Knowledge and Psychoactive Substance Use among Adolescents in Selected Secondary Schools in South-West Ogun State, Nigeria

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Abstract: *Psychoactive substance use is a global problem and the prevalence among secondary schools in Ogun state, Nigeria is increasing. Hence, the need to increase high school students' knowledge on the phenomenon. The paper aim to evaluate the effect of health knowledge on psychoactive substance use towards behavioural change. Quasi-experimental research design was adopted. 90 high school students were purposively selected from three high schools in three Senatorial Districts. The study comprised of 30 participants in each group; the control undergone routine high school curriculum while group 1 and 2 were exposed to psychoactive substance health knowledge interventions. Data were collected through a validated questionnaire and descriptive and inferential statistics were utilized. Findings revealed that a high statistical significant difference (p<0.001) was observed between baseline and immediate post intervention in the knowledge of the participants across the groups. The study concluded that health knowledge affected intention to use psychoactive substances and recommended inclusion of psychoactive substance education in high school curriculum.*

1. Introduction

The cognitive dexterity of persons is instrumental in making robust and appropriate health lifestyle decision. The academic debate revolves around how this health knowledge influences psychoactive substances consumption among humans in different social settings. Psychoactive substances are chemical agents such as alcohol, tobacco and or cannabis, which affect the whole of a being especially the communication between nerve cells, when consumed. Thus, the human cognitive prowess, emotions and moods are altered or affected (World Health Organization [WHO], 2021) with the use of substances. The effects of consistent use of psychoactive substances include but not limited to crime, cultist activity and militancy behaviours (Funmilayo, Robert, Olalekan, Okoyen & Tuebi, 2019), mental illness, depression, brain damage, liver damage, lung and heart disease (Ifeoma et al., 2020).

Globally, 271 million people aged 15-64 years had used psychoactive substances, according to the 2019 estimate by the United Nations Office on Drugs and Crime (UNODC). In Sub Sahara Africa, the estimated proportion of psychoactive substance use (PSU) among adolescents was 41.6% (Olawole-Isaac, Ogundipe, Amoo & Adeloye, 2018) and 38.3% in West Africa. Moreover, the Africa continent has the heaviest burden of alcohol-related disease and disability due to lack of coherent legislation and ineffective measures, based on the WHO Global Alcohol Status Report (2018). Psychoactive substance use is preventable, yet the World Health Organization estimated that more than 2.6 million young people aged 10 to 24 die each year worldwide, mostly due to preventable causes such as substance abuse (WHO, 2012). In Nigeria, the prevalence of psychoactive substance use among adolescents varies depending on the geographical location. However, one thing that is consistent from recent studies is that adolescents in secondary schools have experimented with drugs and the most commonly tried and used are alcohol and tobacco,

compared to the harder drugs such as marijuana or cocaine (Ayandiji & Osoba, 2017; Vigna-Taglianti et al., 2019).

In light of this insight, this study focuses on alcohol and tobacco (specifically cigarette smoking) since these two addictive behaviours have been listed among the top ten contributors to global disease burden as measured in disability-adjusted life-years (Ritchie & Roser, 2019; WHO, 2002) and judged as gateway to other drugs (Nkansah-Amankra & Minelli, 2016; Omigbodun & Babalola, 2004). Although there is no one agreed cause of substance use or abuse among scholars, one of the common risk factors found to have an association with the use of psychoactive substance are personal factors which include lack of knowledge of adverse effects as well as lack of psychosocial competencies (Likpus & Mays, 2018; Lu Yu, 2011; Mehanovića et al., 2019). Drug related studies conducted among in-school adolescents in Nigeria with specific reference to Ogun State revealed that alcohol and tobacco are more commonly used (Alabi, Runsewe-Abiodun, & Ogunowo, 2020; Ayandiji & Osoba, 2017). Regardless of the evidence, there is paucity in geographical coverage, experimental or quasi-experimental studies, and intervention programmes to reduce the likelihood of adolescents getting involved with alcohol or tobacco use and abuse in Ogun state in particular. Thus, the study sought to address and deepen insight on the methodological and coverage gaps on knowledge and psychoactive substance use among adolescents in Ogun State, Nigeria. It was on the strength of this objective that the paper hypothesized that there will be no significant difference in the level of knowledge on the effect of psychoactive substance use between baseline and immediate post intervention among the intervention Groups.

2. Literature Review

Conceptually, psychoactive drug addiction was defined as the physical and psychological need to continue using drugs, regardless of how dangerous it can be (National Institute on Drug Abuse [NIDA], 2020). The main feature of addiction is

the intense cravings that are experienced by drug users (Tiffany & Wray, 2012), while tolerance and dependence are two major mechanisms involved with addiction. These phenomenon results from diminished response occurring in the central nervous system (CNS) and of adaptive process taking place in the CNS of individuals following repeated use. Thus, as time progresses, tolerance increases, which means the substance user need to continually increase the amount of drug use in order to experience the desired effect (NIDA, 2007).

Similarly, health education generally sees knowledge and information as common drivers of behaviour change (Kelly & Barker, 2016). Though knowledge is an antecedent to behaviour change, not all knowledge is equal when behaviour change is an outcome. Moreover, knowledge or information in itself is not sufficient to change a behaviour, which could explain why many health education interventions are not successful. Furthermore, knowledge is power only when it is applied. Knowledge is both explicit and implicit and is acquired through accumulated experiences or education. It is composed not merely of facts or information but also of skills (*The Merriam-Webster Dictionary,* 2006). Arlinghaus and Johnston (2017) advocated that the kind of knowledge that can lead to a change in behaviour must lead to increased awareness and must be relevant to the individual.

Regardless of the studies and interventions done on psychoactive substance use and prevention in developed countries such as the United States of America and Europe, current researches still advocate for the need to come up with evidence-based prevention and interventions among adolescents (Jhanjee, 2014; Botzet, Dittel, Birkeland, Lee et al., 2019; US Preventive Services Task Force, Krist, Davidson, Mangione et al., 2020). The dynamics of PSU is complex given that what works in one country does not necessarily translate into success results in another context, persons and constructs due to differentials and dispositions. In the United States, the trend in prevalence of illicit drugs has reduced but not so much for alcohol and tobacco (National Institute of Drug Abuse, 2020). A decreasing trend is observed in the prevalence of high school adolescents who are experimenting with illicit drugs, while the trend in alcohol is increasing (National Institute of Health, 2018). While daily and monthly cigarette use is decreasing, lifetime use is also increasing, which means that more adolescents are still experimenting with cigarette, addictive psychoactive substances which are considered as poison for the adolescent brain. In Europe however, there is a strong trend in reduction of cigarette use and a moderate decreasing trend in use of alcohol (European Monitoring Centre for Drugs and Drug Addiction, 2019; Kraus, Seitz, Piontek, Molinaro et al., 2018).

