 years reported initiating sex before the age of 15, with more males than females reporting to have had more than two sexual partners. (Doyle et al., 2012; Adebowale, 2018; Ekpenyon and Erebagha, 2017). Employment status and being employed were correlated with RSBs among the youths. For example, having a paid job and being in a financially stable home contribute to authority in a sexual relationship (Gibbs et al., 2017). The study report suggested that having a paid job and being financially stable were associated with condom use during sexual relations. It encouraged females to negotiate sex and avoid threats as their male partners began to feel authority in the relationship.

Adolescent premarital or unsafe sex is related to other risky behaviours such as alcohol, substance and drug misuse (Zgambo, Kalembo, & Mbakaya, 2018; Sommer, Ibitoye, Likindikoki, & Parkare, 2021). For instance, among Nigerian youth, male involvement in alcohol intake is related to sexual behaviour in Nigeria (Fatusi & Blum, 2008; Nwagu, 2016; Ajayi, Owolabi, & Olajire, 2019). Having a paid job and drug use were shown to be significantly associated with men's sex experiences (Williams et al., 2016; Parry, Carney, & Williams, 2017), while not attending any

educational institution and alcohol consumption was found to be correlated with engaging in sexual activities among young adults from Botswana (Hetolang & Amone-P'Olak, 2018). The findings from these studies suggest that more studies are needed on the examination of attitudes towards alcohol intake among youths. This will help to design tailor-made programmes and interventions for at-risk individuals and communities due to their exposure to alcohol intake.

In addition, Cluver et al. (2016) reported in cross-country research that young female adolescents with employment are protected against intimate partner violence in a sexual relationship. Education attainment and being employed were established to be associated with regular use of contraceptive methods and negotiation for condom use. For example, young women who had paid employment and were enlightened were likely to have access to health information and condom use (Furuta & Salway, 2006; Igwe, Yusuf, & Fawole, 2021). The findings from studies have perceived education as a possible mechanism in fostering attitudes that are more favourable towards modern health care, including using modern contraceptive methods (Fayehun et al., 2011).

Youths who did not live with both parents and those from low-income families were also more likely to engage in early sexual activity and use condoms inconsistently (Childs, Moneyham, & Felton, 2008; Steel, Simons, Surtton, & Gibbs, 2020; Mumah et al., 2020). The studies reported that early exposure to alcohol and other substances could lead to unsafe sexual behaviour in young individuals. In another study, having a good parent-child relationship was linked to having fewer sexual partners for males and females (Sidze & Defo, 2013; Muthengi, Ferede, & Emulkar, 2015; Kerpelman et al., 2016). It was probable that growing up with both parents in the same household and parental non-acceptability of early and premarital pregnancy reduced the size of sexual partners. Some studies in Nigeria predicted condom use and sexual initiation among youths (Fatai & Blum, 2008; Okeke, Okeke-Obayemi, & Deborah, 2016; Ajayi & Olamijuwon, 2019). The results revealed that a region of residence was linked to a delayed sexual debut but not condom use, implying that a lack of condom access may influence inconsistent condom use and multiple sexual partnerships. In addition, research conducted in Ibadan, Nigeria, examining young people's sexual behaviour showed that being poor, absence of parents at home due to long hour jobs were more likely to push their children into unplanned sexual relationships resulting in unwanted pregnancies (Adeyemo & Williams, 2010). The study, therefore, suggested that youths living in

such homes were likely to become involved in RSBs, especially when both parents were not in any employment.

Some studies supported the proposition that adolescent males and females had lower odds of becoming involved in RSBs, especially when they lived with both parents (father and mother) or identified with their parents' beliefs (Okigbo et al., 2015; Govender, Naido, & Taylor, 2020; Anyanwu et al., 2020). A study conducted in one of the states in Western Nigeria among female adolescents, not in any educational institution, showed that about 60% of female youths who lived in a household with their relatives or peers tended to be sexually active compared to 38% of those residing with both parents (Onajole et al., 2017). Family connectedness has beneficial effects on the health and sexual well-being of youths by reducing their opportunities for sexual risk engagements. Ajayi and Somefun (2019), in a study, agreed that the socioeconomic status of the family did not influence adolescents' sexual behaviour. In another approach to postpone sexual initiation and lower the number of sexual partners (Fearon et al., 2015; Usonwu, Ahmad, & Curtis-Tyler, 2020), parents were urged to provide a safe and nurturing home environment for their children and to maintain close relationships with them.

At household levels, single-parent households were identified as increasing the odds of youth RSBs. Several studies have shown that the head of the household has a protective effect on youth's involvement in RSBs (Ntaganira et al., 2012; Kirby et al., 2007; Biddlecom et al., 2009). Most of this research claimed that having a man as the head of the household prevented young people from initiating sex very early in life and having many sexual partners as they transitioned to adulthood. Children from single-parent homes tended to engage in RSBs more than children that lived with either or both parents present (Ajayi & Somefun, 2019). Sidze and Defo (2013) looked at the impact of parent-child relationships and found that it was associated with the likelihood of having fewer sexual partners and a high self-efficacy in negotiating condom use. The protective role of residing with either of the parents in the same household during adolescence was correlated with the disapproval of early and unwanted pregnancy by parents (Lee, Yuen, Hung, & Sobel, 2018; Grossman et al., 2019). Meanwhile, parent-child communication/discussion about sexual abstinence was found to be significantly related to a delayed sexual debut and a reduced number of sex partners (Usonnwu, Ahmad, & Curtis-Tyler, 2020; Grossman, Black, & Richer, 2020).

According to the findings of other studies, girls who were more involved in household decision-making were more empowered and were more likely to use health services, resulting in better health outcomes (Furuta & Salway, 2006; Fawole & Adeoye, 2015). For instance, there is an assumption that female empowerment and household position are related to contraceptive use and perceptions of unmet contraceptive needs (Blackstone, 2016; Abdi, Okal, Serour, & Temmerman, 2021). The study report identified the importance of enhancing access to welfare grants for young people living in a single-parent home as vital to accessing SRH services. In addition, the educational level of household heads enhances the feelings of self-worth and self-confidence in young people, which are vital for youth safe sexual negotiation, including the use of condoms (Singh et al., 2013; Blackstone, 2017). For instance, the education of parents may create a conducive atmosphere for knowledge of contraception, hence increasing discussion and decisions between their sexual partners (Fayehun et al., 2011; Singh et al., 2013).

Furthermore, unmarried adolescents who reported little parental monitoring were found to be sexually active and participating in MSPs to meet their demands (Bingenheiner, Asante, & Ahiadeke, 2015; Steele et al., 2020). Pilgrim and colleagues (2014) investigated the significance of family roles as risk and protective factors for adolescent sexual behaviour in Uganda. For instance, in studies on family composition, parental control was found to be a protective factor, lowering the odds of early first sex and condom use by 41% (Kerpelman, McElwain, Pittman, & Adler-Baeder, 2013; Somefun & Odimegwu, 2018; Somefu, 2019). Many studies have established the risks of gender differentials in participating in RSBs, particularly among young females, due to cultural and gender disparities (Meekers & Calves, 1997; Kalichman et al., 2007). In Northeast Ethiopia, female adolescents attending secondary school reported engaging in sexual intercourse without a condom more than males (Kassahun et al., 2019; Tesfaye et al., 2019). The majority of these research findings indicated that ethnic/racial differences instilled in young girls challenged youths to negotiate healthy sexual relationships. In comprehensive studies of parental monitoring as the primary agent of socialisation in Ethiopia (Kassahun et al., 2019), inadequate parental supervision and other social norms that determined the level of a parent-child relationship were associated with greater engagement of youths in RSB (Grossman, Black, & Richer, 2020). In conformity with previous studies, young people with colleagues that are exposed to RSBs have higher odds of involvement in RSBs themselves (Pedlow & Carrey, 2004; Fearon et al., 2015;

Hale & Viner, 2016). Friends are found to influence their peers to engage in sexual behaviour that may be detrimental to their health and well-being. As a result, it is critical to strengthen school peer education programmes to foster a culture of positive peer influence. In Cameroon, students who were perceived to be connected to schools were less likely to engage in RSBs (Nubed & Akoachere, 2016). There is also evidence that showed poor connectedness to schools was significantly associated with RSBs (Kirby, 2007; Nubed & Akoachere, 2016). Students that stay in school longer were found to promote appropriate student-teacher relationships that reduced sexual risk reduction behaviours.

Findings from a study in Nigeria that used three waves of the Nigeria DHS to examine how the sexual behaviour of youths was related to ethnicity showed abuse of the girl child, sexual violence and patriarchal culture were associated with adolescent sexual behaviour (Odimegwu & Somefun, 2017). There were consensus findings from research among youths that ethnicity, religion and cultural connections in some African communities increased the odds of condom use (Odimegwu & Somefun, 2017; Hope et al., 2019; Svanemyr et al., 2021). Again, media access was reported to significantly enhance youths' positive sexual behaviours (Sani et al., 2016; Jean-Louis & Miaba, 2019) through campaigning for positive sexual behaviour, advertising contraceptive methods and social reform (Asekun-Olarinmoye, 2014; Guerriero, 2015). As a result, updated intervention tactics and proper sexuality education provided to young people should receive increased attention.

Nyamu (2019), in research reports in Kenya, posits that the majority of adolescents' sexual behaviour was shaped by their immediate surroundings, especially when they interacted with people from other places and their close neighbours. These remained a limitation to the youths as they transitioned. While there may not have been a continuous and clear association between adolescent sexual and reproductive behaviours and urban/rural contexts, childhood residency has been demonstrated to have substantial consequences (Gadsden & Dixon-Roman, 2017; Wiafe & Mihan, 2021). Fonner et al. (2010) and Messersmith et al. (2021) looked at individual and community-level correlates of condom use and multiple sexual partnerships using Tanzanian national survey data. According to the findings, community-level factors had a significant impact on adolescents' RSB. For example, the social capital hypothesis stated that youths who lived in neighbourhoods with adequate knowledge about STIs, including HIV/AIDS transmission, were

eager to learn more about HIV/AIDS. These communities supported condom use and positive sexual behaviour. The results showed the problems of residing in neighbourhoods that were less well-informed, less supportive of condom usage and less eager to obtain HIV/AIDS information. Female youth's lack of HIV knowledge was disproportionately higher than males. The findings suggested that young girls who lived in communities with negative attitudes towards reproductive health or a lack of social support for condom use were more likely to engage in RSB.

However, in some South African communities, the availability of social and financial support networks for never-married adolescent mothers and the consequences of unsanctioned premarital pregnancy and childbearing, all influence adolescents' likelihood of engaging in multiple sexual partnerships and inconsistent condom use (Liza & Heather, 2015; Titus, 2017). A recent study focusing on sub-Saharan African countries discovered community support as a point of intervention for behavioural change (Closson et al., 2018), although the processes through which the community environment impacted the sexual behaviour of young people in the study locations differed for males and females (Fearon et al, 2015; Wiafe, Mihan and Davison, 2021). It highlights the importance of comprehending the dynamics of sexual behaviour across gender, and the significant impacts of community on the sexual behaviour of youths, most especially in South Africa.

2.1.3 South African Review

2.1.3.1 Individual-level factors and youth's sexual risk behaviour in South Africa

In South Africa, like in other areas of the world, there is a growing interest in examining adolescent and young adult sexual and reproductive behaviour. Age, employment, gender, education, race and area of residence were all linked to RSB at an individual level (Adeboye et al., 2017; Nyemba, 2018). Not using a condom was connected to low self-efficacy and relationship distrust, and an increase in many sexual partnerships among the youth (Knox et al., 2010; Shisana et al., 2014, Leddy et al., 2016). According to studies, young women who work and have higher education are much more susceptible to it using health information (Furuta & Salway, 2006; Robbinson & Seiber, 2008; Fawole & Adeoye, 2015). Hence, education creates favourable attitudes towards modern health care uses and modern contraceptive methods.

A research report by Kaufman and colleagues noted that in South Africa, despite high levels of knowledge about the consequences of unprotected sex and RSB there was a high level of such actions among the youths (Fennie & Laas, 2014; Amoateng, Kalule-Sabiti, & Arkaah, 2014). They noted that many studies have focused on the individual's role and decision-making by partners in a sexual relationship without appropriate consideration of the socio-structural context where young people live and work, particularly in South Africa. In a representative sample, the survey of 3 213 young people aged 14–22 years using time data on education and work in Cape Town showed that adolescents who were not in any education or training engaged in RSB (Bengesai, Khan, & Dube, 2019). The findings showed that community educational levels were linked to not having engaged in sex in the previous 12 months prior to the survey. A high level of employment in communities was positively related to condom use (Muchiri, Odimegwu, & de Wet, 2017; Madiba & Ngwenya, 2017). Within the home, parent educational attainment is understood to have a positive effect on condom use for both boys and girls (Amoateng, Kalube-Sabiti, & Arkaah, 2014; Cluver, Orkin, Yakubu, & Sheir, 2016; Somefun & Odimegwu, 2018), whereas the level of sports engagement in the neighbourhoods had a positive relationship with risk-taking among youths (Kerstin et al., 2016; Cora, 2015). This finding emphasises the significance of understanding the community context of SRH behaviour among youths. Hence, it will indicate which institutional and community elements are the most influential, allowing intervention programmes in those aspects.

2.1.3.2 Household factors and youth RSB in South Africa

At the household level, household affluence, education attainment of the head of the household and single parenthood are likely to promote many sexual partnerships and inconsistent condom usage in South Africa (Carolyn et al., 2017; Thurman et al., 2006; Romero et al., 2018; Fawole & Adeoye, 2015). For example, Sidze and Defo (2013) established that the presence of both parents was associated with less likelihood of MSPs and a high level of self-efficacy in negotiating condoms. As a result, the protective role of growing up in the same house with both parents influences an increase in unwanted pregnancies and reduces multiple sexual partners. Meanwhile, living in a two-parent family and having friends who do not engage in RSBs is protective against risky sexual and contraceptive behaviour in other settings (Billy et al., 1994). However, given the 17.6% rate of marital breakdowns, with 41.8% of female-headed households in South Africa, there

is still a lot to study and understand about how family structure influences young people's sexuality. Hence, examining a multilevel cause of RSBs in South Africa will help to reveal how dysfunctionality in a family influences the RSBs of young people in South Africa.

2.1.3.3 Influence of community factors on adolescent sexual behaviour in South Africa

According to an ecological framework, a diversification of factors, such as the availability of goods and services, norms and opportunities may influence the sexual behaviour of disorganised neighbourhood residents (Cubbin, 2005; Mkwananzi, 2017; Graham et al., 2018). The research report by Wiseman and Steven (2009) showed that in many communities across South African provinces, a rise in STIs, such as HIV/AIDS, was related to social, behavioural and structural factors. Also, the education of adults had a positive effect on condom use for both boys and girls (Reddy, Sewpaul, & Jonas, 2016; Mabaso et al., 2018; Kriel et al., 2019). Females from poor households in a disadvantaged community were three times more likely not to use a condom at first sex, compared to non-poor after adjusting for community clustering (Robinson & Seiber 2009). In addition, a study found that regardless of individual or household factors, higher levels of neighbourhood concentrated disadvantages related to an increased probability of engaging in unprotected sex among Black youths (Burgard & Lee-Rife 2009; Mosavel, Ahmed, & Ports, 2015; Nyembezi et al., 2018). Unfortunately, only a few researchers (see Aarø et al., 2014; Sado et al, 2014; Romero et al., 2018; Mkwananzi, 2017) have investigated the impact of community influences to determine how community factors influence adolescent RSBs in South Africa. Thus, research on sexual behavioural interventions for young South Africans in economically disadvantaged areas is urgently needed.

2.1.3.4 Deficiencies in the existing literature

There have been some studies that highlighted the levels and patterns of RSB among youths. As observed from these studies, most of them have examined youth's RSBs based on theories and models aimed at risk reduction at individual and interpersonal levels (Kailchman et al., 2004; Boisland & Poulin, 2011; Burgard & Lee-Rife, 2009). These models and theories included health belief models, the theory of planned behaviour and social cognitive theory (Anderson et al., 2007; Bryan et al., 2006; Jemmott et al., 2007; Sayles et al., 2006; Oyedokun, 2013). Social

disorganisation theory has not been adequately applied to studies on youths aged 15–24 years in South Africa to explain how community social disorganisation factors influence youth's RSB with national data, which is a gap this study sought to address.

A handful of studies (see Kaichman, 2004; Romero et al., 2018; Sidze & Dafo, 2013; Singh et al., 2013; Mkwananzi, 2017; Bolarinwa, 2021) have looked at how household and community factors influence RSBs in South Africa. The studies found that the education of parents, household wealth status, single parenthood, employment and community poverty could be a reason for engaging in RSB, while living with both parents, being employed, or being educated and having a role model in a community may prevent RSB among young people. However, these studies have some limitations, for instance, only the young females aged 15–19 years were looked at, thereby leaving out valuable information that could be elicited from their male counterparts. The other studies looked at a particular race and colour, hence, it was impossible to generalise the studies to the entire country. This is a gap that this research intended to fill by investigating the RSBs of youths aged 15–24 years (males/females) through the lens of social disorganisation theory, across racial groups in South Africa.

Methodologically, most of the studies applied the multilevel regression approach, which Durkheim (1964) suggests is best used in examining people's health and social risks. Despite the importance of the multilevel regression approach, the studies failed to establish the correlations and variations through which factors of social disorganisation influence RSB. There is a need to examine this approach to understanding the risky sexual outcomes of young people in South Africa. Brook et al. (2006) tested a developmental model to examine pathways to RSB among adolescents aged 12–17 years in South Africa using multilevel structural equation modelling. The study only examined the personality and behavioural attitudes towards RSB among adolescents leaving out community social disorganisation characteristics where youths lived. Thus, this present study sought to address this gap by looking at broader perspectives (household and community levels of social disorganisation-related factors), to identify pathways to RSBs among youths aged 15–24 years in South Africa.

2.2 Theoretical frameworks

This study used the SDT developed by Shaw and McKay (1942; 1969) to examine the sexual risk behaviours of South African youth (Christodoulou et al., 2019). The theory was developed to explain variations in crime and delinquency among adolescents in the inner-city neighbourhoods of Chicago, Illinois, in the United States of America. Social disorganisation identifies neighbourhood poverty, residential instability due to migration, family dysfunction and racial and ethnic heterogeneity as the main structural components that lower the capability of communities to regulate themselves (Shaw & McKay, 1942; Small et al., 2019). The SDT argues that these structural features in certain neighbourhoods diminish community attachments, social norms and social ties by weakening community-level social control of crime and deviance (Bernburg & Thorlindsson, 2007; Sampson 1997; Valdimarsdottir & Bernburg, 2014). Secondly, the SDT proposes that neighbourhoods characterised by a high level of these structural disadvantages are socially disorganised and therefore unable to regulate themselves and cannot socialise the residents, especially adolescents, to engage in conventional behaviours. Although the SDT was originally applied to crime and delinquency, researchers such as Odimegwu and Ugwu (2022) and Opoku-Ware et al. (2022) have applied the theory to different behavioural studies such as youth sexual risk behaviours, sexual and gender-based violence, rape, teenage pregnancy and educational behaviour among adolescents.

In addition, the theory identifies places and community structures responsible for the creation of conditions that are favourable or unfavourable to crime and delinquency among adolescents. The social disorganisation theory is located within the broader neighbourhood framework, which links types of neighbourhoods to individual behaviours and outcomes. The ecological system theory posits that characteristics of the multiple social and environmental domains in which youths function contribute to their behaviour as well as developmental outcomes (Bronfenbrenner, 1979). Ryan (2001, p. 18) referring to Bronfenbrenner's ecological theory, noted that "the interaction between a child's biological factors and immediate family/community environment, as well as the societal landscape, fuels and steers the child's development; hence changes or conflict in one layer will create a rippling effect". Bronfenbrenner (1979) invigorated interest in neighbourhood research especially on children and adolescents, by implying the importance of investigating

multilevel contexts that influence young people and their families, such as school, peers, communities, and relationships between contexts. Similarly, researchers such as Georgiades, Boyle and Fife (2013), Graber and Brooks-Gunn (2002) and Lanza et al. (2010) propose that risk and protective factors occur in multilevel contexts – individual, family, playgroup, school environment and neighbourhoods and its effect of each level may vary for sub-group.

In addition, Leventhal and Brooks-Gunn (2002) propose institutional resources such as availability, accessibility, affordability and quality of learning. Others include social and recreational activities, schools, childcare, medical facilities and employment opportunities in the neighbourhoods as major factors through which neighbourhoods influence children. Other neighbourhood studies have linked neighbourhood socioeconomic disadvantages to RSB, such as early sexual activity and related outcomes (Baumer & South, 2001; Billy et al., 1994; Brewster 1994; Leventhal & Brooks-Gunn, 2002; Browning, Burrington, Leventhal, & Brooks-Gunn, 2008; Sampson et al., 2002). Studies have also applied the SDT in predicting crime and deviant behaviours (Kingston et al., 2009; Zapolski et al., 2019).

More so, researchers have also used the SDT in predicting sexual behaviours (Bauermeister et al., 2010; Ford & Browning et al., 2011; Tewksbury et al., 2013). In sub-Saharan Africa, researchers have applied the SDT in the examination of factors associated with high-risk sexual behaviours (Uthman, 2010); men's involvement with extra-marital sex (Benefo, 2008); and child sexual abuse (Yahaya et al., 2013). In South Africa, Ramphele (1991) lists factors such as family breakdowns with rising divorce rates, separation, single parenthood, high teenage pregnancy, low job participation, high unemployment, high level of alcohol and drug abuse and low school performance as some factors of social disintegration among Black communities. Emmett (2003) indicates the inadequate provision of social services and infrastructure in South African townships that discourage family settlements, as well as rapid and massive urbanisation, following the lifting of restrictions on movement to be predictors of crime in Tshwane.

2.3 Conceptual framework

This study was guided by a thorough review of the literature on the use of the SDT and other neighbourhood theories in the study of youth RSB in South Africa. This study conceptualised a community as being disadvantaged if the community was characterised by a high percentage of unemployment among adults 25 years and older; a high percentage of adults without secondary school completion; low-income earners; a high percentage of youths (15–24 years) not in any training, schools or employment; and poor housing conditions with little or no services. As shown in Figure 2.1, communities characterised by high levels of community poverty may affect youth RSB through the economic opportunity structures and the social environment. Youths living in such communities may lack the motivation for upward social and economic mobility due to the absence of positive role models in the community. A poor community with unemployed and poorly educated adults may create a sense of hopelessness and a state of inertia.

Youths from such communities may not have any motivation to work hard and remain in school or complete secondary school as a way of personal development; neither would they plan nor delay sexual initiation and RSBs. Community poverty may also destroy positive social networks and social relations through a lack of mutual trust, thereby preventing participation in community formal and informal activities, including control of deviant behaviours through supervision, leading to early sex initiation, inconsistent condom uses and MSPs among youths.

In addition, communities with high levels of unemployed adults may have a direct effect on youths by creating a conducive environment for youths to involve in RSB to get necessary items such as food, transportation and even essential clothing. Such communities will have youths who may not value education, thereby engaging in early sexual initiation, inconsistent or non-condom use and multiple sex partners. Communities with high levels of youths not in any form of education, employment or training have a high percentage of idle youths who initiate sex early and have multiple sex partners. In addition, males from such communities may not delay gratification, they may engage in crime, gangsterism and other violent acts to get money and live a lifestyle they are not able to financially afford (Winsted, 2022). They may also engage in sexual and gender-based violence which exposes women to risky sexual outcomes such as undesired pregnancies and STIs.

Communities with a high percentage of single parents, especially where the household heads are females, may lack the social processes (Maguire-Jack, Yoon, & Hong, 2022) required to prevent youth RSBs. Such communities may not have enough adults, especially males that can physically oversee or monitor the behaviour of young people. Single-working parents may be overwhelmed with how to provide for the family's needs, and they may not have time to engage in relationships that foster cohesion and collective supervision of youths within the households and with their neighbours. As shown in reviewed literature in South Africa, living in a household without a father is associated with inconsistent condom use, multiple sex partnering and early initiation of sex among male youths. Females from homes without a father may engage in multiple sexual partnerships and age-disparate sexual relationships and may be unable to negotiate condom use during sexual intercourse. A lack of maternal or paternal role models in a home may contribute to males engaging in sexual and gender-based violence (Thurman et al., 2006; Hallman, 2005).

Youths from communities with many orphans, either paternal, maternal or double orphans may engage in RSBs because of the absence of parent(s), as a means of meeting necessary needs and sometimes due to pressure to provide for siblings. Female orphans may engage in age-disparate sexual partnerships in search of father figures. Difficult economic situations coupled with negative gender norms and orphan status may lead to early sexual initiation and an inability to negotiate condom use. Being an orphan and being head of a household expose youths to sexual exploitation and multiple sexual relationships.

Communities characterised by diverse racial and cultural backgrounds, diverse language and language barriers and diversity in social values may lack the necessary means of informal communication (Tonsing et al., 2019). This may prevent uniform social norms and values, giving youths the courage to act as they wish and engage in sexual risk behaviours such as prostitution. Living in a diverse community may make youths feel isolated and rejected, thereby engaging in excessive alcohol drinking which may affect their sense of judgement leading to RSB. Looking at the high level of internal and international migration in South Africa, the metropolitan areas, inner cities and informal urban settlements are a melting pot for migration due to the availability of low-cost housing. Many of these houses, however, lack social services such as schools, water, sanitation, safety and health services. Crime, including sexual offences and rape, are high in such

communities, and youths may become involved in RSB. In addition, youths living in communities with little or no social services, such as clinics, youth SRH services and Voluntary Counselling and Testing (VCT) centres, may lack information, thereby engaging in RSBs.

Community characteristics may also act to influence youth RSB through available resources such as schools, youth reproductive health services and VCT centres that provide information on the transmission and prevention of STIs and HIV/AIDS. Availability and accessibility of unregulated drinking places in the community will increase youth's RSB. The availability of recreational facilities and engaging in physical activities in the community will keep youths away from the streets.

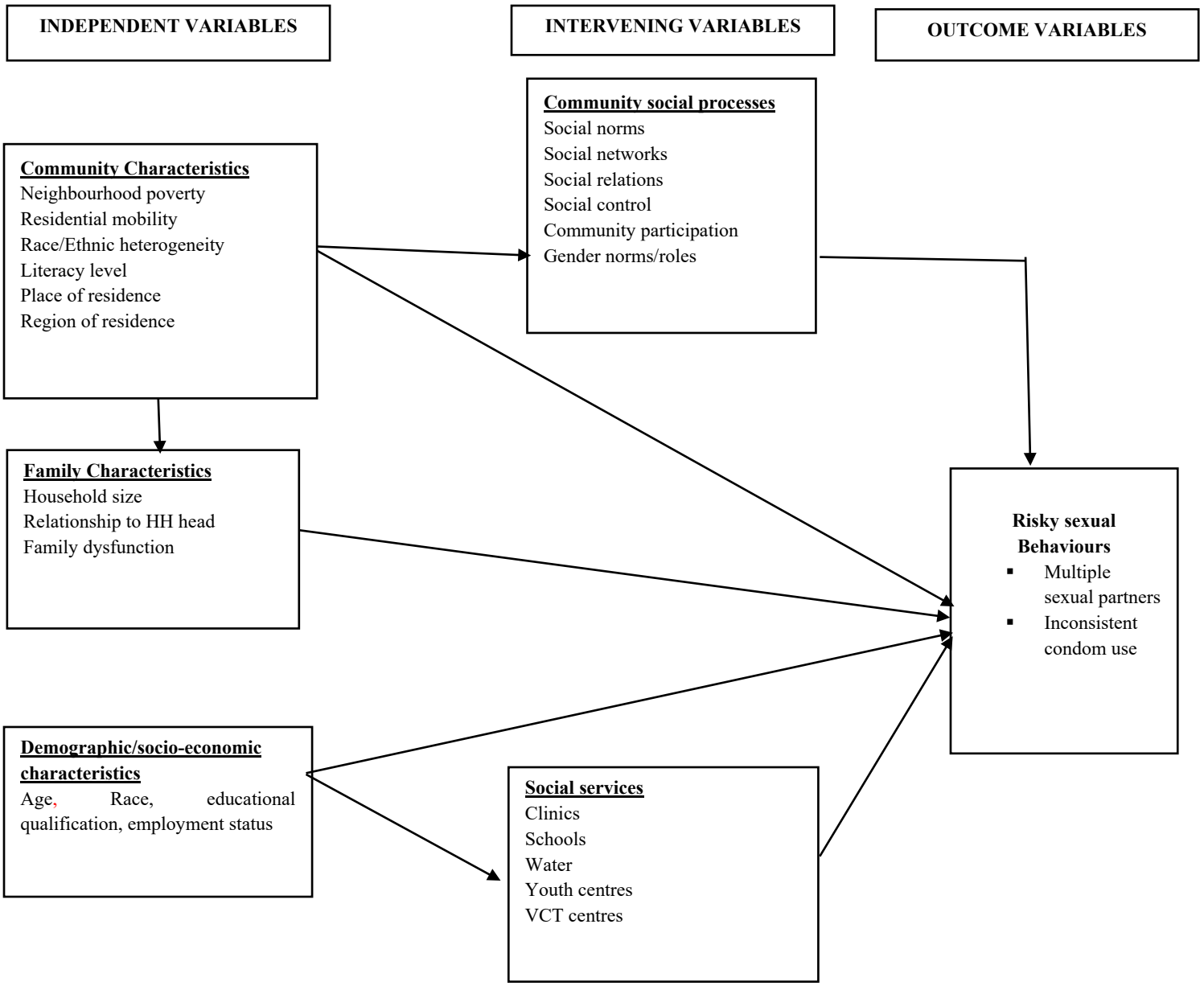


Figure 2.1: Conceptual framework adapted from Shaw and Mckay (1942; 1969) and Browning and Olinga-Wilbon (2003) .[1],[2]

[1] The two outcome variables were chosen because many public health experts in South Africa believe that RSB, referred to the 'lack/inconsistent condom use and multiple sexual partnerships' (MSP), is the process STIs, including HIV infections is spreading among youths across the provinces (Closson et al., 2018; Osuafor and Okoli, 2021).

[2] The intervening variables chosen for this study were not interrogated due to lack of the variables in the SADHS, suggesting that future studies should use qualitative approach to enable a deeper understanding of experience and context of such factors as social norms, social networks, social relations, social control, and gender norms/roles, which may account for the unexplained intervening variable and its association with RSB among youths in South Africa.

2.4 Hypotheses for this research

The hypotheses listed below have been developed based on the study's theoretical/conceptual framework and the reviewed literature.

1. H_0: Youth RSB is not associated with community poverty.
   H_1: Youth RSB is associated with community poverty.
   Significance level at 0.05.
2. H_0: Residence in a community with a high proportion of female-headed households will not increase youth engagement in RSB.
   H_1: Residence in a community with a high proportion of female-headed households is more likely to increase youth engagement in RSB.
   Significance level at 0.05.
3. H_0: Residential mobility due to migration is not associated with youth RSB.
   H_1: Residential mobility due to migration is associated with youth RSB.
   Significance level at 0.05.
4. H_0: Youths resident in a community with a high level of ethnic diversity will not engage in risky sexual behaviour.
   H_1: Youths resident in a community with a high level of ethnic diversity are more likely to engage in risky sexual behaviour.
   Significance level at 0.05.
5. H_0: Community with a high proportion of youths not in educational institutions, employment or training will not have high youth RSB.
   H_1: Community with a high proportion of youths not in any educational institutions, employment or training will have high youth RSB.
   Significance level at 0.05.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The present chapter describes the methodology used to conduct this research. It describes the study's setting, data sources and data collection, sampling design and sample size, variable measurement, data analysis and limitations.

