

# Substance Use and Risky Sexual Behavior among Adolescents: A Cross-Sectional Study of Secondary Schools in Nairobi County, Kenya

Walter Odera Owino  
KCA University, Nairobi Kenya  
Email address: walt\_harry@yahoo.com

**Abstract** – Findings from recent studies suggest that risky sexual behaviors are common among Kenyan adolescents. Such behaviors include early initiation of sexual activity, unprotected sex, casual sex or sex with multiple or older partners. These behaviors are risky because they elevate adolescents' risk for unintended pregnancy, infection with sexually transmitted diseases and other harmful consequences such as unsafe abortions and disrupted schooling. Research suggests that substance use is one of the factors that predispose adolescents to risky sexual behaviors but the association between substance use and risky sexual behavior is not well documented in secondary school settings in Kenya and particularly in Nairobi County. This study therefore investigated whether students in public secondary schools in Nairobi County who used alcohol, cigarettes, bhang (marijuana) or any other psychoactive substances were more likely to report risky sexual behaviors. A sample of 367 students drawn from nine public secondary schools in Nairobi County took part in the study. They completed a questionnaire with items to capture substance use as well as sexual behaviors. Associations between substance use and risky sexual behaviors were examined using chi-square analyses and odds ratios were computed to estimate how substance use related to likelihood of reporting risky sexual behavior. Results of the study indicated that with the exception of early sexual debut, substance using students had significantly greater odds of engaging in risky sexual behaviors compared to non-users. These findings suggest that substance use prevention should be integrated into programs aiming to reduce HIV transmission, adolescent pregnancy and related harms among school going youths.

**Keywords** – adolescents; substance use; risky sexual behavior; alcohol; smoking; bhang.

## I. INTRODUCTION

As young people go through adolescence, they become curious about their sexuality and it is common for them to experiment with sexual behaviors (Kar, Choudhury & Singh, 2015). There is cause for concern when adolescents engage in sexual activities that expose them to health risks (McAloney-Kocaman et al., 2019; Reis et al., 2024). Researchers have identified a number of sexual behaviors that are potentially harmful to adolescents. These risky sexual behaviors include initiating sexual intercourse at an early age (before 15 years), engaging in casual or transactional sex, not using condoms or contraceptives or using them inconsistently, having significantly older sexual partners, sex with multiple partners and having sex while intoxicated (Berhan & Berhan, 2015; Chen et al., 2017; Girmay & Mariye, 2019; Ssewanyana et al., 2021; Workneh et al., 2024).

Sexual risk taking among the youth is a worrying trend because young people who engage in risky sexual behavior are exposed to adverse outcomes such as infection with sexually transmitted diseases including the HIV virus and unwanted pregnancies that can result in further problems including unsafe abortions and disrupted education (Clayton et al., 2016; Devi et al., 2021; Firomsa et al., 2019; Workneh et al., 2014 & Zenebe et al., 2023). Research has shown that sexual risk taking including sex with multiple partners and inconsistent condom use is the main driver behind the high prevalence of HIV infection in sub-Saharan Africa (Uchudi et al., 2012). Researchers have noted with concern that although there is a global decline in the rates of HIV infection, 15 to 24 year old youth in sub-Saharan Africa continue to suffer disproportionately high infection rates. In Kenya, statistics show that more than half (51%) of new HIV infections happen among 15 to 24 year old youth (UNAIDS, 2020). This suggests that young people are engaging in risky sexual behavior at alarming rates.

Research on sexual behavior of youth in Kenya has revealed that adolescents are commencing sexual intercourse at a young age and many are engaging in a variety of risky sexual behaviors. In one survey, Ssewanyana et al. (2021) reported that 15% of adolescents sampled in Nairobi and Kilifi counties were sexually active. Majority of the respondents in that survey who were sexually active (57%) had participated in at least one form of risky sexual behavior. Omanga et al. (2023) reviewed survey data from the Demographic Health Survey collected in 2014 from Kenyan youth and reported that 10% of male adolescents and 1.5% of female adolescents had had sex with two or more partners in the 12 months before the survey was taken. In the same report, 30.2% of male adolescents and 62.5% of female adolescents had not used condoms during their last sexual encounter before the survey.

