The Effect of Age on HIV Risk Related Behaviors among Undergraduate Students at a Historically Black College and University (HBCU)

Abstract

Objective: This study assessed the effect of age on HIV risk related behaviors among African American undergraduate studentsat a Historically Black College and University.

Methods: A total of 400 respondents were randomly selected from undergraduate students at a Historically Black College and University. A cross-sectional study design was utilized. Data were collectedusing a validated self-administered standardized questionnaire that was designed to measure students risk behaviors to HIV Infections.

Results: Over seventy five percent of the study participants have had at least one risk behavior related to HIV infection transmission and there was significant statistical difference between students aged 18-24 and students aged 25 and above regarding their risk behaviors to HIV Infections (P = 0.02). African American undergraduate students aged 18-24 were more likely to participate in risk behaviors that could predispose them to HIV infections when compared to undergraduate studentsaged 25 and above.

Conclusions: This study provided important information regarding HIV risk behaviors among African American undergraduate students and possible protective steps to control the spread of HIV infection. Most undergraduate students (75.8%) in this study have had at least one high risk behavior related to HIV infection. Engagement of these undergraduate students in high risk behaviors was higher among students aged 18-24 years old. This investigation calls for age appropriate HIV preventive programs that are more appealing to this vulnerable age group in addressing high risk sexual behaviors to HIV infection identified in this study.

1. INTRODUCTION

Human immunodeficiency virus (HIV) remains a devastatingcommunicable diseasethat has claimed 40.4 millionlives since the start of the epidemic [1]. It is estimated that 39 million people were living with HIV; about 1.3 million people became newly infected and 630, 000 people died from AIDS-related illnesses in 2022[1].In the United States (U.S.), Centers for Disease Control and Prevention (CDC) estimates that 1.2 millionpeople were living with the virusand 31, 800 people became newly infected with the disease in 2022 [2].In the same year, the highest HIV infection rate was recorded among African Americans. Despite constituting 12% of the US population, African Americans account for 37% of estimated new HIV infections recorded in 2022 [3].

Men who have sex with men (MSM)are the population most affected by HIV in the U.S., They accounted for 67% estimated new HIV infectionsdocumented in 2022 [2, 4]. While individuals who reported heterosexual contact accounted for 22% estimated new HIV infections in 2022[2]. MSM continue to be major drivers of HIV infection rate in the U.S. African American MSM account for most of HIV infectionsseen among all MSM [4, 5]. They accounted for 35% of HIV infections reported among all MSM in 2022 [2, 4].

Although HIV affects people of all ages, the disease has taken a heavy toll on young adults in the U.S. It is expected this age groupwould have access to health information and tools to make sound decisions that would reduce HIV infection risk [4]. However, young adults still indulge in risk sexual behaviors and least likely to be aware of their HIV status [4].The increasing HIV and other sexually transmitted diseases (STDs) transmission rate seen among young adults could be attributed to low rates of condom use, lack of aware of their HIV status, multiple sexual partners, substance use (including alcohol and injection drug use) and misconception regarding HIV infection [6-8].Heavy HIV burden seen among these young adults underscore the need for more aggressive HIV preventive campaigns that focus onconsistent use of condoms, sexual partner fidelity and abstinence practice among these vulnerable population.

In the U.S., most undergraduate students fall within the age group that has the high rates of HIV infections [9, 10]. These students lack full parental supervision, and this unsupervised environment offers them greater opportunities to test the limits of their new found freedom through experimenting in a variety of behavioral risks such as alcohol abuse, illicit drugs use, and risk sexual behaviors [9-11].Some of the risk sexual behaviors common among U.S.undergraduate students includeunprotected anal and vaginal sex; multiple partners, inconsistent condom use,and causal sexual activities thatpredispose them to greater risk for STIs and Unintended pregnancies [10-12].A study conducted by Andrew and Andrew showed that 75.8% of their undergraduate study participants have had at least one risk behaviorrelated to HIV

infection and engaged in risk behaviors that predispose them to greater risk for STIs [9].These findings demonstrate that undergraduate students are constantly at risk of HIV infection due to risky sexual experimentations.