3.2 Study setting

South Africa was chosen as the setting for this study. The country is located at the tip of Southern Africa and is surrounded by Namibia, Zimbabwe, Mozambique and Botswana. Other countries near South African borders by land include Swaziland and Lesotho. In 2021, the South African population was estimated to be 60.14 million people across the nine provinces of the country (Stats SA 2021). Meanwhile, in sub-Saharan Africa, immediately after apartheid, South Africa became the fastest-growing economy mainly because of the kind of policies and programmes put in place (Schneider, 2018). Most of the developmental goals initiated by the government and the WHO were well achieved. There has been much progress made in providing equal opportunities for both men and women, especially concerning employment and access to healthcare. There has been progress in creating a healthy lifestyle for all South Africans.

South Africa, conversely, is plagued by poverty. According to the South African Statistics Service, the country's unemployment rate is currently 32.6% (Stats SA, 2021). Unfortunately, the HIV/AIDS pandemic has eroded South Africa's economic gains. Concerning unsafe and unprotected sexual practices, South Africa has one of the world's highest HIV prevalence rates, with 13.0% in 2021 (Stats SA, 2021). The HIV pandemic is one of the major factors impeding South Africa's progress toward its development goals which are centred on health and education. Lack of job opportunities and poverty continue to be major issues in the country, particularly among young Black people. Despite the issues that the South African populace face, the country's youth endure similar challenges. In the sub-Saharan area, South Africa has one of the highest rates of youth unemployment at 46.3% (Stats SA, 2021). HIV/AIDS is a social concern in the country

that spans beyond ethnic/racial affiliation, social class and gender, impacting negatively on the lives of South Africa's youth. In 2018, 5.5% of young people had HIV (Stats SA, 2018). Given the numerous problems that young people have faced following the end of the apartheid era, South Africa is an intriguing location to research the elements that determine young people's RSB at the community level.

Figure 3.1: South African political map with names of capitals, cities, towns and provinces (Hall et al., n.d)

3.3 Study design and research approach

This study used data from the 2016 SADHS which is a nationally representative survey. The SADHS 2016 is a cross-sectional survey study conducted at the request of the NDoH by Statistics South Africa (Stats SA) in collaboration with the SAMRC. The survey used the Statistics South Africa Master Sample Frame, which was created using census 2011 enumeration areas (Eas). The EAS were appropriate for collecting information for the survey since they were used as the primary sampling unit (PSU) with an average size of 1.03 households found in each of the DUS. From the 26 sampling units, 750 PSUs were chosen. Because the Western Cape does not have traditional residential geo-type PSUs, only two substrata were applicable. Strata, yielding 468 selected PSUs in urban areas, 224 in traditional areas and 58 in farm areas of the country. Due to the geographical hierarchy structure of the census that linked enumeration areas to administrative boundaries, information was available at the municipal, district and provincial levels in the survey. Such information included the living location (rural/urban), province of residence, relationship to the head of household, its population's distribution of men compared to women, and so forth. The survey further provided up-to-date information from males and females to the NDoH and policymakers on demographic and health indicators. The details of the research design and methodology used in the survey are well described in the full report (NDoH, Stats SA, SAMRC, & ICF, 2018).

3.4 Study population and sample

As was mentioned above, the 2016 SADHS were used for this study. It was nationally representative and adopted a multistage cluster sampling design. Due to the geographical hierarchy structure of the census that linked enumeration areas to administrative boundaries, information was available at municipal, district, and provincial levels in the census (NDoH, Stats SA, SAMRC, & ICF, 2018). In the survey, however, information was available at the municipal areas and provincial levels. Therefore, the community variables were created using the 10% data from the 2011 census. In this study, nine provinces and samples were selected independently from the enumeration area which made up the clusters. A total of 750 clusters were chosen from the 26 sampling strata, with 468 from urban areas, 224 from traditional areas, and 58 from farm areas. In total, 4 310 adolescents were found in 750 clusters. In the SADHS, a total of 5 134 females and 2 241 males aged 15-49 years were sampled. However, 2 513 females and 973 males were dropped

since the interest was on young people aged 15–24 years, and these youths were successfully interviewed in the survey (NDoH, Stats SA, SAMRC, & ICF, 2018). Therefore, a weighted sample was drawn from 2 621 females and 1 268 males giving a total of 3 889 never-married young people from all the provinces in South Africa. All the married youths between 15–24 years were excluded from the study. The study focused on those who reported having been influenced to engage in RSB because of social disorganisation defects in the neighbourhoods where they lived at the time of the survey. Thus, it is important to note that all the community variables used in this study do not represent the characteristics of individuals but rather that of a community. Though the individuals in a community may change due to migration, the characteristics of the community do not change.

3.5 Variable measurements and identification

3.5.1 Dependent variables

The dependent variable in this study was RSB which refers to the behaviour itself: unprotected vaginal, oral or anal intercourse. Risky sexual behaviour (RSB) can take several forms, ranging from multiple sexual partners and unprotected sex ie consistently engaging in sex without a condom (Morris & Rushwan, 2015). According to Mahama and colleagues (2020), RSB includes early sexual debut, unprotected/premarital sex and substance abuse. In this study, a youth was said to engage in RSB if they reported having multiple sexual partners in the year preceding the 2016 SADHS, which was derived from the question: how many sexual partners, excluding your spouse, do you have? The two possible outcomes for the question were coded “1” while those reported otherwise were coded “0”. Many of the young people who did not answer the question were not part of the study. Meanwhile, the interest in the number of sexual partners was because multiple sexual partnerships constitute key pathways through which young people can contract STIs and HIV infections, especially if they have unprotected sex.

Furthermore, a youth was said to engage in risky behaviours if they reported unprotected sex (consistently not using a condom) at last sexual intercourse and were further exposed to the risk of multiple sexual partners in the 12 months preceding the survey. Condom use was extracted from the question: Did you use a condom during your last sex with your most recent partner? The 12-month reference period was useful for capturing the most recent behaviours and for further

minimising recall errors. Youths were coded "1" if they reported non-condom use during sexual intercourse and "0" otherwise. Therefore, the focus on the lack or inconsistent condom use in the last 12 months that preceded the survey was because this behaviour constitutes the mechanisms through which young people can be exposed to STIs and HIV/AIDS. It would also help in monitoring intervention programmes to control the spread of the HIV/AIDS epidemic, especially among adolescents in South Africa.

3.5.2 Independent variables

In this study, two independent variables comprise individual-level and community-level variables, which were selected based on the reviewed literature.

3.5.2.1 Individual-level factors

The individual-level factors in this study included the youth's age. Risky sexual behaviour (RSB) has been documented to be more common among younger persons than older persons in the general population (Bengessai, Khan, & Dube, 2019). In this research, the variable age was categorised as aged 15–19 and 20–24 years. It has been demonstrated that educational attainment is related to young people's sexual behaviours (Odimegwu, Somefun, & Chisumpa, 2019). Educated youth are more likely to be aware of reproductive health services, which may lead to healthy sexual behaviours that can help to curb the spread of STIs and HIV/AIDS. The educational level was classified as "primary or less education", "secondary education", or "higher education". Work status was assessed using a dichotomous variable coded as "no" or "yes". The relationship between work status and risky behaviour can be difficult to predict at times because being employed can increase the proclivity to engage in risky behaviour by increasing exposure to opportunities that can be used to address occasional emotional and/or economic needs. It was derived from youth not in any employment (not working or working). Ethnicity/race was expressed as a mixture of physical, behavioural, and cultural attributes. So, it captures the variety of different groups in an area along with their relative representation (Vyas & Kumaranayake, 2006). Variables on the household or family environment were the size of a household which was defined as the average size of a household in a community based on an average of 3.4 members (approximately 3 members) in South Africa (NDoH, Stats SA, SAMRC, & ICF, 2018). Relationship to the head

of the household was expressed as the kind of relationship adolescents have with the head of the household. Meanwhile, the DHS did not collect direct household income and expenditure data. As a proxy indicator of socioeconomic position, we used the DHS wealth index. The methods used to compute the DHS wealth index have previously been described (Deon & Pritchett, 2001; Vyas & Kumaranayake, 2006). Thus, an indicator of economic status for each household was crafted using principal component analysis depending on the household factors: number of rooms per house, ownership of a car, motorcycle, bicycle, fridge, television, telephone and any type of heating device. The DHS wealth index quintiles (poorest, poorest, middle, richest and richest) were calculated based on these criteria and used in subsequent modelling.

3.5.2.2 Community-level factors

The community-level factors included the place of residence, categorised as "urban and rural" as administratively defined by the country. This variable was included in this study because studies in South Africa have shown that young people in urban areas showed higher levels of engaging in positive sexual behaviour. This is because of the higher level of campaigns and awareness around STIs and HIV/AIDS through mass media, access to condom use including the availability at public washrooms, and easy access to sexual and reproductive health services, including ARTs. Province of residence (Western Cape, Eastern Cape, Northern Cape, Free State, KwaZulu-Natal, Northwest, Gauteng, Mpumalanga, and Limpopo) was defined as the geographical location where the respondents resided. Neighbourhood poverty was calculated using the percentage of households in the wealth index's poorest quintile (Rustein & Johnson, 2004). A previous study on the impact of wealth status on youth sexual behaviour yielded conflicting results (Billy, Brewster, & Grady, 1994). Wealth can sometimes act as an enabler or compensatory factor, and the effects vary with gender. Community poverty was classified as "low" or "high". The head of the household was used as a proxy for family disruption in an area and was classified as either "male-headed" or "female-headed". Residential mobility/instability was measured by the percentage of residents in a community who had moved from their current place of residence five years before the 2016 SADHS (Sampson, 1985; Warner & Pierce, 1993). Community literacy level was expressed as the level at which a community would be able to read and write. Ethnicity diversity was expressed as a mixture of physical, behavioural and cultural attributes. It moreover conveyed the variety of

different groups in a specific area and the relative reflection of each cluster (Vyas & Kumaranayake, 2006). It was categorised as “homogenous and heterogeneous”. All the community-level characteristics were created from the family/household and individual-level variables. Some variables in the dataset were regrouped from their original categories using Stata software which makes data analysis and interpretations better, easier and much more significant. These variables are defined in Table 3.1 below.

Table 3.1: The definition of dependent and independent variables

No	***Variable Name***	***Definition***	***Coding***
Outcome variables			
1	*Multiple sexual partnerships*	*Number of sexual partners in the past 12 months*	*This variable will be categorised as "0" if the respondent did not have any sexual partner apart from their current sexual partner and "2^+" if more than one partner*
2	*Unprotected sex (non-condom use)*	*Respondent's use of a condom at the last sexual encounter*	*(1) Yes (0) No*
Demographic/socioeconomic variables			
1.	*Age*	*Age of respondent*	*This will be categorised as "15–19" and "20–24"*
2	*Sex*	*Sex of respondent*	*(1) Male (2) Female*
3	*Race*	*Race of respondent*	*(1) African/Black (2) White (3) Indian/Asian (4) Coloured*
4.	*Education attainment*	*The highest educational level of respondent*	*(1) Primary or less* *(2) Secondary* *(3) Higher*

No	*Variable Name*	*Definition*	*Coding*
7.	*Employment status*	*Employment status of the respondent*	*(1) Unemployed* *(2) Employed*
2.	*Relationship to the head of household*	*Person's relationship to the head of household*	*(1) Head* *(2) Immediate relatives* *(3) Distant relatives* *(4) Not related*
3.	*Household size*	*Number of persons in a household*	*(1) 1-4* *(2) 5-6* *(3) 7+*
Household and community variables			
1.	*Community-level family disruption*	*The measures used for the community-level family disruption were female-headed and single-parent headed*	*(1) Male* *(2) Female*
3.	*Neighbourhood poverty*	*Index of community poverty* *Derived from households without electricity for cooking, heating and lighting; households without regular refuse collection; households without*	*(1) Low* *(2) High*

No	*Variable Name*	*Definition*	*Coding*
		flush toilets; households without piped water at the dwelling	
5,	*Place of residence*	*Rural or urban residence*	*(1) Rural (2) Urban*
6.	*Province*	*The geographical location of the respondent*	*(1) Free State* *(2) KwaZulu-Natal* *(3) Northwest* *(4) Gauteng* *(5)Mpumalanga* *(6)Limpopo* *(7) Western Cape* *(8) Eastern Cape* *(9) Northern Cape*
5.	*Community residential mobility*	*Percentage of individuals that moved municipality in the past five years*	*(1) Low* *(2) High*
6.	*Community ethnic diversity*	*This will be derived from the population group while ethnic heterogeneity will be an index of ethnicity derived from the home language spoken*	*(1) Homogenous* *(2) Heterogeneous*

3.6 Procedures in the analysis of data

Secondary data analysis from the recent South Africa Demographic and Health Survey were used in this study (SADHS, 2016). The data was analysed to provide answers to the research questions based on the three objectives identified for the study. As a result, each of the study's objectives was addressed as follows.

The first objective of the study was to examine the individual and household correlates of sexual risk behaviour among young people in South Africa. To address this objective, descriptive statistics which included percentages and frequency were used to examine the individual and household correlation of RSBs among young people in South Africa. Meanwhile, cross-tabulation using chi-square was used to check the association between RSB (outcome variables) and selected independent variables at the individual, family/household and community variables as mentioned above.

Multilevel logistic regression analysis was used to address the second and third objectives which were to find the relationship between the community social disorganisation factors and RSB among youths. Thirdly, to explore pathways through which social disorganisation factors at the community level influence RSB among youths. A multilevel modelling strategy which accounted for the structure of the dataset was used in this study. Using multilevel models allowed for the identification of clustering of the dependent variables at different levels. The random effects in the multilevel modelling were used to show the extent to which RSB varied between communities (levels higher than the individual). The random effects also showed factors that were omitted from the model or factors that could not be quantified in a survey. It, therefore, estimated the degree of correlation in the outcome that existed at the community level, and controls for individual and community factors, thereby acting as residual variation in the outcomes (Stephenson & Tsui, 2003). Two separate multilevel logistic models were fitted for each of the dependent variables, inconsistent condom use and MSPs when the survey was conducted. The statistical analysis used in this study fitted because of the homogeneity of the youths in the community and the youths nested within the community, and the multiple dependent variables. This meant that two-level multilevel models were used with youths (level 1) nested within communities (level 2).

The model took this form:

Logit (P_{ijk}) =$X_{ijk}\beta + U_{jk} + V_k$;……..(1)

Where P_{ijk} is the probability of having two or more sexual partners for the ith respondent in the jth individual in the kth community. X_{ijk} is a vector of covariates corresponding to the ith respondent in the jth individual in the kth community. B is a vector of unknown parameters, U_{jk} is the random effect at the individual level, and V_k is the random effect at the community level. The variables to be entered into the model were grouped into individual and community variables.

The fitting of the null or empty two-level model, which is referred to as a model with only an intercept and the community effects. The equation below was used:

Log ($\pi ij1/\pi ij$) = β0+u0j

The intercept β0 was shared among all the communities while the random effect u0j was specific to a particular community j. The random effects were assumed to follow a normal distribution with variance σ^2uo. Meanwhile, the binary response (RSB) followed the command which was then followed by the list of fixed-part explanatory variables. This null model contained only an intercept and there were no explanatory variables included. Stata software using the syntax xtmelogit was used to fit the multilevel models for the binary response variables, as shown below using one of the outcome variables:

xtmelogit sexual_partners || v001: var and xtmelogit v761 || v001: var

Therefore, a total of 16 models were fitted in all, eight for each of the two dependent variables. The first model, the empty model referred to as the 'null' mode, was fitted without any independent variables. This model included only a random intercept and allowed the observation of the possible presence of a neighbourhood influence on these outcomes. Model 1 (null model) allowed investigation into differences associated with the dependent factors in all the neighbourhoods. Model 2 comprised individual-level characteristics. The aim was to determine the degree to which an individual's attributes demonstrate area-level variations when participating in RSBs. In models 3 to 6, we investigated each of the attributes and effects of the social disorganisation factors on

exposure to engaging in risky sexual behaviour and the extent to which neighbourhood factors moderated the association between individual factors and RSB. Model 7 only examined neighbourhood variables to investigate the influence of neighbourhood characteristics on each of the communities. Model 8 (full model) included both the neighbourhood and individual variables. This model investigated the effects of background characteristics on RSBs and the severity with which community elements modified the correlation between participants and RSB (MSPs and inconsistent condom use) among young people.

3.6.1 Multilevel logistic regression variance partitioning

The Variance Partition Coefficient (VPC) was included in this study to assess the degree to which individuals from a community look very similar to others far beyond individuals from the other communities regarding the outcome variable (MSPs and inconsistent condom use). The VPC was the percentage of the total variance ($V_{EA} + V_I$) in the outcome that was attributed to the community/EA level (V_{EA}) and was, therefore, a measure of *clustering*.

Model 1 consisted solely of decomposing the total variance of the outcome (VTotal) into its individual (VI) and community/EA (VEA) components, with no explanatory variables. Therefore, in the simple model (model 1), the VPC correlated directly to the intra-class coefficient of correlation, which was a measure of the overall cluster formation of the participant variable of interest in the areas. As a result, the size of this coefficient was critical information in our study because the higher the rate, the more relevant the community level for explaining an individual's participation in RSB (Griffiths et al., 2004). The intra-class correlation coefficient was defined as the ratio of variance at the neighbourhood level to the total variance (ICC). Because this was a two-level logistic random effects method with a 2-intercept variance, the intra-class correlation was: $\rho = (\sigma^2_\mu / (\sigma^2_\mu + \pi^2/3))$

Where: p was the intra-class correlation (ICC), σ^2_μ was the variance at the community level = $\pi^2/3$ = 3.29 and represented the level-1 residual variance for a logit model. In conclusion, if most of the variations in each outcome were explained by individual-level measures, the ICC would be close to 0.

3.7 Ethical issues

This was a secondary analytical study of the 2016 SADHS. Personal identification such as the names of respondents was not included in the dataset. Ethical clearance for the 2016 survey was received by the Human Science Research Council (HSRC) in South Africa before the commencement of the survey. Names of the enumeration areas and municipal areas were not provided by the HSRC to ensure anonymity.

3.8 Dissemination of Findings (Articles and conferences)

Table 3.1: Dissemination of findings (articles and conferences)

1	Socio-ecological determinants of multiple sexual partnerships among youths in South Africa: exploring the roles of social disorganisation factors.	African Journal of Reproductive Health	Revised manuscript
2	Neighbourhood determinants of early sexual debut and multiple sexual partnerships: A cross-sectional analysis of adolescents in Rwanda, Ghana and South Africa.	Journal of Biosocial Sciences	Revised manuscript
3	A multilevel mixed effect analysis of neighbourhood and individual level determinants of risky sexual behaviour among young people in South Africa.	BMC Reproductive Health	Published

5	Family instability and sexual risk behaviour among young people in sub-Saharan Africa: revisiting the instability hypothesis.	BMC Public Health	Under review
6	Social contexts of risky sexual behaviour in youth transition across sub-Saharan Africa: A multilevel analysis.	BMC Reproductive Health	Draft
7	Community media access in risky sexual behaviour among youth in sub-Saharan Africa	PLOS ONE	Draft
8	Sexual risks correlates among young people in Nigeria: A cross-sectional study.	Journal of Biosocial Sciences	Under review
9	Social disorganisation and risky sexual behaviour among youth in Western African region: A multilevel analysis.	BMJ Open	Submitted
10	A systematic review of adolescents sexual behaviour in Africa: Insights beyond individual level determinants.	BMC Systematic Review	Draft
	CONFERENCES ATTENDED		
1	Union for African Population Studies, International Conference, Entebbe, Uganda **(November 17-23, 2019)**	Knowledge and use of contraceptive methods among youths in federal Capital Territory Abuja, Nigeria. Presented @ UAPS 2019.	
2	International Union for the Scientific Study of Population Conference, Manila India, 2021	A multilevel mixed effect analysis of neighbourhood and individual level determinants of risky sexual	

		behaviour among young people in South Africa. Presented @ IPC 2021.
3	First International Conference on Public Health in Africa, Kigali, Rwanda (CPHIA 2021) (Virtual). (December 14 – 16 2021)	Participant.
4	Population Association of America, Conference Atlanta, April 6-9 2022	Neighbourhood determinants of early sexual debut and multiple sexual partnerships: A cross-sectional analysis of adolescents in Rwanda, Ghana and South Africa. Paper accepted for a poster presentation @ PAA 2022.

CHAPTER FOUR: BIVARIATE ANALYSIS

4.1 Introduction

This chapter discusses the study population that was divided into groups based on demographic, socioeconomic and other community-level factors influencing RSB among South African youth. Also included are the correlates of individual, family and community-level variables that expose youths to engage in RSB. Bivariate analyses were also used to establish a relationship between exposure to the outcome variables (multiple sexual partner and non-condom use) and the respondents' demographics. The figures below illustrate the percentage distribution of the sampled population as per the selected individual, family and community-level characteristics.

4.2 Characteristics of the study population

4.2.1 Description of the study population by background characteristics

In South Africa, RSB among the youth is one of the major health concerns in the country because it is associated with negative reproductive health outcomes such as high teenage pregnancies and exposure to STIs and HIV/AIDS. Table 4.1 shows the study population analysis according to the demographic and socioeconomic attributes.

Table 4.1: Percentage distribution of study samples by individual-level characteristics

	Male (n=1 268)		**Female (n=2 621)**	
Selected characteristics	Frequency	Percentage	Frequency	Percentage
Age				
15-19	704	55.5	1461	55.7
20-24	564	44.5	1160	44.3
Educational level				
Primary or less	172	13.6	157	5.9

Secondary	1 045	82.4	2 306	87.9
Higher	51	4.0	158	6.0
Working status				
No	1 061	83.7	2 396	91.4
Yes	207	15.3	225	8.6
Ethnicity/race				
Black/African	1 154	91.0	2 340	89.3
White	20	1.6	33	1.3
Coloured	84	6.6	230	8.8
Indian/Asian	10	0.8	18	0.7
Household size				
1-4	579	45.7	977	37.3
5-6	310	24.5	750	28.6
7+	379	29.9	894	34.1

Source: SADHS (2016)

The sample size comprised 3 889 unmarried young people aged between 15–24 years. The majority of the population, 55.7% were females aged between 15–19 years compared to 55.5% that were males, so the difference was minimal. However, 44.3% of female and 44.5% of male adolescents were between the ages of 20–24 years. The high percentage observed among those aged 15–19 years from the sampled population indicated that younger adolescents engage in RSBs more than older adolescents. This finding implies that younger adolescents may not have adequate knowledge about sexual and reproductive health outcomes. Furthermore, with regard to educational attainment, more than 80% of the sampled population had attained secondary

education. However, 13.6% of the male population had primary or less education, while a lesser percentage of the population, 4.0% males and 6.0% females, had attained higher education. On the other hand, with regard to employment status during the time of the survey, Table 4.1.1 shows that a higher proportion of the male and female sampled population, 83.7% and 91.4%, were not employed. Meanwhile, only 16.3% of males and 8.6% of females in the population had a job or were employed during the survey.

Furthermore, with regard to ethnicity/racial affiliation, Table 4.1.1 shows that the majority of the population, 91.0% males and 89.3% females, were from the Black ethnic group. On the other hand, 6.6% of males and 8.8% of females were Coloured, while only 1.6% and 0.8% of males were from White and Indian/Asian ethnic groups respectively. A lesser proportion of the population of females, 1.3% and 0.7%, were from Whites and Asian/Indian ethnic groups respectively at the time of the survey.

4.2.2 Other background characteristics of respondents

The distribution of the study participants according to their individual family characteristics is shown in Figures 4.1 and 4.2. An examination of their relationship to the head of the household indicated that a higher proportion of the females (72.0%) were immediate relatives of the head of the household. This was followed by 16.9% of females who had a distant relationship with the head of the household. Only a lesser number of the population, 3.5% and 7.6% of females were not related to the head of the household and related to the head of household respectively. Meanwhile, the majority of the male population, 68.5%, were immediate relatives of the head of the household. However, 17.2% of the male population had a distant relationship with the head of the household. Samples also indicated that 3.0% of the young male population was not related to the head of the household, while only 11.2% indicated that they were related to the head of the household.

With regard to the number of household members during the survey, Figure 4.1 below shows that the majority of the population of males, 45.7%, resided in a household of one to four members. This was followed by 29.9% of males from a household of more than seven members. Only 24.5% of the male population was from a household of five to six members. Meanwhile, consideration of

household members by the young females revealed that 37.3% resided in a household with one to four household members, while 34.1% resided in a household of seven and above. Only 28.6% of females indicated that they resided in a household made up of five to six household members.

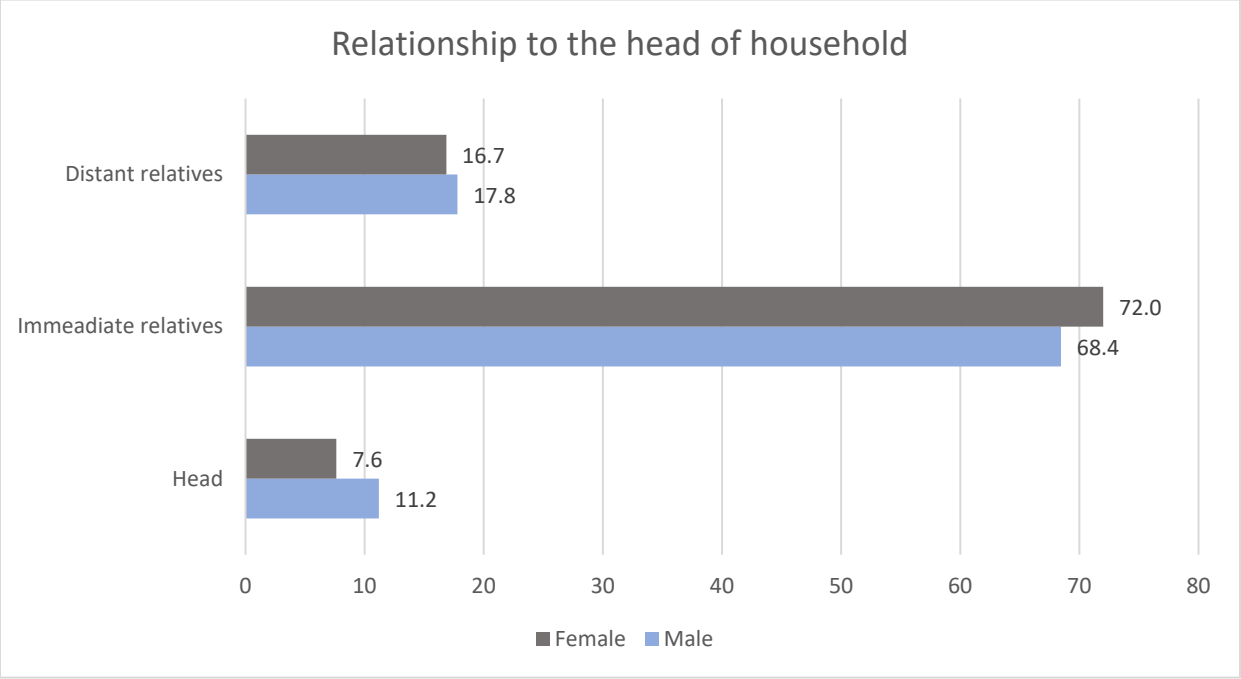


Figure 4.1: Percentage distribution of young people by the head of household relationships

Source: SADHS (2016)

As shown in Figure 4.2 below, the majority of the female population, 64.4%, are from a household headed by a female, while 35.6% of females were from a household headed by a male. Furthermore, 52.5% of the male population indicated that they were from a household headed by a female, while a lesser proportion of the male population, 47.5%, were from a household headed by a male.

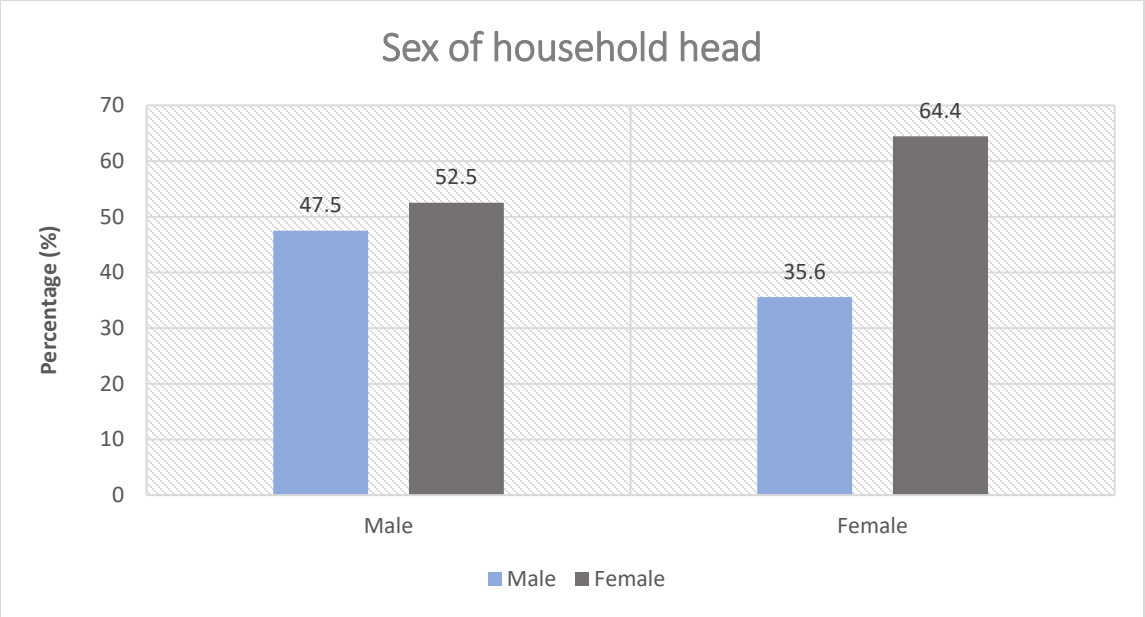


Figure 4.2: Percentage distribution of respondents by sex of household head

Source: SADHS (2016)

4.2.3 The study population's neighbourhood characteristics

As presented in Table 4.2 below, the distribution of the community characteristics shows that the majority of the population, 46.8% males and 53.2% females, live in urban areas. Although, there were no major variations in terms of areas of residence as 53.2% of males and 46.8% of females were rural dwellers.

Table 4.2: Percentage distribution of young people by community characteristics

Characteristics	**Male (n=1 268)**		**Female (n=2 621)**	
	Frequency	Percentage	Frequency	Percentage
Place of residence				
Urban	594	46.8	1 393	53.2
Rural	674	53.2	1 228	46.8

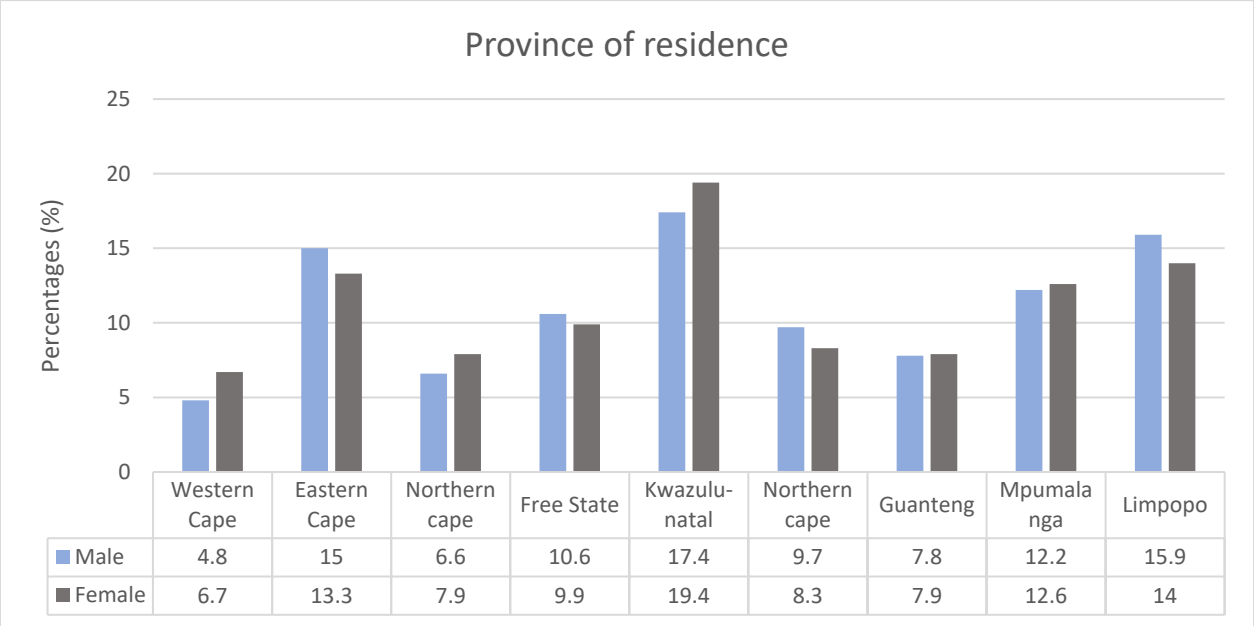
Residential mobility				
No	997	78.6	2 071	79.0
Yes	271	21.4	550	21.0
Community literacy level				
Low	207	16.3	199	7.6
High	1 061	83.7	2 422	92.4
Neighbourhood poverty				
Low	665	52.4	1 441	55.0
High	603	47.6	1 180	45.0
Ethnic diversity				
Homogenous	1 154	91.0	2 340	89.3
Heterogeneous	114	9.0	281	10.7

Source: SADHS 2016

With regard to residential mobility, Table 4.2 show that a greater proportion of the young people indicated that they had not changed residences (78.6% male and 79.0% female), while a lesser proportion indicated that they had changed residences (21.4% male and 21.0% female) during the survey. Meanwhile, more than half of the youths indicated that they were from neighbourhoods with a low prevalence of poverty, while a lesser proportion (47.6% male and 45.8% female) reported that they were from highly prevalent poverty neighbourhoods – although the difference was not as much as expected. Considering community literacy levels, more than two-thirds of the young population reported that they were from highly literate communities, while a lesser proportion of the respondents, 16.3% male and only 7.6% females, reported coming from a low literate community.

