International Journal of Healthcare Sciences ISSN 2348-5728 (Online)
Vol. 10, Issue 1, pp: (70-83), Month: April 2022 - September 2022, Available at: www.researchpublish.com

Assessment of High School Adolescents' Perception of Psychoactive Substance Use in Selected Schools in Ogun State, Nigeria

Atulomah, N. O[1]., Agbede, C[2], Panuel-Egwakhe, C[3]

[1,2,3] Department of Public Health
School of Public and Allied Health,
Babcock University, Ilishan-Remo, Ogun State

DOI: https://doi.org/10.5281/zenodo.6628019

Published Date: 09-June-2022

Abstract: **Psychoactive substance-use (PSU) or abuse has always constituted a global social and health challenge. Quasi-experimental research design was used with three experimental groups and ninety high school students were purposively selected from three high schools in Ogun State, Nigeria. Data were gathered through a validated questionnaire with Cronbach's alpha reliability score of 0.75. Findings revealed that between baseline and immediate post intervention, a significant difference ($p < 0.05$) in overall perception across the intervention groups (Grp1: $t_{29} = -2.027$; Grp2: $t_{29} = -2.462$) was observed, but there was no significant difference ($p > 0.05$) in perception for Grp 3 (Control) (Grp3: $t_{29} = -0.036$) respectively. Between baseline and at 4th week follow-up, significant difference ($p < 0.05$) was seen in overall perception for Grp1 ($t_{29} = -6.754$) and Grp2 ($t_{29} = -9.473$), but no significant difference ($p > 0.5$) was observed for Grp3 ($t_{29} = -1.036$). The effect of changes produced by the intervention program given to Grp2 was more effective (Effect size: 2.32) than for Grp1 (Effect size = 1.85) in increasing adolescents' perception to refuse psychoactive substance use. The study concludes that health education intervention programs do not only affect adolescents' perception of PSU but becomes more effective when motivational counseling is added. It was recommended that motivational counseling be incorporated into health education programs at high schools or in drug awareness clubs at high schools.**

Keywords: **Psychoactive substance, drug perception, adolescent, motivational counseling, psychocognitive intervention, health education.**

1. INTRODUCTION

The abuse of psychoactive substances is a global public health problem, which hinders social and economic development of a person and the nation. The practice compromises and truncates life, health, dignity and security of individuals, communities, and nations [1], [2]. The type and pattern of psychoactive substance use depend on regional and geographic variation [3] and drug trafficking plays a significant role in providing access and distribution of psychoactive substances that has created a menace in every community in the world today. In addition, [4] discovered that overall, 15.5% of adolescents from a nationally represented sample of 13–15-year-olds from seven African countries (Botswana, Kenya, Namibia, Senegal, Tanzania, Uganda, Zimbabwe) started smoking before they were 14; 20.1% among the boys and 10.9% among the girls. Moreover, those who smoked were four times more likely to have used alcohol or twice more likely to have ever used drugs.

A study by [5] among 4078 adolescents across Nigeria revealed the depth, prevalence, and pattern of psychoactive substance use among secondary schools across all geo-political zones: 33.6% reported to have drank alcohol while 13.1% have experienced getting drunk; 7.5% have used cannabis, 5.1% have smoked at least once in their life while 11.6% also reported to have used all other drugs. In Abeokuta, [6] found that the prevalence of psychoactive substances, specifically

alcohol, pain killers and mild stimulants were higher among adolescents attending public secondary schools compared to adolescents who are artisans, while it was lowest among private secondary school students. The findings were confirmed by a qualitative study done in Ikenne local government, which also found alcohol to be perceived as the most commonly abused psychoactive substance, followed by cigarettes, marijuana and codeine [7].

