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# Factors Associated with Substance Abuse by Students in Medical Training Colleges in South Nyanza Region, Kenya

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## ABSTRACT

Substance abuse is a worldwide public health challenge with college youth being among those affected. An estimated 10-15 % of students in medical training institutions risk substance abuse in their lifetime as they are not immune to the predisposing factors associated with the abuse. The conduct and efficiency of medical training college (MTC) students as future healthcare professionals may be impacted negatively by substance abuse; consequently, the patients are at risk. In Kenya, substance abuse is prevalent among college youth though data on the factors associated substance abuse by students in MTCs are still unclear. South Nyanza, the study area lies within marijuana transit route along Kisii - Migori road from Tanzania to Nairobi, Kenya. The objective of the study was to determine the factors associated with substance abuse by students in MTCs in South Nyanza Region. Cross-sectional descriptive study design was used. Five colleges in the region namely: Kendu School of Health Sciences and KMTCs (Kisii, Nyamira, Migori, Homa Bay) were included in the study. A sample of 303 MTC students, proportionately calculated from a total population of 1950 students from the 5 colleges participated in the study. Females were less likely to use any of the substances of interest in the study compared to the males, [43.1% vs 62%]. The respondents who attended religious activities several times a week were also less likely to abuse any of the substances compared to those who have never attended religious activities [36.6% vs 72%]. Respondents who perceived high stress were 3.64 times more likely to drink alcohol compared with those who perceived no stress, [OR=3.64, CI=1.03-12.87, P=0.045]. Respondents participating in choir were also less likely to use alcoholic drinks compared with those who participated in sporting activities, [10% vs 33.7%]. Being male, and having stress were the main risk factors for substance abuse while engaging in religious activities and choir were the least associated with substance abuse. It is suggested that promoting participation in religious activities and extracurricular activities such as choir by students of MTCs could reduce the risk of substance abuse.

**Keywords:** Kenya**,** Factors, medical students, substance of abuse

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## INTRODUCTION

Substance abuse refers to the harmful or hazardous use of psychoactive substances [1]. It is a major public health problem worldwide, cutting across all social strata and penetrating every part of the globe [2], hampering socio-economic development and constitutes a major cause of increased crime, road accidents and HIV/AIDS in many countries[3]. This results to serious implications on individuals, community at large and by extension, students in the learning institutions including those in medical training colleges (MTCs) [4,5,6]. This could impact negatively on students' future professional conduct and efficiency, and hence the safety of patients[7], making substance abuse among MTCs students an important area of research due to the implications of early substance dependence on the future of the health professionals.

There are various factors associated with substance abuse among the students in colleges. A wide range of factors determines why, what, and when people take drugs and how much harm result as well as the attitude held[5]. A study in South Africa, found it as a result of a complex interaction of individual, family, peer, community, and societal factors[8]. According to NACADA (2012), the several factors that influence the substance abuse among the youth in Kenya include peer pressure, weak parental control, child abuse, imitation, emotional stress, truancy among students and other factors. The findings from these researches have attempted to show the factors associated with substance abuse on other set ups. This study examines a few specific associated factors with the abuse in MTCs. These are sex of respondents, family history of substance abuse and parental guidance, history of individual consumer, stress, religion, media, and extracurricular activities among the MTCs students in South Nyanza region.

On the sex of individual, historically, substance abuse research participants have largely been male [9]. Existing gender norms largely influence the drinking habits of men and women and most social norms to regulate the use of alcohol tend to be gendered. It was generally agreeable for men to consume strong drinks and to have their drink anywhere. Women, on the other hand, were expected not to have strong drinks or drink away from their home. While use of alcohol among young boys was linked to masculinity, among girls it was associated with lack of respect[10]. In Kenya, girls and women catching up fast with males on substance abuse threatening to tear the social fabric of the nation[11] and at workplace, there were significant differences in prevalence of substance abuse among the sexes with more men than women being engaged in the usage of each of the drugs[4].

A family history of substance abuse and dependence substantially increases the risk for such problems among its members[4]. It contributed significantly to the incidence of domestic aggression, violent crimes, broken homes and juvenile delinquency in Nigeria[11]. Parents are

the most powerful influence on their children when it comes to substance abuse. By staying involved, knowing what their children are doing, and setting limits with clear rules and consequences, parents can increase the chances that their youth will stay substance abuse free [12,13]. Parenting is often lacking in the homes of parents who abuse alcohol or other substances [13]. It is a risk factor towards negative parenting practices. Their children usually have a higher rate of exhibiting behavioural and emotional problems, and they also have a higher rate of child abuse and neglect[14].

