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Influence of Race and Gender on HIV Risk Behaviors in High School Students in the  
Southern States of the United States

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A dissertation

presented to

the faculty of the Department of Biostatistics and Epidemiology

East Tennessee State University

In partial fulfillment of

the requirements for the degree

Doctor of Public Health with concentration in Epidemiology

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by

Malendie Gaines

May 2015

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Dr. Megan Quinn, Chair

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Dr. Charlotte Powers

Keywords: adolescents, HIV, STDs, Southern United States, sexual risk behaviors, condom use

## ABSTRACT

### The Influence of Race and Gender on HIV Risk Behaviors in High School Students in the Southern States of the United States

by

Malendie Gaines

The incidence of the Human Immunodeficiency Virus (HIV) is highest in the southern states of the United States (US), with adolescents in this region being one of the most affected populations in the country. A limited amount of information is available on adolescent HIV risk behaviors in the southern states, specifically focusing on race and gender. The purpose of this study was to use the Centers for Disease Control and Prevention's National Youth Risk Behaviors Survey (YRBS) for high school students in the southern states for 2011 and 2013 to examine the influence of race and gender on 1) early sexual initiation, 2) number of sexual partners, and 3) condom use. Descriptive statistics and multiple logistic regression was used for the analysis. A total of 6,244 (6.7%) students reported early sexual initiation, 13,121 (14.1%) reported having multiple sex partners, and 11,820 (41.1%) reported condom use in southern states for 2011 and 2013. Minority males were greater than 10 times more likely to engage in early sexual initiation compared to white females (OR-10.40; 95% Confidence Interval (CI)-9.03-11.98). Minorities and males were more likely to have multiple sex partners compared to whites and females (OR-1.84; CI-1.73-1.95, OR-2.20; CI-2.07-2.34, respectively). Minority males were over 2 times more likely to use condoms compared to white females (OR-2.04; CI-1.87-2.23). There was a statistically significant association between the three sexual health behaviors and psychosocial factors, such as dating violence, forced sex, body weight perception, and substance use before

sex. Gender and race along with psychosocial factors were associated with HIV risk behaviors for high school students in the southern states. These preliminary findings could potentially be used to target HIV/AIDS awareness and preventative actions to populations affected by the HIV burden in the southern states.

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I would also like to show my gratitude towards my family and friends for the encouragement and motivation to reach my goals and never give up. Their love and sacrifice will not be in vain.

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## ACRYNOMNS AND ABBREVIATIONS

AIDS – Acquired Immunodeficiency Syndrome

CDC – Centers for Disease Control and Prevention

HIV – Human Immunodeficiency Virus

STD – Sexually Transmitted Disease

US – United States

WHO – World Health Organization

YRBS – Youth Risk Behavior Surveillance System

## CHAPTER 1

### INTRODUCTION

When the Human Immunodeficiency Virus (HIV) first emerged in the United States (US) during the early 1980's it was seen as a disease that targeted young, homosexual men (Bartlett, 2006). Currently, the disease also targets heterosexuals and injection drug users (IDU). In the US, for every 100 people living with HIV, those 100 individuals infect four additional people annually. This rate illustrates an 89% decrease in transmission per year since the beginning of the HIV epidemic in the 1980's due to the effectiveness of testing, counseling, and treatment (*Turning the Tide on HIV*, 2014). Several known ways exist to prevent HIV transmission including HIV education, HIV testing, condom use, clean needles, and monogamous sexual relationships which also reduces the risk of unintended births and sexually transmitted diseases (STDs) ("Contraception", 2013). The current research focuses on HIV risk behaviors in adolescents in the southern states of the US.

In the US, the Centers for Disease Control and Prevention (CDC) estimated 1.1 million people are living with HIV. The CDC reported approximately 50,000 people are newly infected with HIV every year and an estimated 18% of people infected with HIV are unaware of their status ("HIV in the United States", 2013). Annually, the number of new infections of HIV is constant, but the country's prevalence rate of HIV continues to increase. The prevalence rate is increasing due to the impact of preventative services such as testing, counseling, and treatment, resulting in people with HIV living longer along with new infections ("HIV in the United States", 2013; *Turning the Tide on HIV*, 2014).

Even though the nation's incidence rate is stable, southern states are showing a higher rate of new HIV cases (Reif, Whetten, Wilson, & Guy, 2006). The southern states in the US,

Texas, Oklahoma, Arkansas, Louisiana, Mississippi, Alabama, Georgia, Florida, Tennessee, Kentucky, South Carolina, North Carolina, Virginia, West Virginia, Maryland, Delaware and the District of Columbia, accounted for approximately half of the HIV diagnoses in the country in 2011 (Reif, Geonnotti, & Whetten, 2006; *The HIV/AIDS Epidemic*, 2014). Seven of the top ten states by HIV infection rate are in the south (Florida, Texas, Georgia, Maryland, North Carolina, Mississippi, and Louisiana) (*The HIV/AIDS Epidemic*, 2014).

With minorities making up 41% of the southern states, minorities residing in the southern states are being affected by this epidemic disproportionately (Artiga, Stephens, Lyons, & Heiman, 2014; *Social Determinants of Health*, 2013). Among African Americans, rates of diagnosis were highest in the following states: Washington D.C., Maryland, and Texas which are all southern states (*Social Determinants of Health*, 2013). The HIV rates from heterosexual transmission have increased among African Americans within the southern states, especially affecting African American women (Adimora, Ramirez, Schoenbach, & Cohen, 2014; Adimora, Schoenbach, & Doherty, 2006). Additionally, of all Hispanics infected with HIV/AIDS, 41% reside in the southern states of the US (Espinoza, Hall, Selik, & Hu, 2008).

Compared to whites, minorities have the highest rates of new HIV infection as a result of social, economic, and epidemiological factors (*Turning the Tide on HIV*, 2014). Although research shows that the prevalence of HIV is influenced by race and/or gender, there is a lack of research on risk behaviors that provides an explanation for the disparities (Adimora, Schoenbach, & Floris-Moore, 2009; Halpern et al., 2004). African Americans are most affected by HIV compared to other racial groups in the US, accounting for approximately 44% of all new infections, while only making up 12% of the population (“HIV among African Americans”,

2014). African Americans' infection rate is eight times higher than that of their white counterparts and approximately 85,000 infected people in this population were unaware of their status in 2010 ("HIV among African Americans", 2014). Out of the estimated 20,900 new infections from African Americans, 70% of those cases were male in 2010 ("HIV among African Americans", 2014). Even though African American women have a much lower rate of new HIV infections compared to African American men, the new infection rate was 20 times that of white women and almost five times that of Hispanic/Latino women ("HIV among Hispanics/Latinos", 2013; *Social Determinants of Health*, 2013 ).

Overall, Hispanics have the second highest rate of diagnosis of HIV infection and Hispanic/Latino men account for 89% of the new HIV infections in the Hispanic community ("HIV among Hispanics/Latinos", 2013; *Social Determinants of Health*, 2013 ). Among females, Hispanics have the second highest rate of diagnosis of HIV infection, following African American women. Furthermore, in 2010 Hispanics had a higher rate of new HIV infection (19.6 per 100,000) compared to their white counterparts (6.7 per 100,000), illustrating the racial disparity in HIV (*Social Determinants of Health*, 2013). (All subsequent rates will be per 100,000 unless otherwise noted). Although the US annual rate of diagnosis of HIV infection in Hispanics decreased in 2010, the rate increased in 2011 (*HIV Surveillance Report*, 2013).

It is evident that HIV/AIDS is associated with economic disadvantage in the US (Bauermeister, Zimmerman, & Caldwell, 2010; Marmot & Wilkinson, 2005). Low socioeconomic status can affect the risk of HIV transmission through lack of healthcare, housing, and HIV prevention education ("HIV among African Americans", 2014). In 2010, an estimate 14.9% of US citizens were living in poverty (Bishaw, 2014). Even though the southern states' poverty rate as a whole is not significantly different from the nation's rate, some southern states

have the highest poverty rates in the US, including Louisiana (28%), Mississippi (28%), and Arkansas (26%) (Artiga et al., 2014). People who live in areas where 19% or more of the residents live in poverty account for the highest rates of HIV infection among African Americans, then Hispanics, followed by Whites (*Social Determinants of Health*, 2013).

According to a report released by the CDC in 2013, more than 40% of people infected by HIV have an annual household income of \$10,000 or less (Wiltz, T., 2014). Compared to other racial groups, African Americans have the highest poverty rate in the US, which potentially contributes to the increased incidence of HIV in this population. Due to low socioeconomic status in the African American community, there is the potential for limited access to healthcare, housing, and HIV prevention education causing a negative effect on HIV infection rates (“HIV among African Americans”, 2014). Further, racial discrimination that African Americans face is a contextual factor feeding into the socioeconomic status of this race, such as poverty, segregation, and incarceration (Adimora et al., 2006).

Along with language barriers, poverty also affects the Hispanic community, which may contribute to the HIV infection rates (“HIV among Hispanics/Latinos”, 2013). More barriers to seeking healthcare or preventative services for HIV in Hispanics/Latinos are immigration status, fear of discrimination, and possible deportation (“HIV among Hispanics/Latinos”, 2013). Also, migration in the Hispanic population can cause homelessness, isolation, and financial instability resulting in higher HIV rates in the community (Espinoza et al., 2008). In the African American and Hispanic communities, segregation contributes to members being more likely to engage in sex with each other, which poses a greater threat with each new sexual encounter (“HIV among African Americans”, 2014; “HIV among Hispanics/Latinos”, 2013).



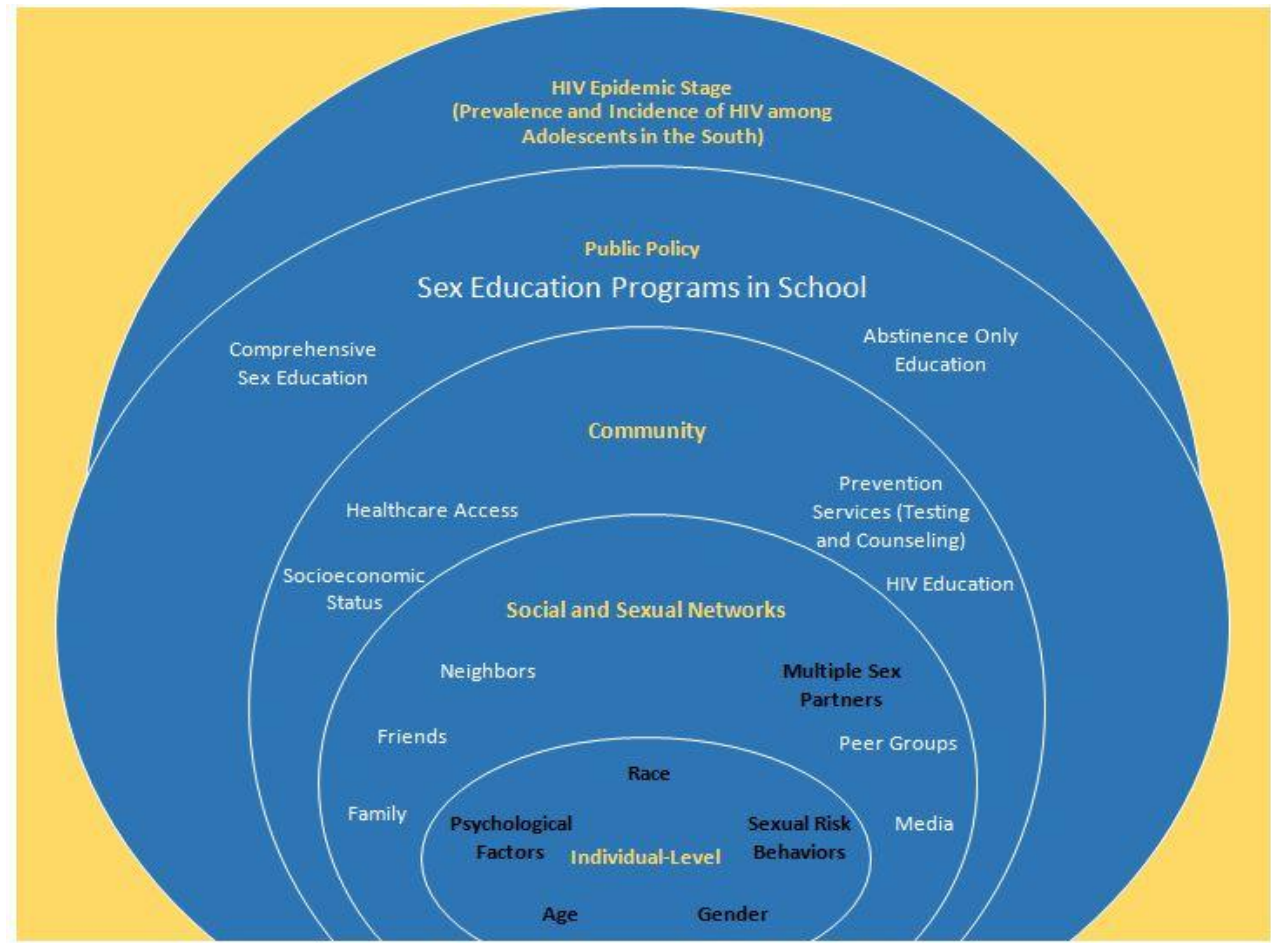
While the rates of HIV are stable at 50,000 infections, HIV is noticeably increasing in adolescents, especially minority youth (O'Donnell, O'Donnell, & Stueve, 2001; Rangel, Gavin, Reed, Fowler, & Lee, 2006). Racial disparities are massive when dealing with HIV and other STDs in disadvantaged youth. Compared to their white counterparts, minority adolescents are disproportionately represented among HIV/AIDS cases (Prado & Pantin, 2011). The highest rates of HIV are reported in the southern states and national surveillance reports that people aged 13-29 are burdened by HIV/AIDS the most in this region, especially African American and Hispanic youth (Adimora et al., 2014; Rangel et al., 2006). Better health education, more comprehensive health services, and additional supportive services are needed to combat the rise of HIV infections in the US, especially in minority youth residing in southern states (*HIV and Other STD Prevention*, 2014).

In order to create better education and health services for the target population, more information is needed on sexual health behaviors in adolescents in the southern states. Commonly, research studies focus on HIV risk behaviors on an individual level instead of accessing multiple levels of the HIV epidemic, especially for youth in the southern states of the US. In order to decrease the incidence of HIV transmission, multi-level HIV risk behaviors must be understood and addressed. Although HIV prevention methods, such as condom use, can reduce HIV transmission on an individual level, higher order social and structural-level factors can also prevent HIV infection across populations (Baral, Logie, Grosso, Wirtz, & Beyrer, 2013).

Social ecological models function as a way to describe the complicated relationship between social and structural factors, individual practices, the physical environment and health.

A modified social ecological model is proposed to aid in envisioning multilevel themes of HIV risk behaviors in high school adolescents residing in the southern states.

Southern States Ecological Model



*Figure 1.1* Modified Social Ecological Model of Risk for HIV Infection in Adolescents of the Southern States (Variables bolded are the only ones explored in this research).

Models focused on adolescent risk behavior based on ecological approaches to health have emphasized the main settings of adolescents’ lives including families, schools, neighborhoods, along with peers and work environments (L’Engle, Brown, & Kenneavy, 2006). Although all factors will not be analyzed in this research, the social ecological model will be

used to explain the relationships between social and structural factors, individual practices, the physical environment and health and how these associations affect HIV risk in adolescents. The social ecological model contextualizes adolescent's HIV risk behaviors through dimensions to assist in visualizing interactions between levels. This modified social ecological model is composed of five levels of risk for HIV infection in adolescents of the southern states: individual, network, community, policy, and stage of the HIV epidemic.

This model is considered modified due to the addition of the HIV epidemic level. The flexibility of this model is most fitting for the HIV infection rate in high school adolescents from the southern states (Baral et al., 2013). This model will not be used in its entirety for this research study due to the limited secondary data available through the survey selected. The levels of the model are explained below; however, the only levels explored in this research are the individual and social/sexual networks levels, as illustrated in Figure 1.1. Individual factors such as race, gender, and age should be assessed when there is a public health plausibility of being an actual risk factor. Also, the examination of sexual partnerships in epidemiological studies is imperative given how network characteristics can protect or expose individuals to the transmission of HIV (Baral et al., 2013).

### Individual Level

There is a wealth of literature dedicated to individual-level risk factors for HIV infection and transmission. Individual factors include biological and behavioral characteristics associated with susceptibility to acquire or transmit HIV (Baral et al., 2013). Individual factors such as low self-esteem, depression, and psychological distress can put adolescents in a position to engage in HIV sexual risk behaviors, such as multiple sex partners. Prevention of HIV should not solely focus on individual-level, but examine networks, communities, and policies. In the past, high

STD rates were seen as an individual-level phenomenon, but individual-level changes may not be sufficient for reaching a large population of at-risk adolescents (DiClemente et al., 2004). Furthermore, individual-level risk behaviors contribute to HIV infection, but this does not fully explain racial differences in HIV prevalence (Adimora et al., 2009).

### Social and Sexual Networks

Social and sexual networks include all interpersonal relationships, such as family, friends, neighbors, and others that influence HIV risk behaviors for adolescents. The social and sexual network levels of HIV risk include biological and behavioral factors, such as multiple sex partners, that increase the risk of acquiring HIV among adolescents in the southern states. Additionally, social and peer group norms, sexual roles, availability of condoms in a network, and HIV/STD prevalence in a social network can result in transmission of HIV and other STDs (Baral et al., 2013). Social networks, such as family relationships, can potentially promote healthy sexual behaviors in adolescents (Baral et al., 2013).

One of the strongest social network predictors for early sexual initiation is the perception that youth have of their peers having sex (Brown et al., 2006). Furthermore, one of the strongest protective factors against early sexual initiation is parental communication about sex (Brown et al., 2006). Mass media can also serve as another factor that can promote sexual risk behavior in adolescents' lives. The media can be identified as a "super peer" for adolescents who represents a persuasive and effective source of information and is more influential than traditional peer groups. This super peer often displays sexual imagery but rarely portrays consequences of risky sexual encounters or health sexual messages (Brown et al., 2006; L'Engle et al., 2006).

## Community

Similar to social networks, community environments can either promote or discourage sexual risk behaviors in adolescents. For example, disadvantaged communities can increase residents' vulnerability to HIV. Community based services such as sex education and preventative services, voluntary counseling and testing, and health literacy, are all imperative preventative measures that can reduce the rate of HIV infection in a certain population (Baral et al., 2013). New HIV infections among adolescents have been linked to socioeconomic factors such as poverty, lack of access to quality healthcare, and low education levels (Bauermeister et al., 2010).

Additionally, African Americans tend to use health facilities less than their white counterparts, which contribute to racial disparities in health (Wyatt, 2009). African Americans distrust in healthcare or "healthy paranoia" -suspicion of the intent of unfamiliar people until these people exhibit trust worthy behavior- has stemmed from mistreatment in the healthcare field, such as the Tuskegee Syphilis Experiment where African Americans infected with syphilis were observed and intentionally untreated for decades (Wyatt, 2009). For Hispanics, lack of healthcare could potentially be associated with fear of disclosing immigration status and possible deportation ("HIV among Hispanics/Latinos", 2013).