Vigna-Taglianti et al. (2019) looked at the differences in psychoactive substance use among secondary school students from all geopolitical zones of Nigeria and found that 33.6% have drank alcohol, 13.1% have experienced drunkenness, 5.1% reported to have smoked cigarettes at least once in their life, 7.5% used cannabis and 11.6% other drugs. In addition, it was found that majority of students who have reported their involvement with alcohol came from the South, while tobacco, cannabis and other drugs were higher in the North (Vigna-Taglianti et al., 2019). While there is no straightforward explanation as to the cause of psychoactive substance use among adolescents, research evidence reveals that PSU is a result of combined influences: cognitive, psychosocial, biological, developmental, environmental and even pharmacological (Botvin, 2000; Botvin & Griffin, 2015). Additionally, studies suggest that initiation of drug use begins during adolescence, around 14 and 15 (Richmond-Rakerd, Slutske & Wood, 2017). The common reason given is the nature of the development of adolescence, which makes it a critical period for experimentation and initiation as they try to establish their identity and fit in with peer groups.

Common signs and symptoms to determine adolescents who may be abusing psychoactive substances are those who start withdrawing themselves from others, including from their own friends (NIDA, 2020). These are not normal changes due to puberty, which is what parents often mistake these signs as, when they are not aware. Not only would they change their peer groups, but they may also become unpleasant to be around or downright hostile to their parents, classmates or teachers in school (Luthar & Ansary, 2005). Moreover, their academic duties suffer as they start missing classes or skipping schools. There may also be changes in eating and sleeping habits. The danger increases when there is addiction.

Conflict exists between scholars regarding the cause of psychoactive substance use addiction, which could explain why this problem persists after many years. The most common explanation of the addiction phenomena is found within the conventional treatment model that helps an addict recover, known as the brain disease model. The chronic brain disease model sees addiction as a brain disease where the addict's free will is no longer functional (Lewis, 2017; Nora, Volkow, George & McLellan, 2016). As a result, the treatment done for such a person does not need to take into consideration the addict's ability to make any choice. Thus, treatment must be forced, according to whatever the therapist believes is best for the patient, in order to heal the patient.

On the other hand, Peele (2016) argued that such an approach is ineffective and counterproductive. The evidence that addiction can actually be improved through mind-fullness exercises contradicts the notion of any treatment that does not consider a person's ability to make choices (Peele, 2016; Johnson, Mullen, Smith, & Wilson, 2016). Mindfulness requires that a person (addict) be conscious of their choices and be able to make decisions. It has also been found that addicts recover most effectively because of their self-efficacy and commitment (Kadden & Litt, 2011). Therefore, the addict has the power to recover or rescue himself/herself from addiction, though the mechanisms involved are not clear. Given this evidence, prevention and treatment need to focus on empowering both adolescents and addicts, instead of removing their decision-making ability. This also means treatment should focus on the person, not on the problem (Peele, 2016). Therefore, it is important to know the factor that puts one at risk or that protects one from experimenting with psychoactive substance use among

adolescents, and empowers them to make smart choices which may prevent them from becoming addicted and thus avoid the need for treatment.

According to The Surgeon General's Report (U. S. Department of Health & Human Services, 2014), tobacco use remains the most preventable cause of premature death and that smoking diminishes health of both among men and women. The report further confirmed that it is also a major risk factor for non-communicable diseases such as diabetes, hypertension, and lung cancer. While developed countries are becoming strict in implementing and enforcing regulation of tobacco products, the tobacco industries in those countries are targeting developing countries with weak policies regulating psychoactive substance use such as tobacco and alcohol. Grant et al. (2017) concluded that the public health problem of increasing alcohol use may have been overshadowed by greater focus on illicit substances such as marijuana and opiates, which though also increased, are less prevalent. The same may be true for Nigeria, which is supported by Adebiyi and Owoaje (2018), which observed that the three most common psychoactive substances found among the secondary school students was not cannabis, but kolanut, alcohol and tobacco. The global consumption of alcohol was said to be 5.6%, but three times higher in Nigeria (15%) which is alarming (Olalekan, 2019). Olalekan (2019) further stated that among every ten adolescent, four of them are already using and abusing drugs and without intervention, seven out of 10 may end up drug addicts by 2030, especially in cities.

Generally, alcohol and tobacco are considered legal but with restrictions, depending on the country's laws and regulations; while marijuana; cocaine, methamphetamines, and heroin are considered illegal. The distinction between legal and illegal substances is not clearly based on pharmacological research but is said to be distorted by the legal and moral perceptions about being "good" and illegal being "evil" (Global Commission on Drug Policy, 2019). It is further stated that the distinction between legal and illegal psychoactive substances are more a result of a long history of cultural and political domination, resulting in the "collateral damage" of the "war on drugs. " The importance of this is that the classification of a substance determines the strictness of measures that will be taken to control its use. The document published by Drug Policy Futures (2019) also confirmed the challenge with regulations regarding alcohol and tobacco. They are difficult to enforce because they are constantly under attack, especially by lobbyists represented by multinational corporations with financial resources, giving them power to increase their political influence.

Adolescence is a crucial transition period for developing healthy habits that will either set them up for life or create a difficult future with destructive habits, creating unnecessary challenges (National Academies of Sciences, 2019) for their own development and that of their families and country at large. The key is in the choices they make when facing life's challenges and difficulties. Alcohol and tobacco use are both harmful for adolescents. Tobacco use during adolescence leads to greater risk of emphysema, lung cancer, heart disease, oral cancers, and a host of other health issues when they get older (Graydanus & Patel, 2005; Tomar, Fox &

Severson, 2009) when these habits are established this early. Adolescence is commonly known as the transitional period of life between childhood and adulthood, and involves certain psychosocial developmental change that makes it a susceptible age to venture into unknown behaviors and companies either for their good or at their own peril. The WHO (2001) defined adolescence as specifically those who are 10-19 years of age. Before puberty is reached, an adolescent goes through different physical, mental and emotional changes; some of which makes them susceptible to start experimenting with risky behaviours such as experimentation with drugs (Gureje et al., 2007).