Researchers have since recognized religion as a core element of culture and a powerful potential motivator on control of behaviour which help to protect youth from delinquent behaviour and other deviant activities, especially substance use and underage alcohol use[15]. Religion may play a part in substance abuse prevention as researchers have found that religious settings act as youth's socialization ground and perhaps contribute to their abstinence from substance use. Another aspect is the presence of positive role models who emphasizes mainly on abstinence; provide opportunities to participate in pro-social activities and have strong, often activist stances against drugs taken by religious leaders and congregations[16]. Among 240 students of College of Medicine, University of Lagos, Nigeria, 66.3% of the respondents that did not consume alcohol did not do so because it was against their religion[17]. A growing body of researches have suggested that religion may both be a protective and contributing factor to substance abuse[18,4]. This study attempts to establish contribution of religion to abuse of substances in the MTCs in South Nyanza Region.

Psychological factors include patterns of thought, behaviour, personality traits, self-esteem and coping skills among others. Owing to a lot of mental stress in academic courses and unachievable expectations from teachers and parents, some youths turn to substance abuse [19]. Medical training college students experience substantial stress from the beginning of the training process, this may be a factor for some individuals to engage in substance abuse. For many individuals, stress arouses feelings of fear, incompetence, uselessness, anger, and guilt and could contribute to both psychological and physical morbidity [20,21]. Some other studies have suggested that heavy demands during medical training contribute to substance abuse. It has been pointed out that the trends toward addiction start very early among many health professionals, although it may not be diagnosed until later on, and have more to do with poor coping skills regarding stress [22,5].

Another factor contributing to substance abuse is history of an individual having any form of abuse. Findings from studies show that people with abuse histories often have more substance abuse and psychiatric problems[23]. For example, several narrative reviews have shown that there are higher rates of child sexual abuse among people who abuse alcohol and other drugs. Some of these reviews have stated that survivors of early sexual victimization are at increased risk of

abusing drugs and alcohol, with some reviews, strongly implying a causal relationship between child sexual abuse and later development of substance abuse [24].

On media, today's youthful people live in a world vastly different from that of their parents and grandparents. They are bombarded constantly with pro-drugs abuse messages in print, television screens and on movies. They also have easy access to internet, which abounds with sites promoting wonders of drugs, offering incentives for having drug tests and in some cases advertising points of sale [25, 26]. With alcohol consumption always being a common discussion in college atmospheres, the major reason college students feel the need to binge drink could be formed from the advertising geared towards college students. A number of other survey studies have reported associations between recall of alcohol use seen in the media and outcomes like alcohol expectancies, consumption and argue [27]. Another study indicated substance abuse by leading characters in movies and soaps increases social acceptance of substance abuse and foster initial and continued abuse among young people [28]. Among 240 students of College of Medicine, University of Lagos, Nigeria, their major sources of information on substance use were television, radio and books. The least represented source of information was from family members with media having a major influence on alcohol use among young people[17]. Social media also may influence students to abuse substances. For example, in the early days of Facebook at the University of Nebraska, there were over 500 Facebook groups which were involved with some form of college drinking and partying[27]. In a study at Los Angeles, USA, in a typical day, 70% of teens ages 12 to 17 million teenagers, spend from a minute to hours on Facebook and other social networking sites[29]. For this same age bracket, the social-network-savvy teens were five times more likely to use tobacco; three times more likely to use alcohol; and twice as likely to use marijuana compared to teens who did not spend any of their time in the day on social networking sites [29]. Kenya has very active media, social media included, with the youth including those in MTCs probably being very active in social media,therefore this study intends to find the contribution of media to substance abuse among the MTCs students in South Nyanza Region.

Extracurricular activities was another factor considered in this study. While many students spend many hours in lectures, labs, review sessions, and independent study they spend less time in health-promoting activities, such as exercising and socializing[30]. Extracurricular activities could either be contributing or protective factor to substance abuse. Students who participate in such activities such as sports, church, clubs and service work in the college, community and government are less likely to abuse drugs or alcohol[31]. Extracurricular activities replenish students by multiple inputs, including psychosocial support, social activities, mentorship, and intellectual stimulation. Medical school administrations through extracurricular programs and the creation of a supportive "cultural" environment can buttress

the internal structure of students' reservoirs. By strengthening the internal structure of the student, it promotes resilience and personal growth[30].