## Public Policy

Laws and policies can be implemented to combat an increasing incidence rate of HIV in a community, in this case high school students. Policies also determine the allocation of money to programs for HIV prevention, such as sex education in schools (Baral et al., 2013). Since research has shown that adolescents who have received comprehensive sex education are less

likely to report teen pregnancy comparable to teens who receive no education, this type of education is a necessity for adolescents' health (Kohler, Manhart, & Lafferty, 2008). Additionally, when comparing adolescents who received comprehensive sex education to adolescents receiving abstinence only education, comprehensive sex education was associated with a 50% lower risk for teen pregnancy (Kohler et al., 2008). In the US, individuals who usually do not receive sex education tend to be African American and from rural areas (Kohler et al., 2008).

Since the late 1900's, the federal legislation has funded abstinence-only programs which exclude any information about contraceptives, except to stress their failure rates (Landry et al., 2003). From the Ronald Regan administration in 1981 to the end of the George W. Bush administration in 2009, the federal government has poured funding into abstinent-only education programs. However, in 2010 the Obama Administration along with Congress ceased two discretionary federally funded abstinence only programs. Additionally, Congress allowed another abstinence only program to expire in the summer of 2009. In 2010, as part of the health care reform package this program was revived allowing \$50 million to be allocated to abstinent-only programs ("A Brief History", 2010).

### HIV Epidemic Stage

The combination of the HIV epidemic stage, community, and network influences an individual's sexual behavior. These separate levels from the modified ecological model do not cause HIV infection; rather these levels can increase or decrease the risk of transmission of HIV (Baral et al., 2013). For more than 20 years the HIV/AIDS epidemic has remained prevalent among youth, causing illness and death. Sexual risk behaviors in conjunction with improvement of HIV treatment contribute to the increase of HIV prevalence (Rangel et al., 2006).

## Statement of the Problem

The CDC reported that approximately 1,144,500 people aged 13 or older in the US were living with HIV (“HIV in the United States”, 2013). Although the CDC reported that the estimated number of HIV diagnoses remained stable overall in the US from 2008-2011, rates increased in some populations (*Social Determinants of Health*, 2013). Sexually active high school students fall into the 13-24 year old age group, where 12,200 new HIV infections occurred in 2010, indicating preventive measures need to be targeted to this population (“HIV Incidence”, 2013). Additionally, from 2008 to 2011, the HIV diagnosis rate increased in people aged 15-19, illustrating the need for more aggressive preventative tactics in this population (*HIV Surveillance Report*, 2013). Prevention measures such as sex education, condom use, and HIV testing are imperative in sexually active high school students, as this age group shows increasing numbers of new infections. There are several social and behavioral determinants that contribute to the number of HIV infections in this population but future actions can be taken to reduce this rising incidence rate for youth. The prevention of infection in this age group presents several challenges that need to be addressed.

Low perception of risk of contracting HIV is a contributor to the incidence rate for this age group. While youth accounted for over a quarter of new infections in 2010, approximately 60% of those individuals were unaware that they are infected with HIV. Despite increasing rates of infection, in 2011 only 13% of high school students had been tested for HIV. According to research studies, people aged 15-24 feel they should not worry about being infected with HIV which illustrates that the most common barrier to adolescents engaging in preventative measures is a low perception of risk for HIV and other STDs (“HIV among Youth”, 2014; Peralta, Deeds, Hipszer, & Ghalib, 2007). Illustrating that adolescents have a low perception of risk of HIV

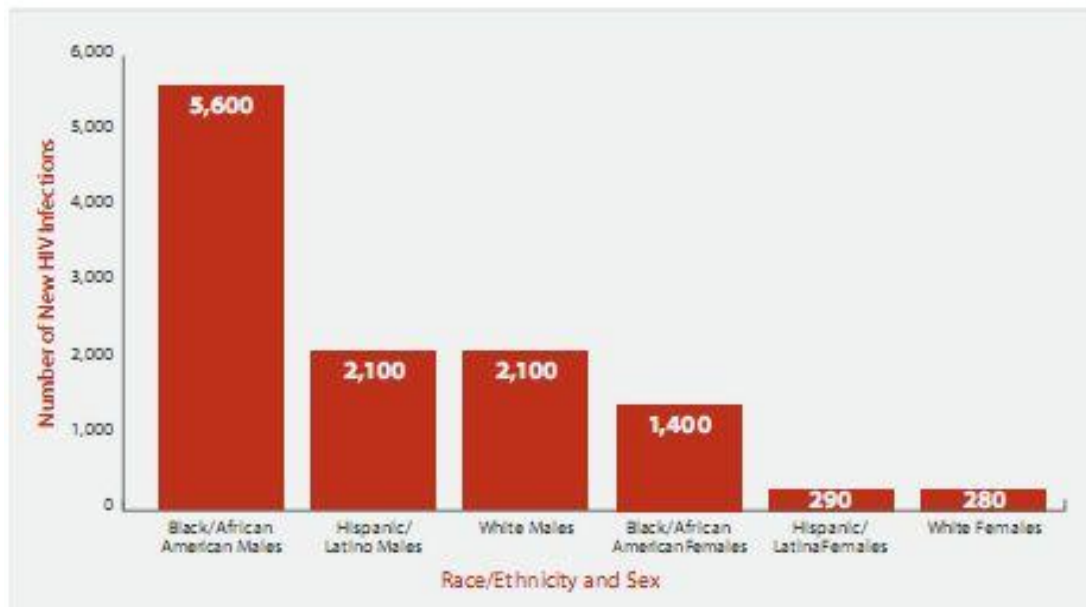
infection, 40% of high school students reported having unprotected sex (“HIV among Youth”, 2014). High STD rates are another challenge that should be reduced to prevent the increase of HIV cases in youth due to high susceptibility to the virus (“HIV among Youth”, 2014).

In 2010, African American youth aged 13-24 accounted for an estimated 57% of all new infections in this age group, being the largest racial group to be affected by HIV followed by Hispanics (20%) (Bauermeister et al., 2011; “HIV among Youth”, 2014). In the US, African American adolescents aged 13-24 are estimated to have 10 times greater risk for HIV infection when compared to their white counterparts (Bauermeister et al., 2011). Also, Hispanic high-school-age adolescents have a significantly higher HIV/AIDS rate compared to white adolescents (Ortega, Huang, & Prado, 2012). In 2010, out of the people living with a diagnosed HIV infection, Hispanic/Latinos aged 15-19 had a rate of 27.9 compared to their white counterparts who had a rate of 7.1 (*HIV Surveillance Report*, 2013).

Examining the geographic distribution of HIV cases especially by race, it is clear that the southern states of the US are affected the most. Compared to other states in the US, the southern states have the heaviest burden of HIV/AIDS and it disproportionately falls on African American and Hispanic youth (Rangel et al., 2006). Three quarters of the new HIV infections are from the minority populations (Rangel et al., 2006). Figure 1.2 displays the distribution of new HIV infections in 2010 among US youth aged 13-24 in the US based on race and gender (“HIV among Youth”, 2014).



**Estimates of New Infections Among Youth Aged 13-24 Years,  
by Race/Ethnicity and Sex, United States, 2010**



*Figure 1.2* Estimates of New Infections among Youth Aged 13-24 Years, by Race/Ethnicity and Sex, United States, 2010

Source: “HIV among Youth”, 2014

Due to the limited information known about adolescent sexual behaviors in southern states of the US, the current research will explore these subjects further. The objective of this study is to evaluate high school aged youth in the southern states on their sexual risk behaviors. The findings from this research are designed to increase awareness of sexual behaviors in this specific population and create preventative measures to reduce HIV infections in the southern states.

## Research Aims

Research Aim #1 - To explore the influence of race and gender on the number of sexual partners high school students have in the southern states of the United States during the years 2011 and 2013 using the Centers for Disease Control and Prevention (CDC)'s Youth Risk Behavior Survey (YRBS).

Research Aim #2 - To determine the influence of race and gender on early sex initiation in high school students in the southern states of the United States during the years 2011 and 2013 using the CDC's YRBS.

Research Aim #3 -To assess the influence of race and gender on condom use in high school students in the southern states of the United States during the years 2011 and 2013 using the CDC's YRBS.

## Southern States

Residents of the southern states are more likely to have chronic illnesses and experience negative health outcomes, to include HIV/AIDS, compared to other regions in the US (Artiga et al., 2014; *HIV Surveillance Report*, 2013). Although the rate of diagnosis of HIV infection remained stable in the US from 2008-2011, the highest HIV rates were in the southern states. In 2011, the HIV rate was 20.9 in the southern states, which is higher than all other regions: Northeast (18.1), West (12.0), and Midwest (9.3) (*HIV Surveillance Report*, 2013).

In 2010, the highest rates of HIV diagnosis in the US were in Washington D.C. (125.9), Maryland (30.6), and Louisiana (25.5), which are all in the south (*Social Determinants of Health*, 2013). According to archival data reported in 2003, the US HIV infection rate (11.6) was lower compared to the Deep South (14.7), including Alabama, Georgia, Louisiana, Mississippi, North Carolina, and South Carolina. The high levels of STDs in some southern states of the US could potentially explain why HIV transmission is so prevalent in these states (Landry et al., 2003). The south still has the highest rates of HIV infection, along with high rates of HIV-related mortality and many other adverse health outcomes in the US (Adimora, Schoenbach, & Doherty, 2014).

In 2011, African Americans in the southern states of the US had the highest incidence rate of HIV diagnosis (64.1) compared to all other races; whites had a lower rate (8.4) compared to African Americans. While whites in the southern states had an HIV diagnosis rate of 8.4, Hispanics in the southern states had a rate of 20.0 (*HIV Surveillance Report*, 2013). In the southern states there are high levels of poverty, poor health services, lack of health insurance, higher rates of STDs which increase susceptibility of contracting HIV, and other factors that contribute to the number of HIV/AIDS cases. There is limited research on the association

between sexual risk behaviors and the southern states to assess factors that may be contributing to the high incidence of HIV/AIDS (Alleyne, Coleman-Cowger, Crown, Gibbons, & Vines, 2011; Reif et al., 2006).

### HIV Incidence in Minorities

The southern states are burdened with the highest rates of certain STDs (Chlamydia, gonorrhea, and syphilis), obesity, age-adjusted all-cause mortality, and mortality due to heart disease, cancer and diabetes. Even though this region is disproportionately affected with poor health outcomes, people residing in the southern states are less likely to possess health insurance (Adimora et al., 2014). Further, people in the south who suffer from low socioeconomic statuses and are minorities usually are affected by health disparities the most (Reif et al., 2006).

African Americans have endured several historical and present day challenges, such as physical and sexual trauma, depression, anxiety, and posttraumatic stress disorder, which all have a lasting negative effect (Adimora et al., 2009). Factors such as poverty, segregation, and incarceration all stem from racial discrimination that African Americans face in the US (Adimora et al., 2009). The historical negative experiences that African Americans have experienced for centuries have resulted into current struggles, some contributing to risks for HIV/AIDS transmission. Due to these experiences, African Americans' personal control has been limited by economic and educational marginalization (Wyatt, 2009). Prevention challenges that the African American population face are stigma, fear, discrimination, homophobia, and negative perceptions about HIV testing, which place this population at a higher risk than any other racial group ("HIV among African Americans", 2014).

As the US has suffered more than three decades of the HIV/AIDS epidemic, African American HIV cases continue to increase compared to any other racial group (Adimora et al., 2014; Wyatt, 2009). Furthermore, there is a high concentration of people living with HIV in communities affected by poverty, where African Americans are disproportionately represented (Reif et al., 2006). Other STDs, which can increase susceptibility to HIV, are also more prevalent among African Americans (Adimora et al., 2006). African Americans compose approximately 20% of the population in the southern states, where the highest rates of HIV/AIDS exist (Reif et al., 2006). In 2010, among African Americans the highest incidence of HIV infection occurred in Washington D.C. (200.2), Maryland (86.1), and Texas (79.5) (*Social Determinants of Health*, 2013).

Hispanics have also been reported to have an increasing incidence and prevalence of HIV/AIDS in the US. Migration and acculturation (adoption of beliefs or behaviors of the US) have been identified as factors that are linked to HIV risk behaviors among Hispanics (Loue, 2006). Lower levels of acculturation are associated with reluctant actions to prevent HIV, such as reduced condom use. Furthermore, HIV behavioral risk factors in the Hispanic population vary by country of birth (“HIV among Hispanics/Latinos”, 2013). Rates of HIV vary based on Hispanic origin, with Puerto Ricans having the highest prevalence of HIV/AIDS among Hispanics in the US even though Puerto Ricans only account for 8.6% of US Hispanic population (Loue, 2006).

For Hispanics aged 15-54, HIV/AIDS is one of the top ten causes of death in the US (Ortega et al., 2012). Hispanics have the third highest rate of STDs in the US, which increases risk for HIV transmission in this population (“HIV among Hispanics/Latinos”, 2013). More than half of the estimated HIV diagnoses in Hispanic women were attributed to heterosexual sex

(“HIV among Hispanics/Latinos”, 2013). Out of all Hispanics infected with HIV, 41% reside in the southern states of the US which continues to illustrate a huge sexual health disparity in minorities of the southern states (Espinoza et al., 2008).

### Adolescents

According to the World Health Organization (WHO), individuals who are considered youth are aged 15-24. The terms “adolescents”, “youth”, and “young people” are used interchangeably for individuals aged 10-24 (WHO, 1986). Unless otherwise specified, the terms youth and adolescents will refer to individuals in the 10-24 year old range, inclusive.

An estimated 9.1 million adolescents are infected with one or more STDs each year in the US (Robinson, 2010). Furthermore, in 2012, 305,388 babies were delivered from young women aged 15-19 years, which indicates that inconsistent and incorrect use of contraceptives is still presently a problem (“Teen Pregnancy the Importance of Prevention”, 2014). Observing data from 1991-2013, the overall birth rate for females 15-19 years has declined, but these rates are still higher for African Americans and Hispanics compared to whites (Hamilton, Martin, Osterman, & Curtin, 2014). These pregnancy rates imitate the national rates for HIV in minority adolescents (“HIV among Youth”, 2014). Figure 1.3 illustrates the rates of HIV diagnoses for US adolescents in 2011.

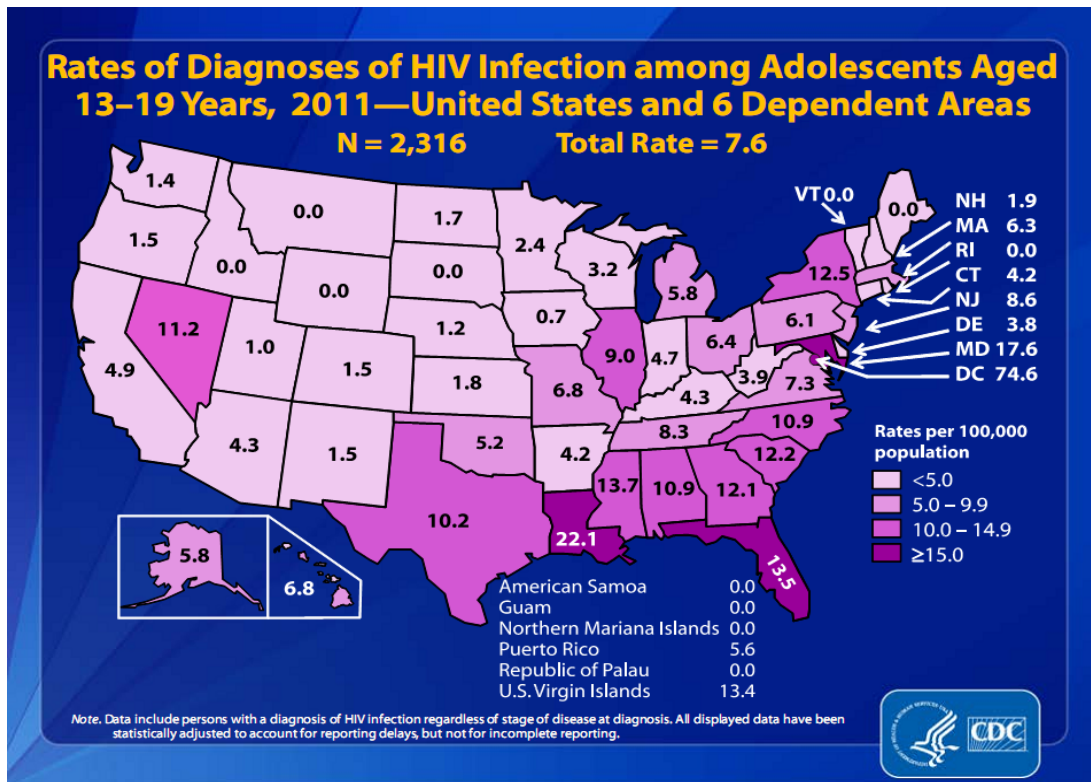


Figure 1.3 Rates of Diagnoses of HIV Infection among Adolescents Aged 13-19 Years, 2011 – United States and 6 Dependent Areas

Source: Centers for Disease Control and Prevention (CDC), n.d.b. Rates of Diagnoses of HIV Infection among Adolescents Aged 13-19 Years, 2011 - United States and 6 Dependent Areas

In the US, people aged 13-24 comprise approximately 26% of HIV incidence and the number of HIV diagnoses in people aged 13-24 have been consistently increasing from 2009 to 2011 in the US (“HIV Among Youth”, 2014; NCHHSTP Atlas, 2014; Spitalnick et al., 2007). Further, the majority of youth who are infected with HIV are unaware of their status (Peralta et al., 2007).

Sexual behaviors tend to become riskier for adolescents when these behaviors begin at an early age and risky sexual behaviors could evolve into higher risk behaviors in the future (Houlihan et al., 2008; Robinson, 2010). This may explain why the rate of HIV diagnosis is

higher in people aged 20-24 compared to 13-19 year olds (Rates of Diagnoses of HIV Infection among Adolescents Aged 13-19 Years, 2011; Rates of Diagnoses of HIV Infection among Young Adults Aged 20-24 Years, 2011). The high number of infections of HIV and other STDs among youth may reflect the sexual risk behaviors adolescents participate in, which can lead to several other negative outcomes (Ortega et al., 2012). Figure 1.4 illustrates the rates of HIV diagnoses in US young adults in 2011.