Knowledge is among the predisposing factors of psychoactive substance use, thus the PRECEDE Model was used for eliciting the possible factors that predisposes an adolescent to substance use. This revolves around knowledge of the harmful effects of substance use and abuse, attitude towards the use of a psychoactive substance and perception (perceived benefits, perceived susceptibility towards harmful effects, perceived severity, and perceived norm). These predisposing factors can either hinder or enhance motivation to change behaviour. Moreover, they can also be changed by using direct communication such as in health education (McKenzie & Smeltzer, 2001). Thus, knowing about the names of different types of psychoactive substances available is not a key part of the knowledge that is to be gained from this intervention. They must know how harmful psychoactive substance can be but an understanding of why avoiding or resisting is critical. The relevance of PRECEDE Model is the fact that it is comprehensive and takes into consideration the factors that predisposes an individual to psychoactive substance use. When considering sociocultural and environmental factors that have been found to influence psychoactive substance use and addiction, those who come from lower socioeconomic backgrounds, have less formal education, with poor academic performance, grew up in high crime areas, associate with delinquent peers are more likely to have problems with psychoactive substance use (Atilola, Ayinde & Adeitan, 2013; Demo, Farrow, Schmeidler & Burgos, 1979; Do et al., 2015)

To bring about change in knowledge, in-school adolescents need more than simple education on the potentially harmful dangers and effects of psychoactive substance use. They need curated information and life skills to increase their intention to avoid or refuse alcohol or tobacco use when offered. Empowerment is needed to prepare them for life's challenges and increase their commitment to not use psychoactive substances, thus preventing them from regular use and abuse which is where the current study is situated. Several researchers have confirmed the importance of knowledge in regards to psychoactive substance use. Lack of knowledge on the dangers of psychoactive substances puts one at risk of use (Atoyebi & Atoyebi, 2013; Idowu, Aremu, Olumide, & Ogunlaja, 2018; Okagua et al., 2016). In addition other researchers found that in-school adolescents with lower knowledge level also have a more positive attitude towards a specific substance; not only that, but that they were also more likely to use that psychoactive substance in the future (Atoyebi et al., 2013; Odukoya, Odeyemi, Oyeyemi & Upadhyay, 2013). A more recent

study found that a common risk factor for drug abuse among university students in Nigeria is lack of basic knowledge regarding the adverse effects of psychoactive substances (Ifeoma et al., 2020). Thus the researchers emphasized the need of education to Nigerians at large about health risks and dangerous effects psychoactive substance abuse.

Family function including family structure (complete, incomplete, and extended), parental education level, and the quality of communication in a family was also found to be a significant factor in the context of tobacco, alcohol, and drug use (Mulic et al., 2017). Hill and Mrug (2015) examined the correlation between multiple school characteristics such as poverty, racial composition, academic achievement, student-teacher ratio, absenteeism, and school size, with psychoactive substance use (tobacco, alcohol, marijuana and combined use) where findings revealed that correlation existed between psychoactive substance use with school-level poverty, more students from ethnic minority groups, those with low academic achievement and with higher absenteeism rate. In order to promote knowledge, psychosocial skills are also needed for adolescents so that they not only have the knowledge, but also the skills to refuse the use of psychoactive substance when offered. The aim of using life skills is to equip adolescents with psycho-social skills in order to not only promote knowledge, but also attitude and skills, all of which influence behaviour. This is supported by Stockings et al. (2016) who found that giving information was not as effective as skills training interventions for prevention interventions to be effective. Those that target adolescents are normally done at a school setting because there is an increased likelihood to find the similar group of people in one place for intervention. The structure, component and strategies used in intervention studies vary according to the systematic review done by Stockings et al. (2016). Though prevention programs have been done for years, there are no standard program at school settings that can be used.

3. Methodology

A quasi-experimental research design was adopted to evaluate the effectiveness of two health education programs on knowledge of the harmfulness of alcohol and cigarette smoking among adolescents from selected secondary schools. The target population for this study was in-school adolescents from SS1 and SS2 high schools from three local governments of Ogun State: Ijebu-Ode, Sagamu and Remo North. Multistage sampling technique was used in selecting respondents of the study. First stage was a purposeful selection of Ogun East out of 3 senatorial districts due to its largest coverage of Local Government Areas. Second stage was purposive selection of three local government areas by considering the distance to avoid contamination of study results. Third stage was the purposive selection of schools which must be a secondary school, a co-ed, and accessible to the main road. Fourth stage was in purposively allocating schools to each intervention program given the flexibility from administration, time limit and readiness to start. The participants were conveniently selected from their classes based on their presence in class at the time of baseline data collection, their ability to meet the eligibility criteria and also their ability to bring a signed consent form from their parents. Thirty (30) students were selected from each of the three schools making it 90 participants in total from SS1 and SS2 classes with both males and females.

A semi-structured, participant-administered questionnaire was used to collect data, with the aim to elicit the information regarding the following sections: Respondents' socio-demographic profile, knowledge, and psychoactive substance use. Sociodemographic characteristics include age, gender, class, ethnicity, family structure, religion, parents' employment status and parents' educational level. The age of the participants was assessed in an open-ended question while the rest of the information was coded and frequencies generated for each value. Knowledge of the Dangers of Alcohol and Cigarette Smoking was measured on a 10 point rating scale. It contained 10 item questions to inquire about the dangers of these specific substances. A dichotomous scale was used. A correct response was awarded 1 mark while a wrong response was awarded 0 marks. The same instrument was used at baseline and right after the intervention programs. The instrument was pilot tested and a test-re-test was conducted using 10% of the total population from another group of SS1 and SS2 students in a different secondary school not included in the study. The standard Cronbach's Alpha score for knowledge was 0.85 making it highly reliable and satisfactory to be used to collect data for the present study.

The researcher met with the principals of the secondary schools selected for the study to obtain permission to give the questionnaire to the students. The instrument was administered on the sampled respondents by the researcher with the help of the research assistant.90 copies of questionnaire were administered and collected at the end.100% of the copies of the questionnaire was retrieved. Descriptive and inferential statistics were used in analyzing the data. P value=0.5 was set as a cut off criteria to determine whether the result is significant or not or whether to accept or reject the hypothesis. Mean scores were compared to determine the difference between groups at the beginning of the intervention and at the end of the intervention. Analysis of variance was used to analyze the difference between pre and post intervention results among and within groups. Effect size was also used to determine the effectiveness of the programs. The study was suggested to ethical approval by the Ministry of Health Research Ethics (HPRS/381/389) and the Ministry of Education, Science and Technology (PL.985/Vol. IV/T2/15) in Ogun State. The respondents were informed on their rights, purpose of the study and that their participation was voluntary and could withdraw at any time.

4. Data Analysis, Results and Presentation

The answers to the established hypothesis in this research are presented in this section through pair-comparison, descriptive statistics and size-effect. The results indicate that the difference between intervention groups along knowledge was statistically significant which offers a robust scientific explanation of latent constructs. Tables 1-3 show the descriptive results in a more detailed way and the others present the outputs for the hypothesis tested.