In the US, nearly 20 million new cases of STIs occur annually and nearly half of all new infections happening among young adults aged 15-24 years old [13, 14]. While HIV infections by age were highest among aged 25-34 years accounted for 40% of estimated new HIV infections recorded in 2022 [6]. Individuals aged 13–24 years accounted for 20% of estimated new HIV infections recorded in the same year [6].Considering the fact that young adults aged 13 to 34 accounted for more than half (60%) of estimated new HIV infections in the U.S. and growing body of literature reporting that risk behaviorspredispose young adults to greater chance for HIV infections [6, 9-12]. Previous studies have shown that African American undergraduate students engagein risk behaviors that make them susceptible to HIV acquisition and transmission even after previous exposure to HIV educational messages [15-19].Thus, it is important to explore the effect of age on risk behaviorsrelatedto HIV infections among undergraduate studentswithin this vulnerable age group that has the highest rate of HIV infections in the U.S. Also, to the best of our knowledge, no study has examined the association between age and risk behaviorsrelated to HIV infections among African American undergraduate students in the U.S. Thus, this study examinedthe effect of age on risk related behaviors among undergraduate students, a well-described high risk group for HIV infections in the U.S.

2. STUDY METHODOLOGY

2.1 Study Design

We conducteda cross-sectional surveystudy among African American undergraduate students at Jackson State University (JSU) from January to September 2016. This Historically Black University enrolled about 9,000 undergraduatestudents during the study period. This study participants were randomly recruited, and students must meet the following inclusion criteria: (a) must be senior, junior, sophomore or freshman undergraduate students currently enrolled at JSU at the time of the study; (b) must give consent to study participation; (c) must be African American undergraduate students currently enrolled at JSU at the time of the study; and (d) must be at least 18 years of age to participate in the study.

A minimum sample size of 369 participants was calculated by using Michel and Talbot formulas [20, 21]. However, a total of 400 African American undergraduate students were recruited into the study to accommodate for any possibilities of non-responses. The study survey questionnaires were answered inside classrooms before or after the students' lectures. In each case, we obtaineda verbal permission from lecturers before distributing the questionnaires to thestudents. All the students that participated in this study signed the informed consent form. The students were informed that the survey was a voluntary study, and they can withdraw anytime

from the study and that they may refuse to respond to any specific question in the questionnairewithout penalty or prejudice against them.

2.2 Study Data Collection

This study approval was obtained from JSU Institutional Review Board. This study survey questionnaire was divided into two sections, section 1: participants' demographic backgrounds and section 2: on risk behaviors relating to HIV infection transmission. To validate the study questionnaire;some samples of the questionnaires were given to a group of undergraduate students at JSU to ascertain clarity of the survey questionsand these students were not included in this final study. The Cronbach's alpha coefficient value was 0.76on risk behaviors related to HIV infections. The Cronbach's alpha coefficient value closer to 1.0 (range 0-1), with values closer to 1.0 indicates higher internal consistency of the questionnaire [22]. HIV risk behaviors questions included questions related to sharing of unsterilized sharps such as needles, inconsistent condom use, unprotected vaginal or anal sex, multiple sexual partners,intravenous injection (I.V.) drugs use and sex under the influence of illicit drugs or alcohol. A total of 400 properly completed questionnaireswere analyzed using chi-square ($p<0.05$) of SAS® 9.3 statistical software (SAS Institute Inc., Cary, NC, 2012).

2.3 Scoring of Risk Behaviors toward HIV Infection

High risk behaviors related to HIV infections were assessed using an 8-item questionnaire, where a student indicates one negative behavior related to HIV infection, such response was considered as having high risk behavior.

3. STUDY RESULTS

3.1 Participants' Profile

A total of 400 African American undergraduate students participated in the study and they were randomly recruited from JSU undergraduate student population. The mean age of the study participants was 21.9 years, standard deviation ± 5.7 years and ranged from 18 to 57 years (Table 1). Of the 400 study respondents, 259 (64.8%) were female and141 (35.2%) were male African American undergraduate studentsas shown in Table 1.