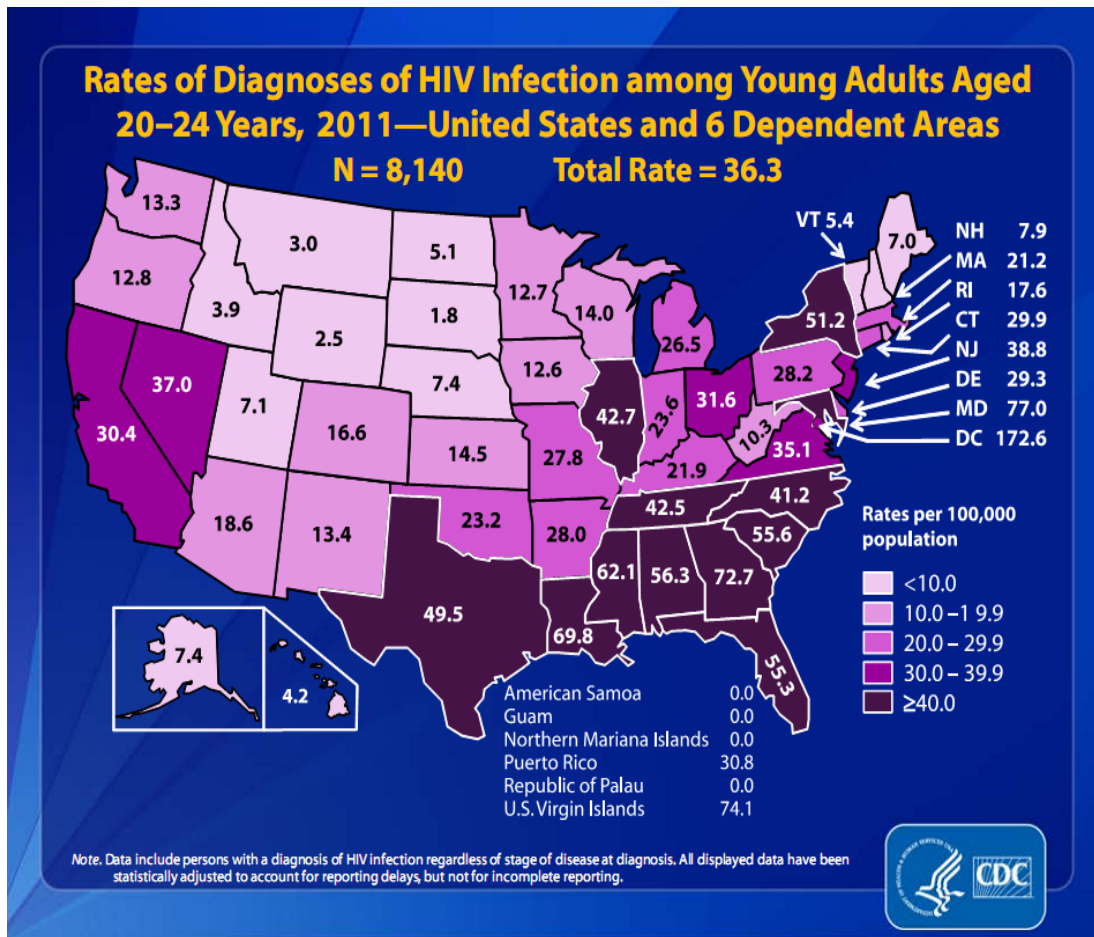


Figure 1.4 Rates of Diagnoses of HIV Infection among Young Adults Aged 20–24 Years, 2011 – United States and 6 Dependent Areas

Source: Centers for Disease Control and Prevention (CDC) n.d.c. Rates of diagnoses of HIV Infection among Young Adults Aged 20–24 Years, 2011—United States and 6 Dependent Areas.

Gender Differences in Adolescent HIV Incidence

Adolescent HIV infections tend to differ between genders (Rangel et al., 2010). In 2011, adolescent males aged 13–19 years had a much higher percentage of diagnoses of HIV infection (77%) compared to females (23%) (Diagnoses of HIV Infection among Persons Aged 13 Years and Older, 2011) The increase in diagnoses in adolescent males is believed to be driven by an increased number of diagnoses in men who have sex with men, with 87% of new HIV infections

being from male-to-male sexual intercourse (“HIV among U.S. Youth 2014”, 2014; Rangel et al., 2006). The stigma associated with homosexuality has caused negative effects among this population. According to the 2009 National School Climate Data, youth who are a part of the lesbian, gay, bisexual, or transgender (LGBT) community have reported harassment (National Sexuality Education Standards, 2012). Even on a state level, there are laws prohibiting same sex intercourse presently in 12 states, six in the southern states (Langlois, L, 2014).

### HIV Incidence in Minority Adolescents

Notably, in the US, rates of HIV and other STDs have been increasing rapidly in minority youth (*HIV Surveillance Report*, 2013; O’Donnell et al., 2001; Rangel et al., 2006). For HIV diagnoses in youth aged 13-24, 56% occurred in African Americans, who have higher rates of HIV than their white and Hispanic counterparts (Halpern et al., 2004; Spitalnick et al., 2007). In 2011, African Americans aged 15-19 had a HIV infection rate of 46.3, which was higher than whites of the same age (2.5) (*HIV Surveillance Report*, 2013).

Even though the HIV infection rate is higher in the African American population, there are gender differences within this racial group. Rangel et al. 2006, reported that out of persons aged 13-24 in the US, African American males and females had the highest frequencies of HIV diagnosis compared to any other races. Although STD rates are higher among African American female adolescents compared to their white counterparts, research suggests that African American females do not engage in more sexual risk behaviors than their white counterparts, but their sexual network has a higher prevalence of STDs, including HIV (Adimora et al., 2006; Upchurch & Kusunoki, 2004).

Hispanic youth, the largest and fastest growing minority group in the US are at a heightened risk for HIV infection (Prado & Pantin, 2011). The rates of HIV and other STDs in Hispanics are significantly higher among high school aged adolescents comparable to whites (Ortega et al., 2012). National surveillance reports that minority youth, including Hispanic adolescents, carry the heaviest HIV burden in the US, especially in the southern states (Rangel et al., 2006). There have also been reports of Hispanics engaging in more unsafe sexual behaviors, such as having multiple sex partners and lack of condom use, than whites and African Americans despite the fact that African Americans have the highest rates of HIV (Prado & Pantin, 2011). Research shows that HIV incidence varies by race yet fewer studies have explored risk behavior patterns by race, especially in adolescents in the southern states, using national representative data (Halpern et al., 2004; Ortega et al, 2012).

### Sexual Initiation

In 2013, the CDC's Youth Risk Behavioral Survey (YRBS) reported that 6% of US high school students had sexual intercourse before the age of 13, indicating early sexual initiation (*HIV and Other STD Prevention, 2014*; Kann et al., 2014). A study evaluating adolescent high school students' sexual behaviors found that 31% of males and 8% of females had reported sexual initiation by 8<sup>th</sup> grade, but by 10<sup>th</sup> grade those percentages increased into 66% and 52%, respectively (Brown et al., 2006). Youth who have early initiation of sexual intercourse are at greater risk for dating violence, unintended pregnancies, and STDs and are less likely to use a contraceptive method (Brown et al., 2006; Robinson, 2010).

Since the 1980's, US minority adolescents' age of first sexual initiation has been decreasing (Caputo, 2009; O'Donnell et al., 2001). Adolescent minorities who engage in sex at an early age put themselves at high risk for negative health outcomes (Lohman & Billings, 2008;

O'Donnell et al., 2001). Early sexual initiation is especially high among African American and Hispanic youth, which feeds into the large health disparity between white and minority adolescents (Caputo, 2009; O'Donnell et al., 2001).

Kohler et al. (2008) focused on high school aged adolescents and reported that African Americans were significantly more likely than any other race to report that they had engaged in vaginal intercourse. The CDC reported from survey results that 5% of white adolescent males and 2.9% of white adolescent females were sexually active before age 13 but 26.8% of African American males and 7.1% African American females had engaged in sex before 13. These percentages may partly be explained by some African American youth viewing themselves more favorably after the initiation of sex (Houlihan et al., 2008).

According to Kann et al. (2014), the 2013 YRBS data showed the prevalence of high school students who had sex was high among Hispanic students. Data also reported that 48% of Hispanic high school students had already initiated sex where 43% of white high school students had initiated sex (Longmore et al., 2009). Furthermore, compared to whites (3.3%), Hispanic students (6.4%) had a higher prevalence of having sexual intercourse before the age of 13. The number of Hispanic males (9.2%) that engaged in sexual intercourse before the age of 13 was higher than Hispanic females (3.8%) (Kann et al., 2014).

Adolescents, regardless of gender, who received sex education before their first sexual experience, were less likely to have sex before the age of 15 (Mueller, Gavin, & Kaulkarni, 2008). In this same study, males and females were both less likely to engage in early sexual initiation if they received sex education but findings were only significant for males after adjusting for all sociodemographic characteristics (Mueller et al., 2008). Among urban

adolescent African American females, there was a positive relationship between sex education and delayed sexual intercourse (Mueller et al., 2008).

Although the age of first sexual encounter continues to decrease for adolescents, research has shown that sex education reduces sexual risk behavior in adolescents (Mueller et al., 2008). Further, adolescents who have early sexual debut are more likely to know less information on correct usage of contraception (Houlihan et al., 2008). For example, only 73% of females and 80% of males reported that they used an effective contraceptive method at first sexual encounter (Mueller, et al., 2008).

According to Mueller et al. (2008), female adolescents who had received sex education before their first sexual encounter tended to use some form of birth control compared to females who did not receive sex education, but no significant difference was found in males. No significant associations were found for females when examining the relationship between sex education and the use of birth control after controlling for sociodemographic characteristics. Oppositely, significant associations were found for males when evaluating the effects of sex education on the use of birth control (Mueller et al., 2008). For populations that are at a disadvantage, such as minorities, sex education seems to be most beneficial. Overall, the research study's results suggest that sex education plays a significant role in contraceptive use and delaying sexual intercourse in adolescents (Mueller et al., 2008).

In addition to factors affecting sexual initiation in adolescents such as race and education, other psychological issues can have positive or negative outcomes on the age of sexual initiation. People who have a negative body image are more likely to abstain from sexual intercourse (Gillen, Lefkowitz, & Shearer, 2006). Contradictory to the literature mentioned previously, other research has found that poor body image has also been shown to encourage sexual risk taking

(Alleyne et al., 2011; Upchurch & Kusunoki, 2004). Also, research shows young women aged 14-18 who have had sexual intercourse report feeling depressed (Ethier et al., 2006). Forced sexual encounters have also been linked to increased sexual risk not only in US adolescents, but in adults as well (Alleyne et al., 2011). Adolescent females who have had a forced sex event are more likely to use alcohol or drugs during sex and initiate sex early in life (Alleyne et al., 2011; Upchurch & Kusunoki, 2004).

One study found that minority adolescents who experienced forced sex predicted early sexual initiation (Alleyne et al., 2011). In addition, forced sexual encounters could result in low self-esteem and depression, which have been shown to encourage risk taking in sexual behaviors (Alleyne et al., 2011; Upchurch & Kusunoki, 2004). Another precursor to sexual risk taking is dating violence. Female adolescents who have experienced dating violence are more likely to engage in sex at an early age. Among Hispanic adolescents, being male, experiencing dating violence, and forced sexual encounters all predicted early sexual initiation (Alleyne et al., 2011).

### Multiple Sex Partners

The number of sex partners an individual has can almost predict the occurrence of other risk-taking behaviors and beliefs they possess (Robinson, S., 2010; Upchurch & Kusunoki, 2004). For example, adolescents who are early sexual initiators have an increased likelihood of having multiple sexual partners (O'Donnell et al., 2001; Robinson, S., 2010). Data from the national YRBS survey reported that 15% of US high school students had sexual intercourse with four or more partners during their lifetime (*HIV and Other STD Prevention*, 2014). Adolescent males tend to have a higher number of sex partners compared to females (Robinson, 2010).

Overall, African Americans have been found to form sexual partnerships between people of differential risk (Adimora et al, 2006). African Americans that had only one sexual partner in the last year were five times more likely to select a sexual partner that has had at least four sexual partners (Adimora et al, 2006). African American males are more likely to have multiple sexual partners compared to their white counterparts (Adimora et al., 2009; Halpern et al., 2004). A study focused on sexual risk behaviors in African American men, found that 45% of the sample had reported having six or more female sex partners in the past year (Raj et al., 2009). These statistics might be explained by studies showing that peer group norms are powerful for urban African American males who are encouraged to achieve status by having as many sex partners as possible (Brown et al., 2006).

Incarceration rates in this adult subpopulation could also contribute to multiple sex partners. African American men are disproportionately incarcerated causing an uneven men-to-women ratio resulting in discordant sexual networks (groups of persons who are connected to one another sexually) (Adimora et al., 2009). Additionally, there is a high mortality rate for African American men which also lowers the sex ratio causing mixing patterns within sexual networks (Adimora et al., 2009).

Concurrent partnerships or overlapping relationships are more frequent in African Americans compared to whites, and that can facilitate the spread of HIV (Adimora et al., 2006). Adimora et al. (2006), indicated that African American women were more likely to report that they believed that at least one of their last three partners had sex with others during their sexual relationship (Adimora et al., 2006). African American men who have concurrent partnerships may be confident that their primary partner will not end the relationship because of the

difficulties associated with African American women attaining primary relationships (Adimora et al., 2006). Further, due to segregation of the African American population, STDs remain prevalent in the community due to the frequency of mixed sexual partnerships in this racial group. African Americans also have low marriage rates, which does not promote monogamy for this population (Adimora et al., 2006).

There are social, political, and cultural factors within the US Hispanic community that increase the likelihood of acquiring HIV. In the Hispanic culture, males often feel that they have to prove their masculinity which could promote Hispanic men to have multiple sex partners (Benavides, Bonazzo, & Torres, 2006). Furthermore, among Hispanic men in the US, individuals who are highly acculturated have an increased likelihood to have multiple sex partners (Loue, 2006). Migration in the Hispanic population can present increased HIV risk behaviors. Migration patterns can cause unequal ratios of women to men causing inconsistent and new sex partners (Espinoza et al., 2008). These behaviors are not solely performed by adults; adolescent Hispanics display some of these risky behaviors as well (Benavides et al., 2006).

In the US, some Hispanic adolescents have been found to engage in sex without a condom and with multiple sex partners (Benavides et al., 2006). According to the data analyzed by the CDC, Hispanic high school males (16.5%) had a higher prevalence of four or more lifetime sex partners compared to Hispanic high school females (10.5%). Comparable to white high school males (12.4%), Hispanic high school males (15.6%) had a higher prevalence of four or more lifetime sex partners (Kann et al., 2014).

In the US, aside from race playing a role in the number of sex partners adolescents have, body image has been found to have an effect as well. Gender roles portray men to have false



power over women, and combining positive body image with this gender role amongst males may contribute to this specific gender having multiple sex partners. Males may have a boost of confidence when they have a positive view of their body, which coincides with them feeling empowered in a masculine role during sex (Gillen et al., 2006). In contrast, a study found that individual's with larger body types compared to average body types were more likely to have more lifetime partners in order to seek approval (Gillen et al., 2006). Dating violence and forced sexual encounters have also been shown to have an effect on the number of sexual partners adolescents have (Alleyne et al., 2011; Upchurch & Kusunoki, 2004).

### Condom Use

Even though preventative messages have been spread nationwide, individuals continue to practice unprotected sex (Loue, 2006). In the US, unprotected sex by adolescents presents a major public health problem (Ortega et al., 2012). Responses from the CDC's YRBS illustrated that condom use increased among high school adolescents in the 1990's, but the rate decreased by the end of the decade (Landry et al., 2003). More recently, the YRBS has found that 41% of US high school students did not use a condom during their last sexual encounter. This statistic is unfortunate because unprotected sex becomes more frequent as adolescents age (Bauermeister et al., 2011).

Despite racial disparities of HIV incidence, data found that minorities are more likely to use condoms compared to their white counterparts, with the exception of Hispanic females (Kann et al., 2014). Additionally, in 2013 high school males had a higher proportion of using a condom when compared to females (Kann et al., 2014). Research also found among white, African American, and Hispanic young men and adolescent boys, who had traditional ideology,

were more likely to engage in unprotected sex (Santana, Raj, Decker, LaMarche, & Silverman, 2006). Also in adolescents, inconsistent condom use has been correlated with having multiple sexual partners (Bauermeister et al., 2011).

Wyatt (2009) found that African American women would usually opt out of using a condom. African American women believed that in order to have a long lasting relationship, they should avoid all confrontation about condom use (Wyatt, 2009). Self-reported data has shown that almost all African Americans who have participated in concurrent and/or multiple sexual partnerships had unprotected sex with at least one of their partners multiple times and had a STD diagnosis in their lifetime (Adimora et al., 2006). Despite the racial disparity in HIV and STDs, condom use is greater among African American males compared to white males, (Raj et al., 2009). A study focused on sexual risk behaviors in African American adolescent males found that 53% of their sample reported never using a condom and 23% reported never using a condom while engaging in anal sex (Raj et al., 2009).

In the Hispanic community, lower acculturation has been linked with a greater reluctance to use condoms (Loue, 2006). Hispanic youth report an even higher number of unprotected sexual events than white and African American youth (Prado & Pantin, 2011). According to the 2013 YRBS, Hispanic males (66.5%) and Hispanic females (50.7) had a lower percentage of using condoms than their African American male and female counterparts (73.0% and 55.3%, respectively), but Hispanic males had a higher percentage of using condoms than their white counterparts (61.8%). Hispanic adolescent males (66.5%) used condoms more than Hispanic females (50.7%) of the same age group (Kann et al., 2014). This statistic might be explained by cultural beliefs of different female Hispanic populations. For example, a research study assessing

Puerto Rican young women found that it is a cultural belief that condom use is immoral (Loue, 2006 ).

Despite the number of high school students engaging in unprotected sex, the 2012 School Health Policies and Programs Study reported only 5% of US high schools made condoms available at school (*HIV and Other STD Prevention*, 2014). Teachers in certain states, including the southern states, are more likely to emphasize the ineffectiveness of contraception and not cover all methods of prevention (Kohler et al., 2008; Landry et al., 2003). Furthermore, compared to northeastern teachers, southern teachers were less likely to teach the importance of correct and consistent use of condoms or how to properly use a condom (Kohler et al., 2008; Landry et al., 2003). In order to prevent the transmission of HIV, education on condom use is needed in order to protect adolescents. Adolescents are more likely to use condoms when they feel confident in the use of condoms, their ability to negotiate the use of condoms with partners, their ability to refuse unprotected sex, and their ability to discuss sexual matters (DiClemente et al., 2004; Houlihan et al., 2008).

Although factors such as religious beliefs, culture, ethnicity, gender roles, and sex education can determine an individual's sexual health, body image serves as an important factor that is often neglected. An individual's body image, including overall satisfaction, may reflect in their willingness to engage in sexual risk behaviors. For example, people who have a positive outlook on their appearance perceived fewer barriers to condom use (Gillen et al., 2006). Oppositely, individuals who have a negative evaluation of their body image may be seeking positive feedback about their body and fail to demand the use of condoms (Gillen et al., 2006).

While gender roles may cause males to perceive they have higher power over females, the addition of positive body image in males may contribute to the decreased likelihood of the use of condoms and believing less in the condom's ability to prevent (Gillen et al., 2006). Contrastingly, women who have a positive body image are more likely to insist on the use of condoms. Individuals who have a smaller body frame had a positive attitude in condoms' ability to protect against STDs such as HIV. Females who are not satisfied with their body image experience more fear of abandonment when discussing condom use with partners (Gillen et al., 2006).

Dating violence among adolescents has also been linked to sexual risk behaviors, such as lack of condom use. Furthermore, adolescent boys who suffer from dating violence are more likely not to use condoms. Specifically white adolescents who experienced dating violence were at a decreased likelihood to use condoms during sexual intercourse. Among Hispanics, younger age and forced sexual encounters were associated with substance use before sexual intercourse and events of unprotected sex (Alleyne et al., 2011).

Along with other factors, HIV testing can also be predictive of condom use in adolescents (Tolou-Shams et al., 2007). Although adolescents are at an increased risk for acquiring HIV, YRBS reported that only 12% of US high school students had been tested (Tolou-Shams et al., 2007). The lack of testing has been linked to low perceived risk for becoming infected with HIV. Despite the racial disparity of HIV, research has shown that African American adolescents are more likely to receive an HIV test than their counterparts. Also, research has found that adolescents who do not use substances during sex and who are more assertive about using condoms are more likely to have been tested for HIV (Tolou-Shams et al., 2007). The association

of HIV testing predicting condom use and lack of substance use during sex could potentially indicate the protection of one's health. Early testing in adolescents should take place before sexual risk taking occurs to prevent any infections (Tolou-Shams et al., 2007).