Table 1: Socio-Demographic Characteristics of Participants: Age, Gender, Ethnicity, Religion

Variables	Group 1 (Health Education + Life Skills) N (%)	Group 2 (H. Education +Life Skills+ Counsel) N (%)	Control N (%)	Statistics	P Value
Age (years)					
Mean ±SD	15.63±1.299	15.13±1.137	15.37±1.299	F=1.207	0.304
Sex					
Male	15 (50.0)	16 (53.3)	14 (46.7)	$\chi 2$=0.267[a]	0.875
Female	15 (50.0)	14 (46.7)	16 (53.3)		
Total	30 (100.0)	30 (100.0)	30 (100.0)		
Ethnic group					
Igbo	1 (3.3)	-	6 (20.0)	$\chi 2$= 11.566[a]	0.072
Hausa	1 (3.3)	-	-		
Yoruba	27 (90.0)	29 (96.7)	23 (76.7)		
Others	1 (3.3)	1 (3.3)	1 (3.3)		
Total	30 (100.0)	30 (100.0)	30 (100.0)		
Religion					
Christianity	25 (83.3)	17 (56.7)	19 (63.3)	$\chi 2$=8.491[a]	0.075
Islam	4 (13.3)	13 (43.3)	11 (36.7)		
Traditional	1 (3.3)	-	-		
Total	30 (100.0)	30 (100.0)	30 (100.0)		

Table 1 showed that the mean age of the participants in Group 1, Group 2 and the Control Group were 15.63±1.299, 15.13±1.137 and 15.37±1.299 respectively. The proportions of males to females in all the groups were distributed equally. Over 75% of the participants in the three groups belong to the Yoruba ethnic group, and Christianity was found to be the dominant religion among the groups. The figures seem to suggestion technical exclusion of persons above age twenty years, but the definition of adolescent limited persons with the possibility of inclusion within the secondary age. In addition, the proportion of religion and Yoruba ethic group were not deliberately selected, rather the context, constructs presented the numerical facts around Ogun State.

Table 2: Socio-Demographic Characteristics of Participants: Family Structure, Parental Employment Status

Variables	Group 1 N (%)	Group 2 N (%)	Control N (%)	Statistics	P Value
Family Structure					
Both parent	18 (60.0)	17 (56.7)	17 (56.7)	$\chi 2$=2.105[a]	0.91
Father alone	2 (6.7)	3 (10.0)	1 (3.3)		
Mother alone	8 (26.7)	8 (26.7)	11 (36.7)		
Family	2 (6.7)	2 (6.7)	1 (3.3)		
Total	30 (100.0)	30 (100.0)	30 (100.0)		
Father's employment status					
Unemployed	-	2 (6.7)	1 (3.3)	$\chi 2$=6.424[a]	0.377
Employed	13 (43.3)	7 (23.3)	14 (46.7)		
Job not steady	2 (6.7)	2 (6.7)	3 (10.0)		
Self-employed	15 (50.0)	19 (63.3)	12 (40.0)		
Total	30 (100.0)	30 (100.0)	30 (100.0)		
Mothers' employment status					
Unemployed	-	3 (10.0)	3 (10.0)	$\chi 2$=5.537[a]	0.477
Employed	12 (40.0)	9 (30.0)	8 (26.7)		
Takes care of home	1 (3.3)	1 (3.3)	3 (10.0)		
Self-employed	17 (56.7)	17 (56.7)	16 (53.3)		
Total	30 (100.0)	30 (100.0)	30 (100.0)		

With reference to the family structure, age, sex, ethnicity and religion, Table 2 shows that the majority of the respondents lived with both parents. For those coming from single parent homes, most of them lived with their mothers. Both father and mother are not gainfully employed but are considered self-employed, meaning that they find their own means to provide for their families.

Table 3: Socio-Demographic Characteristics of Participants' Parent Educational Level

Variables	Group 1 N (%)	Group 2 N (%)	Control N (%)	Statistics	*p*-value
Father's Educational level					
Primary	5 (16.7)	1 (3.3)	7 (23.3)	F=3.087	0.051
Secondary	16 (53.3)	14 (46.7)	14 (46.7)		
University	8 (26.7)	14 (46.7)	9 (30.0)		
Never attended	1 (3.3)	1 (3.3)	-		
Total	30 (100.0)	30 (100.0)	30 (100.0)		
Mean ±SD	2.17 ±0.747	2.50 ±0.630	2.07 ±0.740		
Mother's Educational level					

Primary	8 (26.7)	1 (3.3)	4 (13.3)		
Secondary	15 (50.0)	17 (56.7)	14 (46.7)		
University	4 (13.3)	12 (40.0)	10 (33.3)	F=1.370	0.259
Never attended	3 (10.0)	-	2 (6.7)		
Total	30 (100.0)	30 (100.0)	30 (100.0)		
Mean ±SD	2.07±0.907	2.37±0.556	2.33±0.802		

Table 3 showed that the pattern of parental educational level of participants from all groups is similar. Close to half of the parents (46.7-56.7%) from all three groups have finished secondary school. In summary, the socio-demographic characteristics of the participants from all three schools were similar in regard to their age, gender, ethnicity, religion, family structure, parents' employment status, and parents' level of education.

Knowledge of Psychoactive substance use

The participant's knowledge on psychoactive substance use among adolescent in selected secondary schools using a 10-point rating scale was tested. The knowledge of psychoactive substance use was the focus, and alcohol and cigarette were the identified psychoactive substance. The participants' level of knowledge was measured along baseline and immediate post intervention. The mean score ($\bar{x}$) and standard deviation ($\pm$) of knowledge construct among the groups as at baseline were as follows: Group 1 = 6.77±1.28, Group 2 = 6.28±1.28 and Group 3 (Control) = 0.40±1.30, and post-baseline Group 1 = 10.00±0.00, Group 2 = 10.00±0.00 and Group 3 (Control) = 6.93±0.33.

A paired sample t-test was conducted to determine any statistical significant difference in the participants' level of knowledge between the baseline and immediate post intervention across groups. The results of the paired simple test are as follow; Grp1: t_{29} =-13.857, $p<0.001$; Grp2: t_{29}=-16.384, $p<0.00$, and Control group t_{29}= 1.270, p= 0.214 as shown in Table4.