The distinction between a licit and illicit psychoactive substance is not necessarily based on pharmacological research, but more of cultural and political domination [8]. Regulations on alcohol and tobacco are difficult to enforce given that they are constantly under attack by multinational corporations [9]. Globally, the annual abuse of drugs including alcohol and cigarette causes 11.8 million premature deaths [10]. In addition, [11] has shown that the prevalent harm induced by alcohol use is much greater than with illicit drugs. The ontological gateway hypothesis of substance use suggests that those who use drugs in early adolescence normally begin with alcohol and tobacco followed by involvement in the abuse of illicit drugs such as cannabis advancing to "harder" drugs such as cocaine and amphetamine [12], [13], [14].

Different factors were associated with psychoactive substance use; personal factors, perception of risk and beliefs related to harmfulness of drugs [15], [16]. In addition, socio-environmental risk factors include having friends and family members who consume a psychoactive substance [17], [18], [19], lack of parental monitoring [20], [21], parental disapproval of use of psychoactive substances [22] and peer pressure [23] are documented. The increasing prevalence of use and abuse of psychoactive substances in Nigeria is a cause for concern [24]. An appraisal of the psychoactive substances used by secondary school students across the six geopolitical zones in Nigeria revealed that secondary school students are already getting involved in psychoactive substance use [5]. The differences in context, methodology and findings constituted academic gaps in knowledge that this study investigated with reference to perception of risk to deepen and expand the frontiers of knowledge.

2. LITERATURE REVIEW

The trend in psychoactive substance use among adolescents in Nigeria is a challenge within existing literature especially when comparing studies done in the country regarding the prevalence and pattern of psychoactive substance use. To establish prevalence some researchers only measured lifetime use, which is generally known as ever use in their life, but did not measure current use. Current use, according to the WHO student drug use questionnaire, measures the use of psychoactive substance within the past 30 days, which was also used by some scholars [25], [26], [27], [28]; even then, the definitions for current use varies. [29] defined current use as psychoactive substance use 12 months preceding the survey with continuing use as within the last 30 days. Other researchers defined current use to be use of psychoactive substance within 30 days preceding the survey [30], [31], [32], [33]. Though lack of uniformity in measuring pattern and prevalence of psychoactive substance use exist, most of the researchers agree there is a high prevalence of secondary school adolescence students who have used and are currently using psychoactive substances in Nigeria. Even [24] sees the increasing prevalence of use and abuse of psychoactive substances in Nigeria a cause for concern.

Psychoactive substance use among adolescents follows different stages, as identified by [34] and [35]. The early stage is known as experimentation, where a young person tries a substance out of curiosity or wants to take a risk, usually when he or she is with a peer group. Some of the positive consequences Nigerian adolescents reported as reasons for involvement in psychoactive substance use are not only curiosity or peer pressure, but also for socialization during gatherings. The experimentation stage is peer focused and there is no regular pattern established yet.

The next stage is when an individual starts using psychoactive substances to manipulate their emotions; this occurs when a pattern has been established and there is regular use. At this stage, the motive and context of substance use has changed from peer to self [34], [35]. They are no longer curious, but already knows what to expect from the use. Psychoactive substance use has been defined as the excessive and continuous self-administration of mind-altering substances for the purpose of changing mood without due consideration of any medically or socially acceptable pattern [36]. Other researchers observed that it is not simply mood change that one is after. For example, some use psychoactive substances to self-medicate, increase self-confidence and relieve stress [37], [33], [38].

If prevention is not effected at this stage, the individual will most likely continue to seek out drugs to change their mood and in the process, compulsion or addiction will set in [34]. By then, treatment and rehabilitation will likely become the next step; yet only 1 out of 7 addicts have access to treatment and rehabilitation centers [3]. Although not everyone who use psychoactive substance when young become addicts, research has shown that those who end up abusing a psychoactive substance usually started the use during adolescence [39], [40] and whether or not they continue depend on

the presence of protective factors [34]. Substance use can either stop at mild use or persist until addiction begins and even take over the life of the drug addict.