Concerning ethnic diversity, the distribution shows that more than two-thirds of the youths reported that they were from homogenous ethnic groups (91.0% male and 89.3% females) compared to a very low proportion of the youths from heterogeneous ethnic groups (9.0% males and 10.7% females).

Province of residence was also considered in the study, and the findings as shown in Figure 4.3 indicated that 19.4% of the female population was from KwaZulu-Natal. This was closely followed by 17.4% of the male population also from KwaZulu-Natal. A lesser number of the population, 4.8% of females and 6.7% of males were from the Western Cape. The result suggested that there could be adequate awareness about the survey in KwaZulu-Natal. It further indicated that more young people from KwaZulu-Natal participated in the survey than young people from the other regions who had low participation in the survey.



	Western Cape	Eastern Cape	Northern cape	Free State	Kwazulu-natal	Northern cape	Guanteng	Mpumalanga	Limpopo
Male	4.8	15	6.6	10.6	17.4	9.7	7.8	12.2	15.9
Female	6.7	13.3	7.9	9.9	19.4	8.3	7.9	12.6	14

Figure 4.3: Percentage distribution of young people by the province of residence

Source: SADHS (2016)

4.3 Prevalence of RSB among young people in South Africa

Figure 4.4 (see Appendix A03) presents the practice of RSB among young people. The figure also shows that as many as 783 (61.8%) male adolescents had multiple sexual partners, while 485 (38.2%) had single sexual partners. For the female adolescents, more than half of the female population 1 469 (56.0%) had multiple sexual partners while 1 152 (44.0%) females had single partners. There was a slight difference between the proportion of males and females who had engaged in multiple sexual partnerships, indicating that RSBs among youths vary across gender. On the other hand, condom use among male adolescents was higher 601 (76.8%) compared with their female counterparts 1 469 (56.0%), although, the population of female adolescents were more than double the male population at the time of the survey. However, there was a high proportion of females, 580 (39.4%) who were inconsistent condom users, and a lesser proportion of males 182 (23.2%).

4.4 Bivariate analysis of risky sexual behaviours among young people in South Africa

This section presents the results of the bivariate analysis of this study. The first sub-section presents the bivariate association between multiple sexual partners and individual-level characteristics. The results of the bivariate association between individual family characteristics and multiple sexual partners are presented in the second sub-section, while the third sub-section presents the bivariate association between multiple sexual partners and community characteristics of the study population. Furthermore, the fourth sub-section presents an association between inconsistent condom use and individual-level characteristics. The fifth sub-section also shows the association between individual family characteristics and inconsistent condom use. The final sub-section, sub-section six, presents the association between inconsistent condom use and community-level characteristics.

4.4.1 Multiple sexual partnerships

Tables 4.3 to 4.5 present the bivariate association between individual, individual family and community-level factors exposing youth to engage in multiple sexual partnerships. Table 4.3 shows that all the individual characteristics were significantly associated with exposure to the risk of multiple sexual partnerships among the youth. As shown in Table 4.3, the majority of the youths had multiple sexual partners, the highest percentage was among those aged 20–24 years, 79.2%

for young females and 84.4% for males. Meanwhile, for ages 15–19 years, 37.6% of females and 43.6% of male adolescents had multiple sexual partners. This suggests that older youths engaged in risky sexual behaviours more than younger youths. With regard to educational attainments, those who are in the category of higher education had multiple sexual partners with females at 73.4% and male adolescents at 64.0%. This was closely followed by those in the category of secondary education (55.9% females and 64.0% males), while only 41.4% of females and 38.4% of males from the category of primary and less education, indicated they had multiple sexual partners. Concerning young people who were currently working who had multiple sexual partners was as high as 78.2% of females and 61.8% of males currently working had multiple sexual partners. Meanwhile, more than 50% of both male and female youths currently not working had multiple sexual partners before the survey.

On the other hand, there was an association between multiple sexual partners and ethnic affiliation. For instance, youth from Black ethnic backgrounds had a higher percentage than other ethnic groups for engaging in multiple sexual partnerships, with females at 58.2% and males at 63.6%. For the Whites and Coloured, only 33.3% and 40.0% of females and 35.0% and 46.4% of males respectively, had multiple sexual partners. A small percentage of Indian/Asian ethnic groups (16.7% of females and 30.0% of males) had multiple sexual partners.

Table 4.1: Bivariate association between multiple sexual partnerships and individual-level characteristics of youth in South Africa

	Female			**Male**		
Selected characteristics	**Single partner**	**Multiple partners**	**X^2(p-Value)**	**Single partner**	**Multiple partners**	**X^2(p-Value)**
Age			0.0(453.8)			0.0 (220.6)
15-19	911(62.3)	550(37.6)		397 (56.4)	307 (43.6)	

20-24	241(20.8)	919(79.2)		88(15.4)	476 (84.4)	
Educational level			0.0(33.0)			0.0 (64.7)
Primary or less	92(58.60)	65(41.4)		106 (61.6)	66(38.4)	
Secondary	1 018(44.1)	1 288(55.9)		376 (36.0)	669 (64.0)	
Higher	42(26.6)	116(73.4)		3(5.9)	48(64.0)	
Working status			0.0(49.1)			0.0 (49.9)
No	1 103(46.0)	1 293(54.0)		451 (42.5)	610 (57.5)	
Yes	49(21.8)	176(78.2)		34 (16.4)	783 (61.8)	
Ethnicity/race			0.0(46.9)			0.0 (20.4)
Black/African	977(41.8)	1 363(58.2)		420 (36.4)	734 (63.6)	
White	22(66.7)	11(33.3)		13 (65.0)	7(35.0)	

Coloured	138(60.0)	92(40.0)		45 (53.6)	39(46.4)	
Indian/Asian	15(83.3)	3(16.7)		7(70.0)	3(30.0)	

Source: SADHS (2016)

4.4.1.1 Association between individual family characteristics and multiple sexual partnerships among youth in South Africa

Table 4.4 displays percentage distributions for the study of individual family variables of interest. With regard to household size, more than 50% of the female and male adolescents were from a household with more than seven members and above. This was closely followed by those from one to four household members with young females at 56.2% and males at 66.6%. A little above 50% of young males and females from a household with five to six members had multiple sexual partners. Concerning their relationship to the head of the household, 88.0% of males and 77.0% of females who reported having had multiple sexual partners had a direct relationship with the head of the household, while 67.0% of males and 68.0% of females who stated to have had MSP had no relationship with the head of the household. Meanwhile, of the people who were immediate and distant relatives to the head of the household, 52.0% of females and 55.0% of males, 58.0% of females and 66.0% of males respectively, had MSP. More so, an analysis of the gender of household heads indicated that about 59.0% of female and 58.0% of male adolescents were from female-headed households while a lesser percentage of females 49.0% and 65.0% of males were from male-headed households. Table 4.4 shows that all the variables examined were associated with MSPs except household size.

Table 4.2: Bivariate association between multiple sexual partnerships and family-level characteristics of youth in South Africa

	Female	**Male**

Selected characteristics	Single partner	Multiple partners	X^2(p-Value)	Single partner	Multiple partners	X^2(p-Value)
Household number			0.17 (3.47)			0.0 (8.8)
1-4	428 (43.8)	549 (56.2)		197 (34.0)	382 (66.0)	
5-6	349 (46.5)	401 (53.5)		135 (43.5)	175 (56.5)	
7+	375 (41.9)	519 (58.0)		153 (40.4)	226 (59.6)	
Relationship to HHH			0.0 (53.8)			0.0 (59.1)
Head	45 (22.5)	155 (77.5)		16 (11.3)	126 (88.7)	
Immediate relatives	894 (47.4)	993 (52.6)		383 (44.1)	485 (55.9)	
Distant relatives	184 (41.6)	258 (58.4)		73 (33.5)	145 (66.1)	
Not related	29 (31.5)	63 (68.5)		13 (32.5)	27 (67.5)	

Sex of household head			0.0 (22.2)			0.0 (7.2)
Male	467 (50.1)	465 (49.9)		207 (34.4)	395 (65.6)	
Female	685 (40.6)	1 004 (59.4)		278 (41.7)	388 (58.3)	

Source: SADHS (2016)

4.4.1.2 Association between community characteristics and multiple sexual partnerships among youth in South Africa

With regard to the association between community-level characteristics and multiple sexual partnerships, the percentage of engaging in multiple sexual partnerships is very high (with more than 60% of all the provinces). The highest percentage of the females were from the Eastern Cape, Northwest, Gauteng and Mpumalanga at 67.9%, 60.5%, 63.1% and 66.5% respectively. Among the males, the same provinces recorded the highest percentages at 69.6%, 65.8%, 70.7% and 63.0% respectively. Of all the provinces in the country, Western Cape had the lowest percentage of young males and females (43.4% and 50.8%) with multiple sexual partners. Despite the place of residence having no association with multiple sexual partners, Table 4.5 shows that a high percentage of young people engaged in multiple sexual partnerships. For instance, engagements in MSP were more prevalent among male adolescents in both rural and urban areas with 60.7% and 63.0% respectively. Meanwhile, 54.9% and 57.3% of female urban and rural dwellers had engaged in MSPs. Concerning young people with a history of residential mobility, 73.4% of male adolescents significantly had MSPs compared to 61.4% of females that had engaged in MSPs. Only a lesser number of respondents with no history of moving in the last five years before the survey had not engaged in MSPs (54.6% of females and 41.4% of males). An analysis of neighbourhood poverty revealed that more than 60% of those from high-level neighbourhood poverty were exposed to multiple sexual partnerships with 59.2% of females and 63.6% of males, while 53.5% of females

and 60.3% of males from low-level neighbourhood poverty had MSPs. Furthermore, community literacy levels revealed that as much as 60% of male adolescents who had multiple sexual partners were from a high-level literate community, while only 52.2% of males were from low-level literate communities. Of the females from the low-level literate communities, 57.3% had multiple sexual partners compared to 55.9% of those from high-level literate communities who had engaged in MSPs. The result also showed that ethnic diversity was associated with multiple sexual partnerships. For instance, young people from a homogenous ethnic group tended to have MSPs across genders with 63.0% for male adolescents and female adolescents had 58.2%. Meanwhile, youths from a heterogeneous ethnic group were less likely to have multiple sexual partners (37.7% of females and 43% of males).

Table 4.3: Bivariate association between multiple sexual partnerships and community-level characteristics of youth in South Africa

	Female			Male		
Selected characteristics	**Single partner**	**Multiple partners**	**X^2(p-Value)**	**Single partner**	**Multiple partners**	**X^2(p-Value)**
Place of residence			0.21(1.5)			0.40(1.0)
Urban	628(45.08)	765(54.9)		220 (37.0)	374 (63.0)	
Rural	524(42.67)	704(57.3)		265 (39.3)	409 (60.7)	
Region of residence			0.0(70.9)			0.0(16.9)
Western Cape	99(56.6)	76(43.4)		30(49.2)	31(50.8)	

	Female			Male		
Selected characteristics	**Single partner**	**Multiple partners**	**X^2(p-Value)**	**Single partner**	**Multiple partners**	**X^2(p-Value)**
Eastern Cape	112(32.0)	237(67.9)		59(30.4)	133 (69.6)	
Northern cape	106(51.2)	100(48.5)		34(41.0)	49(59.0)	
Free State	127(48.9)	133(51.1)		55(40.7)	80(59.3)	
Kwazulu-Natal	249(48.9)	260(52.0)		97(44.0)	123 (55.9)	
Northern west	86(39.5)	132 (60.5)		42(34.2)	81(65.8)	
Gauteng	76 (36.9)	130 (63.1)		29 (29.3)	70 (70.7)	
Mpumalanga	111(33.5)	220(66.5)		57(37.0)	97(63.0)	
Limpopo	186(50.6)	181(49.3)		83(41.0)	119 (58.9)	
Residential mobility			0.0 (8.3)			0.0(19.9)
No	940(45.4)	1 131 (54.6)		413 (41.4)	584 (58.6)	
Yes	212(38.5)	338(61.4)		72(26.6)	199 (73.4)	

	Female			Male		
Selected characteristics	**Single partner**	**Multiple partners**	**X^2(p-Value)**	**Single partner**	**Multiple partners**	**X^2(p-Value)**
Community literacy level			0.71(0.1)			0.0(9.6)
Low	85(42.7)	1 149 (57.3)		99(47.8)	108 (52.2)	
High	1 067(44.0)	1 355 (55.9)		386 (36.4)	675 (63.6)	
Neighbourhood poverty			0.0(8.4)			0.26(1.2)
Low	670(46.5)	771(53.5)		264 (39.7)	401 (60.3)	
High	482(40.8)	698(59.1)		221 (36.6)	382 (63.4)	
Ethnic diversity			0.0(42.9)			0.0(18.7)
Homogenous	977(41.7)	1 363 (58.2)		420 (36.4)	734 (63.0)	
Heterogeneous	175 (62.3)	106 (37.7)		65 (57.0)	49 (43.0)	

Source: SADHS (2016)

4.4.2 Unprotected sex or non-condom use among youth in South Africa

Table 4.6 to 4.8 presents the bivariate association between individual, family as well as community-level factors exposing young people to engage in inconsistent condom use.

4.4.2.1 Association between non-condom use and individual level characteristics among young people

Table 4.6 shows that only educational attainment was significantly associated with non-condom use at the individual level. All the other individual characteristics were not significantly associated with exposure to having engaged in unprotected sex among young people in South Africa. As shown in Table 4.6, the majority of the female population was exposed to unprotected sex, the highest percentage was among ages 15–19 years, with 39.0% females compared with 20.5% males. Meanwhile, for ages 20–24 years, 39.7% of females and 25.0% of males were non-condom users. The findings of this study suggest that the younger female population did not use condoms regularly during sexual activities compared to older youths. Furthermore, with regard to educational attainment, females at 56.0% and males at 47.0%, who were in the category of primary or lesser education were exposed to inconsistent condom use. This was closely followed by those in the category of secondary education (39.2% females and 27.0% males in the category of higher education), while a lesser percentage of 32.8% of females and 20.6% of males were from the category of higher and secondary education respectively. Concerning young people who were currently working in relation to inconsistent condom use, a little above 40% of the females currently working were inconsistent condom users. Only 20.2% of young males currently working were inconsistent condom users at the time of the survey. Meanwhile, more than 50% of both males and females currently working were inconsistent condom users at the time of the survey.

On the other hand, despite there being no association between inconsistent condom use and ethnic affiliation, there were high numbers of young people who were inconsistent condom users. For instance, young people from a Black ethnic background had the highest number compared with other racial groups, at 529 females and 168 males. For the Whites and Coloured, only four and 44 females and three and 10 males were inconsistent condom users, while a smaller number of Indian/Asian racial groups, three females and one male were inconsistent condom users.

Table 4.4: Bivariate association between non-condom use and individual-level characteristics among youth in South Africa

	Female			**Male**		
Selected characteristics	**No**	**Yes**	**X^2(p-Value)**	**No**	**Yes**	**X^2(p-Value)**
Age			0.80(0.0)			0.14(3.0)
15-19	215(39.0)	336(60.9)		63(20.5)	244(79.5)	
20-24	365(39.7)	555(60.3)		119(25.0)	357(75.0)	
Educational level			0.0(9.0)			0.0(23.8)
Primary or less	37(56.0)	29(43.9)		31(47.0)	35(53.0)	
Secondary	505(39.2)	784(60.8)		138(20.6)	531(79.4)	
Higher	38(32.8)	78(67.2)		13(27.0)	35(72.9)	
Working status			0.59(0.3)			0.28(1.1)
No	507(39.2)	787(60.8)		147(24.1)	463(75.9)	
Yes	73(41.2)	104(58.8)		35(20.2)	138(79.8)	
Ethnicity/race			0.16(5.1)			0.60(1.8)
Black/African	529(38.8)	835(61.2)		168(27.9)	566(77.1)	

White	4(36.4)	7(63.6)		3(42.9)	4(57.1)	
Coloured	44(47.8)	48(52.2)		10(25.6)	29(74.4)	
Indian/Asian	3(75.0)	1(25.0)		1(33.3)	2(66.7)	

Source: SADHS (2016)

4.4.2.2 Association between individual family variables and non-condom use among young people in South Africa

The percentage distribution for both the family and individual variables is shown in Table 4.7. The findings showed that household size for male and female adolescents and the relationship to the head of the household for the males were significantly associated with inconsistent condom use among young people in South Africa. In addition, with regard to the number of household members, 44.2% of female and 27.7% of male adolescents were from households with more than seven members and above and one to four members respectively. This was closely followed by those from five to six household members for females at 39.1% and for males at 19.0% in the category of seven members and above. The lowest percentage was 34.9% females and 18.9% males in the categories of one to four and five to six household members respectively. Regarding the relationship to the head of the household, 44.1% of females who were immediate relatives to the head of the household were inconsistent condom users compared to 20.8% of male adolescents. Meanwhile, of the people who were not related to the head of household, 36.5% of females and 44.4% of males were inconsistent condom users. Of youths with direct relationships to the head of the household, 34.2% were female and 28.6% were inconsistent condom users, compared to those with distant relationships with the head of the household, with 36.8% of females and 22.3% of males. More so, an analysis of the sex of the household (community family disruption) indicated that 40.9% of young females and 24.6% of males were from male-headed households, while a lesser percentage of young females at 38.8% and 21.9% of males were from female-headed households.

Table 4.5: Bivariate association between non-condom use and individual family-level characteristics among youth in South Africa

	Female			**Male**		
Selected characteristics	**No**	**Yes**	**X^2(p-Value)**	**No**	**Yes**	**X^2(p-Value)**
Household members			0.0(10.1)			0.0(8.5)
1-4	192(34.9)	358(65.0)		106(27.7)	276(72.3)	
5-6	157(39.1)	244(60.8)		33(18.9)	142(81.1)	
7+	231(44.4)	289(55.6)		43(19.0)	183(81.0)	
Relationship to HHH			0.27(3.9)			0.0(10.4)
Head	53(34.2)	102(65.8)		36(28.6)	90(71.4)	
Immediate relatives	409(41.1)	586(58.9)		101(20.8)	384(79.2)	
Distant relatives	95(36.8)	163(63.2)		33(22.3)	112(77.2)	
Not related	23(36.5)	40(63.5)		12(44.4)	15(55.6)	

Sex of household head (Family disruption)			0.43(0.6)			0.38(0.8)
Male	191(40.9)	276(59.1)		97(24.6)	298(75.4)	
Female	389(38.7)	615(61.2)		85(21.9)	3030(78.1)	

Source: SADHS 2016

4.4.2.3 Association between non-condom use and community-level characteristics among youth in South Africa

With regard to the association between community-level characteristics and inconsistent condom use, all the community-level variables were significantly associated with inconsistent condom use except community literacy level for female adolescents and ethnic diversity, as well as the place of residence for the male adolescents. The percentage of participants engaging in inconsistent condom use was more prevalent among females (44.9%) from rural areas compared to their male (24.9%) counterparts. However, 34.3% of females and only 21.4% of males residing in the urban areas of the country were inconsistent condom users. With regard to the association between community-level characteristics and inconsistent condom use, the result indicated more than 40.0% in three provinces for females and one province for males. The highest percentage of the females are from Western Cape, Eastern Cape and KwaZulu-Natal at 44.7%, 45.1% and 47.5% respectively. Among the male adolescents, only Eastern Cape recorded the highest percentage at 37.6%. Of all the provinces, Gauteng had the lowest percentage of young females (26.1%) while Northwest had the lowest percentage of young males (11.1%) that are inconsistent condom users. With respect to youth with a history of residential mobility, 34.8% of females and 24.6% of males were inconsistent condom users compared to 40.8% of females and 22.8% of males with no history of movement. An analysis of neighbourhood poverty revealed that 34.0% of females and 19.2% of males from low-level neighbourhood poverty were inconsistent condom users, while about 45.3% of females and 27.5% of males from high-level neighbourhood poverty reported having sex

with condoms in their most recent sexual activities. Furthermore, community literacy levels revealed that as much as 46.0% of females and 33.3% of males from high-level literate communities were inconsistent condom users, while 38.9% of females and a lesser percentage of males, 21.6%, from low-level literate communities were inconsistent condom users at the time of the survey. It was found that ethnic diversity was associated with inconsistent condom use among young people in South Africa. For instance, young females (47.7%) and males (28.6%) from heterogeneous ethnic groups were inconsistent condom users, while 38.8% of females and 22.9% of males from homogenous ethnic groups were inconsistent condom users.

Table 4.6: Bivariate association between non-condom use and community-level characteristics among youth in South Africa

	Female			**Male**		
Selected characteristics	**No**	Yes	**X^2(p-Value)**	**No**	Yes	**X^2(p-Value)**
Place of residence			0.0(17.4)			0.24(1.4)
Urban	263(34.3)	503(65.7)		80(21.4)	294(78.6)	
Rural	317(44.9)	388(55.0)		102(24.9)	307(75.0)	
Region of residence			0.0(26.6)			0.0(25.0)
Western Cape	34(44.7)	42(55.3)		8(25.8)	23(74.2)	
Eastern Cape	107(45.1)	130(54.8)		50(37.6)	83(62.4)	
Northern cape	37(37.0)	63(63.0)		10(20.4)	39(79.6)	
Free State	40(30.0)	93(69.92)		17(21.2)	63(78.8)	

	Female			**Male**		
Selected characteristics	**No**	Yes	**X^2(p-Value)**	**No**	Yes	**X^2(p-Value)**
KwaZulu-Natal	124(47.5)	137(52.5)		30(24.4)	93(75.6)	
North West	49(36.8)	84(63.16)		9(11.1)	72(88.9)	
Gauteng	34(26.1)	96(73.8)		15(21.4)	55(78.6)	
Mpumalanga	83(37.7)	137(62.3)		18(18.6)	79(81.4)	
Limpopo	72(39.8)	109(60.2)		25(21.0)	94(79.0)	
Residential mobility			0.0(3.9)			0.59(0.2)
No	462(40.8)	670(59.2)		133(22.8)	451(77.2)	
Yes	118(34.8)	221(65.2)		49(24.6)	150(75.4)	
Community literacy level			0.12(2.3)			0.0(7.1)
Low	53(46.0)	62(53.9)		36(33.3)	72(66.7)	
High	527(38.9)	829(61.1)		146(21.6)	529(78.4)	
Neighbourhood poverty			0.0(19.6)			0.0(7.5)
Low	263(34.0)	509(65.9)		77(19.2)	324(80.8)	

	Female			Male		
Selected characteristics	**No**	Yes	**X^2(p-Value)**	**No**	Yes	**X^2(p-Value)**
High	317(45.3)	382(54.6)		105(27.5)	277(72.5)	
Ethnic diversity			0.0(3.3)			0.36(0.8)
Homogenous	529(38.8)	836(61.2)		168(22.9)	566(77.1)	
Heterogeneous	51(47.7)	56(52.3)		14(28.6)	35(71.4)	

Source: SADHS 2016

CHAPTER FIVE: MULTILEVEL ANALYSES

5.1 Contextual effects of risky sexual behaviour

An investigation of contextual factors and effects that are associated with youth's engagement in risky sexual behaviour will provide significant insight into the explanation of STIs and HIV/AIDS among this young productive population. Other studies (see Odimegwu & Ugwu, 2022; Marquire-Jack, Yoon, & Hong, 2022) have shown that some individual-level and socioeconomic determinants such as gender, age, educational attainments, employment status, among others, were associated with youth's RSB in sub-Saharan Africa. In South Africa, studies have shown that the contextual determinants of youth RSB include the individual/family-level determinants such as age, sex, educational attainments, household size, relationship to the head of the household, the type of living environment (urban/rural) and service availability (Robbinson & Seiber, 2008; Burgard & Lee-Rife, 2009; Hope et al., 2019). Other key contextual determinants of RSB among youths included neighbourhood poverty, residential mobility, ethnic/racial diversity, community

education and head of household (Leventhal & Brooks-Gunn, 2000; Dembo et al., 2009). Other studies have identified not being in any educational institution, training or employment, community social processes such as social norms, social networks, social control, community participation and gender roles and traditions (Goodson & Philmore, 2008; Twikirize et al., 2013).

The contextual determinants of RSB among adolescent males and females in South Africa were investigated in this chapter. The chapter further presents the results of the second and the third objectives which sought to explore the pathways through which factors of social disorganisation influence RSBs among South African youth. This section further examines how other variables such as individual-level and neighbourhood-level factors influence multiple sexual partnerships and inconsistent condom use among young people in South Africa.

The risks of exposure to RSBs among youths were analysed with the inclusion of each component of social disorganisation variables of interest. This was done by modelling each component of the social disorganisation factors while adjusting the individual-level factors to establish the relationships with the risks of exposure to RSBs (multiple sexual partnerships and inconsistent condom use) among youths: First, the two main outcome variables, MSP and inconsistent condom use; second, individual-level characteristics and exposure to RSB, individual characteristics and each component of social disorganisation-related factors to determine their effect on RSBs among young people.

The objectives were achieved by building multilevel logistic models to determine the exposure of engaging in RSBs among young people in South Africa. A total of eight models were fitted. The blank model, also known as the null model, was fitted with no independent variable. Only a random interception was included in this model, which allowed the presence of a neighbourhood influence on these outcomes to be observed. The level of differences in the outcome variable across all the neighbourhoods was investigated using model 1 (null model). Model 2 comprised individual-level characteristics. This was to investigate the extent to which area-level differences in engaging in RSB were explained by individual characteristics. In models 3 to 6, we investigated each of the attributes and effects of the social disorganisation factors on exposure to engaging in RSB and the extent to which neighbourhood factors moderated the association between individual factors and RSBs. Model 7 examined only neighbourhood variables to investigate the influence of

neighbourhood characteristics on each of the communities. Model 8 (full model) included both the neighbourhood and individual variables. This model investigated the attributes and effect of background characteristics of the neighbourhood on exposure to engaging in RSBs and to further investigate the level at which community factors moderated the relationship between RSBs (multiple sexual partners and inconsistent condom use) and the individual level factors among youths.

To understand whether the neighbourhood intercepts differed, the random model was used to investigate the outcome after adjusting the individual factors (such as age, education, employment status, ethnicity, household size and relationship to the head of the household), that exposed young people to engage in RSB. The fixed effects formed part of the models (measures of association) that comprised the individual-level and contextual-level factors. The results were presented as the odds ratios and related 95% confidence intervals (95% CI). The measures of differential which were also referred to as the random effects were explained in terms of the VPC. The intra-class correlation coefficient was defined as the proportion of variance at the neighbourhood level to the total variance (ICC). The ICC was a useful tool for determining the level of consistency within units such as a household or a neighbourhood (Maas & Hox, 2006). We determined the ICC by calculating the modulus of rupture in relation to ICCs to provide a better and clearer explanation of community variability.

In addition, because the outcome variable was binary, we used the linear threshold model approach to calculate the intra-neighbourhood similarity coefficient, which translated individual-level variability from the probability percentage towards the logistic proportion, based on which the community variability was explained. Individual-level variation was equal to 2/3 (3.29) in this situation (Theall et al., 2011). The standard error of the predictor variables was used to gauge precision, while the probability ratio test was used to evaluate parameters. According to Merlo and colleagues, the community sociocultural influences on individual risk of sexual behaviour can be measured using an inter-class correlation index, with the ICC = 2uo 2uo + 23.

5.2 Fitness of the Model

The model's appropriateness was determined using the AIC (Akaike Information Criterion), where a2uo represented the variance across neighbourhoods and 2/3 signified an estimation of variability among participants in the very same area. A high VPC value (near 1) indicated clusters that were maximally segregated, whereas a low VPC value (close to 0) indicated clusters that were homogeneous with regard to the risk of exposure to RSB. Many people argue that if the ICC is very close to zero, it means there is no need to adopt a multilevel strategy, implying that individuals are statistically independent. However, when multilevel modelling is not applied, ICC values within 0.05 can render the test of hypotheses and confidence intervals invalid. Furthermore, even when the ICC is near zero, multilevel modelling has advantages (Hayes, 2006).

5.3 Multilevel analysis of individual and neighbourhood-level factors and MSPs among female youths in South Africa

Model 1 in Table 5.1 reports the findings of a multilevel logistic regression model of the female population engaging in MSPs. Model 1 also indicates a strong significant effect according to the age of the female respondents. For instance, female adolescents aged 20–24 years were 5.89 times more likely to always have multiple sex relations. Model 1 further shows that secondary and higher education attainment was 1.56 times and 1.59 times the odds of participating in MSPs among female youths. More so, having a paid job also increased the likelihood of MSPs by 1.63 times compared to those without any job. Meanwhile, the survey results revealed that female young teenagers from the White, Coloured and Indian/Asian ethnic groups had significantly lower odds of 0.27, 0.49- and 0.10 times of engaging in MSPs compared to those from the Black ethnic group. With regard to household size, female adolescents living in a household with five to six members and seven members and above showed increased odds of 1.08 and 1.28 for MSPs. In addition, female adolescents not related to the head of household had increased odds of 1.14 times of having MSPs compared to those with immediate and distant relatives with 0.60 and 0.71 fewer odds of having MSPs.

Furthermore, results of the community-level characteristics (model 7) on the risk of engaging in MSPs among female youths are also presented in Table 5.1. The results showed a strong significant effect of community family disruption. For example, female adolescents living in a family headed by a female were shown to be 1.37 times more likely to engage in MSPs compared to those in a

male-headed household. With regard to residential mobility, those who moved residences in the past five years of the survey had 1.25 increased odds of participating in MSPs. In addition, the findings showed an increased odds of 1.10 likelihood of engaging in MSPs among female youths living in a high-level poverty neighbourhood compared to those in a low-level poverty neighbourhood. However, female adolescents from a community with a high literacy level and those residing in a rural community were less likely to engage in MSPs. In terms of the province of residence, female adolescents residing in the Eastern Cape, Northern Cape, Northwest, Gauteng and Mpumalanga had increased odds of participating in MSPs compared to those residing in the Free State, KwaZulu-Natal and Limpopo with 0.88, 0.84 and 0.79 times less likelihood of MSPs.