Substance abuse is therefore a rampant problem in the Kenyan society[31]. South Nyanza Region was selected because several previous reports show that the region has experienced a number of serious substance abuse problems[32]. Main transit route from Northern Tanzania to Nairobi Kenya, (Isibania - Migori – Kisii Highway) passes through this region. Whenever marijuana was impounded in Nyanza by law-enforcement officers, it was mostly along this route in South Nyanza Region. The marijuana impounded along this road between 2010 and 2011 was estimated at Ksh50 million[32]. Most of the marijuana consumed in Kenya is believed to originate from Tanzania[33]. Hence South Nyanza Region is most affected as it borders Tanzania[32]. The proximity of the colleges' location to major drug routes has been found to have a differential impact on participation in substance use among students [34]. MTCs students were considered in this study as they are exposed to prescription drugs in the course of their clinical training[35] in addition to other substances of abuse. MTCs are also among the majority tertiary colleges in the region and it makes the biggest contribution to the health sector in Kenya for both public and private health sectors, accounting for more than 80% of the health care workforce [36].

## MATERIALS AND METHOD

### Study Area

The study was carried out in the MTCs within South Nyanza Region, located within the South Western part of Kenya along the shores of Lake Victoria. This region falls under four counties i.e. Homabay, Migori, Kisii and Nyamira with the co-ordinates 0° 31'S and 34° 27'E, 1° 3'S and 34° 28'E, 0° 40'S and 34° 46'E, 0° 38'S and 34° 58'E respectively. The site had five MTCs; one mission training college (Kendu Bay Mission School) and four Kenya Medical Training Colleges (KMTCs) (Kisii, Nyamira, Homa Bay and Migori). The colleges offer diploma and certificate programmes in various disciplines which include community health nursing, clinical medicine, community nutrition, pharmacy, laboratory sciences, physiotherapy among others.

### Study Population

The study population was all the students in the medical training colleges in South Nyanza Region. Students of both sexes, 18 years and above were eligible to participate in the study. The colleges in the region had an approximate total population of 1950 students. A minimum sample size of 303 was calculated using Fisher's formula. Since the percentage of students who had abused substances in the medical training colleges was unknown, 50% was used and a confidence interval of 95%. An addition of 10 % respondents were required to allow adjustment of other factors such as withdrawals and missing data. The distribution of

respondents was proportional to size of the student's population in the medical training colleges in South Nyanza per college.

**Study Design**

The study design used was cross-sectional, which used mainly quantitative approach to determine the factors associated with substance abuse among the students in medical training colleges in South Nyanza Region. A pretested self-administered questionnaire with questions on the themes from ecological theoretical framework such as family involvement, college involvement, media and internet being mainly adopted was used[14]. Information collected was on various socio-demographic factors such as age, gender, and marital status. Questionnaires were administered in the English language, given that this is the main language of instruction at secondary and tertiary educational institutions in Kenya.

**Procedure**

The pretesting of the questionnaire was carried out at KMTC Kisumu Campus. The institution had similar population characteristics but in different location from the area of study. Data collection was conducted in May 2015, after obtaining the relevant clearances and permission from the authorities. The ethical clearance on collect data was granted by Maseno University Ethical Research Committee reference number: MSU/DRPC/MUERC/00126/14.

Respondents were selected by stratified and systematic sampling methods. The stratum represented a subgroup of the population under study, which were the specific college, programmes offered by the college (Clinical medicine, Nursing, Nutrition among other courses), year of study (Year I, II, III and IV) and sex of respondents. Students in each college and year were calculated proportional to size of student. Systematic sampling technique by use of class attendance registers were used to identify respondents after stratification. The sampled students were informed and assured of confidentiality before the questionnaires were distributed. Clarifications on particular questions were made to the respondents.

**Data Analysis**

After data collection, data cleaning was done then analysed using SPSS version 17. Descriptive statistics generated was used to obtain prevalence data on the substances abused. Information obtained was presented in tables, bar charts, and expressed as frequencies and percentages. Chi-square was used to test for independence of variables and logistic regression analysis was used to test the association between selected variables on the factors associated with substance abuse. The strength of association was assessed using odds ratio. All tests were two-tailed and a p-value $< 0.05$ was considered as statistically significant.

## RESULTS AND DISCUSSION

**Demographic Characteristics of the Respondents**

Among the respondents, 153 (50.5%) were females and the mean age was 21.96 years (18-23,s.d 0.4). Nearly all respondents were Christians 295 (97.4%) and majority of them was single 278 (91.8%). Slightly more than half of the respondents (51.2%) were undertaking diploma in nursing sciences 155 (51.2%), while those in the second year of the study were 117 (38.6%). Table 1 shows the socio-demographic characteristics of the study population.