Focusing on adolescent girls residing in Nairobi's informal settlements, a survey by Maina et al. (2020) revealed that 13% of girls aged 10 to 14 years had engaged in sexual intercourse at least once in their lives. These findings were supported by findings reported by Mudhune et al. (2014) where 996 adolescents with a mean age of 14 years from urban and peri urban areas of Kisumu County were surveyed. The study found that 152 (15.3%) of the respondents had engaged in sex. It is worth noting that for 64.1% of the males and 48% of the females who had engaged in sex, their first sexual experience

had been willing. Majority of these respondents (60.9%) did not use condoms the first time they had sex and nine of them (14.1%) could not remember whether condoms were used. An earlier study by Wanjiku (2015) reported that 43% of 16 to 19 year old secondary school students in Nairobi County had ever had sexual intercourse and the mean age at first intercourse was 15 years. Moreover, 55% of the sexually active students had had sexual partners significantly older than themselves. Mbuthia et al. (2019) reported that when they surveyed undergraduate students from two Kenyan universities, they found that 23.6% of the sexually active respondents had sexual intercourse for the first time when they were 7 to 14 years old and only 32% used condoms consistently.

Early sexual debut is where adolescents engage in sex before the age of 15 years. The findings reported by Maina et al. (2020), Mudhune et al. (2024), Wanjiku (2015) and Mbuthia et al. (2019) suggest that early sexual debut is common in Kenya. Early sexual debut is of great concern because it is associated with greater risk of unprotected sex, increased numbers of sex partners and other forms of sexual risk taking (Ajuwon et al., 2006; Imaledo et al., 2013; Zuma et al., 2010). The risk of sexually transmitted diseases, unwanted pregnancies and unsafe abortions is higher in adolescents who make an early sexual debut (Houlihan et al., 2016; Mmbaga, Leonard, & Leyna, 2012; Nkata et al., 2019). Adolescents who become sexually active at a younger age have poorer academic achievement (Bengesai, Khan, & Dube, 2018).

#### *Substance Use and Risky Sexual Behavior*

Substance use is one of the correlates of sexual risk taking in young people as reported in previous studies. In one study, Ogundare et al. (2020) investigated whether sexual behavior in a sample of 12 to 23 year old students from Liberia was associated with their marijuana, alcohol or other substance use habits. Students who used alcohol were significantly more likely to have multiple sex partners in comparison to non-alcohol users. Users of marijuana had a fivefold increase in risk of unintended pregnancies. Students who used heroin were more likely than non-users to engage in transactional sex.

Adolescents who used substances were more likely to be sexually active and to have multiple sexual partners in the study done by Doku (2012). Adolescents who were sexually active were more likely to be cigarette smokers (OR = 3.7), users of other forms of tobacco (OR = 2.8), marijuana smokers (OR = 3.3) users of a drug known as “tawa” (OR = 2.4) or alcohol users (OR = 1.7). Adolescents who smoked cigarettes were 16 times more likely to have multiple sex partners. Users of other drugs, “tawa” and tobacco were nine to ten times more likely to have multiple sex partners (OR = 9.1, 10.4 and 10.4 respectively) than non-users. At the same time, users of marijuana and alcohol users who often got drunk were 17 times (OR = 17.1) more likely to have multiple sex partners. Thus, substance use was associated with greater likelihood of being sexually active and having multiple sex partners.

Associations between substance use and sexual behavior in African American adolescents were reported by McFall (2016). Adolescents who reported lifetime alcohol use were two times more likely to have had sexual intercourse, four times more

likely to have had four or more sexual partners in the preceding three months and 1.3 times more likely to have had four or more lifetime sexual partners. Marijuana use was similarly associated with elevated sexual risk. Adolescents who had ever used marijuana were four and a half times more likely to have initiated sexual intercourse and four times more likely to report having four or more partners in the previous three months. Marijuana users also had six times the odds of having had at least four lifetime sexual partners.