Table 4: Knowledge of participants on psychoactive substances between baseline and immediate post intervention

Paired Samples Test								
Group	Variables	Paired Differences			T	Df	Sig	
		Mean	Std. Deviation	Std. Error Mean				
Group1	Knowledge	-3.23333	1.27802	0.233	-13.857	29	<0.00	
Group 2		-3.80000	1.27035	0.232	-16.384	29	<0.00	
Control		0.46667	2.01260	0.367	1.270	29	0.214	

A paired sample *t*-test showed that there was a statistically significant difference in the level of knowledge (Grp1 Knowledge: t_{29} =-13.857, $p<0.001$; Grp2 knowledge: t_{29} =-16.554, $p<0.001$) for the two intervention groups. However, there was no statistical significant difference in the level of knowledge in the Control group (Knowledge t_{29}= 1.270, p=0.214). The result suggested that the level of knowledge was not the same among the respondents in terms of pre and post intervention; hence the null hypothesis was not accepted. A key point from the table lies in the general agreement that there was a significant change in knowledge in relation to the proportion of intervention among Group 1 and 2 over time. This indicates some agreement across all the participants that health education intervention or program brings about a statistical significant change in psychoactive substance use. Though there was a statistically significant difference in the values for Group 1, 2 as compared to the Control Group. This is important because it indicates a high level of consistency between no health education intervention and change in knowledge on psychoactive substance use.

To deepen insight on the mean scores and the marginal change in knowledge, the comparison is illustrated in Figure 1. The figure summarized data position and trends in terms of trajectory with reference to variation in the information concerning participants studied. A trend as observed is the direction of change in the knowledge of the participants over time from the baseline, immediate post intervention and follow-up phases to the categories of intervention groups. From the figure, people's average knowledge generally stationary at the baseline despite their location and academic differences, parental occupation and academic cadre dissimilarities. There was an increased in the level of knowledge over time for Group 1 and Group 2 even though growth was exponential and mutually inclusive for the students from baseline to post immediate intervention. The same trend could not be established for the Control Group as decline seems to linger from the level of knowledge.
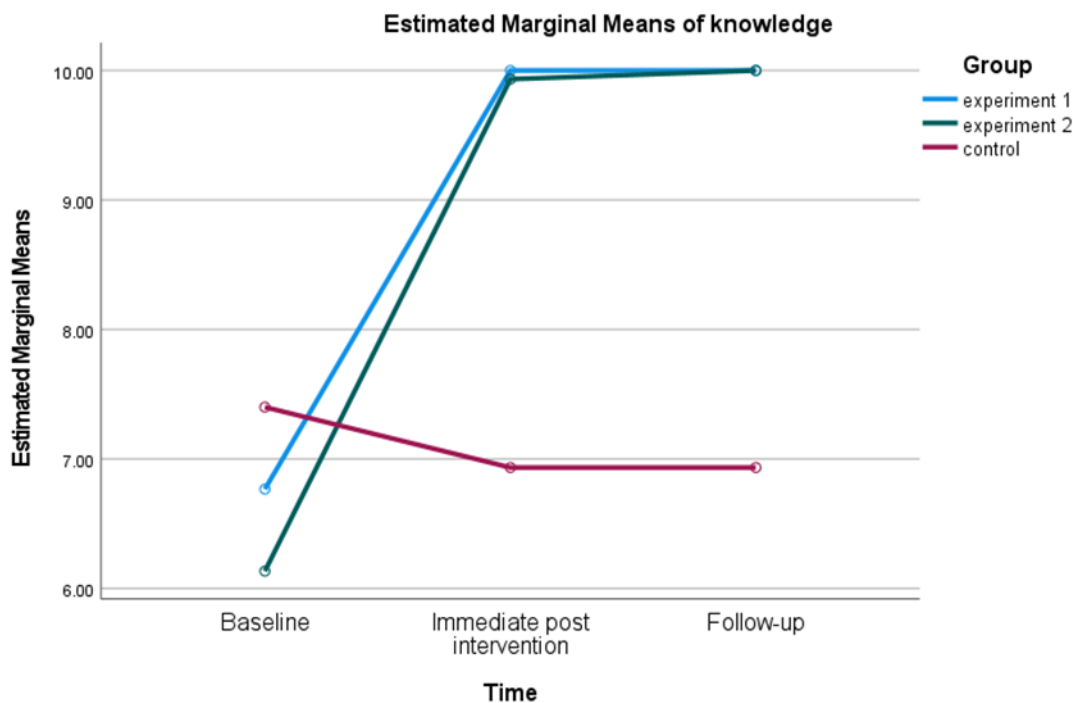
Figure 1: Shows the change in level of knowledge across time

Evidences from the x axis-horizontal (Estimated marginal means of knowledge) and y-vertical (Estimated marginal means) lines illustrate the proportional gradual increase in the knowledge of the participants from the immediate post intervention phase to follow-up stage. The change in the level of knowledge is probably attributable to health educational intervention introduced to the participants. However, a plateau at follow-up stage where a convergence was observed between the intervention groups was not found for the Control Group. For most of the participants in Groups 1 and 2, there is a progressive upward trend in the level of knowledge between baseline and immediate post intervention on psychoactive drug use. Between immediate post intervention and follow-up, a steeper convergence occurred in knowledge among the participants. However, the

change in knowledge seen nose-diving at all times for the Control group from baseline to follow-up stages. The observation suggests that an health education intervention bring about a change in knowledge towards preventing tendency to psychoactive drug use.

To determine the effect size among the groups in terms of the intervention program between Group 1, 2 and 3, on improving the knowledge of psychoactive substance use the Cohen d test was conducted. The results show that there was a change in knowledge in Group 1 from pre-test to post-test-3.63 (-3.855 to-3.405) and was significant at 1%. It was also observed for Group 2-4.35 (-4.574 to-4.124) and statistically significant at 1% but not for the control Group.

Table 5: Participants' Level of Knowledge Regarding Substance Use within groups

Groups Variable	Maximum point of scale Measure	Pre-test, N=30		Post-test, N=30		*ES (95% CI)	p-value
		x̄ (SE)	±SD	x̄ (SE)	±SD		
Group 1 Knowledge	10	6.77 (0.24)	1.28	10.00 (0.17)	0	-3.63 (-3.855 to-3.405)	<0.001
Group 2 Knowledge	10	6.13 (0.24)	1.28	10.00 (0.17)	0	-4.35 (-4.574 to-4.124)	<0.001
Group 3 Knowledge	10	7.40 (0.24)	1.3	6.93 (0.17)	1.6	0.33 (-0.035 to 0.691)	0.293

***ES:** effect size computed from Cohen d*

The effect size computations for the pre-test and post-test knowledge mean within the groups showed that Group 1 had an effect size of-3.63, Group 2 had an effect size of-4.35 and the Control group had a very small effect size (0.33) which was not statistically significant.

5. Discussion

This study evaluated knowledge and psychoactive substance use among high school adolescents, using a quasi-experimental research design and the theoretical framework of PRECEDE model with knowledge as a predisposing factor for psychoactive substance use or prevention.