**Table 1: Demographic Characteristics of the Respondents**

| Characteristics | Frequency, n = 303 | Percent (%) |
|---|---|---|
| **Sex** | | |
| Male | 150 | 49.5 |
| Female | 153 | 50.5 |
| **Age** | | |
| 18-23 years | 150 | 49.5 |
| 23-33 years | 153 | 50.5 |
| **Religion** | | |
| Christian | 295 | 97.4 |
| Islam | 5 | 1.7 |
| Others | 3 | 1.0 |
| **Marital status** | | |
| Single | 278 | 91.8 |
| Married | 25 | 8.2 |
| **Course Undertaken by the Respondents** | | |
| Clinical medicine | 104 | 34,3 |
| Nursing sciences | 155 | 51.2 |
| Laboratory sciences | 14 | 4.6 |
| Physiotherapy | 12 | 4.0 |
| Community Nutrition | 18 | 5.9 |
| **Year of study** | | |
| First | 111 | 36.6 |
| Second | 117 | 38.6 |
| Third | 58 | 19.1 |
| Fourth | 17 | 5.6 |

**Factors Associated with Substance Abuse by Students**

Among the factors associated with substance abuse among the students of medical training colleges, the findings were as presented below. The significant factors were summarized and presented in tables.

**Sex**

There were 50.5% females and 49.5% males sampled in the study. The findings are summarized on Table 2

**Table 2: Lifetime Prevalence of Any of the Substances with Sex of the Respondents**

| Characteristics | categories | Ever used a substance | OR (95% CI) | P value |
|---|---|---|---|---|
| Sex | Male | 93(62.0) | 1(Ref) | |
| | Female | 66(43.1) | 0.46(0.29-0.74) | 0.001 |

The females were 54% (CI=0.29-0.74, P=0.001) less likely to abuse any substance compared to the male respondents.

**The Family History and Parental Guidance**

The respondents were asked the type of family they were brought up in and also to describe the relationship between the family members. The findings are summarized on Tables 3

**Table 3: Family Type and Relationship between Family Members**

| Characteristics | Frequency, n=303, | Percentage |
|---|---|---|
| **Type of family** | | |
| Nuclear | 194 | 64.0 |
| Sibling house-hold (18 years) | 13 | 4.3 |
| Single parent | 51 | 16.8 |
| Extended | 41 | 13.5 |
| Others | 4 | 1.3 |
| **Relationship between family members** | | |
| Excellent | 145 | 47.9 |
| very good | 81 | 26.7 |
| Good | 52 | 17.2 |
| Fair | 23 | 7.6 |
| Poor | 2 | .7 |

Majority 104 (64%) of the respondents were brought up in nuclear family set up with majority 226 (74.6%) of the respondents describing their family relationship as being excellent and very good. There was no association between the type of family and relationship with family members with substance abuse.

**Religion**

The respondents were asked their religious affiliations and the frequency of attending religious activities at the college. A clear majority 97.4% were Christians while the frequency of attending religious activities findings are summarized in Table 4

**Table 4: The Frequency of Attending Religious Activities**

| Frequency of attending religious activities | Frequency, n=303 | Percentage |
|---|---|---|
| Never | 25 | 8.3 |
| once or twice a month | 75 | 24.8 |
| every weekend | 148 | 48.8 |
| every day | 11 | 3.6 |
| several times a week | 41 | 13.5 |
| several times a day | 3 | 1.0 |

Most 148 (48.8%) of the respondents attended religious activities every weekend. On the associations between religious affiliations and the frequency of attending religious activities at the college with the use/abuse of any of the substances, the findings are summarized on Table 5.

**Table 5: Lifetime Prevalence of Any of the Substances with Religious Information of Respondents**

| Characteristics | Categories | Lifetime prevalence | OR (95% CI) | P value |
|---|---|---|---|---|
| Religion | Christian | 154 (52.2) | 1(Ref) | |
| | Muslim | 2 (40.0) | 0.61(0.10-3.71) | 0.592 |
| Attendance of religious activities | Never | 18(72.0) | 1(Ref) | |
| | Once or twice monthly | 51(68.0) | 0.83(0.30-2.24) | 0.708 |
| | Every weekend | 69(46.6) | 0.34(0.13-0.86) | 0.023 |
| | Every day | 6(54.5) | 0.47(0.11-2.04) | 0.311 |
| | Several times a week | 15(36.6) | 0.22(0.08-0.66) | 0.007 |

There were no association between religious affiliations and abuse of the any substances of abuse, however there was on attendance of religious activities. The respondents who attended religious activities every weekend and several times a week were 66% (CI=0.13-0.84, P=0.023) and 78 % (CI=0.08-0.66, P=0.007) less likely to abuse any of the substances under the study respectively.