For adolescents already involved in mind-altering substances, they will appear tired, depressed and careless in how they dress. When a person who has been abusing or who is addicted to mind-altering substances tries to suddenly stop or decrease their intake of usage, they can suffer from withdrawal symptoms. Withdrawal of the substances can produce a life-threatening physical and mental responses due to disturbance of the adaptive balance. The manifestation of withdrawal syndrome and tolerance shows that physiologic dependence is being formed [41]. The persistence use of a psychoactive substance leads to physical dependence. Therefore, when the drug is no longer in the system, the process which comes with the changes in physiology reduces the person's ability to functional optimally [42]. Thus the addicted individual may do anything possible, legal or illegal, to get more drug. This poor judgement leads to risky behaviours that make them unsafe, offensive, and even commit crimes that could cause them to end up in jail [43].

Psychoactive substance use leads to direct and indirect deaths. Not only did smoking, secondhand smoke alcohol and drug use contributed to the 11.4 million deaths in 2017 [44], but addiction is also a global problem and among the top ten factors contributing to disease burden worldwide in disability-adjusted life-years. In developing countries, alcohol was considered the leading contributing risk factor to global diseases with tobacco number three [44]. Many African countries are not only producing tobacco, but have also become a tobacco-consuming nation [45]. In Nigeria, the barriers found for implementing and regulating tobacco laws include lack of funding and conflict of interest in protecting citizens due to economic gains from the industry [46]. Considering the opportunity of gains from tobacco and alcohol industries, both from within and without the country, measures need to be put in place so that development that arise from the economic partnership between the industries and the government will be sustainable.

Psychoactive substances are chemical substances that are taken into the body system through various routes such as by injection, subcutaneous or oral. Once these chemicals are inside the body system, they are widely distributed throughout body fluids to affect the brain neurotransmission modifying mental processes such as cognition or emotions and moods [47]. Some of the substance are considered stimulants, depressants or hallucinogens, and the classification of some being legal and others illegal is subjective which, calls for academic debate. Although every psychoactive substance affect individuals differently, all of them act on the brain circuits by increasing dopamine levels, which controls the part of the brain's reward and pleasure center. The flood of dopamine level which is caused by psychoactive substance use creates a strong desire to continue and repeat the same behaviour—drink alcohol or smoke cigarette [48]. A behaviour that is repeated creates a stronger link between that specific behaviour and the reward (feeling of pleasure), making it difficult to quit and ultimately creating an addict out of the individual [48]. However, such a behaviour can be replaced by socializing with peers, listening to music, exercising or doing other healthy activity which can also release a moderate amount of dopamine.

The effects of psychoactive substance use include crime, cultist and militancy behaviours [49]. The effect of alcohol on the brain differs considering the stage of development. For example, when children or adolescents start drinking before they turn 18 years of age, their brain development is negatively impacted [50], [51]. Moreover, there is increased risk of car accidents, injury, teenage pregnancy and sexually transmitted infections [52]. Further, mental health disorders tend to appear more during adolescence.

Individuals within the adolescent age are not mentally and physically developed, thus psychoactive substance use is hazardous and harmful particularly during this stage [10]. While Africa accounts for 19% of 15-24 year olds worldwide in 2015, the projection is that it will have increased by 42% by the year 2030 [53]. In Nigeria alone, around 60% are within the adolescent and young adult age range or 10-24 [54]. Moreover, it has been observed that when it comes to psychoactive substance use in Nigeria, adolescents are at the center [26]. For this study, the adolescents are those found in SS1 and SS2, given that this is the time most of them start getting involved in psychoactive substance use, especially in regard to experimentation with gateway substances of alcohol and tobacco.