The links between substance use and sexual risk taking have also been supported in studies with Asian youth. Li et al. (2013) conducted a study on 15 to 23 year old Chinese youth and found that after controlling for the respondents’ sociodemographic characteristics and the age at which they initiated sexual intercourse, respondents had twice the odds of regularly having unprotected sex if they had an illicit drug use habit (OR = 2.44) and if they were cigarette smokers (OR = 2.04). In another study involving Chinese adolescents, Lo et al. (2019) found that sexual misconduct was predicted by commitment to school, peer influence and substance use with substance use being the strongest predictor and possibly mediating the effects of school commitment and peer influence.

In Australia, Jenkinson et al. (2014) observed that among 16 to 29 year olds, regular binge drinking doubled the odds of taking part in unprotected sex (OR = 2.13). Recent (past month) illicit drug use also elevated the risk of having unprotected sex (OR = 1.68). In a prospective study, Parkes et al. (2007) sought to determine whether substance use was associated with condom use in adolescents. They collected data when the adolescents were 14 years old and later when they were 16 years old. Adolescents who consumed alcohol or smoked cigarettes when they were 14 years old were less likely to use condoms two years later when they were 16 years old. Adolescents who were not using condoms at 16 were most likely to be using cannabis, alcohol or smoking cigarettes. In addition, the researchers found that adolescents using more than one substance were less likely to use condoms compared to those who used only one substance.

Sex with multiple partners, inconsistent condom use and having sex while intoxicated were associated with alcohol and drug use habits in a survey of 15 to 24 year old students from two Nigerian colleges (Omisore et al., 2022). In a similar survey in Kenya, by Mangeni and Mbuthia (2018), college students who used substances were significantly more likely than non-users to not use condoms ( $\chi^2 = 20.4$ ), to have multiple sex partners ( $\chi^2 = 25.25$ ) and to report early sexual debut ( $\chi^2 = 20.9$ ).

#### *Purpose of the Study*

The purpose of this study was to find out whether substance use was associated with risky sexual behavior in adolescents attending public secondary schools in Nairobi County. The study sought to determine whether adolescents who consumed alcohol, smoked cigarettes or bhang or used any other intoxicating substances had greater odds of being sexually active, became sexually active at an early age, engaged in sex with older partners or multiple partners or had unprotected sex relative to adolescents who did not use any substances. Current research suggests that substance use increases the odds of risky

sexual behavior. However, no studies have focused specifically on school going adolescents in Nairobi County. Moreover, researchers have found a high prevalence of substance use (Abur, 2014; Kigendo, 2015; Owino, 2017) in addition to premarital sex among adolescents in Nairobi County. This study aimed at replicating earlier studies that investigated links between substance use and risky sexual behavior in adolescents with a focus on adolescents enrolled in public secondary schools in Nairobi County.

II. METHODOLOGY

This study targeted Form Three students (equivalent to eleventh grade) enrolled in public secondary schools in Nairobi County of which there were 10, 450 according to data from the County Director of Education. Three of the nine sub counties that make up Nairobi County were purposively chosen to ensure representativeness of the sample. Within these three sub counties, there were 28 public secondary schools. Using stratified random sampling, nine schools were selected such that each school type (girls’ schools, boys’ schools, and mixed schools) was represented by three schools. From each selected school, 43 Form Three students were randomly sampled, yielding a total sample of 385 participants.

A self-administered questionnaire was used to collect data. Respondents indicated whether they had consumed alcohol, smoked cigarettes, used bhang (marijuana), or taken any other psychoactive substances within the 12 months preceding the study. For each substance, responses were recorded dichotomously (use vs. non-use). The questionnaire also asked students to report whether they had ever engaged in specific sexual behaviors. A sample item was: “Have you ever had sexual intercourse with a person of the opposite sex?” Responses to all behavioral items were coded as “yes” or “no.” The risky sexual behaviors of interest were whether the student had ever had sexual intercourse, early sexual debut (before 15 years), having multiple sex partners (two or more), having sex with older partners (partners older by 5 years or more) and having ever had sex without a condom.