Knowledge is the first key and necessary element in developing a healthy behavior (Leah, 2018). The participants of this study had knowledge regarding the dangers associated with substance use, which was evident on the mean knowledge score obtained by the participants of this study at pre-intervention stage and intervention groups. This knowledge score was found to be similar to the studies of Arevian and Khasholian (2014) and Anetor and Oyekan (2018).

The findings of the current study also revealed that students' knowledge about drug abuse post intervention compared with pre-intervention. These findings are consistent with that

of Arevian and Khasholian (2014), Mansur et al. (2021), and Mahmood et al. (2018) who discovered that knowledge significantly increased at the post intervention in their treatment group compared to the control group. The knowledge result found in this study, also aligned with other studies conducted by Fitriana, Suryawati and Zubaidah (2018), Moshki, Zamani-Alavijeh, and Mojadam (2017), which revealed that education by peers has a positive influence on the level of knowledge of school-aged adolescent. In addition, this study was supported by Amey (2018) who assessed the impact of health education programme on knowledge of students towards drug abuse in selected colleges of Belagavi.

Moreover, the result also corresponds with the findings of Goswami et al. (2015), where they examined the effect of structured teaching programme on knowledge of nursing students regarding substance use and found that the intervention significantly improved students' knowledge at one-week post-test. Further, a similar pattern of result was obtained in a study conducted by Isensee et al. (2014) in Germany. Similarly, finding by Theou et al. (2015) also coincided with the present findings, as students' knowledge of substance use obviously increased after implementation of an education program. The knowledge score reported in this study also confirms the findings of Mokadem et al. (2021) in their study carried out in Egypt.

In conclusion, improving knowledge of psychoactive substance use among adolescents in the study is instrumental to behavioral change. In addition, the peer-led health education in combination with motivational counseling was more effective. Therefore, it was recommended that health education intervention could be more effective when adding counseling to increase consciousness among adolescents to increase their chance of preventing psychoactive substance use. Further studies should consider different context, constructs and population and structural equation modelling in pursuit of health education.

References

[1] Adebiyi, A. O., Faseru, B., Sangowawa, A. O. & Owoaje, E. T. (2010). Tobacco use amongst out of school adolescents in a Local Government Area in Nigeria. *Substance abuse treatment, prevention, and policy*, *5*, 24. https://doi. org/10.1186/1747-597X-5-24

[2] Alabi, A. D., Runsewe-Abiodun, T. I & Ogunowo, K. K. (2020). Perception of Substance Abuse Amongst Adolescents and Young Adults in Ikenne Local Government, Ogun State, Nigeria. *International Quarterly of Community Health Education*: 272684X20974547. https://doi: 10.1177/0272684x20974547.

[3] Anetor, G. & Oyekan-Thomas, M. (2018). Knowledge and attitude of youths to substance abuse in Alimosho Local Government area of Lagos Stat Internal. Journal of. Biological and chemical Sciences.12 (2): 822-836.

[4] Arlinghaus, K. R., & Johnston, C. A. (2017). Advocating for Behavior Change With education. *American journal of lifestyle medicine*, *12* (2), 113-116. https://doi. org/10.1177/1559827617745479

[5] tilola, O., Ayinde, O., & Adeitan, O. (2013). Beyond prevalence and pattern: problematic extent of alcohol and substance use among adolescents in Ibadan South-west Nigeria. *African health sciences*, *13* (3), 777-784. https://doi. org/10.4314/ahs. v13i3.37

[6] Atoyebi O. A & Atoyebi, O. E. (2013). Pattern of Substance Abuse among Senior Secondary School Students in a Southwestern Nigerian City. *International Review of Social Sciences and Humanities*. pp.54-65.

[7] Ayandiji, A. & Osoba, P. (2017). Social and Psychological Effects of Drug Abuse among Rural Youths in Ogun State. *International Journal of Health and Pharmaceutical Research* ISSN 2045-4673 Vol.3 No.4 2017 www. iiardpub. org

[8] Ayandiji, A. & Osoba, P. (2017). Social and Psychological Effects of Drug Abuse among Rural Youths in Ogun State. *International Journal of Health and Pharmaceutical Research* ISSN 2045-4673 Vol.3 No.4 2017 www. iiardpub. org

[9] Botvin, G. J., & Griffin, K. W. (2015). Life Skills Training: A competence enhancement approach to tobacco, alcohol, and drug abuse prevention. In L. M. Scheier (Ed.), *Handbook of adolescent drug use prevention: Research, intervention strategies, and practice* (pp.177-196). American Psychological Association. https://doi. org/10.1037/14550-011

[10] Botvin, G. J. (2000) Preventing Drug Abuse in Schools: Social and Competence Enhancement Approaches Targeting Individual-Level Etiologic Factors. *Addictive Behaviors, 25*, 887-897. http://dx. doi. org/10.1016/S0306-4603 (00) 00119-2

[11] Botzet, A. M., Dittel, C., Birkeland, R., Lee, S., Grabowski, J. & Winters, K. C. (2019). Parents as interventionists: Addressing adolescent substance use. *Journal of Substance Abuse Treatment*, 99: 124-133. https://doi: 10.1016/j. jsat.2019.01.015

[12] Do, E. K., Prom-Wormley, E. C., Eaves, L. J., Silberg, J. L., Miles, D. R., & Maes, H. H. (2015). Genetic and Environmental Influences on Smoking Behavior across Adolescence and Young Adulthood in the Virginia Twin Study of Adolescent Behavioral Development and the Transitions to Substance Abuse Follow-Up. *Twin research and human genetics: the official journal of the International Society for Twin Studies*, *18* (1), 43-51. https://doi. org/10.1017/thg.2014.78

[13] Drug Policy Futures. (2019). People's Voice: Roar of the silent majority. Retrieved from https://www. unodc. org/documents/commissions/CND/2019/Contributions/Civil_Society/DPF_report_2019_-_Peoples_Voice. pdf

[14] European Monitoring Centre for Drugs and Drug Addiction. (2019). *European Drug Report 2019*: Trends and Developments, Publications Office of the European Union, Luxembourg

[15] Fitriana, R. N, Suryawati, C. & Zubaidah, Z. (2018). Effect of peer education model on knowledge and self-efficacy of children in the prevention of physical sexual violence. *Belitung Nursing Journal*, *4* (1): 51-57.

[16] Funmilayo, A. A, Robert, O. T, Olalekan, R. M, Okoyen, E & Tuebi, M. (2019). A study of the context of adolescent substance use and patterns of use in yenagoa local government, Bayelsa State, Nigeria. *MOJ Addiction Medicine and Therapy 6* (1): 25-32.