### Summary

Although several known methods exist to prevent the transmission of HIV, 50,000 people in the US acquire the virus annually ("HIV in the United States", 2013). There is a huge disparity for HIV infections in the southern states and minorities are most affected in these states (Reif et al., 2006; *Social Determinants of Health*, 2013). Due to HIV/AIDS being notably prevalent in the adolescent population, especially minority adolescents in the southern states, health education, health services, and supportive services are needed to reduce HIV infection in this population (*HIV and Other STD Prevention*, 2014; O'Donnell et al., 2001; Rangel et al., 2006).

The number of HIV and other STD infections in adolescents can reflect the sexual risk behaviors that young people in the US engage in, resulting in unfavorable outcomes (Ortega et al., 2012). Aside from race, these risky behaviors can potentially vary by the adolescent's gender (Robinson, 2010). Sexual risk behaviors such as early sex initiation, multiple sex partners, and lack of condom use contribute to adolescents' rising infection rates of HIV (Robinson, 2010; Upchurch & Kusunoki, 2004).

The age of first sexual intercourse has been decreasing since the 1980's in the US which puts adolescents who have early sexual initiation at a higher risk for contracting HIV and other STDs, especially among minority youth (Lohman & Billings, 2008; O'Donnell et al., 2001).

Additionally, having multiple sex partners is another factor that can lead to risk taking predicting HIV infection (Adimora et al., 2006; Upchurch & Kusunoki, 2004). Due to the segregation and migration of minorities and them tending to have multiple sex partners, HIV is more prevalent in minority communities (Adimora et al., 2006; Espinoza et al., 2008).

The lack of condom use in adolescents also presents a major public health problem (Ortega et al., 2012). Statistics show that condom use is decreasing among youth and unprotected sex becomes more frequent as adolescents age (Bauermeister et al., 2011; Landry et al., 2003). Contradictory to the racial distribution of HIV infection in the US, minorities use condoms more than their white counterparts (Kann et al., 2014; Raj et al., 2006). This provides more evidence to support the need for extensive research to be conducted to explore the disparity of HIV infections among minorities, including minority adolescents.

These sexual risk behaviors are not the only factors that contribute to HIV prevalence in the US adolescent population. Psychosocial factors, such as body image issues, forced sexual encounters, dating violence, and depression can have a negative effect on sexual behaviors in adolescents (Alleyne et al., 2011; Ethier et al., 2006). Despite several research studies reporting the prevalence of HIV based on race and/or gender, there is an inadequate amount of evidence on sexual risk behaviors that clarify the racial disparity. Further research is needed on adolescent populations in the US to more thoroughly analyze the risk associated with individuals' sexual behavior patterns, especially in minority adolescents (Bauermeister et al., 2010; Halpern et al., 2004).

### Significance to Public Health

Despite the stability of the current estimated number HIV infections in the US, rates are steadily increasing in the nation's youth population, disproportionately in minority adolescents (Rangel et al., 2006; *Social Determinants of Health*, 2013). The southern states of the US have also been identified to have a large HIV disparity, especially among minorities (Reif et al., 2006; *Social Determinants of Health*, 2013). The magnitude of HIV/AIDS in minority populations is so large that the CDC has proposed a heightened national response to the epidemic (Wyatt, 2009).

As adolescents age, they engage in more events of unprotected sex, which increases the risk of continued sexual risk behaviors and therefore the likelihood of acquiring HIV (Bauermeister et al., 2011). Although there are several existing prevention measures available for reducing HIV infection, more comprehensive sex education, prevention programs, and interventions are needed to reduce sexual risk behaviors in youth, notably in minority communities in the southern states (Adimora et al., 2009; Adimora et al., 2006; Ethier et al. 2006). Presently, there is limited research on HIV risk behaviors in the southern states, particularly with adolescents. Therefore, this line of research has important public health implications for the assessment and prevention of HIV risk behaviors among adolescents in the southern states and may contribute to policies and interventions to reduce HIV transmission in the area.

## Human Subjects Protection

The East Tennessee State University and Veteran's Administration Institutional Review Board (IRB) reviewed this study and the study was exempt on the determination that this was not human subjects research. The data were collected by the CDC and all identifying information on individuals was removed prior to being provided for the current study.



## CHAPTER 2

### INFLUENCE OF RACE AND GENDER ON SEXUAL INITIATION IN HIGH SCHOOL STUDENTS IN THE SOUTHERN STATES OF THE UNITED STATES

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## ABBREVIATIONS

AIDS – Acquired Immunodeficiency Syndrome

CDC – Centers for Disease Control and Prevention

HIV – Human Immunodeficiency Virus

STD – Sexually Transmitted Disease

US – United States

WHO – World Health Organization

YRBS – Youth Risk Behavior Surveillance System

## ABSTRACT

**Purpose:** Human Immunodeficiency Virus (HIV) incidence rates are highest in the southern states of the United States (US) with adolescents residing in the southern states as one of the most highly affected groups in the country. Shown to increase risk of HIV infection, the prevalence of early sexual initiation is especially high in minority adolescents potentially contributing to racial disparities in HIV infection in the US. In addition, white and minority males are at an increased risk for early sexual initiation compared to their female counterparts illustrating gender differences. The objective of this study was to examine the influence of race and gender using self-reported data from US high school students in the southern states on their age of sexual initiation. **Methods:** Weighted data were obtained from the 2011 and 2013 National Youth Risk Behavior Survey (N=93,544). Early sexual initiation was defined as an individual engaging in sexual intercourse for the first time before the age of 13. Multiple logistic regression was used to examine the influence of race and gender on early sexual initiation among southern high school students after controlling for the age of the students, body weight perception, dating violence, depression, HIV education, contraception, forced sex, and substance use before sex. **Results:** The sample included the following proportions: male (47.48%), female (52.52%), minority (38.06%), and white (61.94%). Out of the sample, 6.7% reported early sexual initiation. Early sexual initiation for the sample was distributed as follows: respondents aged 16 (26.14%), minority male (45.49%), body weight perception of “about the right weight” (41.70%), no dating violence (76.26%), no depression (63%), HIV education (76.19%), non-effective contraceptive use (53.25), no forced sex (73.52), and no substance use before sex (57.88). Minority males were over 10 times more likely to engage in early sexual initiation compared to white females (OR-10.40; CI-9.03-11.98). Minority females and white males were

also more likely to engage in early sexual initiation compared to white females (OR-2.11; CI-1.81-2.46, OR-3.73; CI-3.23-4.30, respectively). In addition, the age group <15 (OR-2.60; CI-2.19-3.09), body weight perception of “underweight” (OR-1.36; CI-1.20-1.54), experiencing dating violence (OR-1.48; CI-1.31-1.67), depression (OR-1.13; CI-1.02-1.25), no HIV education (OR-1.42; CI-1.26-1.59), non-effective methods for contraception (OR-1.56; CI-1.42-1.72), experiencing forced sex (OR-2.63; CI-2.32-2.97), and using substances before sex (OR-2.24; CI-2.03-2.47) all increased the odds of early sexual initiation. **Conclusion:** Gender and race were associated with early sexual initiation in high school students in the southern states. Psychosocial factors were also associated with early sexual initiation. These results can be utilized to target HIV/AIDS awareness and prevention activities to key affected populations.

## Implications and Contribution

Due to insufficient information on sexual risk behaviors in minority adolescents in the southern states, this line of research has important public health implications. The assessment and prevention of HIV among adolescents in the southern states may contribute to effective policies and interventions that reduce HIV transmission among key affected populations.

## Introduction

It is estimated that 50% of HIV infections occur among US citizens under the age of 25 and the highest proportion of AIDS rates are in the southern states of the US.<sup>1,2,30</sup> There are several HIV prevention challenges for adolescents in the US including a number of sexual risk behaviors,<sup>16</sup> including early sexual initiation that can increase the risk of HIV infection.<sup>6,25</sup> According to the CDC, early sexual initiation is defined as engaging in sexual intercourse before the age of 13.<sup>17</sup> Individuals with early sexual initiation have an increased risk of having multiple sex partners, teenage pregnancy, forced sex, frequent sexual events, and having sex under the influence of drugs or alcohol even in later years of life.<sup>5,7,26</sup>

The 2013 National Youth Risk Behavior Surveillance (YRBS) data show that overall approximately 6% of high school students engaged in sexual intercourse for the first time before their 13<sup>th</sup> birthday. The prevalence of early sexual initiation among adolescents was highest in the southern states where Mississippi had the highest rate (11.8%).<sup>18</sup> The prevalence of early sexual initiation is especially high in minority adolescents which may contribute to the racial disparity in HIV infection. Minority adolescents who are early sexual initiators are at an even higher risk for engaging in sexual risk behaviors which cause negative outcomes of sexual

activity such as contracting STDs.<sup>17,25</sup> Most available literature only explores sexual behaviors for adolescents nationally but does not focus on race and gender for different geographical regions in the US. This gap in the literature is the purpose for conducting this current research study.

### Definition of Adolescents and Youth

According to the World Health Organization, individuals who are considered youth are aged 15-24. The terms “adolescents”, “youth”, and “young people” are used interchangeably for individuals aged 10-24.<sup>32</sup> Unless otherwise specified, the terms youth and adolescents in this manuscript refers to individuals in the 10-24 year old range, inclusive.

### Definition of Minorities

According to the CDC, racial and ethnic minority populations are defined as: African American or Black, Asian American, Hispanic or Latino, Native Hawaiian and other Pacific Islander, and American Indian and Alaska Native.<sup>6</sup>

### Race and Gender

A contributing factor to the high prevalence of HIV/AIDS in minority communities is the age at first sex among minority adolescents has continuously decreased since the 1980's.<sup>7,25</sup> The prevalence of early sexual initiation is especially high among African American and Hispanic youth, which increases the risk of HIV infection.<sup>17,25</sup> The Centers for Disease Control and Prevention (CDC) reported that African American adolescent males were sexually active before the age of 13 at 26.8% compared to white adolescent males at 5%. Also, compared to white females (2.9%), African American females engaged in sex before 13 at a higher proportion

(7.1%).<sup>17</sup> Hispanics also display a differential risk for engaging in sex at an early age. According to the 2013 YRBS, compared to whites, Hispanics had approximately 3% increase for early sexual initiation.<sup>18</sup> Furthermore, African American and Hispanic adolescents living in the southern states were less likely to abstain from sex compared to minority youth in other states.<sup>7</sup>

Limited information was found in the literature on adolescent sexual behaviors in the southern states. Although race and gender have been researched nationally for adolescent sexual behaviors, race and gender has not been researched for predictors of early sexual initiation geographically in the US for adolescents. The objective of this study was to use the YRBS (2011 and 2013) to evaluate self-reported weighted data from US high school students in the southern states on their age of sexual initiation. It has been hypothesized that “minority males” have the highest likelihood of engaging in sex before the age of 13. The results from the study support the likelihood of gender and race interacting with early sexual initiation.

## Methods

### Study Design and Sample

The CDC’s YRBS distributes a national school based survey biennially. The survey includes questions on the following: behaviors that contribute to unintentional injuries and violence; sexual behaviors that contribute to unintended pregnancy and sexually transmitted diseases, including HIV infection; alcohol and other drug use; tobacco use; unhealthy dietary behaviors; inadequate physical activity. The data helped determine racial and gender disparities of early sexual initiation in youth in the southern states of the US. State specific data was requested from the CDC for the current study.



The following states were used in the analyses: Texas, Oklahoma, Arkansas, Mississippi, Alabama, Florida, Tennessee, Kentucky, South Carolina, North Carolina, West Virginia, Maryland (only included 2013 data), and Delaware. Louisiana, Georgia, Maryland (only 2011), and Virginia were excluded because they did not have data on the outcome variable (early sexual initiation), which was measured by the YRBS question: “How old were you when you had sexual intercourse for the first time?” All respondents who reported “I have never had sexual intercourse” were deleted from the sample (N=46,597). The following races were excluded due to the low rates of HIV among that population: “American Indian” (N=1,209), “Asian” (N=3,234), “Native Hawaiian” (N=698), and “Multiple Non-Hispanic” (N=4,881). A final sample size of 93,544 was used for the current analysis. The sample only included whites, African Americans or Blacks, Hispanic or Latino, and multiple Hispanic who had engaged in sexual intercourse.

The East Tennessee State University and Veteran’s Administration Institutional Review Board (IRB) reviewed this study and determined it was not human subjects research. The data were collected by the CDC and all identifying information on individuals was removed prior to being provided for the current study.

### Outcome Variable

Sexual initiation was defined as the respondent’s age they had sexual intercourse for the first time. The respondent could either select an age from “11 years old or younger”, “12 years old”, “13 years old”, “14 years old”, “15 years old”, “16 years old”, “17 years or older” or select “I have never had sexual intercourse.” Among the respondents who had sexual intercourse, they were dichotomized into having sex before 13 years old or not having sex before the age of 13

(based on CDC standards for the definition of early sexual initiation).<sup>17</sup> For this analysis, early sexual initiation refers to those who had sex before 13.

### Exposure Variables

Race was defined as the respondents' selected race. The respondent was allowed to select more than one response. Responses included "American Indian/Alaska Native", "Asian", "Black or African American", "Native Hawaiian/other PI", "white", "Hispanic/Latino", "multiple - Hispanic", or "multiple - non-Hispanic". Respondents were considered "multiple-Hispanic" if they selected Hispanic along with another race on the survey. The variable for race was then dichotomized into whites or minorities.

Only respondents who selected "white" as their race were included in the white category. Respondents who selected "Black or African American", "Hispanic/Latino", and/or "multiple - Hispanic" were included in the minority category. Respondents who selected "female" as their gender and "white" as their race were categorized as "white female." For respondents who selected "male" as their gender and "white" as their race were categorized as "white male." Respondents who selected "female" as their gender and "Black or African American", "Hispanic/Latino", or "multiple - Hispanic" were categorized as "minority female". Respondents who selected "male" as their gender and "Black or African American", "Hispanic/Latino", or "multiple - Hispanic" were categorized as "minority male". Therefore, the exposure variable included four levels: white male, white female, minority male, and minority female.

## Covariates

Age was defined as how old the respondent was at the time of taking the survey. The categories included responses from “12 years old or younger”, “13 years old”, “14 years old”, “15 years old”, “16 years old”, “17 years old”, or “18 years old or older”. Similar to other studies, the age variable was categorized into “younger than 15”, “15-17 years old” or “18 years or older”.<sup>15, 21, 23</sup>

According to some literature, adolescents who have an unfavorable view of their body tend to abstain from sexual intercourse and the opposite occurs when adolescents are satisfied with their body.<sup>13,16</sup> For the current study, body weight perception was defined as how the respondent described their weight. The selections included: “very underweight”, “slightly underweight”, “about the right weight”, “slightly overweight”, or “very overweight”. Due to small sample size, body weight perception was categorized into “underweight”, “about the right weight” or “overweight”. If the respondent selected “very underweight” or “slightly underweight” they were placed in the “underweight” category. If the respondent selected “slightly overweight” or “very overweight” they were placed in the “overweight” category.

Research shows that all individuals who experience dating violence are at risk for early sexual initiation.<sup>3</sup> In this study, dating violence was defined as the respondent’s boyfriend, girlfriend, or someone they were dating or going out with hitting, slapping, or physically hurting them on purpose one or more times during the past 12 months of completing the survey. If the respondent selected “yes” then they were in the “dating violence” category.

There is also evidence that females who engaged in sex during their teen years were depressed.<sup>13</sup> For the current analysis, depression was defined as the respondent feeling so sad or hopeless almost every day for two weeks or more in a row that they stopped doing some usual activities within the past 12 months of completing the survey. If the respondent selected “yes” then they were in the “depression” category.

Houlihan et al., reported that youth who are early sexual initiators tend to know less information about preventative measures during intercourse.<sup>16</sup> Education on healthy sexual behaviors has been shown to help adolescents abstain from sexual intercourse for a longer period of time, especially in African American females.<sup>22</sup> There is even more evidence that females tend to use a form of contraception at first sexual encounter if educated on healthy sexual behaviors.<sup>22</sup> Moreover, minorities seem to benefit from sex education the most.<sup>22</sup> For this study, HIV education was defined as the respondent being taught about HIV or AIDS infection in school. If the respondent selected “yes” then they were in the “HIV education” category.

Contraception was defined as the one method the respondent or their partner used to prevent pregnancy at last sexual intercourse. The selections include: “I have never had sexual intercourse”; “no method was used to prevent pregnancy”; “birth control pills”; “condoms”; “Depo-Provera (or any injectable birth control), Nuva Ring (or any birth control ring), Implanon (or any implant), or any IUD”; “withdrawal”; “some other method”; or “not sure”. If the respondent selected “birth control pills”; “condoms”; or “Depo-Provera (or any injectable birth control), Nuva Ring (or any birth control ring), Implanon (or any implant), or any IUD” they were included in the “effective contraception” category. If the respondent selected “no method

was used to prevent pregnancy”; “withdrawal” “some other method”; or “not sure” then they were placed in the “ineffective contraception” category.

Forced sexual encounters are associated with increase sexual risk behaviors in individuals, such as early sexual initiation.<sup>3,33</sup> Forced sex was defined as a respondent being physically forced to have sexual intercourse when they did not want to. If the respondent replied “yes” to the question, they were placed in the “forced sex” category. Adolescents who engage in early sexual initiation are more likely to use substances before sex.<sup>11</sup> Substance use before sex was defined as a respondent using alcohol or drugs before having their last sexual intercourse before completing the survey. The selections for this question include: “yes” and “no”. If the respondent selected “yes” they were placed in the “substance use” category.

### Statistical Analysis

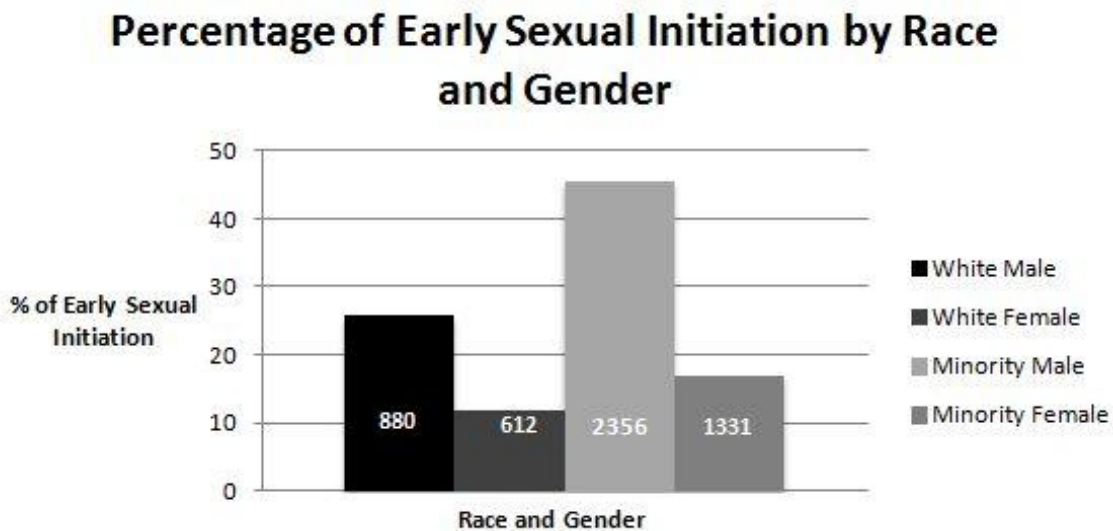
Descriptive statistics were used for the outcome, exposure, and covariates. Chi-squared analyses were used to determine the frequency of associations between the predictor variables and early sexual initiation. Simple logistic regression was used to determine the relationship between early sexual initiation and predictor variables. Multiple logistic regression was used to examine the relationship between race and gender and early sexual initiation controlling for covariates. Interaction terms between race and gender were assessed. SAS was used to conduct all analyses.