Data were analyzed using SPSS Version 23. Associations between students’ substance use and risky sexual behaviors were assessed using the Chi-square test for independence. To further quantify the strength of these associations, odds ratios (ORs) were computed to compare the likelihood of engaging in each risky sexual behavior among substance users relative to non-users.

In order to comply with ethical requirements, a research permit was obtained from the National Council for Science, Technology and Innovation (NACOSTI). Authorization to visit schools for data collection was obtained from the County Director of Education and the heads of the selected schools gave permission to collect data from students. Selected participants gave informed consent before they were issued questionnaires. They were assured of anonymity and confidentiality of information they gave and participation was voluntary.

III. RESULTS

Demographic Characteristics of Respondents

Questionnaires were distributed to a sample of 385 students. A total of 367 completed questionnaires were returned therefore the response rate was 95.3%. This response rate was satisfactory going by the recommendations in Cooper and Schindler (2015), Mugenda and Mugenda (2003) and Fincham (2008). The distribution of respondents by age and sex is shown in Table 1

TABLE 1: Distribution of Respondents by Sex and Age

		N	%
Sex	Boys	181	49.3
	Girls	186	50.7
	<b>Total</b>	<b>367</b>	<b>100</b>
Age	15 years	24	6.5
	16 to 17 years	193	52.6
	18 to 19 years	121	33.0
	Over 20 years	29	7.9
	<b>Total</b>	<b>367</b>	<b>100</b>

As shown in Table 1, there was equal representation of male and female respondents (49.3% and 50.7%). Majority of the respondents were 16 to 17 years old (52.6%) and 18 to 19 years old (33.0%). Most problem behaviors including risky sexual behavior and substance use peak during these adolescent years (Babore, et al., 2016; Eltink et al., 2018). The patterns of substance use by the respondents are shown in Table 2.

TABLE 2: Patterns of Substance use by Respondents

Substance use behavior	Yes		No	
	N	%	N	%
Used alcohol	114	31.1	253	68.9
Smoked cigarettes	92	25.1	275	74.9
Smoked bhang	101	27.5	266	72.5
Used other substances	77	21.0	290	79.0

According to the patterns of substance use shown in Table 2, alcohol was the substance most commonly used by the respondents with 114 (31.1%) of them having used alcohol in the past one year. Bhang (marijuana) was the second most commonly used substance with 101 students (27.5%) reporting having used it. Ninety two respondents (25.1%) smoked cigarettes and 77 respondents (21%) used other intoxicating substances apart from alcohol, cigarettes and bhang in the past one year.

Risky sexual behavior was the main variable of interest in this study. Figure 1 shows the proportion of respondents who had ever had sex and the proportion of respondents who had not.

As shown in Figure 1, 152 respondents (41.4%) reported that they had ever had sex whereas 215 respondents (58.6%) had never had sex. The prevalence of risky sexual behaviors among those respondents who had ever had sex is shown in Table 3.

As shown in Table 3, out of the 152 respondents who had ever had sex, 48 (31.6%) initiated sex when they were 15 or younger; 83 respondents (54.6%) reported having two or more sex partners and 39 respondents (25.7%) had engaged in casual sex. In addition, among respondents who had had sex, 54 respondents (35.5%) reported having had unprotected sex and 25 respondents (16.4%) reported having had sex with partners older than them by five or more years.