**Psychological Factors**

The respondents' perception of the stress in their lives was as follows: no stress (n=36, 11.9%), little deal stress (n=85, 28.1%), moderate deal stress (n=139, 45.9%), great deal stress (n=24, 7.9%) and a very great deal stress (n=19, 6.3%). On the association between alcohol use and the respondents' perception on the stress in their life, the findings are summarized on Table 6.

**Table 6: Alcohol Use with the Respondent Perception on the Stress in their Life**

| | Alcohol use | | | | |
|---|---|---|---|---|---|
| **Characteristics** | Yes | No | OR | CI | P value |
| **Stress levels** | | | | | |
| No stress | 6(16.7) | 30(83.3) | 1 | | |
| Little deal of stress | 22(25.9) | 63(74.1) | 1.75 | 0.64-4.76 | 0.276 |
| Moderate deal of stress | 39(28.1) | 100(71.9) | 1.95 | 0.75-5.05 | 0.169 |
| Great deal of stress | 8(33.3) | 16(66.7) | 2.5 | 0.74-8.47 | 0.141 |
| Very great deal of stress | 8(42.1) | 11(57.9) | 3.64 | 1.03-12.87 | 0.045 |

The respondents who perceived a great deal of stress were 3.64 (P=0.045) times more likely to drink alcohol compared with those respondents who perceived no stress.

**History of Respondent**

The respondents were asked whether they have ever been abused, 106 (35.0%) responded to have been abused as follows: physical 16 (5.3%), verbal 48 (15.8%), psychological 34 (11.2%), sexual 11(3.6%) and multiple abuses 8 (2.6%) at the following places; 25 (8.3%) at home, 76 (25.1%) at learning institutions and at other areas 11 (3.6%). Majority of the abuser at home were relatives (n=30, 9.9%). Others were mothers (1.3%), fathers (n=8, 2.6%), siblings (n=16, 5.3%), other guardians (n=6, 2.0%) and others (n=7, 2.3%). At learning institution, majority of the abuser were fellow students 78 (25.7%) teachers (n= 16, 5.3%), other staff apart from

teachers (n=13, 4.3%). There were no association between individual history of being abused and abuse of any the substances in the study.

**The Media**

The respondents were asked the source of information they thought was contributing to substance abuse, accessibility to social media, average time spent in social media and influence of social media. The findings were as presented in the following sub subsections.

***Source of Information Contributing to Substance Abuse***

According to the opinions of the respondents, the sources of information contributing to substance abuse were as follows: print (n=5, 1.7%), radio (n=3, 1.0%), movies (n=98, 32.3%), television (n=38, 12.5%), internet (n=129, 42.6%) and those who did not know (n= 30, 9.9%).

***Access to Social Media***

The respondents were asked whether they had access to Facebook, Twitter or any other social media, the majority (n= 280, 92.4%) of them had access while only (n=23, 7.6%) did not. The respondents were asked the average time spent social media by the students in 24 hours. The findings are summarized in Figure 1.