### Results

A total of 6,244 (6.7%) of the sample reported that they had early sexual initiation. With a total of 93,544 respondents, the sample included the following proportions: male (47.48%),

female (52.52%), minority (38.06%), and white (61.94%). The sample included the following proportions for early sexual initiation by race/ethnicities: multiple – non-Hispanic (6.9%), Hispanic (4.09%), Native Hawaiian (1.31%), Asian (1.6%), American Indian (2.0%), multiple-Hispanic (14.9%), white (33.1%), and Black or African American (36.1%). All race and gender categories by early sexual initiation in the analysis were as follows: white female (11.82%), white male (25.70%), minority male (45.49%), and minority female (11.82%) (Figure 2.1).

**Figure 2.1 Percentages of Early Sexual Initiation for Southern States by Race and Gender**



Early sexual initiation for the sample was distributed as follows: respondents aged 16, minority male, body weight perception of “about the right weight”, no dating violence, no depression, non-effective contraceptive use, no forced sex, and no substance use before sex (Table 2.1).

Table 2.1 Characteristics of Early Sexual Initiation in US High Schools in the Southern States, YRBS 2011 and 2013

N= 93544		Early Sex Initiation	No Early Sex Initiation	p-value <sup>a</sup>
		N=6244	N=87300	
Characteristics		N (%)	N (%)	
<b>Gender/Race</b>	White Female	612 (11.82)	25711 (33.65)	<0.0001
	White Male	1331 (25.70)	22917 (29.99)	
	Minority Male	2356 (45.49)	11983 (15.68)	
	Minority Female	880 (16.99)	15795 (20.67)	
<b>Age</b> (years)	<15	803 (14.84)	10464 (13.38)	<0.0001
	15	1372 (25.36)	20501 (26.21)	
	16	1414 (26.14)	20689 (26.45)	
	17	1151 (21.28)	18342 (23.45)	
	≥18	670 (12.38)	8212 (10.50)	
<b>Gender</b>	Male	3838 (71.42)	35795 (45.83)	<0.0001
	Female	1536 (28.58)	42302 (54.17)	
<b>Race</b>	White	2065 (33.07)	49534 (56.74)	<0.0001
	Black or African American	2254 (36.10)	16307 (18.68)	
	Hispanic /Latino	256 (4.10)	3932 (4.50)	
	Multiple - Hispanic	927 (14.85)	8247 (9.45)	
	Multiple - Non-Hispanic	430 (6.89)	4451 (5.10)	
	American Indian/Alaska Native	125 (2.00)	1084 (1.24)	
	Asian	105 (1.68)	3129 (3.58)	
	Native Hawaiian/other PI	82 (1.31)	616 (0.71)	
<b>Body Weight Perception</b>	Underweight	1060 (20.82)	19906 (26.39)	<0.0001
	About the Right Weight	2123 (41.70)	33501 (44.42)	
	Overweight	1908 (37.48)	22015 (29.19)	
<b>Dating Violence<sup>b</sup></b>	Yes	1126 (23.74)	5127 (8.49)	<0.0001
	No	3617 (76.26)	55283 (91.51)	
<b>Depression<sup>b</sup></b>	Yes	1956 (37.00)	19767 (25.50)	<0.0001
	No	3331 (63.00)	57756 (74.50)	
<b>HIV Education</b>	Yes	3695 (76.19)	63210 (86.36)	<0.0001
	No	1155 (23.81)	9987 (13.64)	
<b>Contraception</b>	Effective	2357 (46.75)	63277 (83.70)	<0.0001
	Non-Effective	2685 (53.25)	12319 (16.30)	
<b>Forced Sex</b>	Yes	1402 (26.48)	5193 (6.67)	<0.0001
	No	3892 (73.52)	72610 (93.33)	
<b>Substance Use Before Sex</b>	Yes	1560 (42.12)	4175 (18.95)	<0.0001
	No	2144 (57.88)	17861 (81.05)	

<sup>a</sup> p-value for overall chi-square test

<sup>b</sup> Within the past 12 months

The bivariate analysis illustrates that compared to white females, minority males were over 8 times more likely to engage in early sexual initiation (OR-8.26; CI-7.54-9.05). Multiple logistic regression showed that when compared to white females, minority males were over 10 times more likely to engage in sexual intercourse before the age of 13 (OR-10.40; CI-9.03-11.98). Minority females and white males were also more likely to engage in early sexual initiation compared to white females (OR-2.11; CI-1.81-2.46, OR-3.73; CI-3.23-4.30, respectively). In addition, the subpopulations that were more likely to engage in early sexual initiation include: respondents who did not received HIV education (OR-1.42; CI-1.26-1.59); respondents who used non-effective methods for contraception (OR-1.56; CI-1.42-1.72); respondents who experienced forced sex (OR-2.63; CI-2.32-2.97); and respondents who used substances before sex (OR-2.24; CI-2.03-2.47) (Table 2.2).



Table 2.2. Univariate Analysis and Multiple Logistic Regression of Factors Associated with Early Sexual Initiation in US High School Students in the Southern States, YRBS 2011 and 2013

**N= 93544**

Variable		Crude OR (CI <sup>b</sup> )	Adjusted OR (CI <sup>a</sup> )	P-Value
<b>Gender/Race</b>	White Female	1.00 <sup>b</sup>	1.00 <sup>b</sup>	
	White Male	2.44 (2.21-2.69)	3.73 (3.23-4.30)	<0.0001
	Minority Male	8.26 (7.54-9.05)	10.28 (8.93-11.84)	<0.0001
	Minority Female	2.34 (2.11-2.60)	2.11 (1.81-2.46)	<0.0001
<b>Age</b> (years)	<15	1.12 (1.03-1.23)	2.66 (2.24-3.16)	<0.0001
	15	0.98 (0.91-1.06)	1.56 (1.37-1.77)	<0.0001
	16	1.00 <sup>b</sup>	1.00 <sup>b</sup>	
	17	0.92 (0.85-1.00)	0.73 (0.64-0.82)	<0.0001
	≥18	1.19 (1.09-1.31)	0.69 (0.60-0.80)	<0.0001
<b>Body Weight Perception</b>	Underweight	0.84 (0.78-0.91)	1.36 (1.20-1.54)	<0.0001
	About the Right Weight	1.00 <sup>b</sup>	1.00 <sup>b</sup>	
	Overweight	1.37 (1.28-1.46)	0.99 (0.89-1.10)	0.0016
<b>Dating Violence<sup>c</sup></b>	Yes	3.36 (3.12-3.61)	1.52 (1.36-1.72)	<0.0001
	No	1.00 <sup>b</sup>	1.00 <sup>b</sup>	
<b>Depression<sup>c</sup></b>	Yes	1.72 (1.62-1.82)	1.16 (1.05-1.28)	0.0046
	No	1.00 <sup>b</sup>	1.00 <sup>b</sup>	
<b>HIV Education</b>	Yes	1.00 <sup>b</sup>	1.00 <sup>b</sup>	
	No	1.98 (1.85-2.12)	1.46 (1.31-1.64)	<0.0001
<b>Contraception</b>	Effective	1.00 <sup>b</sup>	1.00 <sup>b</sup>	
	Non-Effective	5.85 (5.52-6.20)	1.51 (1.37-1.64)	<0.0001
<b>Forced Sex</b>	Yes	5.04 (4.71-5.39)	2.77 (2.45-3.13)	<0.0001
	No	1.00 <sup>b</sup>	1.00 <sup>b</sup>	
<b>Substance Use Before Sex</b>	Yes	3.11 (2.89-3.35)	2.28 (2.07-2.51)	<0.0001
	No	1.00 <sup>b</sup>	1.00 <sup>b</sup>	

<sup>a</sup>CI: 95% confidence interval

<sup>b</sup> Indicates Reference Category

<sup>c</sup> Within the past 12 months

## Discussion

Race and gender was found to be associated with early sexual initiation in southern high school students. However, the association between early sexual initiation and race and gender varied by several factors such as body weight perception, dating violence, depression, HIV education, contraception use, forced sexual encounters, and substance use before sexual intercourse. The literature expands on some specific characteristics that might be similar to what the study is suggesting. If there are differences in sexual norms due to race/ethnicity, it is plausible that early sexual initiation may occur more often in adolescents due to their racial background.<sup>16</sup>

Gender plays a role in the sexual health of adolescents, especially females who engage in sex prematurely, placing them at an elevated risk for poor medical, social, and psychological outcomes, including HIV infection.<sup>16</sup> Adolescents in the US have been found to engage in high sexual risk behaviors, a finding corroborated by this study. The current study also shows significant findings for gender and racial differences associated with early sexual initiation in adolescents in the southern states.

Literature illustrates that African Americans are more likely to engage in sex at an earlier age compared to whites.<sup>26</sup> It has also been found that males are more likely to engage in early sex initiation compared to females and the current findings for the southern states support it.<sup>26</sup> Several factors affect how these subpopulations behave sexually. In this study, the following factors were found to make a significant difference: body weight perception, dating violence, depression, HIV education, contraception use, forced sexual encounters, and substance use before sexual intercourse.

Adolescents' self-esteem has frequently been associated with sexual behaviors.<sup>13</sup> Individuals who view their body negatively tend to initiate sexual intercourse at a young age.<sup>3</sup> Adolescents in this analyses were more likely to initiate sex before the age of 13 if their body weight perception was underweight compared to adolescents who perceived their bodies to be about the right weight. Dating violence has also been shown to increase sexual risk behaviors in adolescents.<sup>3</sup> In this research, respondents who experienced dating violence were also more likely to engage in early sexual initiation compared to respondents who have not experienced dating violence. The literature stresses that African American adolescents report the highest rates of victimization, which could potentially explain the frequency of sexual risk behaviors in this population.<sup>3</sup>

Sex education has been consistently reported as a beneficial factor to adolescents' sexual health, especially for African American adolescents.<sup>22</sup> African American adolescents who have received sex education have delayed initiating sex until at least the age of 15.<sup>22</sup> Moreover, adolescents who have received sex education are more likely to use an effective mode of contraception at first sexual encounter.<sup>22</sup> In this sample of US high school students in the southern states, students who had not received HIV education were more likely to engage in sexual intercourse before the age of 13. Additionally, respondents who did not use an effective method for contraception during their last sexual encounter were more likely to engage in early sexual initiation.

Although causation cannot be assessed, forced sexual encounters are associated with early sexual initiation in youth but especially in Hispanic adolescents.<sup>3</sup> Also for this racial group, forced sex is a predictor of substance use at last sexual encounter.<sup>3</sup> For southern high school students in the current analyses, respondents who experienced forced sex were more likely to

engage in early sexual initiation. Moreover, respondents who used substances before sexual intercourse were more likely to engage in sex before the age of 13. Both forced sex and substance use before sex were the strongest associations for early sexual initiation in this study, aside from gender and race.

These different factors could explain sexual behaviors between different subpopulations in the southern states of the US. More research is needed to not only explore racial and gender differences, but also to explore psychosocial factors such as forced sexual encounters and substance use before sex in southern adolescents. With one of the heaviest burdens of HIV on minority adolescents in the southern states, the current study can potentially explain differences between racial and gender groups to provide avenues to reduce infection rates.

This study had several strengths. It is the first to produce findings on the association between race and gender and early sexual initiation for high school students in the southern states of the US for the years 2011 and 2013. The CDC's YRBS has a large sample size which increased the power of the study. Also, the YRBS provided a broad scope of data to select several factors to adjust for potential confounders. These strengths contributed to clear evidence of the association between early sexual initiation and race and gender in high school students in the southern states of the US.

Some limitations should be noted. As mentioned previously, this study involved self-reported data which could involve bias. Social desirability could also be a factor with this data. The YRBS also had numerous amounts of missing responses to questions needed for the analyses. Georgia, Virginia, Louisiana, and Maryland (only 2011) were deleted from the analysis due to the states opting out of sex related questions. Additionally, since the sample was limited to only those who were sexually active, it is unknown if events occurred before initiating sex. No

causation can be assessed between predicting factors and early sexual initiation. For example, this research is unable to determine if the respondent experienced forced sex as their sexual initiation due to the type of data used for analyses. Longitudinal data is needed to further assess the problem and determine temporality.

Another limitation is the type of HIV education in the study cannot be determined from the analysis. The quantity and quality is not specified in the survey used for the research study. Also the study may not be generalizable to all adolescents in the southern states. Different elements such as urbanization and socioeconomic status may affect findings for different populations in the southern US. Despite these limitations, this research highlights factors that are associated with sexual initiation among southern adolescents.

### Conclusion

The impact of being a male and a minority was associated with a higher likelihood of engaging in sex before the age of 13. In addition, body weight perception, dating violence, depression, HIV education, contraception, forced sex, and substance use before sex were all associated with early sexual initiation in southern high school students. Considering respondents who had experienced forced sexual encounters and respondents who used substances before sex had the highest likelihood for engaging in early sexual initiation, indicates that future studies can focus on these events solely. Additional research using a prospective design is needed to test for causality.

Understanding sexual risk behaviors that contribute to the HIV/AIDS burden in southern states will contribute to the groundwork needed to implement interventions, prevention, education, and awareness in this region. Identifying predictors of early sexual initiation in adolescents in the southern states can help target which groups and populations should be

focused on for public health interventions. This research recognizes minorities males as having an increased risk and interventions can be put in place to target other factors contributing to early sexual initiation in this population. Psychosocial factors, such as depression, dating violence, and forced sex, have been shown to increase likelihood of engaging in early sexual initiation and this research shows that certain populations in the southern states should be targeted for increased awareness.<sup>3</sup> This research study provides preliminary illustration of risk for early sexual initiation in southern states but additional research is needed to further examine early sexual initiation and other sexual risk behaviors in the this area.

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## CHAPTER 3

### INFLUENCE OF RACE AND GENDER ON MULTIPLE SEX PARTNERS IN HIGH SCHOOL STUDENTS IN THE SOUTHERN STATES OF THE UNITED STATES

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## ABBREVIATIONS

AIDS – Acquired Immunodeficiency Syndrome

CDC – Centers for Disease Control and Prevention

HIV – Human Immunodeficiency Virus

STD – Sexually Transmitted Disease

US – United States

WHO – World Health Organization

YRBS – Youth Risk Behavior Surveillance System

## ABSTRACT

**Purpose:** Human Immunodeficiency Virus (HIV) incidence rates are highest in the southern states of the United States (US) with adolescents as one of the most highly affected groups in the country. One of the main risk factors for HIV is having multiple sex partners. The 2013 Youth Risk Behavior Survey (YRBS) found that 15% of high school students had 4 or more sex partners during their life, with African American and Hispanic students having the highest rates of multiple sex partners. Furthermore, US white and minority males show an increased risk for having multiple sex partners compared to their female counterparts. The objective of this study was to examine the influence of race and gender using weighted data on the number of sex partners of US high school students in the southern states. **Methods:** Data were obtained from the 2011 and 2013 National Youth Risk Behavior Survey (N=93,184). Multiple sex partners was defined as an individual engaging in sexual intercourse with 4 or more sexual partners during their life. Multiple logistic regression was used to examine the influence of race and gender on multiple sex partners among southern high school students after controlling for age of the students, body weight perception, dating violence, depression, forced sex, and substance use before sex. **Results:** The sample included the following proportions: male (47.38%), female (52.62%), minority (38.01%), and white (61.99%). Out of the sample, 14.1% reported having multiple sex partners. Having multiple sex partners among the sample was distributed as follows: respondents aged 17 (33.34%), minority male (32.61%), body weight perception of “about the right weight” (47.01%), no dating violence (78.92%), no depression (64.41%), no forced sex (77.84%), and no substance use before sex (64.89%). The bivariate relationship between race and gender and multiple sex partners showed that minority males were 3 times more likely to have multiple sex partners compared to white females (OR-3.10; CI-2.93-3.27). Multiple logistic

regression shows that compared to white females, minority males were 4 times more likely to have multiple sex partners (OR-4.28; CI-3.93-4.66). Minority females and white males were also more likely to have multiple sex partners compared to white females (OR-1.20; CI-1.10-1.31, OR-1.56; CI-1.44-1.69, respectively). In addition, age group  $\geq 18$  (OR-1.70; CI-1.56-1.86), respondents who experienced dating violence (OR-1.46; CI-1.34-1.59), respondents who were depressed (OR-1.18; CI-1.11-1.27), respondents who experienced forced sex (OR-2.60; CI-2.38-2.84), respondents who used substances before sex (OR-2.75; CI-2.56-2.95), and students who had a body weight perception of “underweight” (OR-1.03; CI-0.94-1.12) all increased the odds of having multiple sex partners. Although gender and race were found to be significant in this model, body weight perception was not. Also, the combination of gender and race interacted with the age variable. In the final model, gender and race were analyzed separately and did not include body weight perception. Compared to whites, minorities were 84% more likely to have multiple sex partners (OR-1.84; CI-1.73-1.95). Other findings in the model were almost identical to the previous model’s results. **Conclusion:** Gender and race were associated with high school students in the southern states having multiple sex partners. Psychosocial factors were also associated with having multiple sex partners for this population. These results can be utilized to target HIV/AIDS awareness and prevention activities to key affected populations.



## Implications and Contribution

Considering the small quantity of research focused on multiple sex partners in minority youth in the southern states, the current analyses have essential public health implications. The evaluation and prevention of multiple sex partners among adolescents in the southern states may contribute to operative policies and prevention programs that ultimately reduce HIV incidence in key affected populations.

## Introduction

Approximately nine million adolescents in the US are infected with HIV and other sexually transmitted diseases (STDs), annually.<sup>26</sup> According to national data, the number of US citizens aged 13-24 who are diagnosed with HIV is steadily increasing.<sup>22</sup> Similar to other age groups, adolescents' most common mode of HIV transmission is sexual activity.<sup>13,25</sup> The incidence and prevalence of HIV in adolescents can be explained by sexual risk behaviors youth engage in, such as having multiple sex partners, leading to these adverse outcomes.<sup>24, 16</sup> According to the Centers for Disease Control and Prevention (CDC), multiple sex partners is defined as having 4 or more sex partners during life.<sup>17</sup>

The 2013 National Youth Risk Behavior Surveillance (YRBS) survey data shows that overall approximately 15% of US high school students have had sexual intercourse with four or more partners in their lifetime. The prevalence of high school students having multiple sex partners was highest in the southern states, with the highest proportion in Mississippi (19.7%).<sup>15</sup> Moreover, the prevalence of having multiple sex partners is higher in minority males compared to minority females.<sup>15</sup> Having multiple sex partners can predict other sexual risk behaviors in

individuals, such as using drugs or alcohol before having sex.<sup>16,28</sup> Available literature only explores sexual behaviors for adolescents nationally but does not focused on race and gender for different geographical regions in the US. This gap in the literature is the purpose for conducting the current research study.