Table 1. Characteristics of the study participants

Characteristicsn (%) or Mean ± S.D.	
Age 21.9 ± 5.7	
Gender	
Male	141 (35.2)
Female	259 (64.8)

% = Percentage; S.D =Standard Deviation; n = Number of students in each group

3.2 Risk Behaviors toward HIV Infection

Study respondents indicated that 16.5% of students had multiple sexual partners. In the last 3 months about 58.5% of the students have had sex without condom and 34.8% reported having sex under influence of alcohol.The result showed that 64.2% of the respondentsdid not use condom during their last sexualintercourse. Respondentsindicated that 13.5% of the students have had sex under the influence of illicit drugs within the last 3 months; about 1.5% of the respondents were IV drug users during the period of the study.Study participants indicated that 1.8% of the studentsregularly share unsterilized sharps such as needles. Regarding the question of havingunprotected anal sexual intercourse,about 13.5% of the students have had unprotected anal sexual intercourse in the past as shown in Table 2.High risk behavior was assessed using an 8-item questionnaire, a report of one negative behavior related to HIV infection transmission was considered as having high risk behavior. After stratifying risk behaviors intorisk behavior group and non-risk behavior group, the result revealed that 303 students (75.8%) in this study had at least 1 high risk behavior related to HIV infections and 97 (24.2%) respondents did not report any high risk behavior related to HIV infection transmission.

Table 2. Risky sexual behaviors of students enrolled in the study

Risky sexual behaviors	**Frequency (%)**
Have you had unprotected anal sex before?	
Yes	54(13.5)
No	346(86.5)
Did you use condom during your last sexual intercourse?	
Yes	143(35.8)
No	257(64.2)
Do you have multiple sexual partners?	
Yes	66(16.5)
No	334(83.5)
Do you regularly share unsterilized sharps such as needle?	
Yes	7(1.8)
No	393(98.3)
Are you currently an intravenous injection (I.V.) drugs user?	
Yes	6 (1.5)
No	394(98.5)
Have you had sex under influence of illicit drug in last 3months?	
Yes	54(13.5)
No	346(86.5)
Have you had sex under influence of Alcohol in last 3months?	
Yes	139(34.8)
No	261(65.2)

Have you had sex without condom in the last 3months?	
Yes	234(58.5)
No	166(41.5)

% = Percentage

Afterstratifying the students' sexual behaviors into risk behavior group and non-risk behavior group, a total of 251 African American undergraduate aged 18-24 and 52 African American undergraduate students aged 25 and above have had at least one high risk behavior related to HIV infection. There was astatistically significant difference between respondents ≤ 24 years and respondents ≥25 years regarding risk behaviors toward HIV infection transmissions(P = 0.02) as shown in table 3.

Table 3. Differences in distribution of risk behaviors by age

Age	**Risk Behaviors**		**P**
	Risk behavior	**Non-risk behavior**	
	n	n	
≤ 24 years	251	89	0.02
≥ 25 years	52	8	

P: p-value; p < 0.05 is considered significant; n = Number of students in each group

4. DISCUSSION

We have succeeded in examining the effect of age on risk behaviors related HIV infections among theseAfrican American undergraduate students. This study demonstrates that a lot of the students (75.8%) still engage in high risk behaviors that predispose them to HIV infection.This study finding is consistent with growing body of literature reporting that undergraduate students are constantly engaging in HIV risk behaviors such as having unprotected anal or vaginal sex activities, inconsistence condom use, sharing of unsterilized sharps, multiple sexual partners, having sex under the influence of alcohol and illicit drugs [6-8,23, 24].We acknowledge that deep seated socio-cultural factors that may influence these students' behaviorssuch asdelinquency,peer pressure, level ofeducation, poverty, attitudetowards ill-health and religion

were not evaluated in this study[25-27]. However, it is disturbing that 75.8% of African American undergraduate students that participated in this survey reported having at least one HIV risk behavior.These study participants also reported that 64.2% did not use condom during their last sexual encounters.A similar study that was conducted among African American undergraduate in the U.S. revealed that 64% of their study participants who had at least two or more sex partners did not use condom duringtheir last sexual encounters [24]. Lack or inconsistence use of condom during vaginal or anal sexual encounters remains the most common route of HIV infection transmission among young adults in the U.S. [28].These study findings buttress the urgent need forHIV preventiveand condom use awareness programs that are more appealing to these vulnerable young adults.