The intention to experiment or use alcohol or cigarette smoking is influenced by attitude, subjective norm and perceived behavioural control, according to the Theory of Planned Behaviour. Attitude is an antecedent of behaviour change and psychological construct which refers to the mental and emotional state of person as it relates to an object or behaviour. [55] defines it as having three components: cognitive, affective and behavioural. [56] explained it further by referring affective to any feeling or emotion linked to the attitude object or behaviour. Subjective norm refers to the normative beliefs about what someone else thinks the person should do. That someone must be a relevant person to the individual

and whose opinion has weight as far as whether a behaviour of interest is considered acceptable or not. Therefore, it can be said that approval of parents can be considered a risk or a protective factor when it comes to adolescent psychoactive substance use or prevention. In addition, Subjective norms are said to be determined by perceived social pressure to comply with an important person or group of people's views regarding a particular behaviour [57]. Adolescents being mostly influenced by peers at this stage of life, their social circle determines to a great deal their likelihood of initiation to certain behaviours such as psychoactive substance use. The Theory of Planned Behaviour is relevant for this study because it considers the value of one's attitude and subjective norms towards the decision to use or avoid drugs. These three constructs (attitude, subjective norms, intention) were adapted in this study to help explain the dynamics of psychoactive substance use prevention behaviour, in addition to perception. Theory of planned behaviour assumes that attitude, subjective norms (perceived social pressure to drink or smoke) and perceived behavioural control (self-efficacy or the ability of a person to say no to drugs when offered) shape a person's intention to perform a given behaviour.

Perception is a core construct of the Health Belief Model which the study adapted because of the likelihood in determining a person's decision to use or avoid psychoactive substance use. Based on this model, an individual is likely to take action to avoid disease if they believe that they are personally susceptible to a diseased condition that can arise from drinking alcohol or smoking, and if the occurrence of adverse effects of alcohol and tobacco would have a moderately severe impact on some aspects of the individual's life. The action taken results from an internal assessment which is based on the constructs found within the model: perceived susceptibility to the adverse effects of alcohol and cigarette or to becoming an addict, perceived severity of the dangers of PSU on health or the likelihood that death may result, and perceived benefit of drinking or smoking.

Furthermore, adolescents' perception and response to school policy regarding measures put in place for psychoactive substances and the communicated repercussions established to deal with in-school adolescents who are found to be using or in possession of any drug in school has decisional value. Also, the consequences they will get at home when found and the perceived severity of such punishments adds to the weight of their decision to use or not to use. Several studies have demonstrated the relevance of perception on psychoactive substance use. Some observed that psychoactive substance use can be determined by a person's perception of how harmful they know or belief a substance is [58]. When a substance is perceived to be harmful, adolescents were less likely to use it, compared to adolescents who do not believe in the harm of such a substance [59]. A relationship was found between the perception of the harmful effects of psychoactive substances and psychoactive substance use among high school. Students, who perceived that smoking 5 cigarette sticks daily or drinking two bottles of beer a day was harmful, were less likely to use them, with results for both psychoactive substances being statistically significant [60].

Moreover, [61] revealed that low perception of harm and high sensation-seeking were independently associated with increased risk of psychoactive substance use. Not only that, but it also appears that perception of harm can also differentiate between users and non-users should an opportunity be given to use [61]. While many studies have found the importance of harm perception, others have also found that perceived benefits are also a factor influencing psychoactive substance use. In addition, higher level of sensation seeking and lower level of self-efficacy [62], low self-esteem, lack of decision-making and refusal skills, perception of risk and beliefs related to harmfulness of drugs [15], [16] were some of the psychosocial factors associated with psychoactive substance use and also reinforces the use.

Stress is a major risk factor associated with alcohol use, abuse and also relapse for both adolescents and adults [63], although it is a normal part of life. The problem with stress is not so much what happens to a person but how a person perceives what is happening and reacts to the emotions that is felt. [64] found that students with higher scores of Emotional Intelligence (EI) were in a better position to deal with and recover from stress compared to those with lower EI. A similar result was found in the United Kingdom when [65] revealed that those with high Emotional Intelligence had lower stress levels and less psychological symptoms of traumatic experiences. Therefore it appears that having a high emotional intelligence is a protective factor for psychoactive substance use among adolescents.