### Definition of Adolescents and Youth

According to the World Health Organization (WHO), individuals who are considered youth are aged 15-24. The terms “adolescents”, “youth”, and “young people” are used interchangeably for individuals aged 10-24.<sup>29</sup> Unless otherwise specified, the terms youth and adolescents in this manuscript refers to individuals in the 10-24 year old range, inclusive.

### Definition of Minorities

According to the CDC, racial and ethnic minority populations are defined as: African American or Black, Asian American, Hispanic or Latino, Native Hawaiian and other Pacific Islander, and American Indian and Alaska Native.<sup>8</sup>

### Race and Gender

In the US, African American males are more likely to have multiple sex partners than white males which could partly result from peer group norms of African American males achieving status by having many sex partners.<sup>2,7,13</sup> Incarceration in the African American community, causing disproportionate male to female ratios, could also contribute to multiple sex partners causing HIV infections to be prevalent.<sup>2</sup> Similar findings of the HIV risk behavior, multiple sex partners, have been discovered for adolescents in the US. According to the 2013

YRBS survey data, African American high school students had the highest percentage of multiple sex partners compared to all other races included in the study sample.<sup>17</sup> African American males (37.5%) reported a higher proportion of individuals who have had multiple sex partners compared to African American females (15.8%).<sup>17</sup>

There are also factors that promote multiple sex partners in the Hispanic population.<sup>6</sup> Hispanic men who are highly acculturated (adoption of beliefs or behaviors of another group) in the US tend to have multiple sex partners.<sup>18</sup> Migration can also cause inconsistent and new sexual partnerships in the Hispanic population.<sup>10</sup> These behaviors are not only seen in adults but in adolescents as well.<sup>6</sup> The 2013 National YRBS reported that Hispanic males in high school had a higher percentage of multiple sex partners compared to both white high school students and Hispanic female high school students.<sup>17</sup>

Limited information was found in the literature on adolescent sexual behaviors in the southern states. Although race and gender has been researched nationally for adolescent sexual behaviors, race and gender have not been researched for predictors of multiple sex partners geographically in the US. The objective of this study was to use the CDC's YRBS (2011 and 2013) to evaluate self-reported weighted data on the number of sex partners of US high school students in the southern states. It has been hypothesized that "minority males" have the highest likelihood of having 4 or more sex partners. The results from the study support the likelihood of gender and race associating with having multiple sex partners.

## Methods

### Study Design and Sample

The CDC's YRBS distributes a national school based survey biennially. The survey includes questions on the following: behaviors that contribute to unintentional injuries and violence; sexual behaviors that contribute to unintended pregnancy and sexually transmitted diseases, including HIV infection; alcohol and other drug use; tobacco use; unhealthy dietary behaviors; inadequate physical activity.

The data helped determine gender and racial disparities existing among high school aged adolescents in the southern states of the US in regards to the number of sex partners. State specific data were requested from the CDC for the current study. The following states were used in the analyses: Texas, Oklahoma, Arkansas, Mississippi, Alabama, Florida, Tennessee, Kentucky, South Carolina, North Carolina, West Virginia, Maryland (only included 2013 data), and Delaware.

Louisiana, Georgia, Maryland (only 2011), and Virginia were excluded because they did not have data on the outcome variable (multiple sex partners), which was measured by the YRBS question: "During your life, with how many people have you had sexual intercourse?" All respondents who reported "I have never had sexual intercourse" were deleted from the sample (N=46,597). The following races were excluded due to the low rates of HIV among those populations: "American Indian" (N=1,208), "Asian" (N=3,227), "Native Hawaiian" (N=697), and "multiple non-Hispanic" (N=4,867). A final sample size of 93,184 was used for the current

study. The sample only included whites, African Americans or Blacks, Hispanic or Latino, and multiple-Hispanics who have engaged in sexual intercourse.

The East Tennessee State University and Veteran's Administration Institutional Review Board (IRB) reviewed this study and the study was exempt on the determination that this was not human subjects research. The data were collected by the CDC and all identifying information on individuals was removed prior to being provided for the current study.

### Outcome Variable

The outcome variable, multiple sex partners, was defined as the number of people the respondent had sexual intercourse with during their lifetime. The respondent could select "I have never had sexual intercourse", "1 person", "2 people", "3 people", "4 people", "5 people", or "6 or more people". Respondents who have had sexual intercourse were dichotomized into having 4 or more sex partners or having less than 4 sex partners (based on CDC definition for multiple sex partners).<sup>17</sup> For this analysis, multiple sex partners refers to those who had sex with 4 or more people.

### Exposure Variables

Race was defined as the respondent's race(s) they selected. The respondent could select more than one response. Responses included: "American Indian/Alaska Native", "Asian", "Black or African American", "Native Hawaiian/other PI", "white", "Hispanic/Latino", "multiple-Hispanic", or "multiple - non-Hispanic". Respondents were considered "multiple-Hispanic" if they selected Hispanic along with another race on the survey. The variable for race was then dichotomized into whites and minorities. Only respondents who selected "white" as

their race were included in the white category. Respondents who selected “Black or African American”, “Hispanic/Latino”, and/or “multiple - Hispanic” were included in the minority category.

Respondents who selected “female” as their gender and “white” as their race, were categorized as “white female.” For respondents that selected “male” as their gender and “white” as their race, were categorized as “white male.” Respondents that selected “female” as their gender and “Black or African American”, “Hispanic/Latino”, or “multiple - Hispanic” as their race were categorized as “minority female”. Respondents that selected “male” as their gender and “Black or African American”, “Hispanic/Latino”, or “multiple-Hispanic” as their race, were categorized as “minority male”. Therefore, the exposure variable included four levels: white male, white female, minority male, and minority female.

### Covariates

Age was defined as how old the respondent was at the time of the survey. Categories included responses from “12 years old or younger”, “13 years old”, “14 years old”, “15 years old”, “16 years old”, “17 years old”, or “18 years old or older”. Similar to other studies, the age variable was categorized into “younger than 15”, “15-17 years old” or “18 years old or older”.<sup>14,</sup>

19, 21

According to the literature, body perception and number of sex partners have been found to have an association with each other. Adolescent males who have a favorable view of their body tend to have more sex partners.<sup>12</sup> For the current study, body weight perception was defined as how the respondent describes their weight. The selections included: “very

underweight”, “slightly underweight”, “about the right weight”, “slightly overweight”, or “very overweight”. Due to small sample size, body weight perception was categorized into “underweight”, “about the right weight” or “overweight”. If the respondent selected “very underweight” or “slightly underweight” they were placed in the “underweight” category. If the respondent selected “slightly overweight” or “very overweight” they were placed in the “overweight” category.

Dating violence and forced sexual encounters have also been linked with having multiple sex partners.<sup>4,28</sup> Research has even found that males who have experienced dating violence have a higher number of sex partners than males that have not encountered these events.<sup>4</sup> Forced sexual encounters have been found to promote negative body image and depression which are both factors that cause sexual risk behaviors.<sup>4,28</sup> For this study, dating violence was defined as the respondent being physically hurt on purpose by someone they were dating or going out with one or more times during the past 12 months of completing the survey. If the respondent selected “yes” then they were in the “dating violence” category. Depression was defined as the respondent feeling so sad or hopeless almost every day for two weeks or more in a row that they stopped doing some usual activities within the past 12 months of completing the survey. If the respondent selected “yes” then they were in the “depression” category.

Female adolescents who have endured forced sex are more likely to have multiple sex partners and use alcohol and drugs while engaging in sex.<sup>4, 28</sup> For the current study, forced sex was defined as a respondent being physically forced to have sexual intercourse when they did not want to. If the respondent replied “yes” to the question, they were placed in the “forced sex” category. Yan et al., reported that adolescents having multiple sex partners are about four times

more likely to use substances before sexual intercourse.<sup>31</sup> For this research, substance use before sex was defined as a respondent using alcohol or drugs before having sexual intercourse the last time before completing the survey. If the respondent selected “yes” they were placed in the “substance use” Category.

### Statistical Analysis

Descriptive statistics were used for the outcome, exposure, and covariates. Chi-squared analyses were used to determine the frequency of associations between exposure variables and multiple sex partners. Simple logistic regression was used to determine the relationship between multiple sex partners and exposure variables. Multiple logistic regression was used to examine the relationship between race and gender and multiple sex partners, controlling for covariates. Covariates were included in the final model if found significant on a p-value <0.001 level. Interaction terms for the data were assessed. SAS was used to conduct all analyses.

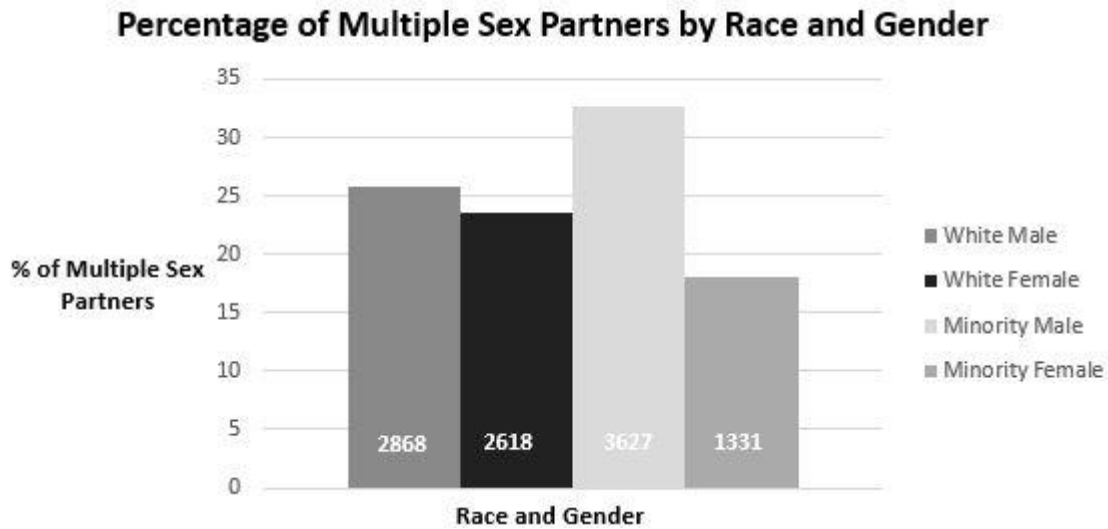
### Results

A total of 13,121 (14.1%) of the sample reported that they had more than four sex partners in their lifetime. The sample (N=93,184) included the following proportions: male (47.38%), female (52.62%), minority (38.01%), and white (61.99%). The sample included the following proportions for multiple sex partners by race/ethnicities: white (44.55%), Black or African American (28.96%), Hispanic (4.04%), multiple Hispanic (12.63%), multiple non-Hispanic (5.60%), American Indian (1.66%), Native Hawaiian (1.21%) and Asian (1.32%). The proportions of students having multiple sex partners by race and gender categories were: white



female (23.54%), white male (25.79%), minority male (32.61%), and minority female (18.06%) (Figure 3.1).

**Figure 3.1 Percentages of Multiple Sex Partners for Southern States by Race and Gender**



Multiple sex partners for the sample were distributed as follows: respondents aged 17, males, white, minority male, body weight perception of “about the right weight”, no dating violence, no depression, no forced sex, and no substance use before sex (Table 3.1).

Table 3.1 Characteristics of Multiple Sex Partners in US High Schools in the Southern States, YRBS 2011 and 2013

N=93184		Multiple Sex Partners	No Multiple Sex Partners	p-value <sup>a</sup>
		N=13121	N=80063	
Characteristics		N (%)	N (%)	
<b>Gender/Race</b>	White Female	2618 (23.54)	23656 (33.73)	<0.0001
	White Male	2868 (25.79)	21270 (30.33)	
	Minority Male	3627 (32.61)	10584 (15.09)	
	Minority Female	2008 (18.06)	14623 (20.85)	
<b>Gender</b>	Male	6693 (58.72)	32693 (45.58)	<0.0001
	Female	4706 (41.28)	39038 (54.42)	
<b>Race</b>	White	5846 (44.55)	45588 (56.94)	<0.0001
	Black or African American	3800 (28.96)	14663 (18.31)	
	Hispanic /Latino	530 (4.04)	3659 (4.57)	
	Multiple - Hispanic	1659 (12.64)	7440 (9.29)	
	Multiple - Non-Hispanic	736 (5.61)	4131 (5.16)	
	American Indian/Alaska Native	218 (1.66)	990 (1.24)	
	Asian	173 (1.32)	3054 (3.81)	
	Native Hawaiian/other PI	159 (1.21)	538 (0.67)	
<b>Age (years)</b>	<15	631 (5.51)	10702 (14.90)	<0.0001
	15	1693 (14.79)	20097 (27.98)	
	16	2883 (25.19)	19087 (26.57)	
	17	3817 (33.34)	15557 (21.66)	
	≥18	2423 (21.17)	6395 (8.90)	
<b>Body Weight Perception</b>	Very Underweight	293 (2.69)	11756 (16.91)	<0.0001
	Slightly Underweight	1454 (13.36)	7441 (10.70)	
	About the Right Weight	5116 (47.01)	30472 (43.82)	
	Slightly Overweight	3340 (30.69)	17367 (24.97)	
	Very Overweight	680 (6.25)	2505 (3.60)	
<b>Dating Violence<sup>b</sup></b>	Yes	2189 (21.08)	4021 (7.38)	<0.0001
	No	8194 (78.92)	50450 (92.62)	
<b>Depression<sup>b</sup></b>	Yes	4008 (35.59)	17617 (24.73)	<0.0001
	No	7253 (64.41)	53617 (75.27)	
<b>Forced Sex</b>	Yes	2507 (22.16)	4049 (5.67)	<0.0001
	No	8805 (77.84)	67413 (94.33)	
<b>Substance Use Before Sex</b>	Yes	3425 (35.11)	2328 (14.53)	<0.0001
	No	6331 (64.89)	13689 (85.47)	

<sup>a</sup> p-value for overall chi-square test

<sup>b</sup> Within the past 12 months

Bivariate analysis illustrates that compared to white females, minority males were about 3 times more likely to have multiple sex partners (OR-3.10; CI-2.93-3.27) (Table 3.2, Model 1).

Multiple logistic regression shows that compared to white females, minority males were 4 times more likely to have multiple sex partners (OR-4.28; CI-3.93-4.66). Minority females and white males were also more likely to have multiple sex partners compared to white females (OR-1.20; CI-1.10-1.31, OR-1.56; CI-1.44-1.69, respectively.)

In addition, subpopulations that were more likely to have multiple sex partners include: the age group  $\geq 18$  (OR-1.70; CI-1.56-1.86); respondents who experienced dating violence (OR-1.46; CI-1.34-1.59); respondents who were depressed (OR-1.18; CI-1.11-1.27); respondents who experienced forced sex (OR-2.60; CI-2.38-2.84); respondents who used substances before sex (OR-2.75; CI-2.56-2.95); and students who had a body weight perception of “underweight” (OR-1.03; CI-0.94-1.12) (Table 3.2, Model 2). Gender and race were found to be significant, however, the association between body weight perception and multiple sex partners was not. Body weight perception was not used in the final model.

When tested for interaction, gender and race combined interacted with the age variable and the gender and race levels were not used in the final multiple logistic model. Instead, gender and race were included in the final model separately. Compared to females, males were 2 times more likely to have multiple sex partners (OR-2.20; CI-2.07-2.34). Compared to whites, minorities were 84% more likely to have multiple sex partners (OR-1.84; CI-1.73-1.95). Other findings calculated without body weight perception were almost identical to Model 2 covariate likelihoods (Table 3.2, Model 3).

Table 3.2 Univariate Analysis and Multiple Logistic Regression of Factors Associated with Multiple Sex Partners in US High School Students in the Southern States, YRBS 2011 and 2013

N=93184				
Variable		Model 1 OR (CI) <sup>a</sup>	Model 2 OR (CI) <sup>a</sup>	Model 3 OR (CI) <sup>b</sup>
<b>Gender/Race</b>	White Female	1.00 <sup>b</sup>	1.00 <sup>b</sup>	
	White Male	1.22* (1.15-1.29)	1.56* (1.44-1.69)	
	Minority Male	3.10* (2.93-3.27)	4.28* (3.93-4.66)	
	Minority Female	1.24* (1.17-1.29)	1.20* (1.10-1.31)	
<b>Sex</b>	Male			2.20* (2.07-2.34)
	Female			1.00 <sup>b</sup>
<b>Dichotomized Race</b>	White			1.00 <sup>b</sup>
	Minority			1.84* (1.73-1.95)
<b>Age</b> (years)	<15		0.70* (0.61-0.81)	0.70* (0.61-0.81)
	15		0.80* (0.73-0.88)	0.82* (0.75-0.89)
	16		1.00 <sup>b</sup>	1.00 <sup>b</sup>
	17		1.36* (1.26-1.46)	1.36* (1.26-1.46)
	≥18		1.70* (1.56-1.86)	1.68* (1.54-1.83)
<b>Dating Violence<sup>c</sup></b>	Yes		1.46* (1.34-1.59)	1.43* (1.32-1.56)
	No		1.00 <sup>b</sup>	1.00 <sup>b</sup>
<b>Depression<sup>c</sup></b>	Yes		1.18* (1.11-1.27)	1.17* (1.09-1.24)
	No		1.00 <sup>b</sup>	1.00 <sup>b</sup>
<b>Forced Sex</b>	Yes		2.60* (2.38-2.84)	2.64* (2.43-2.88)
	No		1.00 <sup>b</sup>	1.00 <sup>b</sup>
<b>Substance Use Before Sex</b>	Yes		2.75* (2.56-2.95)	2.69* (2.51-2.88)
	No		1.00 <sup>b</sup>	1.00 <sup>b</sup>
<b>Body Weight Perception</b>	Underweight		1.03 (0.94-1.12)	
	About the Right Weight		1.00 <sup>b</sup>	
	Overweight		0.99 (0.93-1.05)	

<sup>a</sup>CI: 95% confidence interval

<sup>b</sup>Indicates Reference Category

<sup>c</sup> Within the past 12 months

\*p-value < 0.01

## Discussion

Race and gender were found to be associated with having multiple sex partners in southern adolescents. However, the association between multiple sex partners and race and gender varied by several factors such as dating violence, depression, forced sexual encounters, and substance use before sexual intercourse. The literature expands on some specific characteristics that might be similar to what this study is suggesting. If there are differences in

sexual norms due to race/ethnicity, it is plausible that the number of sex partners may have diverse effects on adolescents due to their racial background.<sup>16</sup>

According to Robinson, adolescent males tend to have a higher number of sex partners compared to females.<sup>26</sup> Moreover, African American and Hispanic males have been found to have more sexual partners compared to their female counterparts.<sup>2,18</sup> This study found that adolescents in the southern states engage in the high risk sexual behavior of having multiple sex partners, a finding consistent with other nationally based studies. The current study also found that minorities and males are more likely to have multiple sex partners compared to whites and females.<sup>25</sup> Several factors affect how these subpopulations behave sexually. In this study, the following were found to make a significant difference: dating violence, depression, forced sexual encounters, and substance use before sexual intercourse.