More so, the full model comprising the individual and community-level characteristics is also presented in Table 5.1. The results indicated that age was significantly correlated with the risk of engaging in MSPs among female adolescents. For instance, female adolescents aged 20–24 years improved the probability of engaging in MSPs by five times, in comparison with those aged 15–19 years. Educational attainment also increased the likelihood of MSPs by 82% and 97% among female adolescents with secondary and higher education attainments respectively. Similarly, having employment showed a 1.57 times more likelihood of MSPs among female youths. Concerning ethnic affiliation, female adolescents from the White, Coloured and Indian/Asian ethnic groups had a lower likelihood of engaging in MSPs compared to those from the Black ethnic group. The results further revealed that young females residing in a household with five to six members and seven members and above increased the odds of MSPs by 10% and 27% compared to those with one to four members. Meanwhile, the odds of participating in MSPs increased by 1.17 times when female adolescents were not related to the head of the household compared to those with immediate and distant relations with the head of the household who were less likely to engage in MSPs. Meanwhile, careful observation of the full model indicated that there was a strong association between community characteristics with the risk of engaging in MSPs. For instance, young females in disrupted families and high-level poverty neighbourhoods increased the odds of engaging in MSPs by 1.16 times and 1.25 times respectively. However, region of residence, residential mobility, community literacy level, as well as ethnic heterogeneity, still exhibited lesser odds of participating in MSPs among female adolescents.

Table 5.1: Multilevel logistic regression odds ratios of independent effects of individual and neighbourhood factors influencing MSPs among female adolescents in South Africa

Characteristics	Empty model (Model 0)	Individual characteristics (Model 1)	Neighbourhood characteristics (Model 7)	Full model
Age				
15-19		1		1
20-24		5.89(4.82-7.19) ***		5.96(4.90-7.26)***
Education				
Primary or less education		1		1
Secondary		1.56(1.08-2.26) **		1.82(1.24,2.67)***
Higher		1.59(0.92-2.74)		1.99(1.13,3.49)***
Employment status				
No		1		1
Yes		1.63(1.12,2.37)***		1.57(1.08,2.28)***
Ethnicity				
Black		1		1
White		0.27(0.11,0.62)***		0.30(0.13,0.70)**
Coloured		0.49(0.35,0.68)***		0.57(0.38,0.86)
Indian/Asian		0.10(0.27,0.39)***		0.15(0.04,0.59)
Household number				
1 – 4		1		1

Characteristics	Empty model (Model 0)	Individual characteristics (Model 1)	Neighbourhood characteristics (Model 7)	Full model
5 – 6		1.08(0.86,1.36)		1.10(0.88,1.38)
7+		1.28(1.03,1.60)**		1.27(1.02,1.59)*
Relationship to HHH				
Head		1		1
Immediate relatives		0.60(0.40,0.89)**		0.60(0.40,0.90)***
Distant relatives		0.71(0.46,1.10)		0.72(0.47,1.12)
Not related		1.14(0.60,0.21)		1.17(0.62,2.20)
Sex of household head				
Male			1	1
Female			1.37(1.16,1.62)***	1.16(0.96,1.40)
Residential mobility				
No			1	1
Yes			1.25(1.02,1.53)**	0.97(0.78,1.25)**
Neighbourhood poverty				
No			1	1
Yes			1.10(0.90,1.35)*	1.25(0.99,1.56)*
Community literacy level				
Low			1	1

Characteristics	Empty model (Model 0)	Individual characteristics (Model 1)	Neighbourhood characteristics (Model 7)	Full model
High			0.97(0.72,1.31)	0.89(0.63,1.27)
Place of residence				
Urban			1	1
Rural			0.93(0.75,1.15)	0.97(0.76,1.23)
Region of residence				
Western Cape			1	1
Eastern Cape			1.77(1.17,2.69) ***	2.02(1.26,3.24)
Northern cape			1.06(0.69,1.61)	1.10(0.69,1.77)
Free State			0.88(0.57,1.36)	0.88(0.54,1.43)
Kwazulu-Natal			0.84(0.56,1.25)	0.80(0.50,1.28)
North West			1.32(0.84,2.07)	1.59(0.96,2.65)
Gauteng			1.45(0.92,2.27)	1.56(0.94,2.61)
Mpumalanga			1.36(1.06,2.53)	1.93(1.18,3.16)
Limpopo			0.79(0.51,1.23)	0.83(0.51,1.36)
Ethnic diversity				
Homogenous			1	1
Heterogeneous			0.47(0.35,0.67) ***	0.49(0.35,0.67)

Source: SADHS (2016)

5.3.1 Independent effects of social disorganisation-related factors and individual characteristics on the risk of MSPs among female youths

Table 5.2 reports the study of a multilevel logistic regression assessment of MSPs among young females based on each of the social disorganisation variables. For instance, model 2, which investigated the independent association of social disorganisation factor (disrupted family) while adjusting the individual level characteristics revealed that adolescent girls belonging to the age group 20–24 years were 5.85 times more likely than those aged 15–19 years to have multiple sex partners. A similar result was observed from the result presented in model 3, as female adolescents who had moved residentially between the ages of 20–24 within a disrupted family during the time of the survey were also five times more likely to engage in MSPs. With education, females with higher educational attainment in a disrupted family were nine times more likely to engage in MSPs compared to those with secondary education attainment that were two times more likely to have MSPs. Similar results were also observed in model 3 in the educational attainments of female adolescents who had moved residentially at the time of the survey. Meanwhile, other characteristics in the models indicated that employment status was associated with participating in MSPs among female youths. However, there was no association with regard to ethnic affiliation and MSPs in both models 2 & 3. Similarly, household size showed no association with exposure to MSPs among female youths in model 2, while living in a household with seven members and above increased the odds of MSPs by 5% among female adolescents. The results from models 2 & 3 revealed no association with the relationship to the head of the household in exposure to having MSPs among female adolescents.

In addition, results in model 4 present the independent effects of neighbourhood poverty concerning female adolescents' engagement in MSPs. The model shows that age was significantly associated with MSPs. For instance, female youths aged 20–24 years residing in high-level poverty neighbourhoods were 5.94 times more likely of having MSPs compared to those aged 15–19 years. The model further shows that attainment of secondary and higher education increased the chances of MSPs by 64% and 77% among female adolescents. In addition, being employed also increased the odds 1.64 times of having MSPs. With ethnicity, female youths belonging to the White, Coloured and Indian/Asian ethnic groups and living in high-level poverty neighbourhoods were

less likely to have MSPs. By household size, female youths from a family made up of five to six members and seven members and above had 1.08 times and 1.26 times the chance of participating in MSPs respectively. Furthermore, in model 4, regarding the relationship with the head of the household, females not related to the head of the household had 1.17 more chance of having MSPs compared to those who were relatives and distant relatives to the head of the household, with 0.62 and 0.73 lower odds of engaging in MSPs.

Concerning the community literacy level presented in model 5, Table 5.2 reveals that there was a strong statistical relationship with the exposure to participate in MSPs among female youths aged 20–24 years. Similarly, it was discovered that in a literate community, females with secondary and higher education attainments increased the odds of MSPs by 60% and 65% respectively. In addition, having a paid job also increased the chances of MSPs among adolescent girls by 1.62 times compared to those without any job in a community with a high literacy level. With ethnic affiliation, White, Coloured and Indian/Asian ethnic groups showed fewer odds of 0.27, 0.49 and 0.11 times of engaging in MSPs among female adolescents in a highly literate community. More so, females residing in a household with five to six members and seven members and not related to the head of the household showed increased odds of engaging in multiple sexual partnerships, while being an immediate relative and a distant relative to the head of the household showed lower odds of 0.60 times and 0.71 times of engaging in MSPs among females in high-level literate communities.

Model 6 presents the results of the independent effects of living environments with multiple sexual partnerships among adolescent girls. According to the findings, females between the ages of 20–24 were six times more likely to have MSPs than those between the ages of 15–19. However, those with secondary and higher education attainments were 1.67 and 1.74 more likely to participate in MSPs. Concerning ethnic affiliation, compared to Blacks, female adolescents from the White, Coloured and Indian/Asian ethnic groups showed 0.27, 0.54 and 0.14 lesser odds of participating in MSPs, although it was highly significant across all the ethnic groups. With respect to the number of people in a household based on their living environments, it was observed that females in a household made up of five to six members and seven members and above ha increased odds of 1.09 and 1.25 of having multiple sexual partners. In addition, female adolescents who were

immediate relatives and distant relatives to the head of the household had lower likelihoods of MSPs compared to those not related to the head of the household with increased odds of 1.09 times of having multiple sexual partners. Compared to females residing in an urban area, exposure to the risk of multiple sexual partners increased by 1.09 times among female adolescents residing in rural areas. Considering the province of residence, Table 5.2 reveals that female youths from the Eastern Cape had double the likelihood of having MSPs compared to those from the Northern Cape, North West, Gauteng and Mpumalanga. Meanwhile, young females from the Eastern Cape and Free State had lower odds of 0.87 times and 0.84 times of having MSPs.

Table 5.2: Multilevel logistic odds ratios of independent effects of the individual and social disorganisation-related factors, on the risk of multiple sexual partnerships among female adolescents

Characteristics	**Individual and Community Family disruption (Model 2)**	**Individual Residential Mobility (Model 3)**	**Individual and Neighbourhood Poverty (Model 4)**	**Individual and community literacy level (Model 5)**	**Individual and living environment (Model 6)**
Age					
15-19	1	1	1	1	1
20-24	5.82(4.76,7.11)***	5.89(4.82,7.19)***	5.94(4.86,7.26)***	5.88(4.80,7.18)**	6.02(4.95,7.32)**
Education					
Primary or less education	1	1	1	1	1
Secondary	1.59(1.09,2.29)**	1.56(1.08,2.26)***	1.64(1.12,2.36)**	1.60(1.09,2.36)***	1.67(1.16,2.42)**

Characteristics	Individual and Community Family disruption (Model 2)	Individual Residential Mobility (Model 3)	Individual and Neighbourhood Poverty (Model 4)	Individual and community literacy level (Model 5)	Individual and living environment (Model 6)
Higher	1.63(0.94,2.81)	1.59(0.92,2.74)	1.77(1.02,3.08)	1.65(0.94,2.89)	1.74(1.01,2.99)
Employment status					
No	1	1	1	1	1
Yes	1.64(1.12,2.39)**	1.63(1.11,2.37)**	1.64(1.12,2.39)**	1.62(1.11,2.36)***	1.56(1.08,2.27)**
Ethnicity					
Black	1	1	1	1	1
White	0.28(0.12,0.66)***	0.27(0.11,0.62)***	0.29(0.12,0.68)***	0.27(0.11,0.62)	0.28(0.12,0.64)**
Coloured	0.50(0.36,0.70)***	0.49(0.35,0.68)***	0.54(0.38,0.75)**	0.49(0.35,0.68)	0.54(0.37,0.80)
Indian/Asian	0.10(0.28,0.41)***	0.10(0.02,0.39)***	0.11(0.03,0.42)***	0.10(0.03,0.39)	0.14(0..4,0.55)**
Household number					
1 – 4	1	1	1	1	1
5 – 6	1.10(0.88,1.38)	1.08(0.86,1.36)	1.08(0.86,1.35)	1.08(0.86,1.36)	1.09(0.87,1.36)
7+	1.30(1.04,1.62)**	1.28(1.03,1.60)**	1.25(1.00,1.57)**	1.28(1.03,1.60)**	1.25(1.00,1.56)

Characteristics	Individual and Community Family disruption (Model 2)	Individual Residential Mobility (Model 3)	Individual and Neighbourhood Poverty (Model 4)	Individual and community literacy level (Model 5)	Individual and living environment (Model 6)
Relationship to HHH					
Head	1	1	1	1	1
Immediate relatives	0.63(0.42,0.94)***	0.60(0.39,0.90)***	0.62(0.42,0.93)***	0.60(0.40,0.89)***	0.56(0.38,0.84)**
Distant relatives	0.75(0.48,1.16)***	0.71(0.46,1.10)***	0.73(0.47(1.13)***	0.71(0.46,1.10)***	0.68(0.44,1.04)**
Not related	1.23(0.65,2.30)	1.14(0.60,2.12)	1.17(0.63,2.20)	1.14(0.60,2.12)	1.09(0.58,2.04)
Sex of household head					
Male	1				
Female	1.19(0.98,1.44)***				
Residential mobility					
No		1			
Yes		0.99(0.79,1.27)			
Neighbourhood poverty					
No			1		
Yes			1.28(1.05,1.55)***		

Characteristics	Individual and Community Family disruption (Model 2)	Individual Residential Mobility (Model 3)	Individual and Neighbourhood Poverty (Model 4)	Individual and community literacy level (Model 5)	Individual and living environment (Model 6)
Community literacy level					
Low				1	
High				0.89(0.63,1.27)	
Area of residence					
Urban					1
Rural					1.09(0.88,1.35)**
Region of residence					
Western Cape					1
Eastern Cape					2.15(1.35,3.44)**
Northern cape					1.13(0.70,1.80)
Free State					0.87(0.54,1.41)
Kwazulu-Natal					0.84(0.54,1.32)
Northern cape					1.58(0.95,2.61)
Gauteng					1.56(0.94,2.60)

Characteristics	Individual and Community Family disruption (Model 2)	Individual Residential Mobility (Model 3)	Individual and Neighbourhood Poverty (Model 4)	Individual and community literacy level (Model 5)	Individual and living environment (Model 6)
Mpumalanga					1.94(1.19,3.15)
Limpopo					0.86(0.53,1.39)

Source: SADHS 2016

5.3.2 Decomposition of community-level variance of MSPs among female adolescents

Table 5.3 presents the decomposition of community-level variance risk of becoming involved in MSPs among adolescent females in South Africa. Results indicated that test statistics (τ = 0.4101841, $p<0.001$) were significant, hence, it showed evidence that the between-neighbourhood variance is non-zero. However, as was revealed in the null model (model 1), 2.8% of the variance in the individual exposure to the risk of engaging in multiple sexual partnerships could be attributed to neighbourhood-level influences. Furthermore, models 2 to model 6 were separate examinations of the relationships between each of the social disorganisation factors with multiple sexual partnerships among female adolescents. The measure of variations was found to be significant across the neighbourhoods, with ICC associated with exposure to multiple sexual partnerships among the females estimated at 2.8% (model 3), 3.0% (model 4), 2.8% (model 5) and 4.3% (model 6). It was found that all the female adolescents living in the neighbourhood had a similar amount of exposure to the risk of multiple sexual partners based on the fact that the value of the ICC was high that is, equal to 1, indicating that neighbourhood characteristics contributed to female adolescents' health outcomes. Therefore, the proportional change in variance (PCV) of risk of having multiple sexual partners ranged from 40.2% (family disruption) to 40.3% (residential mobility) to 36.3% (neighbourhood poverty). Also, results from the community literacy level and living environments indicated that PCV of having multiple sexual partners was 41.4% and 100%, which could be explained by the characteristics at the community level. Hence,

there was a compositional effect on the risk of participating in MSPs among young females as presented in Tables 5.1 and 5.2.

Table 5.3: Decomposition of community-level variance of MSPs among young females

Random effects	**Model 0**	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Full model**
Neighbourhood variance (SE)	0.41**	0.31**	0.31***	0.31*	0.32*	0.31**	0.00***	0.00***	0.00***
'VPC=ICC (%')	0.05	0.03	0.03	0.03	0.03	0.03	0.00	0.00	0.00
PCV (%)	Reference	42.0	40.3	42.0	36.3	41.4	100.0	100.0	100.0
Log Likelihood	-1792.841	-1522.698	-1521.038	-1522.698	-1519.493	-1522.504	-1488.674	-1736.629	-1485.079
Model fit statistics									
AIC	3589.682	3073.396	3072.075	3075.396	3068.986	3075.008	3023.348	3505.258	3024.157
BIC	3601.424	3155.594	3160.145	3163.466	3157.055	3163.078	3158.388	3599.199	3182.683
N	2,621	2,621	2,621	2,621	2,621	2,621	2,621	2,621	2,621

Source: SADHS 2016

5.4 Multilevel analysis of independent effects of individual and neighbourhood factors on the risk of inconsistent condom use among female adolescents

Table 5.4 presents the multilevel result of the influence of individual and community-level characteristics of inconsistent condom use among female adolescents in South Africa. In model 1, the influence of individual-level factors on inconsistent condom use among female adolescents was considered. The findings of this study revealed that age had a significant influence on adolescent MSPs. For instance, female adolescents aged 20–24 decreased the odds of inconsistent condom use by 89% compared to those aged 15–19 years. The model further indicates that

attainment of higher education suggested two times more likelihood of inconsistent condom use compared to those with secondary education attainment who were 1.88 times more likely to use condoms inconsistently. The model further reveals that female adolescents who were employed showed fewer odds at 88% of inconsistent condom use. Similarly, ethnic affiliation indicated that female adolescents from the White, Coloured and Indian/Asian ethnic groups had fewer odds at 0.95, 0.67 and 0.19 times of engaging in inconsistent condom use compared to those from the Black ethnic group. With regard to the household size, residing in a household with five to six members and seven members and above showed decreased odds of 86% and 70% of inconsistent condom use. In addition, young females with a distant relation to the head of the household had increased odds of 1.03 times of inconsistent condom use compared to those who were immediate and distant relatives with lower odds of 0.88 and 0.93 times of inconsistent condom use.

In addition, the influence of community-level factors on inconsistent condom use among female adolescents is presented in model 7. The results showed that female adolescents living in female-headed households (family disruption) were 1.52 times more likely to engage in inconsistent condom use compared to those in male-headed households. With respect to residential mobility, females who had moved residentially had increased odds of 1.28 times of inconsistent condom use. In addition, community literacy levels showed increased odds of 1.22 chances of unprotected sex (non-condom use) among female adolescents. In terms of place of residence and ethnic diversity, young females from rural areas and those from heterogeneous ethnic groups were less likely to use condoms inconsistently. Concerning the province of residence, the multilevel logistics analysis (model 7) revealed that females from KwaZulu-Natal had lower odds at 87% compared to those from the remaining provinces with an increased likelihood of inconsistent condom use.

Table 5.4 presents the results of the combined effects of individual and community-level factors on inconsistent condom use among female adolescents examined in the full model. Although age was statistically significant, female adolescents aged 20–24 years were less likely to have inconsistent condom use compared to those between the ages of 15–19 years. Educational attainment increased the odds of inconsistent condom use by 72% and 92% among female adolescents with secondary and higher education attainment respectively. Meanwhile, a different result was observed among female adolescents that had a paid job with 89% less likelihood of

inconsistent condom use compared to those without any employment. With regard to ethnic affiliation, female adolescents from the White, Coloured and Indian/Asian ethnic groups had a lower likelihood of inconsistent condom use compared to the Black ethnic group. Meanwhile, Table 5.4 indicates that young females residing in a household with five to six members and seven members and above were 0.90 times and 0.82 times less likely to inconsistently use condoms. The model further revealed that the odds of inconsistent condom use increased by 1.03 among females with a distant relation and decreased among those with immediate relatives and not related to the head of the household by 0.87 and 0.72. In the full model, careful observation of community factors showed that females from a disrupted family, those who had moved residentially (residential mobility) and community literacy level showed increased odds of 11%, 16% and 6% chance of inconsistent condom use. Findings from the model also showed that the province of residence, ethnic diversity and high-level neighbourhood poverty showed lesser odds of inconsistent condom use, as well as coming from KwaZulu-Natal, unlike those residing in the other provinces who had a better chance of engaging in inconsistent condom use.

Table 5.1: Multilevel logistics regression odds ratios of the effects of individual and neighbourhood factors influencing inconsistent condom use among female adolescents

Characteristics	**Empty model (Model 0)**	**Individual characteristics (Model 1)**	**Community characteristics (Model 7)**	**Full model**
Age				
15-19		1		1
20-24		0.89(0.70,1.14)***		0.86(0.68,1.08)***
Education				
Primary or less education		1		1
Secondary		1.88(1.11,3.18)***		1.72(1.00,2.95)
Higher		2.46(1.27,4.79)*		1.92(0.97,3.82)
Employment status				
No		1		1
Yes		0.89(0.62,1.26)		0.88(0.62,1.25)
Ethnicity				
Black		1		1
White		0.95(0.26,3.48)		0.75(0.21,2.69)
Coloured		0.69(0.43,1.08)		0.60(0.35,1.03)

Characteristics	Empty model (Model 0)	Individual characteristics (Model 1)	Community characteristics (Model 7)	Full model
Indian/Asian		0.19(0.12,2.04)		0.20(0.02,2.04)
Household number				
1 - 4		1		1
5 – 6		0.86(0.64,1.16)		0.90(0.67,1.21)
7+		0.70(0.53,0.94)**		0.82(0.62,1.08)**
Relationship to HHH				
Head		1		1
Immediate relatives		0.88(0.58,1.32)		0.87(0.57,1.32)
Distant relatives		1.03(0.65,1.64)		1.03(0.65,1.63)
Not related		0.97(0.50,1.86)		0.98(0.51,1.88)
Sex of household head				
Male			1	1
Female			1.15(0.90,1.46)	1.11(0.87,1.02)
Residential mobility				
No			1	1

Characteristics	Empty model (Model 0)	Individual characteristics (Model 1)	Community characteristics (Model 7)	Full model
Yes			1.28(0.98,1.68)	1.16(0.87,1.55)
Neighbourhood poverty				
No			1	1
Yes			0.69(0.53,0.90)	0.71(0.55,0.93)
Community literacy level				
Low			1	1
High			1.22(0.82,1.81)	1.06(0.70,1.61)
Place of residence				
Urban			1	1
Rural			0.77(0.58,1.02)	0.77(0.58,1.02)
Region of residence				
Western Cape			1	1
Eastern Cape			1.03(0.57,1.85)	1.12(0.62,2.03)
Northern cape			1.52(0.80,2.87)	1.65(0.88,3.10)
Free State			1.51(0.79,2.89)	1.64(0.85,3.15)

Characteristics	Empty model (Model 0)	Individual characteristics (Model 1)	Community characteristics (Model 7)	Full model
Kwazulu-natal			0.87(0.48,1.57)	0.98(0.54,1.79)
Northern West			1.35(0.70,2.58)	1.54(0.80,2.95)
Gauteng			1.86(0.97,3.58)**	1.98(1.02,3.85)**
Mpumalanga			1.39(0.75,2.58)	1.53(0.83,2.85)
Limpopo			1.40(0.74,2.64)	1.49(0.79,2.83)
Ethnic diversity				
Homogenous			1	1
Heterogeneous			0.57(0.35,0.93)***	0.57(0.35,0.93)**

Source: SADHS (2016)

5.4.1 Independent effects of social disorganisation-related factors and individual characteristics on inconsistent condom use among female adolescents

The results of the multilevel logistic regression analysis of the examination of contraceptive use from each of the social disorganisation-related factors among adolescent females are presented in Table 5.5. For instance, model 2, which investigated the independent association of the social disorganisation factor (family disruption) after adjusting the individual level characteristics revealed that female adolescents aged 20–24 years had an 89% lower likelihood of inconsistent condom use compared to ages 15–19 years in male-headed households. A different result was observed from the result presented in model 3, as young females who had moved residentially

aged 20–24 within a disrupted family were 1.03 times more likely to engage in inconsistent condom use. With education, females with higher education attainments had a double odds chance of inconsistent condom use in models 2 and 3 compared to those with primary or less and secondary education attainments that had a single odds likelihood of inconsistent condom use. Other characteristics in the two models showed evidence of a lower likelihood of inconsistent condom use except when having a distant relationship with the head of the household which increased the odds of inconsistent condom use among female adolescents by 4%.

In addition, results in model 4 present the independent effects of neighbourhood poverty concerning female adolescents' lack of consistent use of condoms. According to the model's findings, age was positively associated with inconsistent condom use, although young females between the ages of 20–24 years living in high-level neighbourhood poverty were 0.88 less likely to use condoms inconsistently. Furthermore, secondary and higher education attainments increased the odds of inconsistent condom use by 74% and 97% among female adolescents. In addition, being employed decreased inconsistent condom use by 88% for female adolescents. With ethnicity, young females from the White, Coloured and Indian/Asian ethnic groups had lower odds of inconsistent condom use in high-poverty neighbourhoods. Similarly, female adolescents living in a household size of five to six and seven members and above were 0.87 and 0.74 less likely to use condoms inconsistently. Furthermore, in model 4, regarding the relationship to the head of household, not related, immediate and distant relatives to the head of the household reduced the odds of inconsistent condom use by 85%, 99% and 94% among young females.

In addition, the influence of community literacy levels on female adolescents' engagement in inconsistent condom use is presented in model 5. It was revealed that female adolescents aged 20–24 years from a high-level literate community were less exposed to inconsistent condom use by 89%. Meanwhile, female adolescents with higher education attainment increased the odds of inconsistent condom use by 2.36 times compared to those with secondary education attainment who were 1.82 times more likely to engage in inconsistent condom use. In addition, female adolescents with paid jobs decreased the odds of inconsistent condom use by 0.89 times compared to those without any employment. Regarding ethnic affiliation, female adolescents from White, Coloured and Indian/Asian ethnic groups living in communities with high literacy levels had lower

odds of inconsistent condom use compared to those from low-level literate communities. Similarly, young females from a household size of five to six and seven members and above were 0.86 and 0.70 less likely to use condoms inconsistently. Furthermore, in model 4, concerning the relationship to the head of the household, female adolescents with a distant relationship to the head of the household increased the odds of inconsistent condom use by 3% compared to those who were immediate relatives and not related to the head of the household with 87% and 97% lower odds of inconsistent condom use. Summarily, results revealed that female adolescents living in a community with a high literacy level increased the odds of inconsistent condom use by 12% compared to those living in a low-level literate community.

Furthermore, model 6 presents the results of the independent effects of living environments with inconsistent condom use among female adolescents. Although age was significantly associated with exposure to inconsistent condom use, those aged 20–24 years were 87% less likely to use condoms inconsistently based on their living environments (place/province of residence). In addition, female adolescents with higher educational attainment were 2.28 times less likely to use condoms inconsistently compared to those with secondary educational attainment with a 1.89 likelihood of inconsistent condom use. More so, having a paid job decreased the odds of inconsistent condom use by 87% compared to those without any employment. By ethnic affiliation, female adolescents from the White, Coloured and Indian/Asian ethnic groups had lower odds of inconsistent condom use either with respect to the province where they lived or as a result of residing in a rural area. Meanwhile, it was observed that females living in a household with five to six members and seven members and above had decreased odds of inconsistent condom use by 89% and 79%. In addition, female adolescents with a distant relationship to the head of the household increased the odds of inconsistent condom use by 1% compared to those being an immediate relative or not related to the head of household and residing in a rural area with 84%, 98% and 66% lower odds of inconsistent condom use. There was an association between inconsistent condom use and the province of residence. Living in Gauteng, for example, was associated with a greater likelihood of young females using condoms inconsistently by 2%, especially in comparison to those living in the Northern Cape, Northwest, Eastern Cape, Mpumalanga and Free State which revealed the increased odds of inconsistent condom use was 67%, 58%, 9%, 57% and 47% respectively.

Table 5.2: Multilevel logistics odds ratio of the effects of each component of social disorganisation-related factors and individual-level characteristics on inconsistent condom use among female adolescents

Characteristics	**Individual and Community Family disruption (model 2)**	**Individual and Residential Mobility (model 3)**	**Individual and Neighbourhood Poverty (model 4)**	**Individual and community literacy level (model 5)**	**Individual and living environment (model 6)**
Age					
15-19	1	1	1	1	1
20-24	0.89(0.70,1.13)**	0.89(0.70,1.14)*	0.88(0.69,1.10)*	0.89(0.70,1.14)*	0.87(0.68,1.09)**
Education					
Primary or less edu	1	1	1	1	1
Secondary	1.88(1.11,3.18)*	1.88(1.11,3.17)*	1.75(1.04,2.93)*	1.82(1.06,3.12)*	1.89(1.12,3.18)*
Higher	2.47(1.27,4.80)*	2.45(1.26,4.77)*	1.98(1.02,3.83)	2.36(1.19,4.67)	2.28(1.18,4.40)*
Employment status					
No	1	1	1	1	1

Characteristics	**Individual and Community Family disruption (model 2)**	**Individual and Residential Mobility (model 3)**	**Individual and Neighbourhood Poverty (model 4)**	**Individual and community literacy level (model 5)**	**Individual and living environment (model 6)**
Yes	0.89(0.63,1.26)	0.88(0.62,1.26)	0.883(0.62,1.25)	0.891(0.63,1.26)	0.87(0.62,1.23)
Ethnicity					
Black	1	1	1	1	1
White	0.96(0.26,3.54)	0.96(0.26,3.51)	0.77(0.22,2.76)	0.94(0.26,3.46)	0.80(0.22,2.89)
Coloured	0.69(0.43,1.09)	0.69(0.44,1.09)	0.57(0.36,0.90)	0.69(0.43,1.08)	0.63(0.37,1.07)
Indian/Asian	0.19(0.12,2.05)	0.19(0.02,2.03)	0.15(0.01,1.51)	0.20(0.02,2.15)	0.21(0.02,2.15)
Household number					
1 - 4	1	1	1	1	1
5 – 6	0.86(0.64,1.16)	0.88(0.65,1.18)	0.87(0.65,1.12)	0.86(0.64,1.16)	0.89(0.67,1.20)
7+	0.71(0.53,0.94)*	0.72(0.54,0.96)*	0.74(0.56,0.97)*	0,70(0.53,0.94)*	0.79(0.60,1.04)*
Relationship to HHH					

Characteristics	**Individual and Community Family disruption (model 2)**	**Individual and Residential Mobility (model 3)**	**Individual and Neighbourhood Poverty (model 4)**	**Individual and community literacy level (model 5)**	**Individual and living environment (model 6)**
Head	1	1	1	1	1
Immediate relatives	0.88(0.58,1.34)	0.91(0.60,1.39)	0.85(0.56,1.27)	0.87(0.58,1.32)	0.84(0.56,1.26)
Distant relatives	1.04(0.65,1.66)	1.05(0.66,1.67)	0.99(0.63,1.58)	1.03(0.64,1.63)	1.00(0.64,1.58)
Not related	0.99(0.51,1.90)	0.95(0.50,1.83)	0.94(0.50,1.79)	0.97(0.50,1.86)	0.98(0.51,1.85)
Sex of household head					
Male	1				
Female	1.04(0.81,1.33)				
Residential mobility					

Characteristics	Individual and Community Family disruption (model 2)	Individual and Residential Mobility (model 3)	Individual and Neighbourhood Poverty (model 4)	Individual and community literacy level (model 5)	Individual and living environment (model 6)
No		1			
Yes		1.14(0.85,1.53)			
Neighbourhood poverty					
No			1		
Yes			0.60(0.48,0.77)		
Community literacy level					
Low				1	
High				1.12(0.74,1.71)	
Place of residence					
Urban					1
Rural					0.66(0.50,0.85)

Characteristics	Individual and Community Family disruption (model 2)	Individual and Residential Mobility (model 3)	Individual and Neighbourhood Poverty (model 4)	Individual and community literacy level (model 5)	Individual and living environment (model 6)
Region of residence					
Western Cape					1
Eastern Cape					1.09(0.60,1.98)
Northern cape					1.67(0.88,3.16)
Free State					1.72(0.90,3.32)
Kwazulu-Natal					1.00(0.55,1.83)
Northern west					1.58(0.82,3.05)
Gauteng					2.02(1.03,3.94)**

Characteristics	Individual and Community Family disruption (model 2)	Individual and Residential Mobility (model 3)	Individual and Neighbourhood Poverty (model 4)	Individual and community literacy level (model 5)	Individual and living environment (model 6)
Mpumalanga					1.57(0.84,2.93)
Limpopo					1.47(0.78,2.80)

Source: SADHS 2016

5.4.2 Decomposition of community-level variance of inconsistent condom use among female adolescents

The results of the decomposition of community variance of inconsistent condom use among female adolescents are presented in Table 5.6. The results revealed that the measures of variations, the test statistic was $\tau = 0.4890572$, $p<0.001$, was significant with a non-zero between neighbourhood variances. In addition, as was revealed in the null model (model 1), 4.8% of the variance in the individual exposure to the risk of inconsistent condom use among female adolescents could be attributed to the neighbourhood-level effects. More so, models 2 to model 6 were separate investigations of the relationship between each of the social disorganisation-related factors with the risk of inconsistent condom use among female adolescents. The measure of variations was found to be statistically significant across communities, with ICC associated with the risks of inconsistent condom use among female adolescents estimated at 4.9% (model 2), 4.9% (model 3), 2.2% (model 4), 4.8% (model 5) and 9.0% (model 6). The results further revealed that all the female adolescents living in the neighbourhoods had a similar number of risks of inconsistent condom use. The reason was associated with the high value of the ICC, that is, equal to 1, indicating that neighbourhoods where female adolescents reside contributed to their health outcomes. More so, the PCV to the risk of engaging in inconsistent condom use ranged from 27% (disrupted family) to 27% (residential mobility) and 67% (neighbourhood poverty). Also, results

from the community literacy level and living environments indicated that PCV of inconsistent condom use was 28.1% and 86.6% and could be explained by the characteristics at the community level. Thus, there was a compositional effect such as age, education attainment, employment status, etc with the risk of engaging in inconsistent condom use among female adolescents in South Africa as presented in Table 5.6.