In addition, studies from different countries also found the importance of emotional and psychological wellbeing and its relationship on psychoactive substance use initiation. [66] found that in 5 ASEAN countries (Indonesia, Laos, Philippines, Thailand and Timor-Leste), having a middle and high level of psychological distress (no close friends, loneliness, anxiety, suicidal ideation and suicide attempt) was associated with the initiation of alcohol use and cigarette smoking among pre-adolescents (below 12 years). Thus it appears that when students experience high level of psychological distress, it predisposes them to psychoactive substance use initiation.

3. METHODOLOGY

A quasi-experimental research design was employed to assess health education programs on perception of psychoactive substance use among adolescents. The perception domains include perceived susceptibility to drink alcohol or smoke cigarette, perceived severity of the consequences of use, perceived benefits of drinking and smoking cigarette, and perceived self-efficacy to refuse substances when offered. Selection of study participants was done through multistage sampling technique. First stage was a purposeful selection of the Senatorial district in Ogun state with the most number of local government areas, which is Ogun East. Three local government areas were selected provided that they were at least 30 minutes apart by road, to avoid contamination of result. Third stage also made use of purposive sampling by selecting schools that included a secondary school, had a mix of both boys and girls and was located close to the main road. Fourth stage purposefully allocated two schools for the two programs and another school for the control, considering how flexible the school administration was in collaborating with the researchers, the length of time permitted to interact with the students and the school's readiness to start their academic session as planned. The participants were conveniently selected from their classes given that they were present in class at the time of baseline data collection, they met the eligibility criteria and that they were able 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 a population of 773 from SS1 and SS2 classes with both males and females.

A semi-structured, participant-administered questionnaire was used in collecting data, with the purpose of eliciting information regarding the following sections: Respondents' demographic characteristics, perception, and psychoactive substance use. Sociodemographic characteristics included personal information such as the participants' age, gender, class, ethnic group, family structure, and religion as well as their parents' employment status and educational level. The age of the participants was assessed in an open-ended question while the rest of the information were coded and frequencies generated for each value. Perception towards drinking alcohol and smoking cigarette was measured on a 72-point rating scale consisting of the following domains: Perceived severity (15-point) of alcohol and cigarette effects, perceived benefits (18-point) of not drinking alcohol and smoking cigarette, perceived susceptibility (15-point) to health effects of alcohol and cigarette and perceived self-efficacy (24-point) for refusing alcohol or cigarette. A Likert scale was used with strongly disagree, disagree, agree and strongly agree. The scale has an internal consistency score of 0.75. In scoring the items, the positive statements were given points as follows: Strongly Agree (SA) = 3, Agree (A) = 2, Disagree (D) = 1 and Strongly Disagree (SD) = 0 while the negative statements items were reversed scored as follows: SA = 0, A = 1, D = 2 and SD = 3.

The numbers were summed up to get the score for the overall perception. The scores were interpreted to mean that the higher the sum number, the higher the individual's perception towards drinking alcohol and smoking cigarette. The same instrument was used for evaluation at baseline, immediate post intervention (6^{th} week) and at 10^{th} week (end of 4^{th} week follow up). 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 researcher met with the principal of each secondary schools selected for the study to seek approval 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. A total of 90 questionnaires were administered and collected at the end. In each school, it took about 25 minutes to get the students together in one classroom and administer the questionnaires until they were all done and 100% of the copies of the questionnaire were retrieved.

Descriptive and inferential statistics were used in analyzing the data with the *P* value = 0.05 set as a cut off criteria to determine whether to accept or reject the hypothesis. Mean scores were compared to determine the difference among the groups at the beginning of the intervention and at the end of the intervention, while Analysis of variance was used to analyze the difference between pre and post intervention results among and within groups. Effect size was further utilized to evaluate the effectiveness of each program. The study was approved 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.