Psychological factors have been associated with having multiple sex partners in adolescents.<sup>4</sup> Dating violence has also been shown to increase sexual risk behaviors in adolescents, more specifically the likelihood of having multiple sex partners for both genders.<sup>4</sup> With the sample used for this current research, respondents who experienced dating violence were also more likely to have multiple sex partners compared to respondents who have not experienced dating violence. Although it is not common for research to explore male victimization, dating violence among male adolescents has been linked to males having multiple sex partners, which could potentially explain the high likelihood of multiple sex partners in this population.<sup>4</sup>

Forced sexual encounters have been shown to be a predictor of having multiple sex partners, especially in adolescent females.<sup>4</sup> Moreover, adolescent females who have endured

dating violence or forced sex tend to use substances while having sexual intercourse and have a greater number of sex partners.<sup>4</sup> Research studies have also found that gender is a predictor of substance use during sex for minority adolescents.<sup>4</sup> This also might explain the high likelihood of having multiple sex partners for minorities in this research. Aside from gender and race, forced sex and substance use before sex were among the strongest associations with having multiple sex partners.

More research is needed to explore racial and gender differences, but also to explore psychosocial factors such as forced sexual encounters and substance use before sex in adolescents living in the southern states. With one of the heaviest burdens of HIV on minority adolescents in the southern states, the current study can potentially explain differences between racial and gender groups to provide avenues to reduce infection rates. This study had several strengths. It is the first to produce findings on the association between race and gender and multiple sex partners for high school students in the southern states of the US for the years 2011 and 2013. The CDC's YRBS has a large sample size which increased the power of the study. Also, YRBS provided a broad scope of data to select several factors to adjust for potential confounders. These strengths contributed to clear evidence of the association between multiple sex partners and race and gender in high school students in the southern states of the US.

Some limitations should be noted. This study involved self-reported data that could involve bias. Social desirability could also be a factor with this type of data. The CDC's YRBS also had numerous amounts of missing responses to questions needed for the analysis. Georgia, Virginia, Louisiana, and Maryland (only 2011) were deleted from the analysis due to the states opting out of sex related questions. Additionally causation cannot be assessed between variables

and their association with having multiple sex partners. Longitudinal data is needed to further assess the problem. Also the study may not be generalizable to all adolescents in the southern states. Different elements such as urbanization and socioeconomic status may affect findings for different populations in the southern US. Despite these limitations, this research highlights factors that are associated with adolescents in the southern states having multiple sex partners.

### Conclusion

Being a male or a minority was associated with a higher likelihood of having multiple sex partners. In addition, dating violence, depression, forced sex, and substance use before sex were all associated with having multiple sex partners in southern high school students. Considering events of forced sex and using substances before sex had the highest risk for having multiple sex partners aside from gender and race, further analysis should focus on these events more specifically. More research using a prospective design is needed to test for causality.

Assessing the HIV/AIDS disparity in the southern states will help to install necessary preventative actions in this area. Identifying predictors of adolescents having multiple sex partners in the southern states can help target which groups should be focused on for public health interventions. This research recognizes that minorities and males are at increased risk. Specific interventions should be used to target factors contributing to having multiple sex partners in these populations such as psychosocial factors including depression, dating violence, and forced sex. The current research indicates that certain populations in the southern states should be targeted for increased awareness.<sup>4</sup> This initial study provides preliminary associations of risk for adolescents having multiple sex partners in southern states but additional research is

needed to further examine youth having multiple sex partners and engaging in other sexual risk behaviors in this area of the US.



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## CHAPTER 4

### INFLUENCE OF RACE AND GENDER ON CONDOM USE IN HIGH SCHOOL STUDENTS IN THE SOUTHERN STATES OF THE UNITED STATES

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## ABBREVIATIONS

AIDS – Acquired Immunodeficiency Syndrome

CDC – Centers for Disease Control and Prevention

HIV – Human Immunodeficiency Virus

STD – Sexually Transmitted Disease

US – United States

WHO – World Health Organization

YRBS – Youth Risk Behavior Surveillance System



## ABSTRACT

**Purpose:** Southern adolescents are among the most affected groups in the United States (US) for Human Immunodeficiency Virus (HIV) infections. Unprotected sex or lack of condom use is a known risk factor for increased risk of HIV infection. The prevalence of lack of condom use is higher in whites compared to minorities despite the racial disparities of HIV infection in the US. In addition, females are at an increased risk for unprotected sex compared to their male counterparts illustrating gender differences. The objective of this study was to examine the influence of race and gender using self-reported weighted data from US high school students in the southern states on condom use. **Methods:** Data were obtained from the 2011 and 2013 National Youth Risk Behavior Survey (N=28,793). Condom use was defined as a respondent selecting whether or not a condom was used the last time they had sexual intercourse. Multiple logistic regression was used to examine the influence of race and gender on condom use after controlling for age of the students, body weight perception, dating violence, HIV education, and substance use before sex. **Results:** The sample included the following proportions: male (47.28%), female (52.72%), minority (40.20%), and white (59.80%). Lack of condom use for the sample were distributed as follows: respondents aged 17 (33.33%), female (60.30%), white (55.06%), white female (37.17%), body weight perception of “about the right weight” (52.00%), no dating violence (77.77%), HIV education (83.00%), not tested for HIV (63.85%), and no substance use before sex (73.93%). Compared to white females, minority males were more than 2 times more likely to use condoms at last intercourse (OR-2.04; CI-1.87-2.23). Minority females and white males were also more likely to use condoms compared to white females (OR-1.02; CI-0.94-1.11, OR-1.74; CI-1.61-1.87, respectively). In addition, respondents aged 15 (OR-1.18; CI-1.08-1.30) and students who had a body weight perception of “overweight” (OR-2.23;

CI-2.08-2.38) all increased the odds of condom use. The subpopulations that are less likely to use condoms were: respondents who experienced dating violence (OR-0.52; CI-0.48-0.56), respondents were not educated about HIV (OR-0.77; CI-0.71-0.84), and respondents who used substances before sex (OR-0.72; CI-0.67-0.77). **Conclusion:** Gender and race were associated with condom use in high school students in the southern states. Psychosocial factors, such as dating violence, were also associated with lack of condom use for this population. The findings can be used to indicate effective intervention programs to promote condom use for the subpopulations most affected.

## Implications and Contribution

Due to the lack of literature on condom use in youth of the southern states, this study has significant public health implications. The evaluation and prevention among HIV in adolescents in the southern states could potentially add to supportive policies and intervention programs that reduce the number of HIV infections in targeted populations.

## Introduction

In the US, HIV prevention messages focused on condom use have been used for over twenty years, but citizens fail to use condoms consistently contributing to the 50,000 new HIV infections each year.<sup>10,17</sup> Research shows that youth are especially inconsistent with condom use according to the Centers for Disease Control's (CDC) Youth Risk Behavior Surveillance (YRBS) survey.<sup>12</sup> The national survey illustrates that the rates of protected sex in high school adolescents have been decreasing since the 1990's.<sup>16,22</sup> The survey has also reported that approximately 59.1% of high school aged adolescents did not use condoms during their last sexual encounter in 2013.<sup>12</sup>

According to national case surveillance data, one of the heaviest burdens of HIV/AIDS is upon adolescents in the southern states, especially among minorities.<sup>24</sup> Despite evidence that comprehensive sex education is effective for preventing sexual risk behaviors in adolescents, teachers in the southern states of the US tend to emphasize the ineffectiveness of contraceptives and are less likely to teach about the importance of using condoms correctly and consistently.<sup>15,16,25</sup> Furthermore, the southern states have the highest percentage of teachers that teach about abstinence only compared to other states.<sup>15,16,25</sup> In the past southern students were less likely to receive accurate information on ways to prevent STDs.<sup>16</sup> Currently, abstinence only

education continues to be the only option taught in some southern public schools.<sup>18</sup> Additionally, eight of the southern states do not require any form of sex education, even though there is a report of high sexual activity among students in this area compared to the national average.<sup>25</sup>

### Definition of Adolescents and Youth

According to the World Health Organization, individuals who are considered youth are aged 15-24. The terms “adolescents”, “youth”, and “young people” are used interchangeably for individuals aged 10-24.<sup>30</sup> Unless otherwise specified, the terms youth and adolescents will refer to individuals in the 10-24 year old range, inclusive.

### Definition of Minorities

According to the CDC, racial and ethnic minority populations are defined as: African American or Black, Asian American, Hispanic or Latino, Native Hawaiian and other Pacific Islander, and American Indian and Alaska Native.<sup>6</sup>

### Race and Gender

According to the 2013 YRBS survey results, adolescent males used condoms more than adolescent females.<sup>12</sup> Despite the racial disparity of HIV being more prevalent among minorities, minorities are more likely to use condoms compared to their white counterparts with the exception of Hispanic females.<sup>12</sup> The YRBS data supported this with African American males (73%) and African American females (55%) having the highest proportion of condom use than their counterparts.<sup>8</sup> The YRBS also reported in 2013, Hispanic male (66.5%) and Hispanic female (50.7%) high school students had lower proportions of condom use compared to their African American counterparts (73.0%; 55.3%, respectively). However, Hispanic male high

school students had a higher proportion of condom use compared to white males (61.8%).<sup>12</sup> Hispanic male high school students were also found to use condoms more than female Hispanic high school students.<sup>12</sup>

Insufficient literature was found on sexual behaviors in youth residing in the southern states. Although there are studies focused on race and gender disparities for condom use nationally, not much has been researched for this sexual behavior geographically in the US. The objective of this study was to use the YRBS (2011 and 2013) to evaluate self-reported weighted data from US high school students in the southern states on their condom use. It has been hypothesized that “white females” have the highest likelihood of not using a condom. The results from this study support the likelihood of gender and race influencing condom use.

## Methods

### Study Design and Sample

The CDC’s YRBS distributes a national school based survey biennially. The survey includes questions on the following: behaviors that contribute to unintentional injuries and violence; sexual behaviors that contribute to unintended pregnancy and sexually transmitted diseases, including HIV infection; alcohol and other drug use; tobacco use; unhealthy dietary behaviors; inadequate physical activity. The data helped determine racial and gender disparities focused on condom use in youth in the southern states of the US. State specific data were requested from the CDC for the current study.

The following states were used in the analyses: Texas, Oklahoma, Arkansas, Mississippi, Alabama, Florida, Tennessee, Kentucky, South Carolina, North Carolina, West Virginia,

Maryland (only included 2013 data), and Delaware. Louisiana, Georgia, Maryland (only 2011), and Virginia were excluded because they did not have data on the outcome variable (condom use), which was measured by the YRBS question: “The last time you had sexual intercourse, did you or your partner use a condom?” All respondents who reported “I have never had sexual intercourse” were deleted from the sample (N=46,597). The following races were excluded due to the low rates of HIV among that population: “American Indian” (N=450), “Asian” (N=372), “Native Hawaiian” (N=247), and “multiple non-Hispanic” (N=1,461). The final sample size was 28,793 and included only whites, African Americans or Blacks, Hispanics or Latinos, and multiple-Hispanics who have engaged in sexual intercourse.

The East Tennessee State University and Veteran’s Administration Institutional Review Board (IRB) reviewed this study and the study was exempt on the determination that this was not human subjects research. The data were collected by the CDC and all identifying information on individuals was removed prior to being provided for the current study.

### Outcome Variable

Condom use was defined as a respondent selecting whether or not a condom was used the last time they had sexual intercourse. The respondent could either select from the following: “I have never had sexual intercourse”, “yes” or “no”. Individuals who had never had intercourse were deleted. Condom use was analyzed as a dichotomous variable (yes/no).

## Exposure Variables

Race was defined as the respondents' race they selected. The respondent could select more than one response. The responses included "American Indian/Alaska Native", "Asian", "Black or African American", "Native Hawaiian/other PI", "White", "Hispanic/Latino", "multiple - Hispanic", or "multiple - non-Hispanic". Respondents were considered "multiple-Hispanic" if they selected Hispanic along with another race on the survey. The variable for race was then dichotomized into whites or minorities.

Only respondents who selected "white" as their race were included in the white category. Respondents who selected "Black or African American", "Hispanic/Latino", and/or "multiple - Hispanic" were included in the minority category. Respondents who selected "female" as their gender and "white" as their race were categorized as "white female." For respondents who selected "male" as their gender and "white" as their race were categorized as "white male." Respondents who selected "female" as their gender and "Black or African American", "Hispanic/Latino", or "multiple - Hispanic" were categorized as "minority female". Respondents who selected "male" as their gender and "Black or African American", "Hispanic/Latino", or "multiple - Hispanic" were categorized as "minority male". Therefore, the exposure variable included four levels: white male, white female, minority male, and minority female.

## Covariates

Age was defined as how old the respondent was at the time of the survey. Categories included responses from "12 years old or younger", "13 years old", "14 years old", "15 years old", "16 years old", "17 years old", or "18 years old or older". Similar to other studies, the age

variable was categorized into “younger than 15”, “15-17 years old” or “18 years old or older”.<sup>9,13,19</sup>

Body image has been shown to be a factor that affects an individual’s sexual behavior such as condom use.<sup>7</sup> Research has also found that a positive body image decreases the likelihood of males using condoms, but it increases the likelihood of females using condoms.<sup>7</sup> For the current study, body weight perception was defined as how the respondent describes their weight. The selections included: “very underweight”, “slightly underweight”, “about the right weight”, “slightly overweight”, or “very overweight”. Due to small sample size, body weight perception was categorized into “underweight”, “about the right weight” or “overweight”. If the respondent selected “very underweight” or “slightly underweight” they were placed in the “underweight” category. If the respondent selected “slightly overweight” or “very overweight” they were placed in the “overweight” category.

Dating violence is another psychological factor that contributes to sexual risk behaviors in adolescents, such as unprotected sex.<sup>4</sup> In adolescent males, the event of dating violence promotes the lack of condom use.<sup>4</sup> White adolescents also have been shown to engage in unprotected sex if experienced dating violence.<sup>4</sup> In Hispanics, dating violence has not only been linked with unprotected sex, but with substance use before sexual intercourse.<sup>4</sup> In this study, dating violence was defined as the respondent’s boyfriend, girlfriend, someone they were dating or going out with hitting, slapping, or physically hurting them on purpose one or more times during the past 12 months of completing the survey. If the respondent selected “yes” then they were in the “dating violence” category.



Kirby (2008), reported that two-thirds of comprehensive sex education programs show strong evidence of increasing condom use.<sup>14</sup> For this study, HIV education was defined as the respondent being taught about HIV or AIDS infection in school. If the respondent selected “yes” then they were in the “HIV education” category.

According to the literature, substance use before sex increases the likelihood of unprotected sex with causal partners.<sup>11</sup> Substance use during sex was defined as a respondent who had sexual intercourse during the past three months, using alcohol or drugs before having their last sexual intercourse before completing the survey. Selection options for this question include: “yes” and “no”. If the respondent selected “yes” they were placed in the “substance use” category.

Research has found that condom use is predictive of youth receiving a HIV test.<sup>28</sup> Even though adolescents are at an increased risk for HIV infection, only 12% of high school students have received a HIV test in the US. African American adolescents are more likely to get tested than any other race.<sup>28</sup> HIV testing was defined as a respondent ever being tested for HIV. Tests completed during blood donations were not included in the analyses. The selections for the survey question included “yes” or “no”. If the respondent selected “yes” they were placed in the “HIV test” category.

### Statistical Analysis

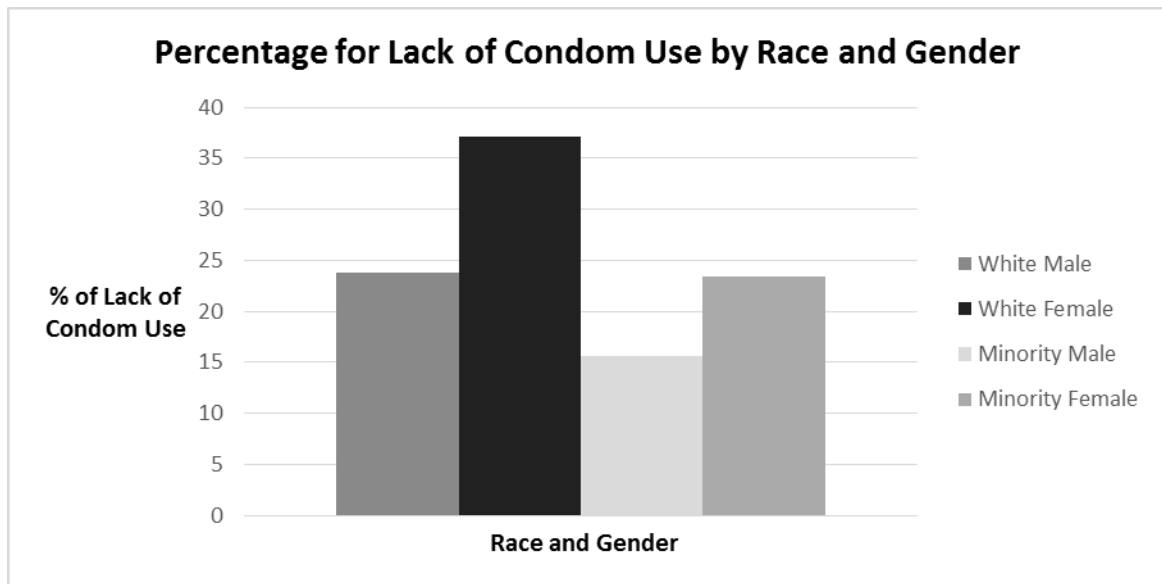
Descriptive statistics were used for the outcome, exposure, and covariates. Chi squared analyses were used to determine the frequency of associations between the exposure variables and condom use. Simple logistic regression was used to determine the relationship between

condom use and exposure variables. Multiple logistic regression was used to examine the relationship between race and gender and condom use, controlling for covariates. Covariates were included in the final model if found significant on a p-value level of <0.001. Interaction terms for the data were assessed. SAS was used to conduct all analyses.

### Results

A total of 11,820 (41.1%) of the sample reported that they had unprotected sex. The sample (N= 28,793) included the following proportions: male (47.28%), female (52.72%), minority (40.20%), and white (59.80%). The following proportions for not using a condom by race/ethnicities were represented in the sample: multiple non-Hispanic (4.98%), Hispanic (4.31%), Native Hawaiian (0.93%), Asian (1.35%), American Indian (1.70%), multiple-Hispanic (12.25%), white (55.06%), and Black or African American (19.42%). All race and gender categories by lack of condom use in the analyses were as follows: white female (37.17%), white male (23.76%), minority male (15.67%), and minority female (23.40%) (Figure 4.1).

Figure 4.1 Percentages for Lack of Condom Use by Race and Gender



Events of not using a condom for the sample were distributed as follows: respondents aged 17, female, white, white female, body weight perception of “about the right weight”, no dating violence, HIV education, not tested for HIV, and no substance use before sex (Table 4.1).