Table 5.3: Decomposition of community-level variance of inconsistent condom uses among females

Random effects	**Model 0**	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Full model**
Community variance (SE)	0.49*	0.41**	0.41*	0.41**	0.27*	0.41**	0.17*	0.20*	0.11**
VPC=ICC (%)	0.07	0.05	0.05	0.05	0.02	0.05	0.01	0.01	0.00
Explained variation PCV (%)	Reference	28.1	27.0	27.4	67.0	28.2	86.6	82.9	94.6
Log Likelihood	-983.3093	-971.8709	-971.8257	-971.4942	-963.4155	-971.7265	-955.8796	-957.852	-952.2448
Model fit statistics									
AIC	1970.619	1971.742	1973.651	1972.988	1956.831	1973.453	1957.759	1947.704	1958.49
BIC	1981.206	2045.853	2053.057	2052.394	2036.236	2052.859	2079.514	2032.403	2101.419
N	1,471	1,471	1,471	1,471	1,471	1,471	1,471	1,471	1,471

Source: SADHS 2016

5.5 Multilevel analysis of independent effects of individual and neighbourhood factors influencing male youths to engage in MSPs in South Africa

The results of the multilevel logistics regression analysis of MSPs among male participants are displayed in Table 5.7. The independent association between multiple sexual partnerships and males' background characteristics are presented in model 1. The model indicated a strong significant effect regarding the age of the male respondents. For instance, male adolescents aged 20–24 years increased the odds of MSPs by 85%. The model further revealed that male youths' attainment of secondary and higher education makes them 9.24 times and 2.73 times more likely to engage in MSPs. More so, having a paid job increased the odds of multiple sexual partnerships by 1.63 times compared to those without any employment. Furthermore, the results obtained from the survey revealed that male adolescents from the White, Coloured and Indian/Asian ethnic groups had significantly lower odds of 0.93, 0.28 and 0.09 times of engaging in MSPs compared to those from the Black ethnic group. Concerning the household size, male adolescents living in a household with five to six and seven members and above showed fewer odds of 0.94 times and 0.99 times of having multiple sexual partnerships. In addition, there was no association between having a relationship with the head of the household with the risks of male youths participating in MSPs. For instance, male adolescents who were immediate relatives, distant relatives and not related to the head of household showed fewer odds of 0.38, 0.22 and 0.44 of MSPs.

Furthermore, the results of the community-level characteristics (model 7) revealed a major influence of community family disruption. Male adolescents, for example, living in a family headed by a female had 0.73 less odds of engaging in MSP compared to those living in male-headed households. With respect to residential mobility, young males who moved residentially in the past five years preceding the survey have a 76% odds likelihood of having multiple sexual partners. Furthermore, among male participants living in high-poverty neighbourhoods, the odds of having MSP increased by 1.13 and 1.58, respectively, and in a community with a high literacy level compared to those in low-level neighbourhood poverty and low-level literate communities. More so, male adolescents from heterogeneous ethnic groups were less likely to have multiple sexual partners compared to those from a homogenous ethnic group. In terms of the province of residence, male adolescents residing in the Eastern Cape, Northern Cape, and Gauteng have

increased odds of having multiple sexual partners compared to those residing in the Free State, KwaZulu-Natal, Northwest, Mpumalanga, and Limpopo with 0.85, 0.75, 0.96, 0.99 and 0.80 less likelihood of MSP.

Table 5.7 also includes the findings of the full model, which included individual and community-level factors. The results revealed that age was greatly associated with the risk of participating in MSPs among South African males. For instance, male adolescents aged 20–24 years increased the odds of having multiple sexual partners by six times compared to those aged 15–19 years. Educational attainments also increased the chances of MSPs by 96% and 9% among male adolescents with secondary and higher educational attainment respectively. Similarly, having a paid job resulted in 2.09 times the likelihood of MSPs among male youths. With regard to ethnic affiliation, male adolescents from the White, Coloured and Indian/Asian ethnic groups had a lower likelihood of having multiple sexual partners compared to male adolescents from the Black ethnic group. The results further revealed that young males residing in a household with five to six members are 95% less likely to engage in MSPs compared to those living in a household with seven members and above by 8%. Meanwhile, male youths who were immediate relatives, distant relatives and those not related to the head of the household decreased the odds of engaging in MSPs by 0.38, 0.45 and 0.43 times respectively. Meanwhile, careful observation of the community-level factors in the full model revealed a strong association between community factors with the risk of MSPs among male adolescents. For instance, male adolescents in a disrupted family, including those who had moved (residential mobility) to living in high-poverty neighbourhoods and highly literate communities increased the odds of engaging in MSPs by 15%, 6%, 27%, 7% and 7% respectively. More so, male adolescents from heterogeneous ethnic groups were less likely to have MSPs. There was evidence of an association between MSPs and region of residence. For example, male youths residing in the Eastern Cape were two times more likely to engage in MSPs compared to those residing in the Northern Cape, Free State, North West, Gauteng, Mpumalanga and Limpopo with about 1% likelihood of engaging in MSPs. Only male adolescents from KwaZulu-Natal had a 34% lower chance of participating in MSPs.

Table 5.1: Multilevel logistic regression odds ratio of the effects of individual and neighbourhood factors on MSP among male youths

Characteristics	Empty model (Model 0)	Individual characteristics (Model 1)	Community characteristics (Model 7)	Full model
Age				
15-19		1		1
20-24		5.85(4.14,8.27)**		6.02(4.25,8.52)***
Education				
Primary or less education		1		1
Secondary		2.73(1.80,4.12)**		2.74(1.74,4.31)***
Higher		9.24(2.49,34.28)*		9.96(2.57,38.46)
Employment status				
No		1		1
Yes		1.90(1.16,3.11)**		2.09(1.27,3.44)**
Ethnicity				
Black		1		1
White		0.29(0.09,0.94)**		0.30(0.09,1.00)*
Coloured		0.28(0.15,0.50)*		0.29(0.14,0.62)**
Indian/Asian		0.09(0.02,0.57)**		0.15(0.02,0.89)*

Characteristics	Empty model (Model 0)	Individual characteristics (Model 1)	Community characteristics (Model 7)	Full model
Household number				
1 - 4		1		1
5 – 6		0.91(0.64,1.30)		0.95(0.66,1.37)
7+		0.99(0.70,1.41)		1.08(0.76,1.54)
Relationship to HHH				
Head		1		1
Immediate relatives		0.38(0.20,0.72)		0.38(0.19,0.19)
Distant relatives		0.45(0.22,0.91)		0.45(0.22,0.94)
Not related		0.44(0.16,1.20)		0.43(0.15,1.19)
Sex of household head				
Male			1	1
Female			0.73(0.56,0.96)*	1.15(0.77,1.73)*
Residential mobility				
No			1	1
Yes			1.76(1.24,2.50)*	1.06(0.74,1.51)*

Characteristics	Empty model (Model 0)	Individual characteristics (Model 1)	Community characteristics (Model 7)	Full model
Neighbourhood poverty				
No			1	1
Yes			1.13(0.83,1.54)*	1.27(0.84,1.93)
Community literacy level				
Low			1	1
High			1.58(1.12,2.22)*	1.07(0.71,1.60)
Place of residence				
Urban			1	1
Rural			0.80(0.56,1.15)	1.07(0.71,1.60)
Region of residence				
Western Cape			1	1
Eastern Cape			1.35(0.62,2.95)*	2.88(1.18,7.02)*
Northern cape			1.15(0.50,2.56)	1.60(0.65,3.95)
Free State			0.85(0.38,1.89)	1.76(0.71,4.37)
Kwazulu-Natal			0.75(0.35,1.62)	0.96(0.39,2.33)

Characteristics	Empty model (Model 0)	Individual characteristics (Model 1)	Community characteristics (Model 7)	Full model
Northern west			0.96(0.42,2.20)	1.54(0.60,3.98)
Gauteng			1.09(0.47,2.56)	1.74(0.66,4.57)
Mpumalanga			0.99(0.45,2.21)	1.47(0.59,3.63)
Limpopo			0.80(0.36,1.78)	0.98(0.40,2.41)
Ethnic diversity				
Homogenous			1	1
Heterogeneous			0.34(0.20,0.59)*	0.35(0.20,0.59)*

Source: SADHS 2016

5.5.1 The independent effects of the social disorganisation-related factors and individual-level characteristics on the risk of MSPs among male adolescents

Table 5.8 presents the findings of the multilevel logistics regression analysis of the risk of participating in MSPs by each social disorganisation-related factor among male youths in South Africa. In the second model, the independent investigation of the association between social disorganisation factors (disrupted family) while adjusting individual-level characteristics among male adolescents aged 20–24 years indicated that the risk of engaging in MSPs significantly increased by 85% compared to those between the ages of 15–19 years. Similarly, male adolescents who had moved residentially between the ages of 20–24 years within a disrupted family were five times more likely to engage in MSPs. Concerning education, male adolescents with higher educational attainments were nine times more likely to engage in MSPs compared to those with

secondary educational attainment, who were two times more likely to have MSPs in a disrupted family. Similar results were also observed in model 3 regarding educational attainments with those who had moved residentially. Meanwhile, other characteristics in the models indicated that employment status was associated with MSPs among male adolescents. Conversely, there was no association with regard to ethnic affiliation in both models (models 2 & 3). For instance, household size showed no association in model 2, while coming from a household size with seven members and above had a 1.05 likelihood of participating in MSPs as revealed in model 3 among male adolescents. From the two models (models 2 & 3), male adolescents with a relationship to the head of the household had no associations with the risk of engaging in MSPs.

In addition, results in the fourth model presented the independent effects of neighbourhood poverty with respect to male adolescents engaging in MSPs. The model shows that age was significantly associated with MSPs. For instance, male adolescents aged 20–24 years living in high-poverty neighbourhoods were 5.84 times more likely to engage in MSPs compared to those aged 15–19 years. The model further revealed that male adolescents with higher educational attainment were nine times more likely to engage in MSPs compared to those that had secondary educational attainments who were 2.76 times more likely to engage in MSPs. In addition, male adolescents with an employment status engaged in multiple sexual partnerships (89%). Meanwhile, ethnicity and household size in high-poverty neighbourhoods had no association with having multiple sexual partners among male adolescents as all the categories showed lower odds. Similarly, in model 4, young males who were immediate and distant relatives and those not related to the head of the household decreased the odds of having multiple sexual partners by 38%, 45% and 43% respectively in high-poverty neighbourhoods.

With regard to the community literacy level presented in model 5, Table 5.8 reveals a strong statistical relationship with the risk of engaging in MSPs among male youths aged 20–24 years residing in highly literate communities. Similarly, it was observed that in highly literate communities, males with higher education attainments increased the chances of engaging in MSPs by seven times compared to those with secondary education attainments who were two times more likely to have MSPs. In addition, having employment in literate communities increased the odds of MSPs among male adolescents by 1.91 times compared to those without any employment. In a

highly literate community, ethnic affiliation and living in households of five to six members had a lower likelihood of multiple sexual partnerships among male adolescents compared to those living in a household with seven members and above with increased odds of participating in MSP by 10%. More so, male adolescents who were immediate relatives, distant relatives and not related to the head of the household were not associated with the risks of having multiple sexual partners in a highly literate community with a decreased likelihood of participating in MSPs by 0.37, 0.44 and 0.43 times respectively.

Model 6 examined the independent effects of living environments concerning having MSPs among male youths. Findings presented in Table 4.8 show that based on the living environments, male youths aged 20–24 years were six times more likely to engage in MSPs compared to those aged 15–19 years. Similarly, male adolescents with higher educational attainments were 10 (10.98) times more likely, compared to those with secondary educational attainments have a 2.97 chance of participating in MSPs. Having employment among males in any living environment (place and province of residence) increased the risk of multiple sexual partnerships by 2.11 times. Concerning ethnic affiliation, compared to Blacks, males from the White, Coloured and Indian/Asian ethnic groups showed 0.31, 0.28 and 0.14 less likelihood of participating in MSPs. With regard to the number of people in a household based on their living environments, it was observed that young males living in a household with seven members and above had increased odds of 1.06 of having MSPs compared to those living in a household with five to six members with 0.94 lower odds of MSPs. In addition, young males who were immediate relatives and distant relatives and not related to the head of the household had a lower chance of participating in MSPs. Compared to male youths living in urban areas, exposure to the risk of having multiple sexual partners increased by 1.07 times among male adolescents residing in rural areas. In considering the province of residence, Table 5.8 reveals that male youths residing in the Eastern Cape were three times more likely of having multiple sexual partners compared to those residing in the Northern Cape, Free State, North West, Gauteng and Mpumalanga. Meanwhile, young males living in KwaZulu-Natal and Limpopo had lower odds of 0.96 and 0.99 times respectively of engaging in multiple sexual partnerships.

Table 5.2: Multilevel logistic regression odds ratio effects of social disorganisation-related factors and individual characteristics on the risk of MSPs among male youths

Characteristics	**Individual and Community Family disruption (Model 2)**	**Individual and Residential Mobility (Model 3)**	**Individual and Neighbourhood Poverty (Model 4)**	**Individual and community literacy level (Model 5)**	**Individual and living environment (Model 6)**
Age					
15-19	1	1	1	1	1
20-24	5.85(4.13,8.26)*	5.80(4.10,8.20)*	5.84(4.13,8.25)*	5.90(4.18,8.35)*	6.00(4.23,8.48)*
Education					
Primary or less education	1	1	1	1	1
Secondary	2.73(1.80,4.12)*	2.73(1.80,4.13)*	2.76(1.81,4.19)*	2.40(1.55,3.74)*	2.97(1.95,4.54)*
Higher	9.23(2.49,34.26)	9.33(2.50,34.73)	9.50(2.54,35.53)*	7.83(2.08,29.49)	10.984(2.90,41.47)*
Employment status					
No	1	1	1	1	1
Yes	1.90(1.16,3.12)*	1.88(1.15,3.08)*	1.89(1.15,3.10)*	1.91(1.17,3.13)*	2.11(1.28,3.47)*
Ethnicity					

Characteristics	Individual and Community Family disruption (Model 2)	Individual and Residential Mobility (Model 3)	Individual and Neighbourhood Poverty (Model 4)	Individual and community literacy level (Model 5)	Individual and living environment (Model 6)
Black	1	1	1	1	1
White	0.29(0.09,0.94)**	0.28(0.09,0.90)*	0.30(0.09,0.98)*	0.28(0.09,0.91)*	0.31(0.98,1.01)*
Coloured	0.28(0.15,0.50)*	0.28(0.15,0.51)*	0.28(0.15,0.52)**	0.28(0.16,0.52)*	0.28(0.14,0.58)*
Indian/ Asian	0.09(0.02,0.57)**	0.10(0.02,0.60)*	0.10(0.02,0.59)*	0.09(0.02,0.55)*	0.15(0.02,0.84)*
Household number					
1 - 4	1	1	1	1	1
5 – 6	0.91(0.63,1.30)	0.92(0.64,1.32)	0.92(0.64,1.31)	0.92(0.64,1.31)	0.94(0.66,1.35)
7+	0.99(0.70,1.41)	1.01(0.71,1.44)	0.99(0.70,1.41)	1.10(0.71,1.43)	1.06(0.75,1.51)
Relationship to HHH					
Head	1	1	1	1	1
Immediate relatives	0.38(0.19,0.75)*	0.40(0.20,0.78)**	0.38(0.20,0.73)*	0.37(0.19,0.70)*	0.38(0.20,0.72)**
Distant relatives	0.45(0.22,0.94)*	0.46(0.22,0.93)*	0.45(0.22,0.92)*	0.44(0.021,0.88)*	0.45(0.22,0.92)*
Not related	0.44(0.16,1.21)	0.43(0.15,1.17)	0.45(0.16,1.22)	0.43(0.16,1.17)	0.45(0.16,1.22)
Sex of household head					

Characteristics	Individual and Community Family disruption (Model 2)	Individual and Residential Mobility (Model 3)	Individual and Neighbourhood Poverty (Model 4)	Individual and community literacy level (Model 5)	Individual and living environment (Model 6)
Male	1				
Female	0.99(0.72,1.34)				
Residential mobility					
No		1			
Yes		1.30(0.88,1.94)			
Neighbourhood poverty					
No			1		
Yes			1.06(0.78,1.45)		
Community literacy level					
Low				1	
High				1.38(0.91,2.09)	
Place of residence					
Urban					1
Rural					1.07(0.74,1.55)
Region of residence					
Western Cape					1
Eastern Cape					3.08(1.26,7.33)*

Characteristics	Individual and Community Family disruption (Model 2)	Individual and Residential Mobility (Model 3)	Individual and Neighbourhood Poverty (Model 4)	Individual and community literacy level (Model 5)	Individual and living environment (Model 6)
Northern cape					1.64(0.67,3.99)
Free State					1.76(0.71,4.33)
KwaZulu-Natal					0.96(0.40,2.30)
Northwest					1.58(0.62,4.04)
Gauteng					1.77(0.68,4.63)
Mpumalanga					1.47(0.60,3.62)
Limpopo					0.99(0.40,2.44)

Source: SADHS 2016

5.5.2 Decomposition of community-level variance of MSPs among male adolescents

The outcome of the decomposition of community-level variance risk of being involved in multiple sexual partnerships among male participants in South Africa is presented in Table 5.9. Results indicated that test statistics ($\tau = 0.7444142$, $p<0.001$) were significant. As a result, it demonstrated a strong effect that, for within variance is non-zero. Furthermore, in the null model (model 1), 2.8% of individual risks of participating in MSPs could be attributed to community influence. More so, models 2 to model 6 were separate examinations of the relationship between each of the social disorganisation factors with multiple sexual partnerships among male adolescents. The measure of variations was found to remain significant across communities, with ICC associated with the risks of exposure to multiple sexual partners among the males estimated at 12.5% (model 2), 12.8% (model 3), 12.4% (model 4), 12.2% (model 5) and 10.1% (model 6). The results further revealed that the male youths living in the community exhibited a similar amount of exposure to

the risk of having multiple sexual partners since the ICC value was high, that is, equal to 1, indicating that neighbourhood characteristics were contributing to the individual health outcomes. Therefore, the PCV of the risk of having MSPs ranged from 13.0% (family disruption) to 11.0% (residential mobility) and 13.7% (neighbourhood poverty). Also, results from the community literacy level and living environments indicated that PCV of multiple sexual partners was 14.9% and 29.6%, which could be explained by the characteristics at the community level. Thus, there was a compositional effect with exposure to multiple sexual partners among male youths as presented in Table 5.7 and Table 5.8.

Table 5.3 Decomposition of community-level variance of MSPs among male adolescents

Random effects	**Model 0**	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Full model**
Community variance (SE)	0.74*	0.69*	0.69*	0.70*	0.68*	0.68*	0.61*	0.62*	0.61*
VPC=ICC (%)	0.14	0.13	0.13	0.13	0.12	0.12	0.10	0.10	0.10
Explained variation PCV (%)	Reference	12.9	13.0	11.0	13.7	15.0	29.6	27.4	28.9
Log Likelihood	-835.9861	-682.3503	-682.347	-681.4396	-682.2772	-681.2045	-670.2491	-670.2491	-669.3179
Model fit statistics									
AIC	1675.972	1392.701	1394.694	1392.879	1394.554	1392.409	-670.2491	1647.099	1392.636
BIC	1686.263	1464.733	1471.872	1470.057	1471.732	1469.587	1504.838	1729.423	1531.556
N	1,268	1,268	1,268	1,268	1,268	1,268	1,268	1,268	1,268

Source: SADHS 2016

5.6 Multilevel analysis of independent influences of individual and neighbourhood variables contributing to inconsistent condom use among male adolescents in South Africa

Table 5.10 presents the multilevel result of the influence of individual and community-level characteristics of inconsistent condom use among male adolescents in South Africa. In model 1, the influence of individual-level factors on inconsistent condom use among male adolescents was examined. The results showed that the effects were significant at age. For instance, male adolescents aged 20–24 decreased the odds of inconsistent condom use by 70% compared to ages 15–19 years. The model further revealed that attainment of secondary and higher education increased the likelihood of inconsistent condom use by 3.93 times and 2.84 times among male adolescents. The model also indicated that male adolescents who were employed and were immediate relatives to the head of the household increased their inconsistent condom use by 1.73 times and 1.27 times respectively. Similarly, ethnic affiliation indicated that males from the White, Coloured and Indian/Asian ethnic groups had lower odds of 0.27, 0.84 and 0.54 times of engaging in inconsistent condom use. In addition, young males with distant relationships and those not related to the head of the household had lower odds of 0.89 times and 0.37 times for inconsistent condom use. Meanwhile, young males living in a household with five to six members and seven members and above had increased odds of 1.57 and 1.53 likelihood of inconsistent condom use.

The influence of community-level factors on inconsistent condom use among male adolescents was presented in model 7. The results showed that male adolescents living in a female-headed household (family disruption) were 1.20 times more likely to engage in inconsistent condom use compared to those living in male-headed households. Furthermore, the community literacy level was 1.67 odds likelihood of inconsistent condom use among young males. Concerning residential mobility, males who had moved residentially had a decreased odds of 0.94 times for inconsistent condom use. Similarly, neighbourhood poverty, ethnic diversity and residing in rural areas were less likely to lead to inconsistent condom use. Concerning the province of residence, the multilevel analysis (model 7) showed a different result as males residing in the Northwest were two times more likely to have inconsistent condom use compared to those residing in the other provinces

with an increased likelihood of inconsistent condom use. Only male adolescents residing in the Eastern Cape had 0.62 lower odds of the likelihood of inconsistent condom use.

The combined influence of individual and community-level factors on inconsistent condom use was examined in the full model. Although age was statistically significant, male adolescents aged 20–24 years were less likely to have inconsistent condom use compared to those aged 15–19 years. Educational attainment increased the odds of inconsistent condom use by 13% and 19% among male adolescents with secondary and higher educational attainments respectively. Similarly, young males with a paid job had a 1.56 odds likelihood of inconsistent condom use compared to those without any employment. With regard to ethnic affiliation, male youths from the White, Coloured and Indian/Asian ethnic groups had a lower odds likelihood of inconsistent condom use compared to the Black ethnic group. Meanwhile, male youths residing in a household with five to six members and seven members and above increased the chances of using condoms inconsistently by 57% and 54% times.

The model further revealed that the chances of using condoms inconsistently by 1.00 and 1.13 among males with distant and immediate relatives to the head of the household decreased among those not related to the head of the household by 0.72. A careful observation of community factors showed that males from a disrupted family and those who had moved residentially (residential mobility) and community literacy levels were associated with inconsistent condom use among male adolescents. With high-level neighbourhood poverty, living in rural areas and ethnic diversity showed lower odds of the likelihood of inconsistent condom use by 81%, 90% and 70% among male adolescents. The model also showed that male youths residing in the Northwest were three times more likely to engage in inconsistent condom use compared to other provinces with increased likelihood. Only male youths residing in Eastern Cape were 68% less likely to use condoms inconsistently.

Table 5.1: Multilevel logistic regression odds ratios of the effects of individual and neighbourhood factors on inconsistent condom use among male adolescents

Characteristics	**Empty model (Model 0)**	**Individual characteristics (Model 1)**	**Neighbourhood characteristics (Model 7)**	**Full model**
Age				
15-19		1		1
20-24		0.70(0.47,1.06)		0.67(0.45,1.00)
Education				
Primary or less education		1		1
Secondary		3.93(2.18,7.09)		3.13(1.68,5.85)
Higher		2.84(1.16,6.96)		2.19(0.84,5.73)
Employment status				
No		1		1
Yes		1.73(1.06,2.82)		1.56(0.96,2.53)
Ethnicity				
Black		1		1
White		0.29(0.06,1.58)		0.29(0.06,1.49)
Coloured		0.86(0.37,2.03)		0.93(0.36,2.43)

Characteristics	Empty model (Model 0)	Individual characteristics (Model 1)	Neighbourhood characteristics (Model 7)	Full model
Indian/Asian		0.54(0.04,7.24)		0.52(0.04,6.56)
Household number				
1 - 4		1		1
5 – 6		1.57(0.94,2.62)		1.57(0.95,2.59)
7+		1.53(0.95,2.47)		1.54(0.97,2.44)
Relationship to HHH				
Head		1		1
Immediate relatives		1.27(0.72,2.22)		1.13(0.69,2.37)
Distant relatives		0.99(0.52,1.87)		1.00(0.52,1.96)
Not related		0.37(0.14,0.98)		0.35(0.13,0.91)
Sex of household head				
Male			1	1
Female			1.20(0.83,1.72)	1.01(0.67,1.53)
Residential mobility				
No			1	1

Characteristics	Empty model (Model 0)	Individual characteristics (Model 1)	Neighbourhood characteristics (Model 7)	Full model
Yes			0.94(0.61,1.44)	1.19(0.76,1.89)
Neighbourhood poverty				
No			1	1
Yes			0.72(0.47,1.10)	0.81(0.52,1.26)
Community literacy level				
Low			1	1
High			1.67(1.04,2.67)	1.20(0.70,2.05)
Place of residence				
Urban			1	1
Rural			0.89(0.56,1.43)	0.90(0.56,1.45)
Region of residence				
Western Cape			1	1
Eastern Cape			0.62(0.22,1.69)	0.68(0.24,1.91)
Northern cape			1.23(0.39,3.82)	1.32(0.41,4.26)
Free State			1.07(0.37,3.14)	1.37(0.46,4.09)

Characteristics	Empty model (Model 0)	Individual characteristics (Model 1)	Neighbourhood characteristics (Model 7)	Full model
KwaZulu-Natal			1.12(0.40,315)	1.22(0.42,3.55)
Northwest			2.73(0.82,9.04)	3.29(0.96,11.29)
Gauteng			1.08(0.36,3.25)	1.39(0.44,4.19)
Mpumalanga			1.55(0.52,4.59)	1.58(0.52,4.79)
Limpopo			1.44(0.49,4.26)	1.48(0.49,4.45)
Ethnic diversity				
Homogenous			1	1
Heterogeneous			0.69(0.32,1.54)	0.70(0.32,1.54)

Source: SADHS 2016

5.6.1 Independent effects of social disorganisation-related factors and individual characteristics on the risk of inconsistent condom use among male adolescents

Table 5.11 reported the findings of a multilevel logistic regression analysis of the independent investigation of association in low condom use among male participants in South Africa for each of the social disorganisation-related variables. Model 2 which investigated the independent association of male youth living in a female-headed household (disrupted family) while adjusting the individual level factors indicated that male youths aged 20–24 years had a 0.70 lower likelihood of inconsistent condom use compared to those aged 15–19 years. A similar result was also observed in model 3, as young males who had moved residentially between the ages of 20–24

years living in a disrupted family had fewer chances of inconsistent condom use. With education, males with higher educational attainments were three times more likely to engage in inconsistent condom use compared to those with secondary educational attainments that were two times more likely to use condoms inconsistently. In addition, in model 3, a similar trend was observed with educational attainments as male adolescents who had moved residentially significantly reduced the odds of having inconsistent condom use among male youths by 3.96 and 2.86 times respectively. Meanwhile, other characteristics in the models indicated that employment status had an association with inconsistent condom use among young males. However, there was no association with regard to ethnic affiliation in both models (models 2 & 3). Similarly, not being related to the head of the household had a 0.37 odds less likelihood of inconsistent condom use among male youths, while being immediate relatives and distant relatives to the head of the household in both models (models 2 & 3) increased the odds of inconsistent condom use among male youths by less than 35%. Furthermore, male adolescents living in a family size of five to six and seven members and above increased the odds of inconsistent condom use by 1.56 and 1.59 times in the two models.

In addition, results in model 4 presented the independent effects of neighbourhood poverty with regard to young males' inconsistent use of condoms. Model 4 further showed that age was significantly associated with inconsistent condom use among male adolescents, although young males aged 20–24 years living in high-poverty neighbourhoods were 72% less likely to use condoms inconsistently. Furthermore, with educational attainments, males with secondary and higher educational attainments increased the odds of inconsistent condom use by 3.48 times and 2.23 times among male adolescents residing in neighbourhoods with a poverty effect. In addition, being employed enhanced the odds of inconsistent condom use by 89% among males. Ethnicity, being a distant relative and not being related to the head of the household in high-poverty neighbourhoods had no association with inconsistent condom use among male youths. In addition, young males from a family size of five to six and seven members and above increased the odds of inconsistent condom use by 1.54 and 1.51 among male adolescents. Similarly, in model 4, regarding relationship to the head of the household, young males who were immediate relatives to the head of the household were 1.20 times the odds of inconsistent condom use compared to those

not related and distant relatives to the head of the household with less likelihood of inconsistent condom use.

Furthermore, the influence of community literacy level on male adolescents' engagement in inconsistent condom use was presented in model 5. The model revealed that male youths aged 20–24 years residing in a community with high literacy levels were less exposed to inconsistent condom use by 71%. Meanwhile, in a literate community, males with secondary educational attainments had 3.54 times more likelihood of inconsistent condom use compared to those with higher educational attainments with increased odds of 2.47 more likely to engage in inconsistent condom use. Similarly, male adolescents with employment increased the odds of inconsistent condom use by 74% compared to those without any employment in a highly literate community. With ethnic affiliation, male youths belonging to the White, Coloured and Indian/Asian ethnic groups had lower odds of inconsistent condom use in highly literate communities compared to those from low literate communities. More so, regarding the relationship to the head of the household, males who were distant relatives to the head of the household had 97% fewer odds of inconsistent condom use; those who are not related to the head of the household had 0.34 lower odds compared to those who were immediate relatives with increased odds of 1.24 for inconsistent condom use. In addition, young males from a family size of five to six and seven members and above increased the likelihood of inconsistent condom use by 1.58 and 1.53 times. Generally, male adolescents increased the odds of inconsistent condom use by 1.27 times in communities with high literacy levels.

Furthermore, model 6 presented results of the independent effects of living environments with inconsistent condom use among male adolescents in South Africa. The model revealed that young males aged 20–24 years were less likely to engage in inconsistent condom use by 0.66 based on their current living environment (place or province of residence). Again, male adolescents with secondary educational attainments were 3.52 times more likely to use condoms inconsistently compared to those with higher educational attainments with a 2.47 times likelihood of inconsistent condom use. In addition, having a paid job increased the odds of inconsistent condom use by 54% compared to those without any employment among male youths. By ethnic affiliation, young males from the White, Coloured and Indian/Asian ethnic groups had lower odds of inconsistent condom

use, either with respect to the province where they lived or as a result of residing in a rural area. In addition, male youths living in a household of five to six members and seven members and above had increased odds of inconsistent condom use by 1.58 and 1.55 times respectively. In addition, males who were distant relatives and immediate relatives to the head of the household were 1.29 times and 1.03 times more likely to have inconsistent condom use compared to those not related to the head of the household with a less likelihood of inconsistent condom use. There was an association between inconsistent condom use and province of residence during the period the survey was conducted. For instance, male youths living in the Northwest were three times more likely to engage in inconsistent condom use compared to those living in the Northern Cape, Free State, KwaZulu-Natal and Gauteng which indicated increased odds of inconsistent condom use by 38%, 37%, 19% and 40% respectively. Meanwhile, only male youths residing in the Eastern Cape were less likely to engage in inconsistent condom use.