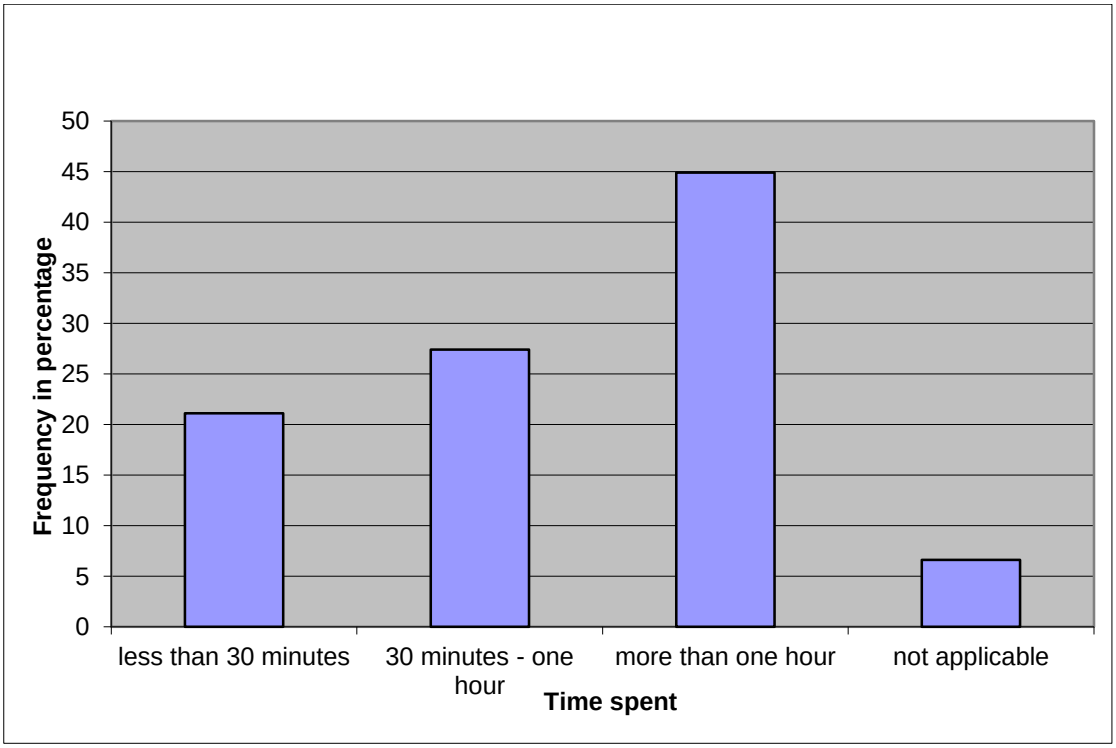


**Figure 1: The Average Time Spent in Social Media by the Students in 24 Hours**

The responses on average time students spent on social media in 24 hours were as follows: less than 30 minutes (n=64, 21.1%), 30 minutes to one hour (n= 83, 27.4%) and more than one hour (n=136, 44.9%). There was an association between alcohol use and time spent in social media. The findings is summarized in Table 7

**Table 7: Alcohol Use with the Average Time Spent in Social Media by the Students in 24 hours**

| | Alcohol use | | | | |
|---|---|---|---|---|---|
| **Average time spent in social media** | Yes | No | OR | CI | P value |
| <30 minutes | 8(12.5) | 56(87.5) | 1 | | |
| 30 minutes-1 hour | 18(21.7) | 65(78.3) | 1.94 | 0.78-4.80 | 0.152 |
| > 1 hour | 53(39.0) | 83(61.0) | 4.47 | 1.97-10.12 | 0.0001 |

The respondents who spent more than one hour in social media were 4.47 (P<0.001) times more likely to drink alcohol compared with those respondents who spent less than 30 minutes. The respondents were also asked whether they had seen pictures of persons on social networking sites abusing substances, majority (n=247, 81.5%) reported to have seen the pictures, when asked further their opinion on the pictures, 232 (76.6%) of them said the pictures seen on social networking sites could influence students to abuse substances.

**Extracurricular Activities**

The extracurricular activities that the respondents participated in were as follows: sports (n=143, 47.2%), club activities (n=23, 7.6%), community activities (n=24, 7.9%), choir (n=70, 23.1%), others (n= 7, 2.3%) and none (n=36, 11.9%). There was association between extracurricular activities and abuse of substance as shown in Table 8.

**Table 8: Alcohol and Tobacco Abuse with Respondents' Extracurricular Activities**

| | **Alcohol use** | | | | |
|---|---|---|---|---|---|
| | Yes | No | OR | CI | P value |
| **Extracurricular activities** | | | | | |
| Sports | 48(33.6) | 95(66.4) | 1 | | |
| Club activities | 7(30.4) | 16(69.6) | 0.87 | 0.33-2.25 | 0.767 |
| Community activities | 9(37.5) | 15(62.5) | 1.19 | 0.48-2.91 | 0.707 |
| Choir | 7(10.0) | 63(90.0) | 0.22 | 0.09-0.52 | 0.001 |
| None | 9(25.0) | 27(75.0) | 0.66 | 0.29-1.51 | 0.326 |
| Others | 3(42.9) | 4(57.1) | 1.48 | 0.32-6.90 | 0.614 |
| | **Tobacco use** | | | | |
| | Yes | No | OR | CI | P value |
| **Extracurricular activities** | | | | | |
| Sports | 2(1.4) | 141(98.6) | 1 | | |
| Club activities | 3(13.0) | 20(87.0) | 10.58 | 1.66-67.22 | 0.012 |
| Community activities | 0(0.0) | 24(100.0) | 1 | | |
| Choir | 0(0.0) | 70(100.0) | 1 | | |
| None | 2(5.6) | 34(94.4) | 4.15 | 0.56-30.50 | 0.162 |
| Others | 1(14.3) | 6(85.7) | 11.75 | 0.93-148.34 | 0.057 |

The results showed that respondents participating in choir were 78% (OR=0.22, P=0.001) less likely to use alcoholic drinks compared to those who participate in sporting activities. The results also showed that respondents who participate in club activities were 10.58 (P=0.012)

times more likely to use tobacco compared with those respondents participating in sporting activities.