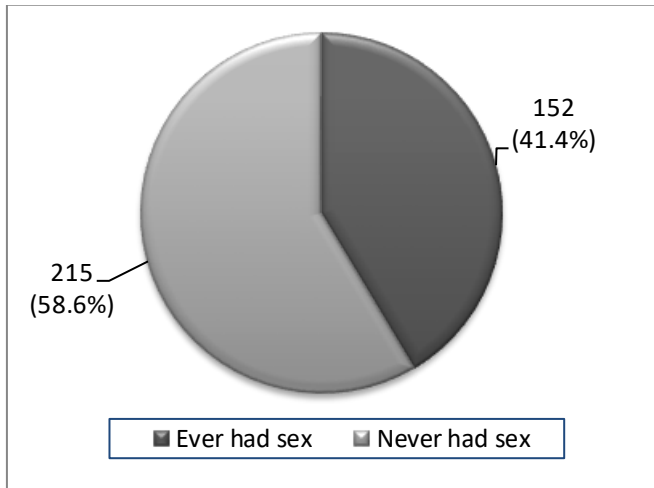


Figure 1: Proportion of Respondents who had Ever Had Sex

Associations between substance use and risky sexual behaviors

The results of the chi-square tests that were carried out to determine the associations between substance use and risky sexual behaviors and the odds ratios computed to estimate the strength of those associations are presented in Table 4.

TABLE 3: Prevalence of Risky Sexual Behaviors among Respondents who had Ever had Sex

Risky sexual behaviors	Yes		No	
	N	%	N	%
Sex debut at or below 15	48	31.6	104	68.4
Sex with two or more partners	83	54.6	69	45.4
Sex with a casual partner	39	25.7	113	74.3
Sex without a condom	54	35.5	98	64.5
Sex with older partner	25	16.4	127	83.6

TABLE 4: Results of Chi-square Tests of the Associations between Substance Use and Risky Sexual Behaviors

Risky sexual behaviors	Used alcohol		Smoked cigarettes		Smoked bhang		Used other intoxicants	
	$\chi^2$ (p value)	OR (95% CI)	$\chi^2$ (p value)	OR (95% CI)	$\chi^2$ (p value)	OR (95% CI)	$\chi^2$ (p value)	OR (95% CI)
Ever had sexual intercourse	88.566 (.000)	16.109 (8.225 - 31.551)	50.272 (.000)	8.206 (4.356 - 15.462)	41.697 (.000)	5.754 (3.304 - 10.024)	53.187 (.000)	13.016 (5.785 - 29.285)
Sex debut at or below 15 years	1.167 (.280)	1.607 (.769 - 3.362)	.373 (.541)	1.366 (.636 - 2.936)	1.167 (.280)	.623 (.299 - 1.298)	.038 (.846)	.928 (.435 - 1.979)
Sex with two or more partners	26.167 (.000)	4.867 (2.656 - 8.916)	9.533 (.002)	2.638 (1.455 - 4.782)	33.639 (.000)	6.578 (3.437 - 12.589)	26.880 (.000)	5.762 (2.937 - 11.305)
Sex with a casual partner	18.217 (.000)	4.930 (2.345 - 10.361)	12.088 (.001)	3.302 (1.709 - 6.379)	12.419 (.000)	3.367 (1.738 - 6.524)	36.646 (.000)	8.297 (4.060 - 16.957)
Sex with partner older by 5 or more years	14.071 (.000)	3.907 (1.926 - 7.927)	31.568 (.000)	7.173 (3.521 - 14.612)	13.634 (.000)	3.542 (1.830 - 6.853)	62.583 (.000)	18.474 (8.255 - 41.343)
Sex without a condom	9.434 (.002)	2.627 (1.449 - 4.765)	8.959 (.003)	2.554 (1.414 - 4.613)	12.325 (.000)	2.985 (1.648 - 5.408)	22.696 (.000)	4.579 (2.453 - 8.549)

The results in Table 4 show statistically significant associations between substance use and the sexual behaviors except early sexual debut. To start with, there were significant associations between using alcohol and ever having had sexual intercourse ( $\chi^2 = 88.566, p < .000$ ), having two or more partners ( $\chi^2 = 26.167, p < .000$ ), having casual sex ( $\chi^2 = 18.217, p < .000$ ), having sex with older partners ( $\chi^2 = 14.071, p < .000$ ) and having sex without a condom ( $\chi^2 = 9.434, p = .002$ ). The odds of students having had sex were 16 times higher among students who used alcohol (OR = 16.11). Students who used alcohol had nearly five times greater odds of having multiple partners (OR = 4.87) and having casual sex (OR = 4.93).