Table 5.2: Multilevel logistic regression odds ratio effects of social disorganisation-related factors and individual characteristics on the risk of inconsistent condom use among male adolescents

Characteristics	**Individual and Community Family disruption (model 2)**	**Individual and Residential Mobility (model 3)**	**Individual and Neighbourhood Poverty (model 4)**	**Individual and community literacy level (model 5)**	**Individual and living environment (model 6)**
Age					
15-19	1	1	1	1	1
20-24	0.70(0.47,1.06)	0.69(0.46,1.05)	0.72(0.48,1.08)	0.71(0.47,1.07)	0.66(0.44,0.99)
Education					
Primary or less education	1	1	1	1	1
Secondary	3.39(2.18,7.08)*	3.96(2.19,7.13)*	3.48(1.94,6.27)*	3.54(1.87,6.67)*	3.52(1.97,6.28)*
Higher	2.83(1.15,6.92)*	2.86(1.17,6.98)*	2.23(0.90,5.55)*	2.47(0.95,6.39)*	2.64(1.08,6.43)*

Characteristics	Individual and Community Family disruption (model 2)	Individual and Residential Mobility (model 3)	Individual and Neighbourhood Poverty (model 4)	Individual and community literacy level (model 5)	Individual and living environment (model 6)
Employment status					
No	1	1	1	1	1
Yes	1.73(1.06,2.82)*	1.71(1.05,2.80)*	1.76(1.08,2.86)*	1.74(1.07,2.85)*	1.54(0.95,2.49)*
Ethnicity					
Black	1	1	1	1	1
White	0.29(0.05,1.56)	0.29(0.05,1.55)	0.25(0.05,1.29)	0.29(0.05,1.55)	0.33(0.06,1.66)
Coloured	0.85(0.36,2.01)	0.88(0.37,2.06)	0.71(0.30,1.69)	0.86(0.36,2.03)	0.96(0.38,2.47)
Indian/Asian	0.52(0.04,7.09)	0.57(0.04,7.64)	0.44(0.03,5.69)	0.52(0.04,7.02)	0.55(0.04,6.87)
Household number					
1 - 4	1	1	1	1	1
5 – 6	1.56(0.94,2.60)	1.59(0.95,2.64)	1.54(0.93,2.54)	1.58(0.95,2.64)	1.58(0.96,2.60)
7+	1.53(0.95,2.47)	1.55(0.96,2.50)	1.51(0.95,2.42)	1.53(0.95,2.46)	1.55(0.98,2.46)
Relationship to HHH					
Head	1	1	1	1	1
Immediate relatives	1.32(0.71,2.46)	1.34(0.75,2.37)	1.20(0.69,2.09)	1.24(0.70,2.17)	1.29(0.75,2.23)
Distant relatives	1.03(0.52,2.02)	1.00(0.53,1.90)	0.95(0.50,1.78)	0.97(0.51,1.83)	1.03(0.55,1.92)
Not related	0.37(0.14,1.00)	0.35(0.13,0.95)	0.36(0.13,0.95)*	0.36(0.13,0.96)	0.37(0.14,0.96)
Sex of household head					

Characteristics	Individual and Community Family disruption (model 2)	Individual and Residential Mobility (model 3)	Individual and Neighbourhood Poverty (model 4)	Individual and community literacy level (model 5)	Individual and living environment (model 6)
Male	1				
Female	0.94(0.61,1.43)				
Residential mobility					
No		1			
Yes		1.20(0.76,1.90)			
Neighbourhood poverty					
No			1		
Yes			0.66(0.45,0.98)**		
Community literacy level					
Low				1	
High				1.27(0.74,2.19)	
Place of residence					
Urban					1
Rural					0.80(0.52,1.25)
Region of residence					
Western Cape					1
Eastern Cape					0.68(0.24,1.89)
Northern cape					1.38(0.43,4.40)

Characteristics	Individual and Community Family disruption (model 2)	Individual and Residential Mobility (model 3)	Individual and Neighbourhood Poverty (model 4)	Individual and community literacy level (model 5)	Individual and living environment (model 6)
Free State					1.37(0.46,4.05)
KwaZulu-Natal					1.19(0.41,3.46)
Northwest					3.61(1.06,12.29)*
Gauteng					1.40(0.46,4.33)
Mpumalanga					1.59(0.52,4.82)
Limpopo					1.46(0.48,4.39)

Source: SADHS (2016)

5.6.2 Decomposition of community-level variance of inconsistent condom use among male adolescents in South Africa

The results of the decomposition of community variance of inconsistent condom use among male adolescents are presented in Table 5.12. The results revealed that the measure of variations, the test statistic was $\tau = 0.725987$, $p<0.001$, was significant with a non-zero between neighbourhood variances. In addition, it was observed that in the null model (model 1), 9.6% of the variance in the individual exposure to the risk of inconsistent condom use among male adolescents could be attributed to neighbourhood-level effects. Again, model 2 to model 6 was separate examination of the relationships between each component of social disorganisation factors with exposure to the risk of inconsistent condom use among male adolescents. The measure of variations was found to remain significant across communities, with ICC associated with the risks of inconsistent condom use among male youth estimated at 9.5% (model 2), 9.4% (model 3), 6.8% (model 4), 9.5% (model 5) and 2.1% (Model 6). The result further revealed that all the male youths living in the neighbourhood had a similar amount of risk of exposure to inconsistent condom use. This was because the value of the ICC was quite high that is, equal to 1, indicating that neighbourhoods

contributed to the health outcome of male adolescents. Furthermore, the PCV of risk of inconsistent condom use ranged from 33.9% (disrupted family) to 34.6% (residential mobility), and a PCV of 34.6% in high-poverty neighbourhoods among male adolescents. Also, results from the community literacy level and living environments indicated that PCV of inconsistent condom use was 33.8% and 85.4% respectively, which could be explained by the characteristics at the community level. Therefore, a compositional effect in exposure to the risk of inconsistent condom use was generally observed among male adolescents in South Africa.

Table 5.3: Decomposition of community-level variance of inconsistent condom uses among male adolescents

Random effects	**Model 0**	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Full model**
Community variance (SE)	0.73*	0.59*	0.59*	0.59*	0.49*	0.59*	0.27*	0.32*	0.19*
VPC=ICC (%)	0.14	0.10	0.10	0.09	0.07	0.10	0.02	0.03	0.01
Explained variation PCV (%)	Reference	32.8	33.9	34.6	52.4	33.8	85.4	79.4	92.8
Log Likelihood	-422.6972	-401.7886	-401.7423	-401.4761	-399.7409	-401.4247	-401.7886	-406.8931	-390.0051
Model fit statistics									
AIC	849.3945	831.5773	833.4846	832.9521	829.4818	832.8493	827.7609	845.7862	834.0103
BIC	858.7207	896.8611	903.4316	902.8991	899.4288	902.7963	935.013	920.3964	959.9149
N	783	783	783	783	783	783	783	783	783

Source: SADHS 2016

CHAPTER SIX: HYPOTHESIS TESTING

6.1 Introduction

This chapter presents the results of the test of hypotheses for this study. Five hypotheses were tested to investigate the association between social disorganisation-related factors, socioeconomic characteristics, and RSB among youths in South Africa. These hypotheses were neighbourhood poverty, and female-headed households (family disruption, residential mobility, and its association with youth RSB). Others were ethnic diversity and youth not in any employment. The chi-square test and multilevel binary logistic regression were employed to test the hypotheses.

6.2 Hypothesis one

6.2.1 Null and alternative hypothesis

H_0: Community poverty is not associated with RSB among youths.

H_1: High-level community poverty is associated with youth's RSB

Significance level $\alpha=0.05$.

6.2.2 Results

The first hypothesis examined the relationship between neighbourhood poverty and youth RSB in South Africa. The hypothesis rested on the premise of the neighbourhood theory of social disorganisation which states that the health behaviour of an individual could be affected by structural features in a certain environment that diminishes community attachments, social norms and social ties by weakening community social control of positive sexual behaviour. In this study, a socially disorganised society is characterised by a high percentage of unemployment among those aged 25 years and older, a high percentage of adults without secondary school completion, low-income earners and poor housing conditions with little or no social services (Sampson, 2017). A community with such attributes may create a sense of hopelessness and a state of inertia, thereby

leading to sex without any protection and MSPs among the youths (Floyd & Brown, 2013). Therefore, this study hypothesised that high-level neighbourhood poverty is positively associated with youth involvement in RSBs. To test this hypothesis, high-level neighbourhood poverty and the outcome variables were cross-tabulated. The hypothesis was further tested through the fitting of multilevel binary logistic regression analysis as presented in Table 6.1. This was done by controlling the individual level characteristics such as age, education, working status, ethnicity, household size and the relationship to the head of the household. The significance of the association was tested by examining the p-value corresponding to the estimated ratio of the parameter's coefficient, with the p-value set at a 95% significance level (α=0.05).

Table 6.1: An association between high-level neighbourhood poverty and RSB among youth in South Africa

Multiple sexual partnerships **Female (Model 4)**			**Multiple sexual partnerships** **Male (model 4)**			**Inconsistent condom use** **Male (model 4)**			**Inconsistent condom use** **Female (model 4)**		
Odd Ratio	95% CI		Odd ratio	95% CI		Odd ratio	95% CI		Odd ratio	95% CI	
1.28*	1.05	1.55	1.06*	0.78	1.45	0.60*	0.48	0.77	0.66*	0.45	0.98

*=p<0.05

Source: SADHS (2016)

The results of model 4 in the multilevel binary logistic regression showed that the risk of engaging in RSBs is significantly associated with high-level neighbourhood poverty. For instance, the results revealed that male and female youths residing in high-level neighbourhood poverty enhanced the chances of MSPs by 28% and 6% respectively. Although there were decreased odds of exposure to inconsistent condom use by 0.60 and 0.66 times among female and male adolescents in high-level neighbourhood poverty, it was significant. **Decision:** The results of this hypothesis

imply that youths living in high-level neighbourhood poverty engage in RSBs in South Africa since there is enough evidence to accept the hypothesis.

6.3 Hypothesis two

6.3.1 Null and alternative hypothesis

H_0: Residing in a community with a high proportion of female-headed households will not increase youth engagement in RSBs.

H_1: Residing in a community with a high proportion of female-headed households will likely increase youth engagement in RSBs.

Significance level $\alpha=0.05$.

6.3.2 Results

Hypothesis two examined the relationship between family disruption and youth engagement in RSBs. The hypothesis states that residing in a community with a high proportion of female-headed (family disruption) households will increase youth RSBs. The purpose of this hypothesis was to understand how family disruption (female-headed household) in a community exposed young people to engage in RSBs. To achieve this, cross-tabulation was done using two categories of family disruption (such as living in a male-headed household and living in a home headed by a female) with the outcome variables. The hypothesis was further tested by fitting multilevel logistic regression to test the relationship between residence in a community with a high proportion of female-headed households (family structure) and RSBs as presented in Table 6.2 below.

Table 6.1: An association between family disruption and RSBs among young people in South Africa

Multiple sexual partnerships Female (Model 2)		**Multiple sexual partnerships Male (model 2)**		**Inconsistent condom use Male (model 2)**		**Inconsistent condom use Female (model 2)**	
Odd Ratio	95% CI	Odd ratio	95% CI	Odd ratio	95% CI	Odd ratio	95% CI
1.19*	0.98 1.44	0.99*	0.75 1.34	1.04*	0.81 1.33	0.94*	0.61 1.43

*=p<0.05

Source: SADHS (2016)

The results showed that the p-value obtained in the multilevel logistic regression model (model 2) was statistically significant at p<0.05, indicating that the chances of participating in RSBs (MSPs) in a community exhibiting a high proportion of female-headed households increased by 1.19 times and 0.99 times for female and male adolescents respectively. Meanwhile, the interaction between family structure and RSB (inconsistent condom use) showed that there were increased odds of inconsistent condom use by 1.04 times and 0.94 times among female and male adolescents in South Africa. **Decision:** Therefore, since there was enough evidence supporting the effects of residence in a community with a high proportion of female-headed (family disruption) households increasing youth RSBs, it calls for the acceptance of the null hypothesis.

6.4 Hypothesis three

6.4.1 Null and alternative hypothesis

H_0: Residential mobility due to migration is not associated with youth RSB.

H_1: Residential mobility due to migration is associated with youth RSB.

Significance level α=0.05.

6.4.2 Results

The hypothesis examined the relationship between residential mobility and youth participating in RSBs in South Africa. Hypothesis three states that residential mobility due to migration is associated with youth involvement in RSBs. To test this hypothesis, residential mobility was cross-tabulated with RSBs (MSPs and inconsistent condom use). This hypothesis was further tested through multilevel binary logistic regression analysis as presented in Table 6.3 below. This was done by controlling the individual level characteristics such as age, education, working status, ethnicity, household size and the relationship to the head of the household. The significance of the association was tested by examining the p-value corresponding to the estimated ratio of the parameter's coefficient and standard error and comparing this to the Wald X^2 test result of a 95% significance level.

Table 6.1: An association between residential mobility and RSB among youth in South Africa

Multiple sexual partnerships **Female (Model 3)**		**Multiple sexual partnerships** **Male (model 3)**		**Inconsistent condom use** **Male (model 3)**		**Inconsistent condom use** **Female (model 3)**	
Odd Ratio	95% CI	Odd ratio	95% CI	Odd ratio	95% CI	Odd ratio	95% CI
0.99*	0.79 1.27	1.30*	0.88 1.94	1.14*	0.85 1.53	1.20*	0.76 1.90

*=p<0.05

Source: SADHS (2016)

The results of the third model in the multilevel binary logistic regression presented in Table 6.3 above showed that the risk of engaging in RSBs was significantly associated with residential

mobility due to migration among the youth. For instance, young males were 1.30 times more likely to engage in RSBs when they moved residentially compared to females who were 0.99 times less likely to engage in MSPs. Furthermore, there was a significant association with inconsistent condom use of 1.14 and 1.20 times among males and females. **Decision:** This further calls for an acceptance of the null hypothesis which holds that there is an association between residential mobility due to migration and youth RSBs in South Africa.

6.5 Hypothesis Four

6.5.1 Null and alternative hypothesis

H_0: Youths residing in a community with a high level of ethnic diversity will not engage in RSBs.

H_1: Youths residing in a community with a high level of ethnic diversity are more likely to engage in RSBs.

Significance level $\alpha=0.05$.

6.5.2 Results

Hypothesis four tested the association between ethnic diversity and RSBs among youths in South Africa. To test the hypothesis, ethnic diversity and the outcome variables [multiple sexual partnerships and inconsistent condom use] were tabulated. The hypothesis was further tested by fitting multilevel binary logistic regression analysis in Table 6.4 below. This was done at the community level (model 7) after controlling the individual level characteristics such as age, education, working status, ethnicity, household size and the relationship to the head of the household. The significance of the association was tested by examining the p-value corresponding to the estimated ratio of the parameter's coefficient and standard error and comparing this to the Wald X^2 test result of a 95% significance level.

Table 6.1: Relationship between ethnic diversity and RSBs among youths in South Africa

Multiple sexual partnerships **Female (Model 7)**			**Multiple sexual partnerships** **Male (model 7)**			**Inconsistent condom use** **Male (model 7)**			**Inconsistent condom use** **Female (model 7)**		
Odds Ratio	95% CI		Odds ratio	95% CI		Odds ratio	95% CI		Odds ratio	95% CI	
0.47*	0.35	0.67	0.34*	0.20	0.59	0.57*	0.35	0.93	0.69*	0.32	1.54

*=p<0.05

Source: SADHS (2016)

The results of this test in the community model (model 7) in the multilevel binary logistic regression in Table 6.4 indicate no association between ethnic diversity and RSBs among youths, although significant. **Decision:** This result implies that the null hypothesis is rejected and suggests that residing in a community with a high level of ethnic diversity does not increase youth RSBs.

6.6 Hypothesis Five

6.6.1 Null and alternative hypothesis

H0: A community with a high proportion of youths not in educational institutions, employment or training will not have high youth RSBs.

H1: A community with a high proportion of youths not in educational institutions, employment or training will have high youth RSBs.

Significance level $\alpha=0.05$

6.6.2 Results

Hypothesis five examined the relationship between a community with a high proportion of youths not in any employment and RSBs among youths. To test the hypothesis, employment status and

RSBs (MSP and not using condoms consistently) were cross-tabulated. The hypothesis was further tested using multilevel binary logistic regression analysis in Table 6.5 below. This was done at the individual level (model 1) after controlling the individual level characteristics such as age, education, working status, ethnicity, household size and the relationship to the head of the household. The significance of the association was tested by examining the p-value corresponding to the estimated ratio of the parameter's coefficient and standard error and comparing this to the Wald X^2 test result of a 95% significance level.

Table 6.1: An association between employment status and RSBs among youths in South Africa

Multiple sexual partnerships **Female (Model 1)**		**Multiple sexual partnerships** **Male (model 1)**		**Inconsistent condom use** **Male (model 1)**		**Inconsistent condom use** **Female (model 1)**	
Odd Ratio	95% CI	Odd ratio	95% CI	Odd ratio	95% CI	Odd ratio	95% CI
1.63*	1.12 2.37	1.90*	1.16 3.11	0.89*	0.62 1.26	1.73*	1.06 2.82

*=p<0.05

Source: SADHS 2016

The result in the individual level characteristics (model 1) in the multilevel binary logistic regression showed that a community with a high proportion of youths not in any employment was significantly associated with high-risk behaviour. For instance, young males who were not in any employment were 1.90 times more likely to engage in MSPs, while young females not in any employment were 1.63 more likely to participate in MSPs. Furthermore, there was a significant association between youth not in any employment and condom use as male youths had 1.73 odds of inconsistent condom use compared to their female counterparts who were 0.89 times less likely

to use condoms inconsistently. **Decision:** The result of this test showed that a community with a high proportion of youths not in any employment will have high youth RSB.

CHAPTER SEVEN: DISCUSSION OF FINDINGS

7.1 Introduction

The discussion of the findings is presented in this chapter. This study examined three specific objectives. First, it described the individual and family-level correlates of RSB among never-married youths aged 15–24 in South Africa, using data from the recent South African Demographic and Health Survey 2016. Second, it identified the relationship between the community social disorganisation factors and RSB among the youths. Third, it determined the mechanisms through which social disorganisation factors influence RSB among young people in South Africa.

Generally, the primary goal of this study was to investigate the impact of individual and community social disorganisation-related characteristics on youth engagement in RSB. Two outcome variables were employed to assess RSB among young persons and their neighbourhoods. Multiple sexual partnerships, and lack of, or inconsistent condom use were two of the variables.

The chapter is divided into five sections: the discussions of the three specific objectives and the strengths and weaknesses of the study. Conclusion and recommendations are presented and finally the frontiers for future research within the context of the study.

7.2 Individual and family-level correlates of RSB among youths in South Africa

Risky sexual behaviours (RSBs) were found to operate at both micro and macro levels. The findings show that at the micro level, the impact of demographic and socioeconomic characteristics on young people's involvement in RSB was evident across gender. Although the difference was minor, young males were shown to be more exposed to RSB than females. This finding is consistent with previous findings that males are more likely than females to engage in RSB, including having a higher number of sex partners (Thomas et al., 2009; Wang et al., 2007; Ramiro et al., 2013; Liu et al., 2015). In most parts of the world, gender has been researched as a probable driver of exposure to engaging in RSB. For instance, in Egypt, studies found that gender was found to be associated with RSB among young people (Ward-Peterson et al., 2018; El-Awady et al., 2017; Seff, Steiner, & Stark, 2021). In South Africa, youth participation in high RSBs is not completely unexpected as a recent study of the adolescent population, done in KwaZulu-Natal,

shows that more than 60% of male youths were identified to have been involved in RSBs (Francis et al., 2018). This may be due to sociocultural norms existing in many South African communities that give men the leverage to be predominantly the decision-makers in sexual relationships (Reddy, Sewpaul, & Jonas, 2016). The consequence of this male dominance in a sexual relationship is not only undermining the role of women in a sexual relationship but also exposing them to the risk of HIV/AIDS. Therefore, without addressing the power inequalities in a sexual relationships, that see males as dominant over their female counterparts, efforts to protect against and prevent the spread of STIs and HIV/AIDS in South Africa among youths would be severely challenged.

In addition, the independent effect of age on RSBs indicates that young people between the ages of 20–24 years were found to engage in RSBs more than those aged 15–19 years. The researcher's findings show that becoming older was found not to be a protective factor for engaging in RSBs for both male and female youths. Several studies have documented the relationship between peoples' age and their exposure to RSBs (McPhail & Campbell, 2001; Sani et al., 2016; Ward et al., 2018). The possible explanations for our results could be attributed to the fact that older youths tend to have more confidence and better knowledge and experience about risks in a sexual relationship, which might influence their actions to engage in RSBs (Hargreaves et al., 2008). They are also more capable of withstanding any sociocultural norms and values preventing young people to engage in RSBs existing in the environment where they live.

Furthermore, study findings show that educational attainment was linked to young people's exposure to RSBs. Most of the young people interviewed in the survey had completed at least a secondary education. Surprisingly, it was found that increased education attainments were associated with RSBs for both male and female youths. Findings were supported by the previous studies which established that an increase in educational attainment could influence an individual to engage in RSBs due to new knowledge and skills acquired (Johnson et al., 2010; Odimegwu, Imo, & Amoo, 2020). The findings of these studies highlight the compensatory roles education plays in societal transformation by providing knowledge on positive/healthy sexual behaviours that can prevent an individual from acquiring infectious diseases through sexual intercourse. This is mostly achieved through the sexual and reproductive health education most young people receive through universal access to quality and reliable health education. Meanwhile, other studies

highlight the challenges of not attaining any formal education to be associated with a higher risk of unfavourable health outcomes for young people and increased exposure to RSBs (Odimegwu & Somefun, 2017; Francis et al., 2019). Hence, findings from this study are apt as they emphasise the need for the education of young people to gain knowledge and understanding to make better decisions about their sexual and reproductive health and prevention of STIs, such as HIV/AIDS.

In addition, our study found that employment was associated with adolescent involvement in RSBs. For instance, previous studies have shown that lack of employment opportunities was linked to education in that it was a structural element that impacted young people's ability to seek health behaviours in several ways which included geographical locations, financial opportunities, knowledge and attitudes towards healthcare services (Viner et al., 2012; Hom, Stanley, & Joiner, 2015; Homer et al., 2018). Our results show that being employed significantly increased the likelihood of participation in RSBs for both male and female youth. These findings are in support of recent observations that suggest employed youth tend to have MSPs because of their financial security which gives them false hope to indulge in RSBs (Odimegwu et al., 2019). Hence, money predisposes young people to engage in RSBs, especially when they feel that the situation could be handled financially (Viner et al., 2012; Hom, Stanley, & Joiner, 2015; Homer et al., 2018). Based on our results, we recommend that young people continue to be the target when designing policies for job opportunities. This will enhance their capability to resist RSBs as they transition into adulthood. This is vital in preventing HIV risk among youths, especially at the community level.

Furthermore, prior research has linked health-related issues among young people to their ethnic/racial group (Walker et al., 2020). The findings from this study show evidence of ethnic diversity in youth engagement in RSBs in South Africa, most especially among Black Africans. A possible reason is that mixing with other youths coming from other African countries with diverse and possible contradictory cultural norms and values regarding sexual behaviour might lead to RSBs (Varga, 1997; Odimegwu & Somefun, 2019). Hence, there are calls for urgent policy concerns in line with previous observations regarding young people experiencing cultural norms and values about healthy sexual behaviour as a result of social change (Wamoyi et al., 2014; Odimegwu & Somefun, 2017). This study suggests that the interaction between ethnic diversity and RSBs highlights the impact of some cultural norms and values influenced by globalisation in

shaping sexual behaviour and its consequences for RSBs. As a result, young people's behaviours may naturally reflect specific cultural or national traditions unique to various ethnic backgrounds or identities they belong to, resulting in a diversity of practices, including RSBs.

Furthermore, having a close relationship with the household's head such as a father or mother has been linked to an increased likelihood of sexual behaviour. In our study, the likelihood of being exposed to RSBs was determined by the kind of support youths got within their household. This study is significant because it underlines the importance of the household head in teaching and creating awareness about healthy sexual behaviour while also being able to make proper health decisions for the benefit of young people. Our results are in line with Carlson, McNulty, Bellair, and Watts (2014) and Ranganathan et al. (2017) who demonstrated that many of the advantages of having a healthy sex life are related to the relationship with the head of the household. These results imply that parents' or other significant adults' relationship with their children does matter in a sexual relationship. It is possible that the role of the household head's support in a sexual relationship could influence adolescents to engage in positive sexual behaviour. It is also possible that the lack of sufficient attention to young people at the community level influences their involvement in RSBs, suggesting the parental/household role in adolescent engagement in RSBs.

7.3 Effects of community social disorganisation-level factors and RSBs among young people in South Africa

The second objective of this research was to investigate the effects of community social disorganisation on youth RSB in South Africa. It examined the community-level factors that are associated with RSBs. Researchers in sexuality and reproductive health in sub-Saharan Africa, South Africa included, have mainly focused on the individual-level characteristics associated with RSBs (Robbinson & Seiber, 2008; Leddy et al., 2016). As a result, we know comparatively little about community social disorganisation-related factors of RSBs in South Africa. Knowledge gained from understanding the community characteristics influencing youth sexual behaviour is important for the design of context-specific and sustainable policies to address STIs, including HIV/AIDS among the youth.

Overall, the findings support the social disorganisation theory (model) based on explaining variations that existed across neighbourhoods where young people lived. The theory identifies neighbourhood poverty, residential mobility due to migration, family dysfunction, race/ethnic diversity and community literacy level as the main structural factors that reduce communities' ability to regulate themselves, most especially the activities of young people, which in turn lead to RSBs. For instance, individuals who reside in disadvantaged communities may experience these specific elements to the degree that may influence an individual to engage in RSBs. Previous studies have consistently found that some factors such as family dysfunction, residential mobility, neighbourhood poverty and ethnic and racial diversities in disorganised communities can influence an individual to engage in RSBs (Yaw Amoateng & Kalule-Sabiti, 2013; Kim & Glassgow, 2016). Communities' social disorganisation factors remain an important discussion on adolescent sexual behaviour, especially in South Africa. For young people's development, understanding the mechanisms through which youth participate in RSBs in disorganised communities is vital. For instance, over the years, the interest in community factors, such as family composition on individual health outcomes has gained momentum due to an increase in divorce and single-parent families. The presence of both the father and mother may reduce the possibility of adolescents engaging in RSBs, while children living in a single-parent home without adequate parental monitoring can result in several negative factors associated with sexual health outcomes, such as emotional and behavioural problems.

In addition, findings from this research showed the significance of community social disorganisation factors for RSBs among young people. It established that female youths residing in female-headed households tended to have MSPs compared to their male counterparts. This new finding has important implications for sexually transmitted prevention among young people, particularly females who may not be closely supervised by their mothers, unlike their male counterparts. This is because there is a tendency for female young people to meet with their sexual partners outside their homes, compared to males who often invite their sexual partners to the family house. Like our findings, previous studies have already documented how coming from a disrupted family affects adolescents' sexual behaviour (Gibbs, Carpenter, Crankshaw, Hannass-Hancock, Smit, Tomlinson, & Butler, 2017).

Furthermore, this study's findings indicate that having a record of residential mobility/instability increased the chances of getting involved in unsafe sex across gender. This corroborates the previous observation that residential instability came with challenges to cultural norms and values that promote RSBs among the youths (Lawoyin & Kanthula, 2010). These findings support Warner (2003), who showed that a change of residence can cause a break in cultural ties and can foster anonymity that weakens social control in a community. Consequently, a change of residence among youths could heighten their indulgence in RSBs, hence increasing their HIV acquisition risks (Letamo & Mokgatlhe, 2013; Muridi, 2016).

More so, community literacy level, the importance of those who can read and write at the community level has been emphasised for healthy behaviours. This is because if a community is highly literate, young people in that community will have behavioural control to utilize the reproductive health care services available in the community. Communities with a higher proportion of literate parents may know the importance of educating youth on SRH practices, as well as ways to keep them safe from STIs, as well as HIV/AIDS. It could also translate into more economic opportunities or social capital, which may be protective for youth. However, this study found that female adolescents living in a community with a high proportion of literate parents, tend to engage in RSB, unlike male youths that have lesser chances of engaging in RSB. Indicating that residing in a community with a high proportion of literate parents does not prevent RSB among female youths in South Africa. This finding is consistent with Ajayi and colleagues (2021) who found that residing in a community with a highly literate parent does not prevent girls from having multiple sexual partners. However, our study was in contrast with Borawski and colleagues who found that educated parents provide security for their female children to involve in RSB. This may be because their study did not apply the social disorganisation framework which might have indicated the extent youths with literate parents in a socially disorganised society engage in RSB. According to the social disorganisation framework, youths' behaviours might be influenced by community characteristics, which may also act through available resources such as schools, youth reproductive health services and VCT centres that provide information on the transmission and prevention of STIs and HIV/AIDS, to youth influence RSB. Hence, the availability and accessibility of unregulated drinking places in the community will increase RSB among the youths.

Suggesting the presence of a positive role model and a cultural norm that encourage the youths to avoid RSB.

7.4 Pathways through which social disorganisation factors influence RSBs among young people in South Africa

The third objective of this study explored pathways through which social disorganisation factors influence RSBs among youths in South Africa. Multilevel analysis was used to address this objective. To do this, models 3 to model 6 presented the investigation of the independent effects of social disorganisation factors on the risks associated with RSB among the South African youth. What is noteworthy in this study was the independent investigation of the independent association between social disorganisation-related factors and the outcome variables (multiple sexual partnerships and inconsistent condom use) to see how other variables (individual and family-level factors) influenced this relationship.

In each of the social disorganisation models, age, educational attainments, employment status and household size were the highly significant influences of RSB among youths. The results show that regardless of gender, most young people aged 20 to 24 had higher odds of having MSP of 5.85 times compared to the referent category. These numbers are high compared to a recent study done on young people in Uganda, which showed 1.29 and 5.41 times of young males and females had multiple sexual partners (Ssekamate et al., 2020). In South Africa, the high percentage of youth engagement in MSP was not completely unexpected as a recent study of the youth population using SADHS, done in KwaZulu-Natal shows that 39% of the participants could engage in sex before reaching the age of 16 years, particularly the female adolescents. This may be due to cultural norms and values existing in many communities in South Africa, preventing access to information regarding STIs, including HIV/AIDS to the youths (James et al., 2004; Osuafor and Ayiga, 2016). The consequences of these sociocultural factors of distrust and misinformation about “sex” engenders power in balance in a sexual relationship among partners. As a result, the power disparities that exist in most South African communities as well as allow men to exert dominance over women may indeed be associated with the high rate of sexual vulnerability among youths. Such practices have continued to exist for many years and jeopardize the challenge of young

people's sexual rights in South Africa. Thus, undermining the efforts by the government in curbing infectious diseases associated with RSB in South Africa.

Furthermore, the strong intra-cluster correlations observed through our study results emphasised the role of neighbourhood indicators in subjecting youths to RSB. Previous findings in South Africa on the influence of neighbourhoods on youth empowerment gave less consideration to the effect of community social disorganisation factors, most especially on their participation in RSB (Cubbin, 2006; Graham, Jordan, Hutchinson, & de Wet, 2018; Romero, Hall, Cluver, & Steinert, 2018). These studies used theories that examined individual-level characteristics in relation to adolescents' engagement in RSB. This study was able to establish various pathways (such as community poverty, residential mobility, family disruption and ethnic/racial diversity) in which social disorganisation factors affected RSBs among South African youths. As a result, the research findings have important implications for infection prevention in South Africa, especially among the youths whose activities may go unobserved due to the increasing incidence of availability of social disorganisation factors in their localities. Due to the sheer rising widespread use of social disorganisation elements, existing sexual health education in South Africa, especially at the local level, is inadequate for attitudinal change towards positive sexual behaviours among youths.