## DISCUSSION

### Sex of Respondents

The study sampled 50.5% female respondents and 49.5% male respondents. Results showed that female respondents were 54% (OR=0.46, P=0.001) less likely to use alcoholic drinks compared with male respondents. This concurs with a study done in Kenyan workplace which found significant differences in prevalence of substance abuse among the sexes with more men than women being engaged in the usage of each of the drugs [4]. Elsewhere, outside the country, a study to assess substance abuse amongst the medical students in India, Karamat (2011) concurred with this study by finding the prevalence of those who abuse substances to be significantly ($P$<0.001) higher in males (30%) as compared to females (11.67%). In Nigeria, among 240 students of College of Medicine, University of Lagos, alcohol consumption was also more prevalent among males than females ($p<0.05$)[17]. The statistically significant difference in the substance abuse prevalence rates between males and females, with males having a higher rate than females is consistent with what has been found in other studies, and may reflect a more tolerant social attitude males have compared to females on substance abuse.

### The Family History and Parental Guidance

The study showed that 64.0% of the respondents were brought up in the nuclear family set up, while sibling house-hold were 4.3%, single parent 16.8%, extended family 13.5% and others were 1.3%. The results showed no association between the type of family and substances abused. A study done in South Africa, which found out that those learners who indicated that they did not experience high levels of support from their families, had many of them exposed to substance abuse[8]. A report noted that appropriate parental guidance and monitoring could reduce future substance abuse, even among adolescents who may be prone to abuse, such as those who are rebellious and those experiencing internal distress[13]. This could explain the low prevalence of substance abuse in this study.

### Religion

There is strong empirical link between substance use and a variety of problems that adversely impact adolescent health such as motor vehicle accidents, school problems, delinquency and researchers have invested considerable effort in the identification of risk and protective factors for the use and abuse of alcohol, tobacco, and other drugs[16]. Ninety-seven percent point four percent (97.4%) of the respondents were Christians, Islam were 1.7%, African Traditional Religion were 0.3%) and others were 0.7%. The results showed no association between religion and substances abused, but there was on attendance of religious activities. The respondents

who attended religious activities every weekend and several times a week were 66% (CI=0.13-0.84, P=0.023) and 78 % (CI=0.08-0.66, P=0.007) less likely to abuse any of the substance in the study respectively. A study noted that over 80% of studies examine only one variable in this aspect, usually affiliation[36]. Such single measures are problematic because religiosity is multidimensional, including aspects of affiliation, devotion, and beliefs. It is strongly familial and resemblance in siblings is due largely to shared environmental exposure to the religious beliefs of parents, peer group, and community[36]. Among 240 students of College of Medicine, University of Lagos, Nigeria, those that did not consume alcohol, their major reason for not doing so was related to religion where 66.3% of them did not do so because it was against their religious beliefs[17]. This was in agreement with a study carried out among medical students in the United States of America which also stated that strong religious identity was associated with abstinence from alcohol[17]. Young people who were more religiously engaged for example by attending religious services or saying religion is important were less likely to use drugs than the less religiously engaged counterparts. The more religiously engaged also consistently report lower levels of drug use than young people who were less religious[36]. This could explain the low prevalence of substance abuse in this study.

**Psychological Factors**

The study found out that 11.9% of the respondents perceive no stress in their life while 88.1% perceive varied deal of stress. This concurs with studies by Dyrbye, (2005) and Naidoo, (2012) which found out that medical college students experienced substantial stress during the training process. It further stated that for many individuals, stress arouses feelings of fear, incompetence, uselessness, anger, and guilt and could contribute to both psychological and physical morbidity. This could lead to substance abuse as seen in the association which showed that respondents who experienced a great deal of stress were 3.64 (P=0.045) times more likely to drink alcohol compared with those respondents who have no stress. It also agrees with another study by Mokua (2012) that psychological stress and the overwhelming availability of drugs with the potential abuse offer a tempting respite for college students. It also agreed with a study to assess substance abuse amongst the medical students in India, where the most common reason reported for using such substances of abuse was relief from psychological stress at 72.4% [37]. A study by Halldorsson (2006) suggested that heavy demands during medical training contributed to substance abuse and pointed out that the trends toward addiction start very early in many medics, although it is not diagnosed until later on.