Smoking cigarettes was significantly associated with ever having had sexual intercourse ( $\chi^2 = 50.272, p < .000$ ), having two or more partners ( $\chi^2 = 9.533, p = .002$ ), having casual sex ( $\chi^2 = 12.088, p = .001$ ), having sex with older partners ( $\chi^2 = 31.568, p < .000$ ) and having unprotected sex ( $\chi^2 = 8.959, p = .003$ ). Notably, the students who smoked cigarettes had eight times the odds of ever having had sexual intercourse (OR = 8.21) and seven times greater odds of having sex with older partners (OR = 7.17).

There were significant associations between smoking bhang and ever having had sexual intercourse ( $\chi^2 = 41.697, p < .000$ ), having two or more partners ( $\chi^2 = 33.639, p < .000$ ), having

casual sex ( $\chi^2 = 12.419, p < .000$ ), having sex with older partners ( $\chi^2 = 13.364, p < .000$ ) and having unprotected sex ( $\chi^2 = 12.325, p < .000$ ). Students who smoked bhang had six times greater odds of having sex with multiple partners (OR = 6.58) and having ever had sex (OR = 5.75).

Finally, significant associations were observed between using substances other than alcohol, cigarettes and bhang and ever having had sexual intercourse ( $\chi^2 = 53.187, p < .000$ ), having two or more partners ( $\chi^2 = 26.880, p < .000$ ), having casual sex ( $\chi^2 = 36.646, p < .000$ ), having sex with older partners ( $\chi^2 = 62.583, p < .000$ ) and having sex without a condom ( $\chi^2 = 22.696, p = .002$ ). Using other substances increased the odds of ever having had sex by 13 times (OR = 13.02) and increased the odds of having sex with older partners 18 times (OR = 18.47).

IV. DISCUSSION

This study sought to determine whether using alcohol and other substances was associated with risky sexual behavior among students in public secondary schools in Nairobi County. A hundred and fifty two (41.1%) of the respondents had ever had sex. This finding is very similar to the finding made in the survey by Wanjiku (2015) where 43% of respondents reported ever having sex. These findings imply that early sexual

initiation among adolescents is a problem in Nairobi County. This, however, is not limited to Nairobi County because studies done in other counties also report that a large percentage of adolescents have debuted sex. In Nakuru County for instance, Esho et al. (2018) surveyed 68 secondary school students with a mean age of 16.6 years. Thirty of those students (44%) reported that they had ever had sex. In a study where data was collected from 15 to 19 year old girls living in Homabay and Narok Counties, 60% of the girls reported ever having sex and 83% of these girls reported being sexually active in the past 12 months before the study (Embleton et al., 2023).

Forty eight of the respondents (31.6%) who had ever had sex debuted sex early. Multiple sex partners, casual sex, unprotected sex and sex with older partners were also noted among respondents. These are risky sexual behaviors that have been reported in studies from other counties in Kenya. Wanjiku et al. (2024) examined data from 10 to 19 year old girls in Kirinyaga County and drew the conclusion that most of the girls had older sex partners, had multiple sex partners or involved themselves in commercial sex. They also noted that unplanned pregnancies, abortions and disruption of schooling were common in that county. Khasewa et al. (2023) surveyed 15 to 24 year old youths from Kericho and Kakamega Counties in relation to their sexual behaviors. It emerged that 60.6% of respondents were in sexual relationships and 18.8% had had sex with two or more partners in nine months. They also found that 38% of the sexually active respondents never used condoms at all.