[17] Global Commission on Drug Policy. (2019). Classification of psychoactive substances: When science was left behind. http://www.globalcommissionondrugs.org/reports/classification-psychoactive-substances

[18] Goswami, Y. P, Jayalakshmi, L. S. & Mathur, D. M. (2015). A Study to assess the effectiveness of structured teaching program on knowledge regarding substance use among adolescents at selected nursing colleges of Udaipur District, Rajasthan, India. *International Journal of Scientific and Research Publications*.5 (2).

[19] Grant, B. F, Chou S. P, Saha, T. D, Pickering, R. P, Kerridge, B. T, et al. (2017). Prevalence of 12-month alcohol use, high risk drinking, and DSM-IV alcohol use disorder in the United States, 2001-2002 to 2012-2013: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Journal of American Medical Association Psychiatry 74* (9): 911-23

[20] Graydanus, D. E. & Patel, D. R. (2005) The adolescent and substance abuse: Current concepts. *Current Problems in Pediatric Adolescent Health Care 35* (3): 78-98.

[21] Gureje, O, Degenhardt, L, Olley, B., Uwakwe, R., Udofia, O., Wakil, A., Adeyemi, O. (2007). A descriptive epidemiology of substance use and substance use disorders in Nigeria during the early 21st century. *Drug Alcohol Dependency*.2007; 91 (1): 1-9. OI: 10.1016/j. drugalcdep.2007.04.010

[22] Hill, D & Mrug, S. (2015). School-Level Correlates of Adolescent Tobacco, Alcohol and Marijuana Use. *Substance Use Misuse.5*0 (12): 1518-1528.

[23] Idowu, A., Aremu, A. O, Olumide, A. & Ogunlaja, A. O. (2018). Substance abuse among students in selected secondary schools of an urban community of Oyo-state, South West Nigeria: implication for policy action. *African Health Sciences, 18* (3): 776-785. https://dx. doi. org/10.4314/ahs. v18i3.36

[24] Ifeoma, O. J., Grace, N., Chimezie, N., Bashir, I. W., Ngozi, O. G., Uzochukwu, A. F., & Onyemaechi, N. P. (2020). Effect of Drug Abuse and Health Risks Among Undergraduates of Federal Universities in Nigeria. *Global Journal of Health Science, 12*, 107.

[25] Isensee, B, Hansen J, Maruska K, Hanewinkel R. (2014) Effects of a school-based preventionprogramme on smoking in early adolescence: a 6-month follow-up of the 'Eigenständigwerden' cluster randomised trial. *British Medical Journal Open*, *4* (1).

[26] Jhanjee S. (2014). Evidence based psychosocial interventions in substance use. *Indian journal of psychological medicine*, *36* (2), 112-118. https://doi. org/10.4103/0253-7176.130960

[27] Johnson, D., Mullen, D., Smith, I., & Wilson, A. (2016). Mindfulness in addictions. *British Journal Psychological Advances, 22* (6): 412-419. doi: 10.1192/apt. bp.114.014142.

[28] Kadden, R. M. & Litt, M. D. (2011). The role of self-efficacy in the treatment of substance use disorders. *Addictive Behaviors, 36*: 1120-6

[29] Kelly, M. P, Barker, M. (2016). Why is changing health-related behaviour so difficult? *Public Health*.2016; 136: 109-116. [PMC free article] [PubMed]

[30] Kraus, L., Seitz, N. N., Piontek, D., Molinaro, S., Siciliano, V., Guttormsson, U., & Hibell, B. (2018). Are The Times A-Changin? Trends in adolescent substance use in Europe. *Addiction (*Abingdon, England), *113* (7), 1317-1332. https://doi. org/10.1111/add.14201

[31] Leah, M. (2018). Substance use education resources. Retrieved from https://www. projectknow. com/research/substance-use-education-resources/.

[32] Lewis, M. (2017). Addiction and the Brain: Development, Not Disease. *Neuroethics* 10, 7-18 (2017). https://doi. org/10.1007/s12152-016-9293-4

[33] Likpus, I. M & May, D. (2018). Comparing harm beliefs and risk perceptions among young adult waterpipe tobacco smokers and nonsmokers: Implications for cessation and prevention. *Addictive Behaviors Reports* 7: 103-110

[34] Likpus, I. M & May, D. (2018). Comparing harm beliefs and risk perceptions among young adult waterpipe tobacco smokers and nonsmokers: Implications for cessation and prevention. *Addictive Behaviors Reports* 7: 103-110

[35] Luthar, S. S., & Ansary, N. S. (2005). Dimensions of adolescent rebellion: Risks for academic failure among high-and low-income youth. *Development and Psychopathology*, 17: 231-250

[36] Mansur, R., Isa, A. . Mansur, O., Aminu, K. & Balarabe, I. (2021) Using peer led health education intervention to improve in-school adolescents' cigarette smoking related knowledge, attitude and behaviour in a North West Nigeria state. *Health Science Journal*

[37] Mahmood, N., Othman, S., Al-Tawil, N. & Al-Hadithi, T. (2018). Impact of an education intervention on knowledge of high school students concerning substance use in Kurdistan Region-Iraq: Aquasiexperimentalstudy. *PLoSONE*13 (10): e0206063. https://doi. org/10.1371/journal. pone.020603

[38] McKenzie, J. F., & Smeltzer, J. L. (2001). Planning, implementing, and evaluating health promotion programs: A primer (3rd ed.). Boston: Allyn & Bacon.

[39] Mehanovića, E., Virkc, H. K., Akanidomoc, I., Pwajokd, J., Prichardc, G Kreefte, P., Vigna-Tagliantia, F. (2019). Correlates of cannabis and other illicit drugs use among secondary school adolescents in Nigeria. *Drug & Alcohol Dependence*, 04.028

[40] Mokadem, N. M. E., Shokr, E. A., Salama, A. H., Shereda, H. M. A., Radwan, H. A., & Amer, H. M. (2021). Peer education intervention to promote drug abuse prevention among Secondary Schools Students. Neuro-Quantology: An Interdisciplinary *Journal of NeuroscienceandQuantumPhysics*, 19 (5): 68-78.

[41] Moshki, M., Zamani-Alavijeh, F. & Mojadam, M. (2017). Efficacy of peer education for adopting preventive behaviors against head lice infestation in female elementary school students: a randomized controlled trial. *PloS one, 12* (1).