**History of Respondent Abuse**

The study showed that 35.0% of the respondents had been abused. The type of abuse encountered included physical, verbal, psychological, sexual and multiple abuses. Several narrative reviews had shown that there were higher rates of child sexual abuse among people

who abuse alcohol and other drugs [23]. Some of these reviews have stated that survivors of early sexual victimization were at increased risk of abusing drugs, with some reviews, strongly implying a causal relationship between child sexual abuse and later development of substance abuse[23]. This also agreed with the findings from studies which showed that persons with abuse histories often were more prone to substance abuse [22].

**The Media**

The study found out that the source of information contributing to substance abuse as per the respondents were as follows: print, radio, movies, television and internet. This agreed with a study in Colombia which showed that much of the substance abuse information was accessed through television, and increasingly the internet, where youth viewed pictures other youth of their own age partying with alcohol, marijuana and smoking substances[24]. It partly concurs with research on students of College of Medicine, University of Lagos, Nigeria, where their major sources of information on substance use were television, radio and books. The least represented source of information was from family members while the media has a major sway on substance use among young people[17].

The study found that majority (92.4%) of the respondents had access to social media with the average time spent on social media in 24 hours follows; less than 30 minutes (21.1%), 30 minutes to one hour (27.4%), and more than one hour (44.9%). The study revealed that respondents who spent more than one hour in social media were 4.47 ($P<0.01$) times more likely to drink alcohol compared with those respondents who spent less than 30 minutes. This agrees with other studies which showed that social media influenced students to abuse substances. For example, in the early days of Facebook at the University of Nebraska, there were over 500 Facebook groups which were involved some form of college drinking and partying [25]. In another study at Los Angeles, USA, in a typical day, 70% of teenagers ages 12 to 17 years spent from a minute to hours on Facebook and other social networking sites. For this same age bracket, the social-network-savvy teens were five times more likely to use tobacco; three times more likely to use alcohol; and twice as likely to use marijuana than teens who did not spend any of their day on social networking sites [27].

On pictures of persons on social networking site abusing substances, the study found out that majority 81.5% the respondents had seen pictures of persons on social networking site abusing substances. The findings agreed with a study among university students in Netherlands which indicated that substance abuse by leading characters in movies and soaps increased social acceptance of substance abuse and fostered initial and continued substance abuse among young people[26]. Also in the study, majority (76.6%) of the respondents said the pictures seen on social networking site could influence students to abuse substances. This agrees with a study that has

reported associations between recall of alcohol use in the media outlet and outcomes like alcohol expectancies, consumption or argues[25].

**Extracurricular Activities**

The study found out that those respondents participating in choir were 78% (OR=0.22, P=0.001) less likely to use alcohol compared to those who participated in sporting activities. The results also showed that respondents who participated in club activities were 10.58 (P=0.012) times more likely to use tobacco compared with those respondents participating in sporting activities. This agreed with a study in USA by Rebecca (2014) which found that extracurricular activities could either be contributing or protective factor to substance abuse. Students who participated in such activities such as sports, church, clubs and service work in the college, community and government were less likely to abuse drugs or alcohol [29]. It concurs with the fact that extracurricular activities replenish student by multiple inputs, including psychosocial support, social activities, mentorship, and intellectual stimulation.

Medical school administrations through, extracurricular programs and the creation of a supportive "cultural" environment could buttress the internal structure of students' reservoirs. By strengthening the internal structure of the student, extracurricular activities also promote resilience and personal growth[28].

## CONCLUSION AND RECOMMENDATIONS

**Conclusions**

The study established the factors associated with substance abuse were the sex of the respondents, perception of stress by respondents, use of social media and participation in extracurricular activities such as choir and club activities.

**Recommendations**

1. Government agencies responsible could consider on family-focused interventions, example television program to educate general population on good parenting behaviour that could reduce all forms of abuse among children.
2. Stakeholder such as colleges and parental organizations involved in substance abuse prevention could deliver prevention messages through various channels of communication including internet, print media, videotapes, and social media.
3. Colleges could implement strategies that promote extracurricular activities such as choir to reduce the risk of substance abuse.

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