This study reported that 16.5% of the undergraduate students in this study had multiple sexual partners. However, this figure of 16.5% was lower in comparison to similar study conducted among undergraduate students that found that40.6% of their study participants had multiple partnerships [27]. This is quite unsettling since several studies have linkedmultiple sexual partners toHIV and other STDs infections among these vulnerable youths [23 - 28].A study conducted among youths reported that the greatest risk factor for HIV and other STDs infections in their study participants was the act of having unprotected sex with multiple sexual partners [29]. More youth friendly HIV preventive programs tailored toward addressing riskybehaviors that are very noticeableamong this vulnerable young population should be implemented across the board.This study reported that 13% of students have had unprotected anal sexual intercourse in the past.In the U.S., the practice of unprotected receptive anal sexual encounter carries the highest risk of transmitting HIV infection if either partner is HIV-positive in the USA [30].The risk of HIV transmission through anal sexual intercourse is very high due to thin lining of the rectum. This rectum anatomy of thin epithelial liningcreates an easy access to HIV infection during unprotected anal sexual encounters [30]. This risk behavior for HIV infection transmission could be reduced or eliminated during anal sexual encounter through consistent condoms use; daily intake of HIV pre-exposure prophylaxis (PrEP) drugs; antiretroviral therapy (ART) treatment for HIV positive individuals; abstinence or avoidance of risk sexual activities [30, 31].

This study found a significant statistical difference between students aged 18-24 and students aged 25 and above regarding their risk behaviors to HIV Infections ($P = 0.02$).The engagements of these undergraduate students in high risk behaviors varied between the two age groups and were higher among students aged 18-24 years in both groups. One may argue that the higher risk behaviors seen among students aged 18 – 24 could be attributed to other factors that may influence theseyoung adults'behaviors such as level of maturity, peer pressure, level of education, poverty, delinquency and substance usethat are more pronounced among this vulnerable age group [25-27].However, the higherrisk behaviors recorded among these study participantsaged 18-24may be ascribed to the skewed age distribution in this study. A total of 340 students that participated in this study were withinthe age bracket of 18-24 years and 60

studentswere aged 25 and above.A study conducted among African American students, found thatadolescent students seeking for sexual sensation has translated to higher frequencyof unprotected sex, spontaneity of sexual encounters, multiple sexual partnersand risky sexual experiments [32].Studies have documented thatlack of parental supervision at the universities, offers fresh undergraduatestudents ample opportunities to test the limits of their newlyfound freedom through risky sexual activities [9-11, 33, 34].There are nearly 20 million new cases of STIs occur annually and nearly half of all new infections happening among young adults aged 15-24 years old in the U.S. [13, 14]. Individuals aged 13–24 years accounted for 20% of estimated new HIV infections recorded in 2022 [6]. This investigation advocates for an effective age-appropriate HIV preventive programs that willreduce or eliminate these high risk sexual behaviors notable among these young adults. These youth friendly programs should be promoted and properly implementedacross the various colleges and universities.

5. CONCLUSION

The general assumption that students ininstitutions of higher learning would be well informed concerning HIV/AIDS and other STDs and therefore should have less risk sexual activities. This study finding hasshown that the assumption bears no resemblance to actual reality among these undergraduate students. These students were aware of what construes risky sexual behaviors; nonetheless a lot of these students (75.8%) in this study have had at least one risk behavior that could predispose themto HIV infections. Therefore, emphasis should be placed on designing HIV preventivestrategies that are more appealing to these young adults. This study suggests that institutions of higher learning should adopt HIV preventive educational programs that will address HIV risk behaviors identified in this study. It is imperative that this vulnerable age group recognizes the dangers of HIV risk behaviors, avoidHIV infection, as well as indulge in safer sexual encounters.

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