Unlike previous studies in sub-Saharan Africa (see Thurman, 2006; Fawole and Adeoye, 2015; Carolyn et al., 2017; Mumah et al., 2020), our findings indicate that adolescent sexual risk behaviours in South Africa may worsen as a result of a link between family dysfunction, neighbourhood poverty and community literacy level. Such a pattern of associations could be explained by the probability that adolescents from intact families (presence of father and mother) living in a low-poverty neighbourhood may also engage in RSBs even with the presence of both parents. Despite the high literacy level in the community (a high proportion can read and write), which should have provided better access to contraceptive information (through radio, internet, TV etc), inadequate parental control over media use could lead to younger generations being more likely to engage in RSBs. These findings are not entirely surprising given the proportion of youth congregating in the neighbourhoods who have adequate media access (internet, radio, TV) without proper control, either from their father or mother, who should provide strong positive support for protection against RSBs. The findings show that the lack of a stable relationship with their parents

could affect positive decisions in exercising safer and healthier sexual practices. Therefore, when there is a stable relationship with parents that leads to regulation of media access among children, the odds of engaging in RSBs among youths will reduce. Notwithstanding, there is indeed a high level of awareness of SRH safety and preventive actions, such as low condom use and sexual risk partnering. Because of the limited regulation over media content in such high-literate South African communities, youths still have inadequate knowledge.

The association with exposure due to inconsistent condom use based on the community social disorganisation factors was investigated. Research findings show that there were age differences in the chances of engaging in condom use across the neighbourhoods in all the models including the full model. In our study, we found that some demographic variables were significantly correlated with the risk of inconsistent condom use. Specifically, there was an increase in RSB (condom use) among youths in all the models, although the increase was higher among older adolescents. There was no significant relationship between household size and the risk of reporting condom use among the youths. Meanwhile, being employed and having a relationship with the head of the household increased the likelihood of reporting inconsistent condom use among youths in a disrupted family and when changing residences. As shown in the multilevel analysis, the variance in the individual exposure to the risk of engaging in inconsistent condom use could be linked to neighbourhood influences. The measure of variations was found to be significant across neighbourhoods indicating that youth living in the same neighbourhoods have a similar amount of exposure to the risk of inconsistent condom use based on the fact that the ICC was high with males (14%) and females (7%) in the inconsistent use of condoms respectively. After adjusting the individual level factors, residential mobility, community literacy level and the province of residence were found to be associated with inconsistent condom use among the youths. The results show that community literacy level had an association with adolescent RSB (inconsistent condom use). This is concerning as our study identified that young males and females (15–25 years old) in a community with a high literacy level were at increased likelihood to engage in inconsistent condom use. These numbers are high compared to a study conducted on young people in Nigeria that showed less than 20% of youth (15–24 years old) did not use a condom during their most recent sexual encounter (Oyediran, Feyisetan, & Akpan, 2011). In South Africa, the low condom use among young people is not completely unexpected as a recent study of the population (15+

years old), showed a prevalence of condom use rate at 0.91% of new infections (Statistics SA, 2018). This outcome could be attributed to the unique cultural and religious practices of the community, which may conflict with global strategies and missions regarding adolescent sexual behaviour (Roudsari et al., 2013; Yakubu & Salisu, 2018). Therefore, without complete and accurate information about infectious diseases at the community level, efforts to protect young people against STIs and HIV/AIDS and their spread among young people in South Africa will be severely challenged.

7.5 Summary of Discussion

The main objective of this study was to investigate the pathways through which individual and neighbourhood characteristics affect adolescents' sexual behaviour in South Africa, using a quantitative research approach. Some of the specific objectives of this study were to examine the individual and family-level correlates of RSB among youths in South Africa and to investigate the community social disorganisation factors influencing youth aged 15–24 years old to participate in RSBs in South Africa. The outcome variable for this study was lack or inconsistent condom use (unprotected sex) and MSPs. The social disorganisation-related factors examined influencing youth's participation in RSBs were neighbourhood poverty, residential mobility, family disruption, literacy level, ethnic/racial diversity, place, and province of residence. Sociodemographic factors were the covariates in this study.

Findings from the multilevel logistic regression analyses employed to examine the effects of community-level social disorganisation factors on adolescents' RSBs in South Africa show that neighbourhood poverty, family dysfunction and community literacy level were interrelated to influence adolescent engagement in RSB. The multilevel framework demonstrated highly significant neighbourhood differentials in the exposure to RSBs among the youth. Neighbourhood poverty, family disruption, residential mobility and places of residence were correlated with multiple sexual partners, while residential mobility, neighbourhood poverty, community literacy level and the province of residence correlated with inconsistent condom use. These findings suggest the need to look at effective intervention policies and programmes such as the National Youth Policy 2015–2019, the Adolescent and Youth Policy (2012), and the National Strategic Framework for HIV/AIDS, STIs and TB 2012–2016 developed to address factors associated with

youth's engagement in RSBss at the community levels. The findings were not different from the previous studies linking the impact of neighbourhood characteristics on adolescent involvement in RSB in South Africa (Cubbin, 2005; Graham et al., 2018; Steinert et al., 2016; Mkwananzi, 2017). The findings further demonstrate the extent to which individual disparities in MSPs and condom use in South Africa can be explained by differences in neighbourhood contexts. For example, in our study, the ICC value ranged from 5% to 14%, which was found to be relatively low, suggesting that to address adolescent involvement in RSBs, scholars should as a matter of necessity go beyond individual-level characteristics.

Also, at the individual/family level, the findings indicate a positive influence of household size, including relationships with the head of the household on the two outcomes of RSBs examined in this study. These results are consistent with previous studies that established a positive relationship between household/family-level characteristics and adolescents' sexual behaviour (Thurman, 2006; Fawole & Adeoye, 2015; Carolyn et al., 2017; Munah et al., 2020). The findings show that household variables were some of the possible pathways through which social disorganisation factors operate to influence young people to engage in RSBs. Therefore, programmes must be focused on identifying and addressing neighbourhood social disorganisation factors and exposing young people to RSBs in South Africa.

In addition, place of residence (rural/urban or province) was identified as a possible pathway through which young people engage in RSB. For example, findings from this study show that provinces of residence, particularly the Northwest, have a 3.29:0.96–11.29 odds likelihood of inconsistent condom use, and a 1.58:0.58-0.62 odds likelihood of MSPs among the youth. The possible explanation for these findings may be due to inequalities in social and economic development between communities in South Africa (Hallman, 2005; Madiba & Ngwenya, 2017), benefits of greater service availability afforded to urban residents (Knight, Schatz, & Mukumbang, 2018; Shung-king, Lake, Sanders, & Hendricks, 2019), variations in sexual and reproductive health education across provinces, variations in community literacy levels (Zuma et al., 2020; Govender, Naidoo, & Taylor, 2020), and variations in access to contraceptive methods. There were other causal mechanisms through which adolescents' sexual behaviour could be affected, like unavailability of community clinics, lack of schools, inadequate access to water and lack of youth

and VCT centres, which could be liable for the wide discrepancies as a result of social disorganisation factors. Therefore, future studies may also examine the association of these social services with RSBs among youths in South Africa.

7.6 Conclusions

This research revealed that more than 50% of female youths and about 61% of male youths had engaged in RSBs. Both neighbourhood and individual-level characteristics were found to be important in explaining the involvement of youths in RSBs in South Africa. Meanwhile, the neighbourhood and individual predisposing factors in youth engagement in RSBs were being educated, living in a household of more than five members and having paid jobs; others included ethnic diversity, residential instability and neighbourhood poverty, which were all found to be associated with youth engagement in RSBs in South Africa.

This present research adds to the body of knowledge that examines the implications of social disorganisation factors on the likelihood of adolescents' RSBs: inconsistent condom uses and MSPs. The findings are significant for policymakers and programme planners who are consistently collaborating with key stakeholders to promote safe sex among youths. It also lends support to social disorganisation theories, which contend that community contextual factors rather than only individual/family-level characteristics influence young people to engage in RSBs.

We used a multilevel logistic strategy incorporating community and individual-level variables for a nationally representative sample of male and female adolescents to test a hypothesis about a wide range of social disorganisation factors and their association with youth engagement in RSBs in South Africa. Our findings suggest the chances of inconsistent condom use and other RSBs such as MSPs are not just influenced by individual-level characteristics but also the extent of the surrounding social contexts. Our findings support the idea that addressing social disorganisation and prevailing factors influencing young people to engage in RSBs can motivate them to avoid RSBs with potentially deleterious consequences, such as unwanted pregnancies and STIs including HIV/AIDS.

Our study was able to confirm an association between neighbourhood social disorganisation theory and RSBs among youth in the South African context. Our results suggest that when there is

widespread evidence of social disorganisation factors (such as neighbourhood poverty, residential mobility, family disruption and race/ethnic diversity), RSBs among youths may exacerbate. Results also indicate that the absence of adult supervision and breakdown of social processes (social norms, social networks, social relations) may contribute to youth's RSBs. The findings suggest the creation of multilevel STIs, including HIV/AIDS prevention programmes that go beyond individual-level prevention efforts that can assist in addressing adolescents' RSBs in a wider social context.

7.7 Recommendations

This research's findings are dependent on some significant policy recommendations to stakeholders in the health and education sectors and planners and implementers of policies in South Africa.

First, the study found that youths in socially disorganised communities engage in RSBs more than their counterparts living in organised communities. Therefore, policies aimed towards healthcare service use, most especially for young people and their parents living in socially disorganised communities must be developed and implemented.

Second, in socially disorganised neighbourhoods, our findings demonstrated the significant contributions of mediation effects of parents' support on positive sexual behaviour. The presence of both parents in a family, for example, offers enough support to their children. This link was discovered in this study to have a direct impact on adolescent sexual behaviour. As a result, findings suggest that governments should focus on providing parents with the social and economic resources they need to properly assist and manage the behaviour of their children. In the last decades, policies on adolescent sexual health have tended to solely focus on the young population, ignoring the importance of parents' participation and support. In other words, programmes that provide educational support and employment opportunities for adolescents and their parents at the community level should be implemented with a strong penalty when violated. Furthermore, community leaders and other organisations at the community level should collaborate to urge parents to participate actively in programmes on adolescent health and well-being.

Furthermore, it is important to encourage not only neighbourhood engagement and mobilisation among parents, but also for local groups to provide enough support to youths during meetings so that they have a safe place to go while their parents are there. A policy that affects youths and their peer groups should also be implemented. However, this study was unable to demonstrate how peer networks in socially disorganised communities were associated with youth sexual behaviour, indicating that more research is needed. As a result, both in-school and after-school programmes must be developed that promote positive sexual behaviours among youth.

In addition, community organisations, ministries of education and health and schools (primary and high school) should develop programmes and workshops that will deliver clear messages on the dangers of unsafe sexual behaviour at the community level. These organised programmes, policies and workshops may reduce the likelihood that young people will participate in RSBs.

Finally, local community organisations should provide activities and programmes (especially after school) that allow students to "congregate" in a secure and supervised environment. This would limit youth's ability to associate with peers without adult supervision, potentially lowering their risk of engaging in RSBs.

7.8 Limitations and strengths of this study

There are some limitations to note in this study. First, we examined two outcomes of RSBs, MSPs and lack of or using condoms inconsistently. First, the number of sexual partners in the past 12 months does not address concurrency which is riskier than sequential partners. Also, condom use at the last sexual encounter does not speak to a pattern of behaviour which is riskier than a once-off sexual encounter without a condom. Further, condom use with multiple partners is not in the data and this is a limitation because that is a clear indicator of RSBs. Other aspects of sexual behaviour (eg, frequency of sex, early sexual debut) among the youth need to be investigated to understand the full picture of adolescent engagement in RSBs in South Africa.

A second limitation is the possibility of selectivity bias. To understand the effects of individual and neighbourhood factors on youth engagement in RSBs, this study focused only on never-married youths who had sex before the survey was selected. This may have introduced some selection effects on the study. That is, married youth and those who did not respond to the questions

were excluded from this study, suggesting further investigation on how the sexual behaviour of married youths residing in socially disorganised neighbourhoods has been affected.

Third, there is no assessment of peer sexual behaviour in this study. According to research, adolescent sexual behaviour, attitudes and perceptions are related to their peers' sexual attitudes and behaviour (Bearman & Bruckner 1999; Koletic, 2017; Warner, 2018; Coyne et al., 2019). The SADHS data, on the other hand, could not be used to determine peer sexual attitudes and behaviour. Having the opportunity to do so would have provided a better understanding of the sexual attitudes of peers within peer networks and, as a result, the effects of peer sexual behaviour among youths living in socially disorganised environments.

Despite these limitations, this study adds to the body of knowledge through the exploration of the social disorganisation framework. It offers some evidence that investigated the role of social disorganisation factors in understanding adolescent sexual behaviour. It also shows how the effects of family structure, neighbourhood poverty, residential mobility and community literacy level differ depending on neighbourhood disadvantages. This study refocuses our attention on examining the sexual health risks associated with adolescents and provides some directions for future research in this area.

7.9 Future Research

Future research should investigate the direct impacts of the role of opportunity in sexual behaviour among the youth. For instance, residing in a community where there are few role models/adult supervisors may not only offer youth the opportunity for sex but may also provide them with the resources (eg, money, time, energy etc) by which to do so.

This study suggests a need to explore the effects of extended family members on adolescent engagement in RSBs through qualitative studies.

This work should therefore be extended by looking at the mediating role of collective efficacy in the association between neighbourhood characteristics and youth participation in RSBs.

The study should also be extended by examining another social context like the role of religious affiliation.

7.10 Relevance to Demography and Population Studies

The findings of this study, which are related to RSBs, fit closely with the expertise of Demography and Population Studies. Risky sexual behaviours (RSBs) contribute to HIV transmission and fertility outcomes in adolescents and young adults. Thus, findings linked to RSBs are essential for Demography and Population Studies. Understanding the mechanisms through which community social disorganisation factors influence adolescent sexual behaviour would help to curb HIV infections. Contracting HIV/AIDS and unwanted pregnancies affect population dynamics, including life expectancy, mortality and fertility. Adolescent SRH is a burgeoning theme in Demography and Population Studies. This is also central to global health and policy, which centres on adolescent SRH strategy in line with the WHO. The core area in the discipline is to ensure that provision and support for adolescents' sexual and reproductive health is maintained even with the emergence of the Covid-19 pandemic. Sexual and reproductive health in low- and middle-income countries including adolescent health is currently challenged especially at the community levels, where most of the policies on SRH have not been adequately felt. This necessitated the need for this study which aligned with the core mandate of the discipline of Demography and Population Studies.

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APPENDICES

A01 - Literature Matrix

S/NO	Tittle, Sources, Author, Year	Theory	Objectives and hypotheses	Variables: IV, DV, Covariates	Data sources, Sampling strategy, size	Level and method of analysis	Findings	Gaps
1	Amoateng, A., Kalule-Sabiti, I., & Arkaah, Y. (2014). The Effect of Socio-Demographic Factors on Risky-Sexual Behaviours of Adolescents in the Northwest Province of South Africa. African Population Studies, 28, 487. https://doi.org/10.11564/28-1-502		To fill a research void on adolescent problem behaviours in South Africa by examining individual and contextual factors that affect sexual-risk taking behaviours amongst black African adolescents in a poor community of	Adolescent Sexually Risky Behaviour, gender, grade, having a girlfriend/boyfriend, peer influence, religiosity, perception about sex issues, alcohol and drug use, ever had sex, had sex in the past three months	The data for the study came from a survey of 1065 school-going adolescents . The sampling frames consisted of all pupils in Middle and High Schools aged between 12 and 21	Descriptive statistics using bivariate and multivariate analysis.	we find that individual and contextual factors such as gender, grade, religiosity, peer influence, parental value of children, parent-child communication, school attachment, the use of alcohol and substance like tobacco and marijuana all	Influence of parental structure as a contextual factor to risky sexual behaviour

			the North West Province of South Africa.		years across 11 schools in the district. It involved a three-stage cluster sampling.		affect sexual risk behaviours like lifetime sex, recent sexual activity and involvement with multiple sexual partners.	
2	Manja H. Andreasen, Jytte Agergaard, Robert B. Kiunsi & Ally H. Namangaya (2017) Urban transformations, migration and residential mobility patterns in African secondary cities, Geografisk Tidsskrift-Danish Journal of Geography, 117:2, 93-104, DOI: 10.1080/00167223.2017.1326159		A study of urban transformations, migration and residential mobility patterns in Arusha, a rapidly growing secondary city of Tanzania.	various changes that the settlements had undergone in relation to building types, density of settlement, accessibility, population composition and access to services	Data consists of semi-structured interviews with individual residents regarding their settlement preferences and intra-urban	These areas have been selected based on the above-mentioned analysis of spatially disaggregated census data.	insights on how migration and residential mobility patterns influence processes of urban growth and transformation in the context of large secondary city, and thereby	

					settlement trajectories		contributes to fill a significant knowledge gap on secondary cities in Africa.	
3	Anyanwu, F. C., Akinsola, H. A., Tugli, A. K., & Obisie-Nmehielle, N. (2020). A qualitative assessment of the influence of family dynamics on adolescents' sexual risk behaviour in a migration-affected community. International Journal of Qualitative Studies on Health and Well-Being, 15(1), 1717322. https://doi.org/10.1080/17482631.2020.1717322		the influence of family dynamics on adolescent's sexual risk behaviour within a migration-affected community in South Africa.	Demographic profile: Gender, age, level of education, employment status, relationship status, religion. Themes: family conflicts, lack of discipline, parent-child closeness, lack of sex education	Interview with households of interest were those families with adolescents aged 15 to 19 years, including child-/adolescent-headed households	Using thematic analysis, we processed data collected from 13 adolescents and 10 parents.	Adolescents who live within a secure family system where the parents are united, morally and financially stable are more likely to show good behaviour in the face of changing environmental factors.	community-specific studies like the index study is harnessed in order to develop evidence-based public health programmes to support adolescents and help them make informed choices regarding

								their sexual health.
4	Asekun-Olarinmoye, O. S., Asekun-Olarinmoye, E. O., Adebimpe, W. O., & Omisore, A. G. (2014). Effect of mass media and Internet on sexual behavior of undergraduates in Osogbo metropolis, Southwestern Nigeria. Adolescent Health, Medicine and Therapeutics, 5, 15–23. https://doi.org/10.2147/AHMT.S54339		To examine the role of mass media and Internet utilization in shaping the sexual health attitudes and behaviors of young undergraduates in Osogbo metropolis, Osun State, Nigeria.	The first section comprised sociodemographic characteristics of respondents; the second section dealt with awareness of and use of various forms of mass media; the third section examined patterns of sexual behavior of respondents; and the last section dealt with respondents' attitudes about, and use of the Internet and its effects, especially on sexual behaviors.	Questionnaires from cross sectional study	descriptive, cross-sectional study was carried out in Osogbo, the capital of Osun State, Nigeria;	uncontrolled exposure to mass media and Internet could negatively influence the sexual patterns and behavior of youths.	

5	Doyle, A. M., Mavedzenge, S. N., Plummer, M. L., & Ross, D. A. (2012). The sexual behaviour of adolescents in sub-Saharan Africa: Patterns and trends from national surveys. Tropical Medicine & International Health, 17(7), 796–807. https://doi.org/10.1111/j.1365-3156.2012.03005.x		To describe the sexual and reproductive behaviour of adolescents in sub-Saharan Africa, particularly 15- to 19-year-olds.	Sexual intercourse before the age of 15. Marriage before the age of 15 (females only).• Sex in past year among never-married adolescents. • For those who had sex in past year, a report during that period of ○ Multiple sexual partnerships.	Using DHS/ALS data	Using DHS/AIS data (2000–2010), nine indicators of adolescent behaviour and one of adult attitudes towards condom education for adolescents were described for 24 countries. Indicators were disaggregated by gender, urban/rural residency and educational status, and time trends were described.	Many 15- to 19-year-olds are at risk of HIV/STIs and unplanned pregnancies because of multiple partnerships and insufficient condom and other contraceptive use. In many countries, trends are moving in a favourable direction.	The use of DHS data available in country reports or the online database, as opposed to analysis of the raw data, restricted the choice of indicators and the degree of disaggregation and level of statistical analysis.

				○ Sex with a partner ≥10 years older (females only). ○ Condom use at last sex (among never-married adolescents only). ○ An HIV test with known result. •				

				Currently pregnant or have had a child (females only). • Current use of a modern contraceptive (including condoms) among never-married adolescents who had had sex in the last 30 days (females only). In addition, we looked at the following indicator of adult attitudes towards sex education for adolescents:				

				• Adult (18–49 years) support for condom use education for 12- to 14-year-olds.				
6	Alfred S. Ekpenyong et al., American International Journal of Research in Humanities, Arts and Social Sciences, 14(2), March-May, 2016, pp. 94-98	Cultivation theory is categorised under "media effect" theories (Fayehun, Adebayo and Gbadamosi, 2014). The theory explains the strength and influence of sustained media usage on the construction of	To examines effects of social media (SM) on adolescents' sexual reproductive health behaviour in Bayelsa State	Sociodemographic characteristics, social media used, activity enjoyed in social media, sexual intercourse, age at 1st sexual intercourse, context of sexual debut, contraceptive usage during sexual intercourse	Questionnaires from a cross sectional study	The study adopted the quantitative instruments to explore the role of social media on adolescents' sexual reproductive behaviour. Bayelsa state is situated in the South-south geographical	The study has established that sexual health reproductive behaviour among adolescents in Bayelsa state is invariably tied to their social media usage	to improve adolescents' sexual health reproductive behaviour should relate to adolescents social media usage.

		reality for media consumers.				zone of Nigeria.		
7	El-Awady, S., Elsheshtawy, E., Elbahaey, W., & Elboraie, O. (2017). Impact of familial risk factors on the severity of addiction in a sample of Egyptian adolescents. Egyptian Journal of Psychiatry, 38(2), 70–78. https://doi.org/10.4103/1110-1105.209677		exploring the effect of various familial risk factors on the development and severity of substance use in adolescent Egyptians.	drug habits of the patients (the type of drug, the route of administration, the dose, etc.), sociodemographic data	Semi structured Interview	This case–control study was conducted in Mansoura city, Egypt. The study included two groups: the patient group and the control group.	Family factors were related to adolescent substance use, such as negative parenting style, low parental monitoring, and parental substance use. Having an intact nuclear family was protective factor against youth substance use.	study was crosssectional , which limits the extent to which conclusions can be drawn about the causal nature of the associations between the correlates and substance abuse.

8	Farid, N. D. N., Rus, S. C., Dahlui, M., Al-Sadat, N., & Aziz, N. A. (2014). Predictors of sexual risk behaviour among adolescents from welfare institutions in Malaysia: A cross sectional study. BMC Public Health, 14(3), S9. https://doi.org/10.1186/1471-2458-14-S3-S9		examines the association between individual and interpersonal factors concerning sexual risk behaviour (SRB) among adolescents in welfare institutions in Malaysia	sexual initiation, age of sexual debut, number of sexual partners, condom use, and sex with high-risk partners, parental monitoring, family connectedness, peer pressure, demographic factors	Data were derived from a cross-sectional study of 1082 adolescents in 22 welfare institutions located across Peninsular Malaysia in 2009.	Using supervised self-administered questionnaires, adolescents were asked to assess their self-esteem and to complete questions on pubertal onset, substance use, family structure, family connectedness, parental monitoring, and peer pressure	This cross-sectional study shows that SRB among male adolescents is determined predominantly by individual factors such as substance use. For most female adolescents, SRB was linked to both individual and interpersonal factors such as self-esteem and family connectedness.	limited to adolescents from welfare institutions, this population could be said to represent at-risk adolescents in Malaysia.

9	Fatusi, A. O., & Blum, R. W. (2008). Predictors of early sexual initiation among a nationally representative sample of Nigerian adolescents. BMC Public Health, 8(1), 136. https://doi.org/10.1186/1471-2458-8-136	The theory of planned behaviour holds that attitudes constitute one of the determinants of health behaviour. Problem behaviour theory, can be traced to a common underlying factor of unconventionality – the tendency to transgress social norms.	to examine predictors of adolescent sexual initiation among a nationally representative sample of adolescents in Nigeria.	age, gender, literacy in English language, education and economic status. "Wealth index",religiosity, alcohol use and personal attitude to premarital sex. Scales were constructed using exploratory factor analysis to assess other psychosocial factors: FP accessibility and attitudes;	Data were obtained through structured interview	Using Cox proportional hazards regression multivariate analysis was carried out with two different models – one with and the other without psychosocial factors.	A fifth of Nigerian adolescents initiate sexual intercourse prior to marriage.	study may not be generalised to all adolescents in Nigeria particularly with the fairly high rate of marriage among adolescent females and the associated geographic diversity within the national context.

				condoms perceived norms, efficacy and access; HIV prevention knowledge; gender attitude; and, sexualityrelated communication				
10	Somefun OD, Odimegwu C (2018) The protective role of family structure for adolescent development in sub-Saharan Africa. PLoS ONE 13 (10): e0206197. https://doi.org/10.1371/journal. pone.0206197	Bioecological theory framed by a risk and resilience perspective. Protective factor model in the risk and resilience framework	ensuring a supportive environment for adolescents may result in delayed sexual debut for adolescents in SSA.	Age of sexual debut, living with both parents", "living with mother alone", "living with father alone" and "living with neither parent", urban and rural, educational status, household wealth status, work status, sex of household head and exposure	Nationally representative Demographic and Health Surveys (DHS), conducted in different countries in SSA	Descriptive statistics for all explanatory variables	The evidence from this study implies that more than 90% of adolescents in SSA are delaying age of sexual debut.	due to the cross-sectional nature of the data, the analysis was only able to determine correlation and association and thus prevents any conclusions from being

				to mass media. Wealth status,				drawn about causation between family-level factors and adolescent SRH outcomes.
11	Somefun, O. D. (2019). Religiosity and sexual abstinence among Nigerian youths: Does parent religion matter? BMC Public Health, 19(1), 416. https://doi.org/10.1186/s12889-019-6732-2	social control perspective to explain the mechanisms through which religiosity influences youth sexual behaviour.	higher levels of youth religiosity will be associated with sexual abstinence due to biological factors such as gender at the individual level, 2) the association between	Sexual debut, religion, sex, age, importance of religion, parental religion, education, job, parental situation	Data for the study came from 2399 male and female youth aged 16–24 years in four states purposively selected from four regions in Nigeria.	Abstinence was the sexual behaviour of interest. Logistic regression was used to examine this relationship.	Religiosity is a protective factor for sexual abstinence among youth in Nigeria.	which may be broadly representative of Nigeria, they are only four of the 36 states in the country. The sexual behaviours of the youth in other states may differ

			religiosity and abstinence will operate, in part, through parental religion and presence of parents in the household, which are family level factors,					
12	Ssekamatte T, Tetui M, Kibira SPS, Isunju JB, Mugambe RK, Nabiwemba E, et al. (2020) Multiple sexual partnerships and associated factors among young psychoactive-substance-users in informal settlements in Kampala, Uganda. PLoS	social exchange theory to establish the prevalence of multiple sexual partnerships across socio-demographic strata, and associated	The prevalence of multiple sexual partnerships and associated factors among young psychoactive-substance-users in informal	This cross-sectional study was conducted in the informal settlements in Kampala, Uganda's	Modified Poisson regression models were run in Stata 14 software to generate prevalence rate ratios for the factors	This was a cross-sectional study involving 744 young (aged 18–24 years), sexually active, psychoactive substance-users selected	Multiple sexual partnerships are highly prevalent among young psychoactive-substanceusers, irrespective of the socio-demographic strata.	examine engagement in multiple sexual partnerships among young psychoactive-substance-users in affluent and

	ONE 15(10): e0239323. https://doi.org/10.1371/ journal. pone.0239323	factors among young psychoactive-substance-users in the informal settlements of Kampala.	settlements in Kampala.		associated with multiple sexual partnerships.	from 12 of the 57 informal settlements of Kampala City.		formal settlements. The cross-sectional design limits causal linkages between psychoactive substances and engaging in multiple sexual partnerships.
13	Steele, M. E., Simons, L. G., Sutton, T. E., & Gibbons, F. X. (2020). Family Context and Adolescent Risky Sexual Behavior: An Examination of the Influence of Family Structure, Family Transitions and Parenting. Journal of Youth and Adolescence, 49(6), 1179–1194. https://doi.org/10.1007/s10964-020-01231-z		To examine the relationship between family structure, family transitions, and parenting experienced during early	Risky sexual behaviour, family structure, family transition, mother parenting-caregiver parenting, adolescent factors, age, religiosity, financial stress	Interview data	A series of regression models were estimated using MPlus Version 8.1 (Muthén and Muthén 2017).	Results indicated that continuously married mother–father households were most efficacious in	

			adolescence on risky sexual behavior in late adolescence.				reducing risky sexual behavior for both males and females, while mother-relative households were also beneficial for females compared to single-mother, mother–stepfather, and mother–cohabiting partner households.	
14	Sommer, M., Ibitoye, M., Likindikoki, S., & Parker, R. (2021). Participatory Methodologies With Adolescents: A Research Approach Used to Explore Structural Factors Affecting Alcohol Use and Related Unsafe Sex in Tanzania. The		To explore adolescent alcohol use and related sexual behaviours	key informant interviews (KIIs), same-sex pairings were only done when considered important for a	key informant interviews (KIIs),	Qualitative research	participatory methodologies toolkit described here could be used as the basis for	

	Journal of Primary Prevention, 42(4), 363–384. https://doi.org/10.1007/s10935-020-00586-0			participant's sense of ease.			future studies exploring young peoples' usage of alcohol and engagement in related unsafe sex in differing contexts, or, if adapted, for use in exploring other sensitive topics around alcohol use with similar populations	
15	Stanger-Hall KF, Hall DW (2011) Abstinence-Only Education and Teen Pregnancy Rates: Why We Need Comprehensive Sex Education in the U.S.. PLoS ONE 6(10): e24658. doi:10.1371/journal.pone.0024658		to evaluate the current sex-education approach in the U.S., and to identify the most effective educational approach to	Teen pregnancy, abortion, birth data, socioeconomics, educational attainment, ethnic composition	Data on abstinence education were retrieved from the Education Commission of the States, Data on teen pregnancy,	on-parametric (Spearman) correlations to assess relationships between variables, and for	that abstinence-only education as a state policy is ineffective in preventing teenage pregnancy and may actually be contributing to the high	

			reduce the high U.S. teen pregnancy rates.		birth and abortion rates were retrieved for the 48 states from the most recent national reports	normally distributed variables we also used parametric (Pearson) correlations,	teenage pregnancy rates in the U.S.	
16	Ann. N. Y. Acad Sci. 1021: 51-58 (2004) 2004mNew York Academy of Sciences		To examine risk perception and risk appraisal and indicate age differences in factors that explain adolescents risk taking				The greater propensity of adolescents to take risks is not due to age differences in risk perception or appraisal, but to age differences in psychosocial factors that influences self-regulation	Quantitative data on adolescent risk taking

17	Mokgatle MM, Madiba S (2017) High Acceptability of HIV Self-Testing among Technical Vocational Education and Training College Students in Gauteng and North West Province: What Are the Implications for the Scale Up in South Africa? PLoS ONE 12(1): e0169765. doi:10.1371/ journal.pone.0169765		investigate the acceptability of HIVST among students in Technical Vocational Education and Training (TVET) colleges in two provinces in South Africa.	Gender, age group, current sexual partner, sexually active, number of sexual partners, condom use, ever tested HIV, know HIV status, where HCT was done,pre-counselling, HIV testing important, reasons for HCT uptake,	Questionnaires at TVET colleges	A cross-sectional survey using a self-administered structured questionnaire was used to collect data among 3,662 students recruited from 13 TVET colleges.	scaling up HIVST in South Africa is feasible, considering the majority of students are willing to purchase HIVST kits despite being from low socioeconomic settings and to confirm HIV positive test results at a local health facility	there is a level of selection bias even though probability sampling was used to select the sites (TVET colleges), and random sampling was done to address the bias.