[42] National Academies of Sciences, Engineering, and Medicine; Health and Medicine Division; Division of Behavioral and Social Sciences and Education; Board on Children, Youth, and Families; Committee on the Neurobiological and Socio-behavioral Science of Adolescent Development and Its Applications; Backes EP, Bonnie RJ, editors. *The Promise of Adolescence: Realizing Opportunity for All Youth*. Washington (DC): National Academies Press (US); 2019 May 16.2, Adolescent Development. Available from: https://www. ncbi. nlm. nih. gov/books/NBK545476/

[43] National Institute of Drug Abuse.2020, July 10. Drugs and the Brain. Retrieved from https://www. drugabuse. gov/publications/drugs-brains-behavior-science-addiction/drugs-brain on 2021, April 14

[44] National Institute of Drug Abuse.2020, May 25. What are the early signs of risk that may predict later drug abuse? Retrieved from https://www. drugabuse. gov/publications/preventing-drug-use-among-children-adolescents/chapter-1-risk-factors-protective-factors/what-are-early-signs-on 2021, March 21

[45] National Institute of Health. (2020). Monitoring the Future Study: Trends in Prevalence of Various Drugs. Retrieved from Monitoring the Future Study: Trends in Prevalence of Various Drugs | National Institute on Drug Abuse (NIDA)

[46] National Institute on Drug Abuse (2007). *The Neurobiology of Drug Addiction: 6: Definition of tolerance.*

[47] Nkansah-Amankra, S., & Minelli, M. (2016). "Gateway hypothesis" and early drug use: Additional findings from tracking a population-based sample of adolescents to adulthood. *Preventive medicine reports*, *4*, 134-141. https://doi. org/10.1016/j. pmedr.2016.05.003

[48] Nora, D. Volkow, M. D., George F. K., McLellan, A. T. (2016). Neurobiologic Advances from the Brain Disease Model of Addiction. New England Journal of Medicine, 374: 363-71. DOI: 10.1056/NEJMra1511480

[49] Odukoya, O. O., Odeyemi, K. A., Oyeyemi, A. S., & Upadhyay, R. P. (2013). Determinants of smoking initiation and susceptibility to future smoking among school-going adolescents in Lagos State, Nigeria. *Asian Pacific Journal of Cancer Prevention*, *14* (3), 1747-1753.

[50] Okagua, J., Opara, P., & Alex-Hart, B. A. (2016). Prevalence and determinants of cigarette smoking among adolescents in secondary schools in Port Harcourt, Southern Nigeria. *International Journal of Adolescent Medicine and Health, 28* (1), 19-24.

[51] Olalekan, R. M., Funmilayo, A. A., Iteimowei, M., Okoyen, E., Oyinlola, B. O. (2019). Public Health Impact of Substance Use on Adolescent: A Snapshot of Yenagoa in Bayelsa State, Nigeria. *Am Journal of Biomed Science & Research, 4* (3).

[52] Olawole-Isaac, A, Ogundipe, O, Amoo, E O, & Adeloye, D. (2018). Substance use among adolescents in sub-Saharan Africa: A systematic review and meta-analysis. *South African Journal of Child Health*, *12* (7), 79-84.

[53] Omigbodun, O. O. & Babalola, O. (2004). Psychoactive substance misuse among Nigerian adolescents. *Annals of African Medicine*, 3 (3) : 111-115

[54] Peele, S. (2016). People Control Their Addictions. *Addictive Behaviors Reports* 4: 97-101

[55] Richmond-Rakerd, L. S., Slutske, W. S., & Wood, P. K. (2017). Age of initiation and substance use progression: A multivariate latent growth analysis. J*ournal of the Society of Psychologists in Addictive Behaviors*, *31* (6), 664-675.

[56] Ritchie, H. & Roser. M. (2019). Drug Use. Published online at OurWorldInData. org. Retrieved from https://ourworldindata. org/drug-use [Online Resource]

[57] Stockings, E., Hall, W. D., Lynskey, M., Morley, K. I., Reavley, N., Strang, J., Patton, G., & Degenhardt, L. (2016). Prevention, early intervention, harm reduction, and treatment of substance use in young people. *The lancet. Psychiatry*, *3* (3), 280-296. https://doi. org/10.1016/S2215-0366 (16) 00002-X

[58] *The Merriam-Webster Dictionary*. Merriam-Webster, Incorporated; 2006

[59] Theou, C., Nayak, A. & Jose, T. T. (2018). A study to determine the effectiveness of an awareness programme on knowledge on substance abuse and its consequences among the students of a selected pre-university college of Udupi district, Karnataka. Nitte University *Journal of Health Science*.5 (1).

[60] Tiffany, S. T. & Wray, J. M. (2012). The clinical significance of drug craving. *Annual New York Academy of Sciences, 1248: 1-17.*

[61] Tomar, S. L., Fox, B. J. & Severson, H. H. (2009). Is smokeless tobacco use an appropriate public health strategy for reducing societal harm from cigarette smoking? *International Journal of Environmental Research in Public Health, 6* (1): 10-24.

[62] U. S. Department of Health & Human Services. (2014). CDC National Health Report Highlights. Retrieved from http://www. cdc. gov/healthreport/publications/compendium. pdf

[63] United Nations Office on Drugs and Crime. (2019). *World Drug Report 2019*. Retrieved from https://wdr. unodc. org/wdr2019/

[64] US Preventive Services Task Force, Krist, A. H., Davidson, K. W., Mangione, C. M., Barry, M. J., Cabana, M., Caughey, A. B., Curry, S. J., Donahue, K., Doubeni, C. A., Epling, J. W., Jr, Kubik, M., Ogedegbe, G., Pbert, L., Silverstein, M., Simon, M. A., Tseng, C. W., & Wong, J. B. (2020). Screening for Unhealthy Drug Use: US Preventive Services Task Force Recommendation Statement. *JAMA*, *323* (22), 2301-2309. https://doi. org/10.1001/jama.2020.8020

[65] Vigna-Taglianti F, Alesina M, Damjanović L, Mehanović E, Akanidomo I, Pwajok J, Prichard G, van der Kreeft P, Virk HK; Unplugged Nigeria Coordination Group. (2019). Knowledge, attitudes and behaviours on tobacco, alcohol and other drugs among Nigerian secondary school students: Differences by geopolitical zones. *Drug Alcohol Review*, *38* (6): 712-724.

[66] World Health Organization (2001). Psycho-social morbidities among adolescents. A report of the National Institute of Cooperation and Child Development, New Delhi-India.

[67] World Health Organization. (2002). *The world health report 2002: Reducing risks, promoting healthy life*. World Health Organization, Geneva

[68] World Health Organization. (2012). Management of substance use. Retrieved from http://www. who. int/substance_abuse/facts/psychoactives/en/

[69] World Health Organization. (2018). *Global status report on alcohol and health*. Geneva: World Health Organization. Retrieved from https://www. who. int/publications/i/item/9789241565639

[70] World Health Organization. (2021). Alcohol. Harmful use of alcohol. Retrieved from http://www. who. int/health-topics/alcohol#tab=tab_1.

[71] World Health Organization. (2021). *Substance Abuse: Overview*. Retrieved from https://www. afro. who. int/health-topics/substance-abuse