The odds of a student having ever had sex were significantly higher among students who used substances. Therefore, initiating sex was associated with substance use as reported in earlier studies by Clayton et al. (2019), Doku (2012) and McFall (2016). However, early sexual debut was not associated with any substance use in this study. This is contrary to findings reported in other studies that have found early sexual debut among adolescents using various substances. For instance, although only 4.4% of the respondents in the study by Mudhune et al. (2024) reported previous use of alcohol or any other substance, there was significant association between sexual debut and use of any substance ( $\chi^2 = 5.1, p = 0.02$ ). Durowade et al. (2017) investigated prevalence and risk factors for early sexual debut (they defined early sexual debut as penetrative sex at 14 years or earlier) in a cross sectional survey of secondary schools in Ido, Nigeria. Eleven percent of the respondents had debuted with the mean age of debut being 13.10 years. The strongest predictors of early debut were friendship with other students who were sexually active and consumption of alcohol. Furlamento et al. (2017) investigated factors associated with early sexual initiation (sexual debut before age 15) in a school based survey of 11 to 18 year old adolescents in Brazil. Use of licit and illicit substances was one of the individual factors associated with early sexual debut. Strandberg et al. (2019) also found that use of substances increased the odds of early sexual debut (OR = 2.07).

Substance use increased the odds of having multiple sex partners, having casual sex, having sex with older partners and inconsistent condom use. This finding aligns with findings in previous studies which found increased odds of risky sexual

behavior among substance using adolescents. Users of alcohol and other substances were found to have increased odds of sex with multiple partners (Doku, 2012; McFall, 2016 & Ogundare et al., (2020) and unprotected sex (Jenkinson et al., 2014; Li et al. 2015; Mangeni & Mbuthia, 2018; Parker et al., 2007). In a meta-analysis of studies that examined the associations between alcohol consumption and risky sexual behaviors in adolescents Cho and Young (2023) found that inconsistent condom use and sex with multiple partners were associated with alcohol consumption. Ritchwood et al. (2016) investigated the association between substance use and condom use, having sex while intoxicated and number of sex partners reported by 9 to 19 year old adolescents. Use of alcohol, marijuana and cocaine predicted inconsistent condom use, having sex while intoxicated, and having more sex partners.

Use of alcohol and other substances significantly increased the odds of casual sex in this study. Substance use has been observed to increase the odds of engaging in casual sex in adolescents and young adults. For instance, a meta-analysis of 29 studies that looked into effects of consuming alcohol on casual sex in samples spanning young to older adults reported a significant association between consuming alcohol and engaging in casual sex with a stronger effect for emerging adults (Claxton et al., 2015). Fortunato et al. (2010) surveyed middle and high school American students to establish prevalence and correlates of “hooking up”. Hooking up was more prevalent among students who used alcohol or other drugs than students who did not use alcohol or drugs. Similar findings were reported in a prospective study by Johnson (2013) who found that higher consumption of alcohol during adolescence increased odds of hooking up in young adulthood. Moreover, a study of young sexually active adults by Kiene et al. (2009) found that consumption of alcohol increased the probability of having unprotected sex with casual partners.

Researchers have provided different explanations as to why substance using adolescents have increased odds of engaging in risky sexual behaviors. The problem behavior theory of Jessor and Jessor (1977) states that problem behaviors tend to co-occur in individuals. This might explain the co-occurrence of substance use and risky sexual behavior observed in this and previous studies. Personal factors such as personality, self-esteem, depression, sensation seeking and impulsivity as well as contextual factors such as economic disadvantage, peer pressure, parental substance use, abuse or neglect can increase vulnerability to both substance use and risky sexual behavior (Charnigo et al., 2013; Jackson et al., 2012; Ritchwood et al., 2015). Substance use and risky sexual behavior have been found to be statistically clustered in adolescent samples (McAloney-Kocaman et al., 2019) and young adults (Meador et al., 2016) further supporting the explanation given by the problem behavior theory. Li et al. (2013) suggests that substance use and risky sexual behavior are risk taking behaviors that reflect youth deviance and share common causes.