Table 4.1 Characteristics of Condom Use in US High Schools in the Southern States, YRBS 2011 and 2013

N=28793		Condom Use		p-value <sup>a</sup>
		N=16973	No Condom Use N=11820	
<b>Characteristics</b>		N (%)	N (%)	
<b>Gender/Race</b>	White Male	4465 (29.22)	2275 (23.76)	<0.0001
	White Female	4581 (29.98)	3559 (37.17)	
	Minority Male	3449 (22.57)	1501 (15.67)	
	Minority Female	2784 (18.22)	2241 (23.40)	
<b>Age (years)</b>	<15	944 (6.04)	581 (5.93)	<0.0001
	15	2881 (18.44)	1521 (15.53)	
	16	4402 (28.17)	2552 (26.06)	
	17	4855 (31.07)	3264 (33.33)	
	≥18	2545 (16.29)	1876 (19.15)	
<b>Gender</b>	Male	8117 (52.03)	3877 (39.70)	<0.0001
	Female	7483 (47.97)	5889 (60.30)	
<b>Race</b>	White	9147 (53.89)	6508 (55.06)	<0.0001
	Black or African American	3994 (23.53)	2295 (19.42)	
	Hispanic /Latino	677 (3.99)	509 (4.31)	
	Multiple - Hispanic	1685 (9.93)	1448 (12.25)	
	Multiple - Non-Hispanic	872 (5.14)	589 (4.98)	
	American Indian/Alaska Native	249 (1.47)	201 (1.70)	
	Asian	212 (1.25)	160 (1.35)	
	Native Hawaiian/other PI	137 (0.81)	110 (0.93)	
<b>Body Weight Perception</b>	Very Underweight	196 (1.30)	239 (2.53)	<0.0001
	Slightly Underweight	1355 (8.97)	1787 (18.94)	
	About the Right Weight	7009 (46.42)	4907 (52.00)	
	Slightly Overweight	6074 (40.23)	1751 (18.56)	
	Very Overweight	465 (3.08)	752 (7.97)	
<b>Dating Violence<sup>b</sup></b>	Yes	1765 (12.04)	2033 (22.23)	<0.0001
	No	12895 (87.96)	7114 (77.77)	
<b>HIV Education</b>	Yes	12621 (86.66)	7524 (83.00)	<0.0001
	No	1942 (13.34)	1541 (17.00)	
<b>HIV Tested</b>	Yes	285 (28.88)	278 (36.15)	0.0012
	No	702 (71.12)	491 (63.85)	
<b>Substance Use Before Sex</b>	Yes	3057 (19.71)	2536 (26.07)	<0.0001
	No	12452 (80.29)	7193 (73.93)	

<sup>a</sup> p-value for overall chi-square test

<sup>b</sup> Within the past 12 months

Bivariate analysis illustrates that compared to white females, minority males were 79% more likely to use condoms (OR-1.79; CI-1.66-1.92). Using simple logistic regression, HIV tests were shown to have an impact on condom use in this sample. Respondents who received an HIV test were 28% less likely to use condoms compared to respondents who have not received a HIV test (OR-0.72; CI-0.59-0.88). However, the variable was not included in the multivariate model for this study due to the low response rate to the question.

Multiple logistic regression found that compared to white females, minority males were over 2 times more likely to use condoms during their last sexual intercourse (OR-2.04; CI-1.87-2.23). White males were also more likely to use condoms when compared to white females (OR-1.74; CI-1.61-1.87). In addition individuals aged 15 (OR-1.18; CI-1.08-1.30) and students who had a body weight perception of “overweight” (OR-2.23; CI-2.08-2.38) were more likely to use condoms compared to individuals aged 16 and respondents who reported a body weight perception of “about the right weight”. The subpopulations that were less likely to use condoms were: respondents who have experienced dating violence (OR-0.52; CI-0.48-0.56), respondents who have not been educated about HIV (OR-0.77; CI-0.71-0.84), and respondents who have used substances before sex (OR-0.72; CI-0.67-0.77) (Table 4.2).

Table 4.2. Univariate Analysis and Multiple Logistic Regression of Factors Associated with Condom Use in US High School Students in the Southern States, YRBS 2011 and 2013

N= 4463				
Variable		Crude OR (CI <sup>a</sup> )	Adjusted OR (CI <sup>a</sup> )	P-Value
<b>Gender/Race</b>	White Female	1.00 <sup>b</sup>	1.00 <sup>b</sup>	
	White Male	1.53 (1.43-1.63)	1.74 (1.61-1.87)	<0.0001
	Minority Male	1.79 (1.66-1.92)	2.04 (1.87-2.23)	<0.0001
	Minority Female	0.97 (0.90-1.04)	1.02 (0.94-1.11)	<0.0001
<b>Age</b> (years)	<15	0.94 (0.84-1.06)	1.08 (0.94-1.24)	0.0318
	15	1.10 (1.02-1.19)	1.18 (1.08-1.30)	<0.0001
	16	1.00 <sup>b</sup>	1.00 <sup>b</sup>	
	17	0.86 (0.81-0.92)	0.84 (0.78-0.91)	<0.0001
	≥18	0.79 (0.73-0.85)	0.77 (0.70-0.84)	<0.0001
<b>Body Weight Perception</b>	Underweight	0.54 (0.50-0.58)	0.52 (0.48-0.57)	<0.0001
	About the Right Weight	1.00 <sup>b</sup>	1.00 <sup>b</sup>	
	Overweight	1.83 (1.72-1.94)	2.23 (2.08-2.38)	<0.0001
<b>Dating Violence<sup>c</sup></b>	Yes	0.48 (0.45-0.51)	0.52 (0.48-0.56)	<0.0001
	No	1.00 <sup>b</sup>	1.00 <sup>b</sup>	
<b>HIV Education</b>	Yes	1.00 <sup>b</sup>	1.00 <sup>b</sup>	
	No	0.75 (0.70-0.81)	0.77 (0.71-0.84)	<0.0001
<b>Substance Use Before Sex</b>	Yes	0.70 (0.67-0.74)	0.72 (0.67-0.77)	<0.0001
	No	1.00 <sup>b</sup>	1.00 <sup>b</sup>	
<b>HIV Tested</b>	Yes	0.72 (0.59-0.88)		
	No	1.00 <sup>b</sup>		

<sup>a</sup>CI: 95% confidence interval

<sup>b</sup>Indicates Reference Category

<sup>c</sup> Within the past 12 months

## Discussion

Race and gender were found to be associated with condom use in high school students in the southern states. However, the association between condom use and race and gender varied by several factors such as body weight perception, dating violence, HIV education, and substance use before sexual intercourse. The available literature has similar findings of the current study. If there are differences in sexual norms due to race/ethnicity, it is plausible that condom use may be one.<sup>11</sup>

Adolescents' lack of condom use reveals a significant public health problem for the US.<sup>31</sup> According to the CDC, more than half of the high school population in the US had unprotected sex, putting them at elevated risk for HIV.<sup>12</sup> Though minorities overall are most affected by HIV, they are more likely to use condoms compared to whites.<sup>12</sup> The CDC also reported that female adolescents have a higher prevalence of unprotected sex than male adolescents.<sup>12</sup> Furthermore, the lack of sex education and the teaching of contraception ineffectiveness is common in schools in the southern states.<sup>25</sup> The current analyses for the southern states are similar to national findings from available literature focused on condom use in adolescents. Several factors affect how these subpopulations behave sexually in this particular study with the following found to make a significant difference: body weight perception, dating violence, HIV education, and substance use before sexual intercourse.

In national based literature, adolescents' self-esteem has frequently shown an association with sexual behaviors.<sup>8</sup> According to previous research, females who have a positive perception of their body are more likely to insist on the use of condoms whereas males who have a positive perception are more likely to have unprotected sex.<sup>8</sup> Another study found that adolescent girls with underweight perceptions were less likely to report condom use compared to adolescent females with a positive body weight perception.<sup>3</sup> In this study, adolescents were more likely to use condoms if their body weight perception was "overweight" compared to adolescents with "about the right weight." Oppositely, this study found that adolescents were less likely to use condoms if their body weight perception was "underweight" compared to "about the right weight."

Literature exploring adolescent sexual behavior nationally reported that adolescents who have experienced dating violence are more likely to engage in unprotected sex, especially among white adolescents.<sup>4</sup> In the current analysis, experiencing dating violence was predictive of not using a condom. It has also been repeatedly shown in the literature that in order to prevent the transmission of HIV, education on proper condom use is necessary for adolescents.<sup>11</sup> Adolescents who are confident on how to use a condom correctly are less likely to engage in unprotected sex.<sup>11</sup> According to the current study, southern adolescents who were not taught about HIV were less likely to use condoms.

Studies indicate substance use is a predictive factor for unprotected sex among adolescents and young adults, more so in males.<sup>13</sup> The current study found that substance use before sex was linked with events of unprotected sex. HIV testing in adolescents has been shown to be associated with condom use as a sign of protection of one's health.<sup>26</sup> In the current study, the HIV testing variable was only used in bivariate analysis. However, this analysis provided a finding opposite to national based literature and found that adolescents who got HIV tested were less likely to use condoms. The National Center for Health Statistics reported that frequent sexual risks increases the likelihood of individuals getting HIV tested, potentially explaining the current study's findings.<sup>29</sup>

Both body weight perception and dating violence had the strongest associations for condom use in the research study aside from race and gender. These factors could explain the sexual behaviors between different subpopulations in the southern states of the US. More research is needed to explore racial and gender differences, but also explore psychosocial factors such as body weight perception and dating violence in southern adolescents. With one of the



heaviest burdens of HIV on minority adolescents in the southern states, the current study can potentially explain differences between racial and gender groups using condoms to provide avenues to reduce infection rates.

This study had several strengths. It is the first to produce findings on the association between race and gender and condom use for high school students in the southern states of the US for the years 2011 and 2013. The CDC's YRBS has a large sample size which increased the power of the study. Also, YRBS provided a broad scope of data to select several factors to adjust for potential confounders. These strengths contributed to clear evidence of the association between condom use and race and gender in high school students in the southern states of the US.

Limitations should be noted. This study involved self-reported data which could involve bias. Social desirability could be a factor to cause some data to be incorrect. The CDC's YRBS also had numerous amounts of missing responses to the question used for the outcome variable, condom use. Georgia, Virginia, Louisiana, and Maryland (2011) were deleted from the analysis due to the states opting out of sex related questions. Furthermore, HIV testing could not be used for multivariate analysis due to many of the southern states omitting this question from the survey. Analyses from the YRBS survey are vulnerable to selection bias due to missing data, especially from the outcome variable. Causation cannot be assessed between variables associated with unprotected sex. Longitudinal data is needed to further assess the problem. Another limitation is the type of sex education in the study cannot be determined from the analysis. The quantity and quality of HIV education is not specified in the survey used for the research study. Also the study may not be generalizable to all adolescents in the southern states. Different

elements such as urbanization and socioeconomic status may affect findings for different populations in the southern US. Despite these limitations, this research highlights factors that are associated with condom use among southern adolescents.

### Conclusion

The impact of being a female and white was associated with a higher likelihood of engaging in unprotected sex. In addition, body weight perception, dating violence, HIV education, and substance abuse before sex were all associated with condom use in southern high school students. Considering both body weight perception of “overweight” and dating violence experiences had the highest likelihood for condom use, aside from gender and race, shows that further analysis can focus on these events solely. More research using a prospective design is needed to test for causality.

Understanding the risk factors that lead to the HIV/AIDS burden in southern states will contribute to the groundwork needed to implement interventions, prevention, education, and awareness in this region. Identifying predictors of condom use in adolescents in the southern states can help target which groups and populations should be focused on for public health interventions. This research recognizes whites and females at increased risk for lack of condom use. Interventions can be put in place to target other factors contributing to the lack of condom use in these populations. Additionally, research should assess reasons behind the high likelihood of condom use but high HIV infection rates in minorities. Psychosocial factors, such as “overweight” body weight perception and dating violence, have been shown to increase likelihood of unprotected sex and this research indicates that certain populations in the southern states should be targeted for increased awareness.<sup>4</sup> This initial research study provides

preliminary association of risk for unprotected sex in southern states but additional research is needed to further examine condom use and other sexual risk behaviors in this area.

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## CHAPTER 5

### DISCUSSION AND CONCLUSION

Even though there are several known ways to prevent the transmission of HIV, 50,000 US citizens are infected with the virus yearly (“HIV in the United States”, 2013). There is a huge disparity for overall health statuses including HIV/AIDS in the southern states of the US, especially in minority populations (Reif et al., 2006; Social Determinants of Health, 2013). Minority adolescents, compared to their white counterparts, are notably affected by HIV in the southern states (Rangel et al., 2006). Sexual risk behaviors are indicated through the number of infections of HIV and other STDs that adolescents acquire in the US, causing negative outcomes (Ortega et al., 2012). Even though it is known that race has an effect on sexual behaviors, such as early sexual initiation, multiple sex partners, and lack of condom use, gender has an effect as well (Robinson, 2010).

Early sexual initiation, multiple sex partners, and lack of condom use can all vary based on adolescents’ racial and gender background (Houlihan et al., 2008). Particularly in minority adolescents, early sexual initiation places them at higher risk to acquire STDs such as HIV (Lohman & Billings, 2008). According to the 2013 YRBS report, adolescent males had a higher proportion of engaging in early sexual initiation than adolescent females. Caputo (2009) indicated that minority adolescents in the southern states were more likely to engage in early sexual initiation compared to minority adolescents in other regions (Caputo, 2009). Having multiple sex partners, another HIV risk behavior, is prevalent among minorities due to several factors such as disproportionate male-to-female ratios, segregation, and migration in the US (Adimora et al., 2006; Espinoza et al., 2008). In 2013, national data showed that females in high school had a smaller percentage of multiple sex partners than high school males (Kann et al.,

2014). Furthermore, the highest proportions of high school students having multiple sex partners were in the southern states of the US.

In the US, minorities have been shown to report condom use more so than whites despite HIV being prevalent among minorities (Kann et al., 2014; Raj et al., 2006). Female adolescents have also been found to have an increased likelihood of engaging in unprotected sex compared to male adolescents (Robinson, 2010). Despite the disparity of HIV/AIDS in the southern states, most HIV education provided in this region is inadequate and often dismisses the importance of condoms and other contraceptives (Reif et al., 2006). The current study was used to explore these specific risk factors for adolescents in the southern states and focused specifically on race and gender.

Based on national findings on sexual health behaviors and the current study's findings, better HIV sex education, more access to comprehensive health services, and more supportive policies are needed to help reduce HIV infections, especially targeting the southern population (HIV and Other STD Prevention, 2014). This study indicates that adolescents who are minorities and/or males are at an increased likelihood of engaging in early sexual initiation. This population can be targeted for sex education not only in schools but also in community centers and churches to be most effective (Muller et al., 2008). This type of prevention should occur before adolescents engage in sex for the first time, promoting knowledge and skills to make proper and informed decisions about sex (Mueller et al., 2008).

The current study found that minority and male adolescents in the southern states were more likely to have multiple sex partners. Sexual partnerships have been shown to be altered in the south, stemming from determinants such as neighborhood poverty, racial discrimination, migration, and disproportionate incarceration of African American males (Adimora et al., 2014;

Espinoza et al., 2008). There are many policies being practiced in the southern states that directly and indirectly increase the infection rates of HIV in this region that promote these certain discriminations. Such policies need urgent revisions to solve the public health problem (Adimora et al., 2014).

Contrary to the high rates of HIV infection in the minority community, the current study found that white females were the most likely group to not use condoms in the southern states. Interventions are needed for this target population to improve sexual health through assertive communication skills with partners, particularly about condom use. Based on the findings from the current data, sexual behaviors in high school students in the southern states also vary based on psychosocial factors such as dating violence, forced sex, body weight perception, and substance use before sex. Prevention programs should take place in school systems to prevent victimization and teach how to build health relationships (Alleyne et al., 2011). Furthermore, programs should be in place to address body perception to encourage positive views of the body in conjunction with comprehensive sex education (Gillen et al., 2006).

In this study, the impact of gender and race has a clear influence on adolescents' HIV risk behaviors in the southern states. In addition, psychosocial factors are also associated with sexual behaviors in this population. Moreover, more research is needed using a prospective study design to test causality for sexual behaviors. Although this study offers an initial assessment of HIV risk behaviors in adolescents in the southern states, additional research is needed to fully understand the disparities in race, gender and sexual risk behaviors to reduce HIV infections in key populations in the southern states.

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## APPENDIX: Human Subjects Protection



East Tennessee State University  
Office for the Protection of Human Research Subjects • Box 70565 • Johnson City, Tennessee 37614-1707  
Phone: (423) 439-6053 Fax: (423) 439-6060

### IRB APPROVAL – Initial Exempt

October 17, 2014

Malendie Gaines

RE: Dissertation using the Centers for Disease Control's Youth Risk Behavioral Study (YRBS) Involving All Southern States  
IRB#: c1014.14e  
ORSPA#: ,

On **October 16, 2014**, an exempt approval was granted in accordance with 45 CFR 46.101(b)(4). It is understood this project will be conducted in full accordance with all applicable sections of the IRB Policies. No continuing review is required. The exempt approval will be reported to the convened board on the next agenda.

- xform new protocol submission submitted in Sep 2014, Research Aims containing data protection plan

### **Projects involving Mountain States Health Alliance must also be approved by MSHA following IRB approval prior to initiating the study.**

Unanticipated Problems Involving Risks to Subjects or Others must be reported to the IRB (and VA R&D if applicable) within 10 working days.

Proposed changes in approved research cannot be initiated without IRB review and approval. The only exception to this rule is that a change can be made prior to IRB approval when necessary to eliminate apparent immediate hazards to the research subjects [21 CFR 56.108 (a)(4)]. In such a case, the IRB must be promptly informed of the change following its implementation (within 10 working days) on Form 109 ([www.etsu.edu/irb](http://www.etsu.edu/irb)). The IRB will review the change to determine that it is consistent with ensuring the subject's continued welfare.

Sincerely,  
Stacey Williams, Chair



*Accredited Since December 2005*

## VITA

### MALENDIE T. GAINES

#### Education:

**DrPH Epidemiology**, May 2015

Dissertation: Influence of Race and Gender on HIV Risk Behaviors in High School Students in the Southern Region of the United States

East Tennessee State University, Johnson City, Tennessee

**MPH**, May 2012

Thesis: Knowledge of HIV Transmission among HIV Positive Population in Georgia

Mercer University, Macon, Georgia

**BS in Biology**, May 2010

Tuskegee University, Tuskegee, Alabama

#### Experience:

**Unicoi County Joint Economic Development Board Fellowship**, Erwin, Tennessee, May 2014 - August 2014

**Graduate Research Assistant**, East Tennessee State University, Johnson City, Tennessee, College of Public Health – Biostatistics and Epidemiology Department, August 2012

**DrPH Practicum**, Project Hope UK, Munsieville, South Africa, The Thoughtful Path Program, June 2013 - August 2013

**HIV Vertical Transmission and Highly Active Antiretroviral Therapy (HAART) Toxicity Study Internship**, Macon, Georgia, June 2011 – August 2011

**HIV Research Coordinator**, Mercer Medicine, Macon, Georgia, October 2010 – August 2012

#### Research Information:

##### *Presentations*

**Gaines, M., Quinn, M.** *The Analysis of Condom Use Compared to Risk Factors Associated with Dating Violence and Bullying in United States High School Students*. Poster presentation at the 2014 National STD Prevention Conference, Atlanta, Georgia (May 2014).

**Gaines, M., Quinn, M.** *Parental Relationships Predicting Adult Sexual Behaviors*. Poster presentation at the 2014 Appalachian Student Research Forum, Johnson City, Tennessee (April 2014).

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**Professional Affiliations:** Southern Region Education Board (SREB)  
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Tau Beta Sigma National Honorary Band Sorority

**Honors and Awards:** 2014 Alpha Kappa Alpha Educational Advancement Foundation, Inc. Graduate Scholarship  
2014 Southern Region Education Board Dissertation Fellow  
2014 Unicoi County's Economic Development Board Summer Fellow  
2013 Frist Global Health Leader  
2013 International Education Scholarship  
2013 Wykoff Public Health Scholarship  
2013 Appalachian Student Research Forum Winner  
2009 Harper Fellow, University of Alabama at Birmingham