18	Woldemicael, G., and Tenkorang, E.Y. (2010). Women's autonomy and maternal health-seeking behaviour in Ethiopia.		To examine the net effect of women's	Scale derived from women's autonomy (input in HH decision-making on larger purchases, daily needs and	2005 EDHS	Hierarchical logit model	Women's autonomy, education, employment, wealth status and place of residence	Only recognizes poor usage in adolescents, does not explain why

	Maternal and Child Health Journal, 14, 988-998.		autonomy on their health seeking behavior in Ethiopia	health needs, and freedom of movement) Scale derived from ANC, tetanus injection and skilled attendance at delivery			had association with MHC seeking behaviour Lack of transport and far distance to HF reduces usage Poorer use in adolescent mothers	
19	Adedini, S.A., Odimegwu, C., Imasiku, E.N.S., Ononokpono, D.N., and Ibisomi, L. (2015). Regional variations in infant and child mortality in Nigeria: a multilevel analysis. *Journal of Biosocial Sciences, 47*, 165-187.	Mosley and Chen (1984) proximate causes of child mortality	To examine the effects of individual- and community-level characteristics on infant/child mortality in Nigeria. To determine the extent to which characteristics at these levels influence regional variations in	Community level-region, place of residence, community infrastructure, community hospital delivery and community poverty level Individual level-child's sex, birth order, birth interval, maternal	2008 NDHS	Multilevel cox survival analysis	Children of mothers aged <25 have worse outcomes than those of mothers >=25 possibly due to inexperience, early marriage, and low education	Reasons for this not covered in the study, guesses made No information on cultural practices and distance from HF

20	Jamal jones, Laura F.salazar and Richard Crosby(2017) Contextual Factors and Sexual Risk Behaviors Among Young, Black Men. American Journal of Men's Health Vol. 11(3) 508–517	Lang et al., (2010). extension of the broken windows theory	To examine the effects of environmental context, desire to impregnate a partner, and perceived peer norms on sexual risk–taking behavior. To determine whether parental monitoring modified the effects of the predictors of interest on sexual risk outcomes	The predictor variables were environmental context, desire to impregnate a partner, and the extent to which friends thought it was okay to have vaginal or anal sex without a condom	Clinics diagnosing and treating STIs in New Orleans, Louisiana; Baton Rouge, Louisiana; and Charlotte, North Carolina	Cross-sectional baseline data from a larger randomized controlled trial	There was a difference in the effect of perceived peer norms on lifetime number of sexual partners for different values of perceived parental monitoring score.	Did not determine the level of perceived parental monitoring .

21	Merhawi Gebremedhin, Agumasie Semahegn, Tofik Usmael and Gezahegn Tesfay.(2018). Unsafe abortion and associated factors among reproductive aged women in Sub-Saharan Africa: a protocol for a systematic review and meta-analysis Gebremedhin et al. Systematic Reviews (2018) 7:130 43-018-0775	Mantel–Haenszel random effects model	To identify and summarize the available evidence, To determine prevalence of unsafe abortion among women in the reproductive age and associated factors in SSA.		Literatures from Databases such as MEDLINE (via PubMed), EMBASE, CINAHL, and POPLINE Google search engine, Google scholar, and WHO websites. In addition, experts on the field.	Cochran Q test.	The burdens of unsafe abortion and its associated maternal mortality are disproportionately higher for women in Africa than in any other developing region	Did not assess the magnitude of unsafe abortion and its associated factors in SSA so as to inform the development of appropriate programs and policy that would have an impact in reducing maternal morbidity and mortality in the region

22	Kim Jonas1, Rik Crutzen , Bart van den Borne , Ronel Sewpaul and Priscilla Reddy, (2016) Teenage pregnancy rates and associations with other health risk behaviours: a three wave cross-sectional study among South African school-going adolescents. Jonas et al. Reproductive Health (2016) 13:50 DOI 10.1186/s12978-016-0170-8		To examine the trends in teenage pregnancy as well as related health risk behaviors, including unsafe sex, substance use, partner violence, and psychological well-being; which might act as contributory factors associated with teenage pregnancy among school going adolescents between 11 and 19 years of age in different settings of the country	Age,gender, race, being married, parent devorce, having an elder sister who had a history of teenage pregnancy. peer pressure, sexual abuse	The three Umthente Uhlaba Usamila: South African National Youth Risk Behaviour Surveys (YRBS)	cross-sectional surveys	The first important finding in this study is that sexual intercourse among adolescents has decreased. However, among those adolescent girls who reported to engage in sex, teenage pregnancy has increased.	No comprehensive research on adolescents SRH needs particularly among the vulnerable adolescents aged 16 years and under, but not excluding those aged above 16 years old, to identify risk factors and develop specific interventions tailored for their needs.

23	Lucie Dale Cluver, Frederick Mark Orkin, Franziska Meinck1, Mark Edward Boyes and Lorraine Sherr(2016) Structural drivers and social protection: mechanisms of HIV risk and HIV prevention for South African adolescents. Cluver LD et al. Journal of the International AIDS Society 2016, 19:20646	Predictive model	1) the potential pathways from structural disadvantage to adolescent HIV risks and 2) the nature and 3) the extent of the effects of cash and care types of social protection on adolescent HIV risk pathways	How do cash unconditional cash transfer work, what is the effect of augmenting cash, provision for social care.	3516 adolescents aged 10 to 17	Hayes' Model ,	Adolescent HIV risks in South Africa are strongly driven by structural drivers (living in poverty, with AIDS-affected parents and in high-violence or informal communities) and that this association is mediated by (or occurs via) increased psychosocial problems (higher rates of abuse, mental health distress and school dropout).	Research is clearly required to test whether education-conditional or -unconditional programmes have a greater impact on the education pathways to HIV risk

24	JUNHAN CHO AND STEVEN M. KOGAN (2016), Parent and youth dopamine D4 receptor genotypes moderate multilevel contextual effects on rural African American youth's risk behavior Development and Psychopathology 28 433–445	Conceptual model.	To investigates genetic moderation processes in the development of rural African American youth's risk behavior.	Risk behavior, Planful future orientation, Dopamine	361 African American youth (159 male and 202 female)	Structural equation modeling with complex designs as implemented in Mplus	effects of community disadvantage on protective parenting and the effects of protective parenting on youth's planful future orientation were moderated by parent and youth DRD4 status. We found that exposure to community disadvantage did not predict parenting behavior among parents who did not carry DRD4 long allele.	The results suggest a continued need for studies that integrate transactional developmental perspectives and G &E research

25	Famutimi Esther Oluwatoyin, Oyetunde Modupe O(2014) Risky Sexual Behaviour among Secondary School Adolescents in Ibadan North Local Government Area, Nigeria. Journal of Nursing and Health Science: PP 34-44	Health Believe Model(HBM)	To assess various risky sexual behaviours practiced by adolescents. 2. To identify which socio-demographic characteristics have influence on risky sexual behaviours. 3. To describe the association between primary care giver and risky sexual behaviour. 4. To evaluate knowledge of risky sexual behaviour across selected secondary schools. 5. To identify the primary source of information that is mostly available to adolescents on sexuality education.	Age, Tribe, School, Class, Religion, Primary care giver.	Adolescents in Ibadan	A descriptive cross sectional survey	Respondents at lower border of age equally have exposure to risky sexual activity talk less of respondents within 15 -19 years.	Did not evaluate how teachers deliver lessons on adolescent sexuality

26	Leslie Gordon Simons. K. A. S. Wickrama, T. K. Lee, and Melissa Landers-Potts Carolyn Cutrona, Rand D. Conger (2016) Testing Family Stress and Family Investment Explanations for Conduct Problems Among African American Adolescent. Journal of Marriage and Family 78: 498–515	The family stress model (FSM) and The family investment model (FIM).	Tinvestigate the impact of economic distress on adolescent conduct problems. To examine the extent to which this relationship can be explained by 2 frequently employed models: (a) the family	Family Stress, Family Investment, African American Adolescent.	(FACHS;	Three waves of data to examine the family processes over time	We found that, consistent with the FSM, the effect of family economic hardship on adolescent delinquency was fully mediated by parents' depression, caregiver conflict, and parenting practices, even when controlling for the variables in the FIM. On the other hand, the predictions of the FIM were not supported when the variables associated with the FSM were included in the model.	Did not examined; conduct problems and delinquency among economically disadvantaged African American youth

27	Beston B. Maonga Tapiwa Sphiwe Gondwe Kennedy Machira.(2018) Determinants of Risky Sexual Behavior Among the Youth in Malawi DHS Working Paper No. 141	The Lewin Theory of Change, the Health Belief Model, and the Theory of Reasoned Actions.	To assess the background characteristics of men (youths age 15-24 and adults age 25-54) engaging in risky sexual practices by their marital status, To assess sociodemographic factors that influence men (youths and adults) to indulge in multiple sexual partnerships and that affect condom use with non-cohabiting partners	Dv.Non-marital non-cohabiting partners, condom use, Iv education, religion, number of living children, media exposure, household wealth, gender of household head, place of residence	MDHS 2015-2016	complex sample design of the 2015-16 MDHS,	male Muslim youths and those of other undefined religions were generally associated with having a greater number of non-marital and non-cohabiting sexual partners compared with Protestant and Catholic youths respectively.	This study targeted men only excluding their counterpart

	contextual determinants of adolescent risky behaviours in South Africa		To determine the contextual determinants of adolescent risky behaviours in South Africa.		South African Youth Life Style Survey of 2008	Binary-multilevel logistic regression	Findings demonstrated that community level factors were not associated with reports of risky behaviour among adolescents but were influential in shaping the risky behaviour of adolescents.	only focus on individual level but also on the household and community engagement.

A02 - Policy Brief

Topic: Neighbourhoods' Risk in Sexual Behaviour among Youth in South Africa.

Summary/ Key Message:

Risky sexual behaviour (RSB) affects young people all over the world. It is one of the most critical health issues they face (Frye et al., 2017). Many young people involved in RSB, particularly Multiple Sexual Partnerships (MSP and inconsistent condom use), lack proper sexual education. This has resulted in a slew of health issues and poor sexual and reproductive health outcomes among this young demographic (Francis et al., 2018). MSPs participation among young people is increasing. Due to prevalent communal conditions in many neighbourhoods, this is likely to continue to rise (Govender, Naidoo and Taylor, 2020; Zuma et al., 2020). Sexual behaviour among this age group is frequently unplanned and has remained a key concern for this generation's future productivity, particularly in developing countries. As a result, young individuals may lack the financial means to pursue positive options such as condom use and the essential support from a single partner to do so.

Risky sexual behaviour contributed to the unprecedented rising numbers of undesired pregnancies among young people, usually influenced by community social disorganisation factors such as neighbourhood poverty, residential instability, ethnic diversity, and family dysfunctions (Johns, Bauermeister and Zimmerman, 2010; Sentino et al., 2018). In this present study, a report from South Africa Demographic and Health Survey (SADHS) 2016 showed that 42% of adolescent girls, as well as 35% of adolescents' boys who reported having more sexual partners did not use a condom during last sexual encounter (NDoH, Stats SA, SAMRC and ICF 2018). On the other hand, the Communication Survey Report 2017 showed that the health risk associated with all the risky sexual activities on young people is very high, contributing to about 30.9% of HIV prevalence among young people aged 15-24 (Shishana et al., 2014). Young people who engage in RSB may not have access to livelihood opportunities, social services, and basic infrastructures to negotiate sex. These have different implications. For example, it compromises the sexual and

emotional development of these young people and contributes to school dropouts and future distress. These prevailing situations present an opportunity for understanding and addressing issues surrounding youth development, especially the leading factors driving their engagements to RSB. This is because neighbourhood factors are associated with youth exposure to RSB in South Africa.

The present study recommends that neighbourhoods factors that promote high-risk sexual behaviour among the young population in South Africa need to be addressed. Understanding the high risk of engaging in RSB among young people is an important measure to reduce the transmission of both the HIV/AIDS pandemic.

Background:

The sexual and reproductive health of young people aged 15-24 years has continued to face challenges due to RSB among this young population. Estimates show that approximately 14 million young people die each year from SRH challenges, with about 40% occurring in sub-Saharan Africa (Morris and Rushwan, 2015; Yakubu, 2018). Most of these deaths are from sexually transmitted infections, including HIV/AIDS, due to their engagements in RSB. A growing number of researchers are examining the risk factors that encourage youth sexual behaviour at both individual, household, and community levels. However, very few studies have examined the influence of neighbourhood factors on the SRH of young people that exposed them to STIs. Studies in sub-Saharan African countries, for instance, indicate that about 14,000 new HIV cases are occurring each day among young people aged 15-24, with more than 95% in developing countries (Gaga et al., 2019), where it ranges from 6.50% in Uganda to 27% in Swaziland. More so, studies in South Africa found that 37.5% of males and 8.2% of females reported having two or more sexual partners in 2018 (Shisana et al., 2014; Reddy et al., 2013).

The Fall of apartheid and RSB in South Africa

Risky sexual behaviour has increased in South Africa since 1994, after the fall of apartheid law due to important social, cultural and economic changes leading to social disorganisation. The changes in social disorganisation occur in various forms such as neighbourhood poverty, residential instability, ethnic diversity, and household/family size. RSB has been established to be associated with these neighbourhoods' factors in South Africa. Hence, recent literature on the role of neighbourhood's factors on 'Youth sexual behaviour is scarce in South Africa with national data. Reports show that coming from a stable home was found to engender authority in sexual behaviour among young people. Again, reduced family size results in a lower household economic dependency ratio and relieves some of the resource constraints that may force young people to indulge in RSB. Also, the wealth status of parents was recognized as the protective factor for youth involvement in RSB. Addressing the impacts of neighbourhood's factors exposing young people to RSB is necessary to address the health challenges facing these young populations. The overall situation is a cause for concern, especially for researchers and practitioners in social and behavioural sciences. These, however, involves exploring the behaviours of individuals within the context of their social and physical environments.

Despite the various policies that guided interventions on youth sexual behaviour, such as the National Youth Policy 2015-2019 and the Adolescent and Youth Health Policy (2012), aimed at addressing the health needs of young people and improved communication at the national level about the outcome of RSB in South Africa, gaps still exist in understanding the influence of community pathways that contribute to the complexity of neighbourhood social organizations. These undermine informal social networks, norms and relations that reduce the ability of communities to monitor youth behaviour

Key Findings'

As shown in figure 1, about six out of ten men practiced multiple sexual partnerships

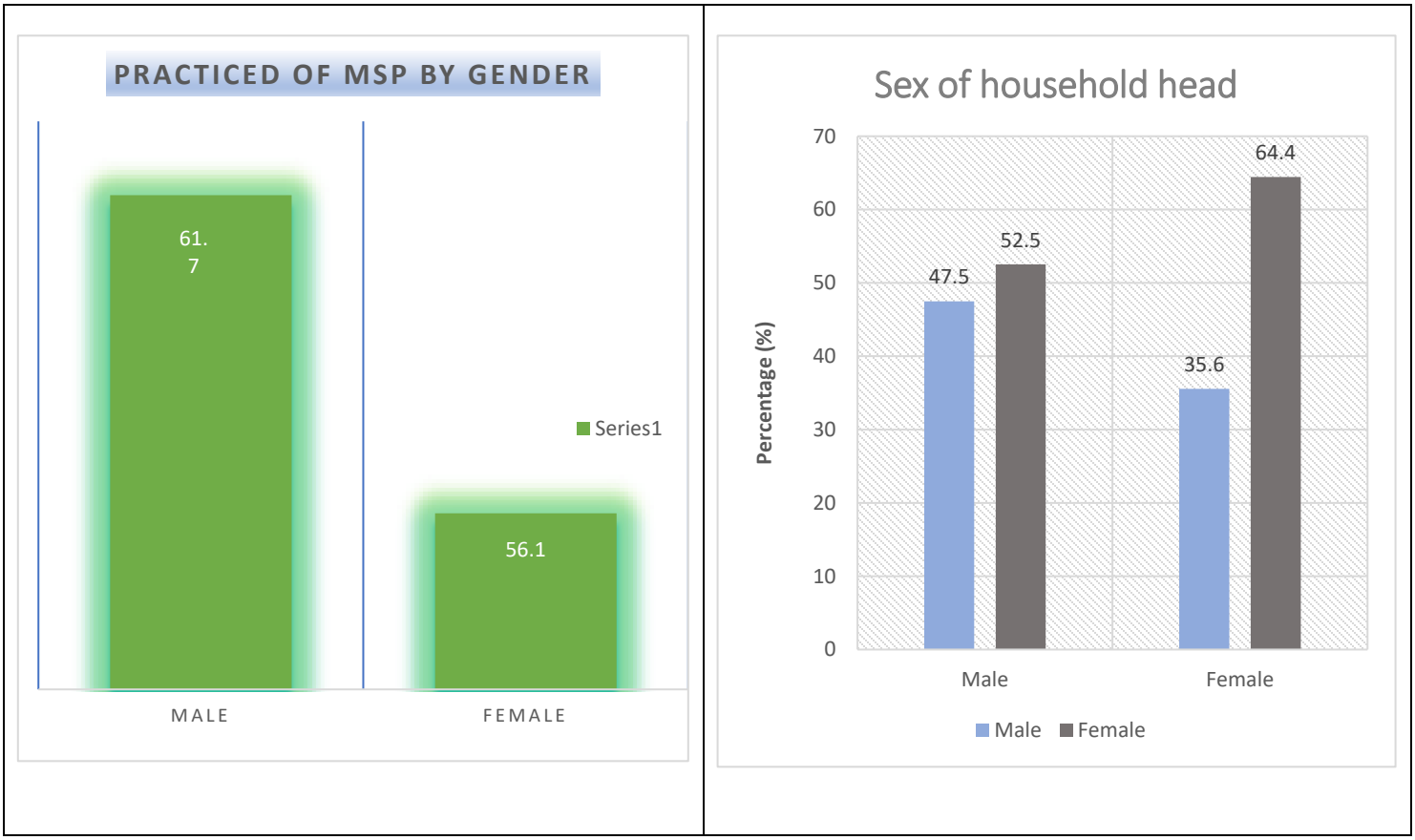


Figure 1: percentage distribution of MSP and Household size

Figure A1, Percentage of youth by multiple sexual partnerships and household size

On analysis of national data, it was found that male young people have more sexual partners than their female counterparts. This shows that males tend to indulge in risky sexual behaviour, including having a greater number of sex partners compared to their female counterparts. Our analysis further shows that majority of the female population 64.4% are from household headed by a female, while 35.6% females were from a household headed by a male. Furthermore, 52.5%

male population indicated that they are from a household headed by a female while a lesser number of the male population 47.5% were from a household headed by a male.

Family dysfunction

Of the young people who engaged in MSP, more than 5 out 10 were from female-headed households. In addition, in female-headed households, there is the tendency of female youths engaging in risky sexual behaviour, although lower among the male youths. The reason is because there is the tendency that female young people might not be closely monitored by their mothers, unlike their male counterparts. They usually meet with their sexual partners outside their homes, relative to males who most often invite their sexual partners to the family house.

Residential instability

According to the findings of the study, having a history of residential instability substantially enhanced the practice of unsafe sex across both sexes. This is due to the fact that residential instability challenges culture and way of life, which stimulate youth to participate in unsafe sex, thus increasing the probability of HIV transmission.

Ethnicity/Race diversity

Considering ethnicity/race, there is evidence of significant ethnic diversity in having MSP among female and male Black Africans. This could be attributed to the fact that coming from other African countries with diverse contradictory cultural norms and values regarding sexual behaviour might lead to MSP. Meanwhile, young people's behaviour naturally could reflect specific cultural traditions peculiar to different ethnic background or identity, hence, practices become diverse in the same way.

Implications:

The results imply that young people in South Africa are vulnerable to RSB due to community/neighbourhoods' defects existing in many South African communities. This implies that existing sexuality programmes/policies are not very effective in addressing HIV prevention

among unmarried youths in South Africa caused by community and neighbourhoods' factors. It is also not effective in tackling the interplay between ethnic diversity and cultural norms and values that expose young people to engage in RSB. This community or neighbourhood's factors have exposed young people to many sexual and reproductive health challenges including sexually transmitted infections including HIV, unintended pregnancies which can possibly lead to unsafe abortion and as a consequence, morbidity and even mortality, including other non-consensual sexual experiences, unprotected sex and multiple partnerships.

Way forward:

Prevention through enlightenment is key

- Given the important role education plays in societal transformation and in providing knowledge of healthy sexual behaviour, it is recommended that the Legislators, the Ministers of Health, and Education ensure quality sexual and reproductive education that explains implications of engaging in high-risk sexual behaviour.

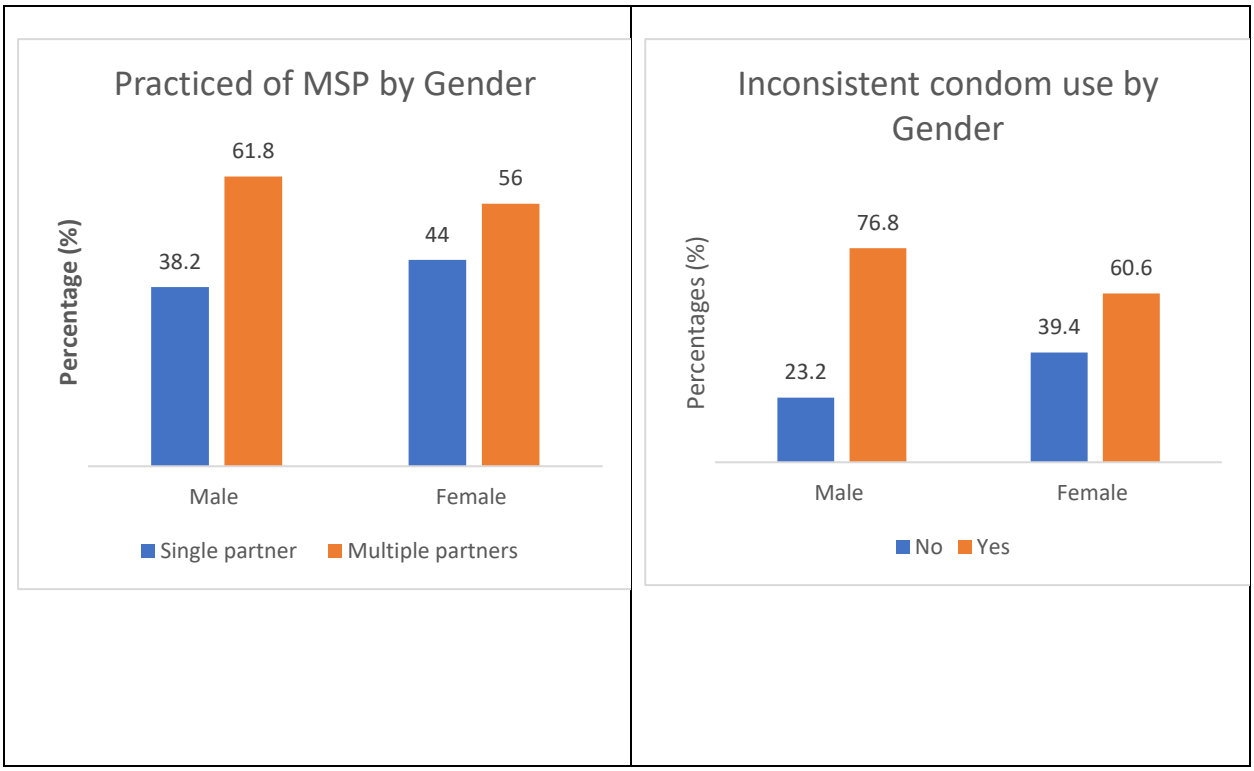
Youth empowerment and Skill acquisition

- It is recommended that young people be empowered and equipped with relevant skills that will take them out of poverty. This is because if they are empowered, they can utilize the skills to feed and assist others. This will help them to avoid engaging in high-risk sexual behaviour, especially the female youth who may not be closely monitored as a result of coming from single parent households. It could be achieved by creating youth-friendly centres in South African communities, with the aim of supporting the youths closing the gaps created by the community and neighbourhoods risk factors.

Effects of cultural norms and values

- It is recommended that sexual risk reduction programmes should be developed considering the specific cultural environment as a result of residential location or ethnic/race affiliation. This could be achieved by using strategies that encourage communities to challenge the accepted cultural norms and values that may expose young people to risky behaviour. Engagement of stakeholders at community levels is very important in achieving this recommendation.

A03 - Distribution of 'risky sexual behaviour' by gender among youths in South Africa



Source: SADHS 2016

A04 - Study Do-File

**** Weighting**

gen wt=v005/1000000

egen strata= group(v025 v024)

svyset [pw=wt], psu(v001) strata(strata)

**** Study Sample (Female youths)**

tab v501

tab v501, nol

drop if v501>0

tab v501

tab v013

tab v013, nol

drop if v013>2

tab v013

tab v106

recode v106 (0/1=1 "Primary and less education")(2=2 "Secondary")(3=3 "Higher"), generate (education)

tab education

tab v714

tab v131

```
tab v136

tab v136, nol

recode v136 (1/4=1 "1-4")(5/6=2 "5-6")(6/24=3 "7 +"), generate (household_size)

tab household_size

tab v150

tab v150, nol

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tab household_relationships

tab v151

tab v025

tab v024

tab v104

tab v104, nol

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tab residential_mobility

tab v190

tab v190, nol

recode v190 (3/5=1 "low")(1/2=2 "high"), generate (neighbourhood_poverty)
```

```
tab neighbourhood_poverty

tab v155

tab v155,nol

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tab literacy_level

tab v131

tab v131,nol

recode v131 (1=1 "homogenous")(2/4=2 "heterogenous"), generate (ethnic_diversity)

tab ethnic_diversity



**Multiple Sexual Partnerships

tab v766a

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tab number_partners



**Descriptive MSP FEMALES**

tab1 v013 education v714 v131 household_size household_relationships v025 v024 residential_mobility neighbourhood_poverty ethnic_diversity literacy_level number_partners
```

Bivariate MSP FEMALES

tab v013 number_partners, row chi

tab education number_partners, row chi

tab v714 number_partners, row chi

tab v131 number_partners, row chi

tab household_size number_partners, row chi

tab household_relationships number_partners, row chi

tab v151 number_partners, row chi

tab v025 number_partners, row chi

tab v024 number_partners, row chi

tab ethnic_diversity number_partners, row chi

tab neighbourhood_poverty number_partners, row chi

tab residential_mobility number_partners, row chi

tab literacy_level number_partners, row chi

**Multilevel Female MSP

xtmelogit number_partners || v001:, nolog or

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xtmelogit number_partners i.v013 i.education i.v714 i.v131 i.household_size i.household_relationships || v001:, nolog or

xtmelogit number_partners i.v013 i.education i.v714 i.v131 i.household_size i.household_relationships i.v151 || v001:, nolog or

xtmelogit number_partners i.v013 i.education i.v714 i.v131 i.household_size i.household_relationships i.residential_mobility || v001:, nolog or

xtmelogit number_partners i.v013 i.education i.v714 i.v131 i.household_size i.household_relationships i.neighbourhood_poverty || v001:, nolog or

xtmelogit number_partners i.v013 i.education i.v714 i.v131 i.household_size i.household_relationships i.literacy_level || v001:, nolog or

xtmelogit number_partners i.v013 i.education i.v714 i.v131 i.household_size i.household_relationships i.v025 i.v024 || v001:, nolog or

xtmelogit number_partners i.v151 i.v025 i.v024 i.residential_mobility i.neighbourhood_poverty i.literacy_level i.ethnic_diversity || v001:, nolog or

xtmelogit number_partners i.v013 i.education i.v714 i.v131 i.household_size i.household_relationships i.v151 i.v025 i.v024 i.residential_mobility i.neighbourhood_poverty i.literacy_level i.ethnic_diversity || v001:, nolog or

MALE Population

** Weighting

gen wt=mv005/1000000

```
egen strata= group(mv025 mv024)

svyset [pw=wt], psu(mv001) strata(strata)



**Study Sample (Male Population)

tab mv501

tab mv501, nol

drop if mv501>0

tab mv501

tab mv013

tab mv013, nol

drop if mv013>2

tab mv013

tab mv106

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tab mv714

tab mv131

tab mv136
```

```
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tab m_household_size

tab mv150

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tab m_household_relationships

tab mv151

tab mv025

tab mv024

tab mv104

tab mv104, nol

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tab m_residential_mobility

tab mv190

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```

```
tab mv155

tab mv155,nol

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tab m_literacy_level

tab mv131

tab mv131,nol

recode mv131 (1=1 "homogenous")(2/4=2 "heterogenous"), generate (m_ethnic_diversity)

tab m_ethnic_diversity



**Dependent Variables (Multiple sexual partnerships and Inconsistent Condom use)

tab mv766a

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tab m_number_partners

tab mv761



** Descriptive

tab1 mv013 m_education mv714 mv131 m_household_size m_household_relationships mv025 mv024 m_residential_mobility m_neighbourhood_poverty m_ethnic_diversity m_literacy_level m_number_partners
```

**Bivariate

tab mv013 m_number_partners, row chi

tab m_education m_number_partners, row chi

tab mv714 m_number_partners, row chi

tab mv131 m_number_partners, row chi

tab m_household_size m_number_partner, row chi

tab m_household_relationships m_number_partners, row chi

tab mv151 m_number_partners, row chi

tab mv025 m_number_partners, row chi

tab mv024 m_number_partners, row chi

tab m_ethnic_diversity m_number_partners, row chi

tab m_neighbourhood_poverty m_number_partners, row chi

tab m_residential_mobility m_number_partners, row chi

tab m_literacy_level m_number_partners, row chi

**** Multilevel Male MSP**

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xtmelogit m_number_partners i.mv013 i.m_education i.mv714 i.mv131 i.m_household_size i.m_household_relationships i.mv151 || mv001:, nolog or

xtmelogit m_number_partners i.mv013 i.m_education i.mv714 i.mv131 i.m_household_size i.m_household_relationships i.m_residential_mobility || mv001:, nolog or

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xtmelogit m_number_partners i.mv013 i.m_education i.mv714 i.mv131 i.m_household_size i.m_household_relationships i.m_literacy_level || mv001:, nolog or

xtmelogit m_number_partners i.mv013 i.m_education i.mv714 i.mv131 i.m_household_size i.m_household_relationships i.mv025 i.mv024 || mv001:, nolog or

xtmelogit m_number_partners i.mv025 i.mv024 i.m_residential_mobility i.m_neighbourhood_poverty i.m_literacy_level i.m_ethnic_diversity i.mv151 || mv001:, nolog or

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A05 – Bioscketch Nebechukwu Henry Ugwu

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A06 - Publications

1. Odimegwu, C. O., & Ugwu, N. H. (2022). A multilevel mixed effect analysis of neighbourhood and individual level determinants of risky sexual behaviour among young people in South Africa. *Reproductive Health*, *19*(1), 1-18.

2. Imo, C. K., Ugwu, N. H., Ukoji, U. V., & Isiugo-Abanihe, U. C. (2022). Intimate partner violence and its association with skilled birth attendance among women in Nigeria: evidence from the Nigeria Demographic and Health Surveys. *BMC pregnancy and childbirth*, *22*(1), 1-11.

3. Ugwu, N. H., Igwe, I., Nwokeoma, B. N., Ajuzie, H. D., Iwuamadi, K. C., Ezike, S. C., & Madukwe, C. I. (2022). Adolescents' knowledge and use of sexual and reproductive health services in the Federal Capital Territory, Nigeria. *African Journal of Reproductive Health*, *26*(6), 80-88.

Articles under review

1. Socio-ecological determinants of multiple sexual partnerships among youths in South Africa: exploring the roles of social disorganisation factors.

2. Neighbourhood determinants of early sexual debut and multiple sexual partnerships: A cross-sectional analysis of adolescents in Rwanda, Ghana and South Africa.

3. Family instability and sexual risk behaviour among young people in sub-Saharan Africa: revisiting the instability hypothesis.

4. A systematic review of adolescents sexual behaviour in Africa: Insights beyond individual level determinants.

5. Community media access in risky sexual behaviour among youth in sub-Saharan Africa.