Other researchers have based their explanations on the effects of alcohol and other substances on cognitive processes. The alcohol myopia theory (Steele & Josephs, 1990) proposes that individuals' information processing is affected by alcohol consumption. After consuming alcohol, individuals focus on

immediate cues such as their sexual desire or availability of a willing sexual partner but discount consequences that could arise from sexual activity such as an unwanted pregnancy. When adolescents use psychoactive substances, their rational thinking, judgment and decision making is impaired leaving them more vulnerable to risky sexual activities (Espinoza et al., 2019). The risk of unprotected sex is greater when adolescents have sex while under the influence of alcohol and other substances. For instance, a study by Strandberg et al. (2019) reported that adolescents classified as risky alcohol consumers were three times (OR = 2.95) more likely to have unprotected sex if they had sex while drunk and were also less likely to use condoms with new or casual sex partners (OR = 2.60). Users of other drugs were also more likely to have unprotected sex according to that study (OR = 2.3).

Adolescents who use substances might fail to perceive the risk of activities such as unprotected sex because substance use impairs their thinking. In the study by Dir et al. (2018), adolescents who used marijuana and alcohol perceived less risk in unprotected sex and were more likely to report using no protection the last time they had sex. The effect of substance use on perception of risk is greater in adolescents than adults because their brains, especially the regions responsible for sophisticated cognitive processes, are not fully mature (Riggs & Greenberg, 2009). When intoxicated, adolescents are more likely to make decisions influenced by emotions rather than reason hence greater risk of engaging in unsafe sexual activities. For instance, Ritchwood et al. (2016) suggest that the stimulation, disinhibition, excitement and elation individuals feel when they use marijuana can reduce their perception of danger making them ignore safe sex practices and focus only on sexual pleasure. Individuals have less self-control when they are intoxicated making them more likely to have sex with risky partners, ignore precautions with casual partners and lose ability to negotiate for safe sex (Devi et al., 2021).

Some researchers have suggested that risky sexual behavior is not a consequence of substance use. Instead, individuals use substances because of their proclivity to risky sexual behavior. Individuals might use substances in order to facilitate their sexual behaviors and to achieve the desired sexual outcome (Hendershot et al., 2010). According to this view, adolescents might consume alcohol or other substances in anticipation of having sex so as to enhance their sexual experience (Matthews et al., 2013) or to get courage with a new partner (Lo et al., 2019). The expectancy theory predicts that adolescents might consume substances if they expect that using those substances will lower their sexual inhibitions or enhance their sexual experience (Metrik et al., 2012). Cocaine users, for example, believe that it increases stamina, arousal and sexual pleasure hence they are more likely to use cocaine before engaging in sexual intercourse according to Foxman et al. (2006).

## V. CONCLUSION

The aim of this study was to determine whether substance use was associated with risky sexual behaviors in adolescents enrolled in public secondary schools in Nairobi County. The findings of the study reveal that adolescents who use substances are more likely to be sexually active and to engage in risky

sexual behaviors. This finding aligns with findings reported in similar studies with different populations. Substance using adolescents had greater odds of having multiple sex partners, engaging in casual sex, unprotected sex and sex with older partners compared to adolescents who did not use substances. However, contrary to findings reported elsewhere, adolescents who were using substances were not more likely to debut sex early compared to those who did not use substances.

## VI. RECOMMENDATION

In line with the overall finding of the study that risky sexual behaviors in adolescents were associated with substance use, the author recommends that stakeholders and policy makers in education put more effort in curbing substance use in adolescents so that a reduction in the negative consequences of substance use can be achieved. Curbing substance use is likely to result in reduction in risky sexual behavior since the two are associated although the exact mechanisms are not clear. Efforts should also be intensified to discourage adolescents from becoming sexually active at a young age to avoid harmful consequences of early sexual initiation. Early sexual debut is likely to be caused by other factors apart from substance use hence there is need for more research on this issue.

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