Hypotheses 1: *There is no significant difference in the adolescents' perception towards psychoactive substance use at baseline and immediately post intervention among all groups.*

Hypothesis 2: *There is no significant difference in the adolescents' perception of psychoactive substance use between baseline and at 4^{th} week after follow up among all groups.*

4. ANALYSIS AND PRESENTATION OF RESULTS

The findings for the hypotheses as tested are presented in this section using descriptive statistics, analysis of variance, pair-wise comparison and effect-size. The results indicate statistically significant difference among intervention groups regarding participants' perception, which offer profound scientific evidence of the construct explanations of intention to refuse psychoactive substance consumption. Tables 1-2 provide detailed descriptive results on the social demographics of the participants in the study.

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)					
				F=1.207	0.304
Mean ±SD	15.63±1.299	15.13±1.137	15.37±1.299		
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)		

Demographic characteristic of the respondents indicated that the mean age of the participants were approximately 16 years ±1.299 (Group 1), 16years ±1.137 (Group 2) and 16 years±1.299 (Control Group) respectively with the proportions of males to females distributed equally. Over 75% of the participants are Yoruba considering context of the study. Most belong to the Christian faith, which would be different if the respondents and context were from other geo-political zones.

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

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)	$\chi^2=2.105^a$	0.910
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)		
Employed	12 (40.0)	9 (30.0)	8 (26.7)	χ^2=5.537[a]	0.477
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)		
Father's Educational level					
Primary	5 (16.7)	1 (3.3)	7 (23.3)	F=3.087	
Secondary	16 (53.3)	14 (46.7)	14 (46.7)		0.051
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)	F=1.370	0.259
University	4 (13.3)	12 (40.0)	10 (33.3)		
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		

In addition, the socio-demographic characteristics as shown in Table 2 shows that the majority of the respondents lived with both parents. Among those who live with one parent, majority of them lived with their mothers. Majority of the fathers and mothers are considered self-employed and find ways to provide for their families. Table 2 further showed a similar finding regarding the pattern of parental educational level of participants from all groups. The highest formal education received by most parents (46.7-56.7%) was secondary school. In general, there was profound differences observed among the socio-demographic characteristics of the participants from all three schools in terms of age, gender, ethnic group, religion, family structure, parents' employment status and parents' educational level.

Table 3: Participants' Perception of Substance Use within Groups at Baseline and Immediate Post Intervention.

Variables	Groups	Pre-test N=30		Post-test N=30		*ES (95% CI)	p-value
		x̄(SE)	±SD	x̄(SE)	±SD		
Overall Perception	Group 1	51.20(1.38)	8.73	55.70(1.45)	8.41	-0.53(-2.67 to 1.60)	0.05
	Group 2	52.77(1.38)	6.81	57.2 (1.45)	6.85	-0.66(-2.36 to 1.04)	0.02
	Control	47.30(1.38)	7.02	47.37 (1.45)	8.42	-0.01(-1.94 to 1.92)	0.97
Perceived Severity	Group 1	11.37(0.43)	2.85	11.87(0.52)	3.04	-0.17(-0.50 to 0.72)	0.43
	Group 2	11.10(0.43)	1.99	12.93(0.52)	2.80	-0.30(-0.94 to 0.34)	0.01
	Control	10.23(0.43)	2.18	10.60(0.52)	2.70	-0.15(-0.76 to 0.46)	0.55
Perceived Benefits	Group 1	13.43(0.49)	2.74	15.63(0.51)	2.37	-0.87(-1.51to -0.24)	0.01
	Group 2	14.37(0.49)	2.48	15.80(0.51)	2.54	-0.58(-1.20 to 0.05)	0.03
	Control	12.63(0.49)	2.87	12.56(0.51)	3.39	-0.02(-0.76 to 0.80)	0.93
Perceived Susceptibility	Group 1	9.97(0.40)	2.54	11.70(0.44)	2.17	-0.75(-1.33 to-0.16)	0.01
	Group 2	9.80(0.40)	2.21	11.53(0.44)	3.16	-0.64(-1.32 to 0.04)	0.03
	Control	8.87(0.40)	1.78	9.00(0.44)	1.68	-0.08(-0.51 to 0.35)	0.72
Perceived Self-efficacy	Group 1	16.43(0.82)	5.90	16.50(0.62)	4.50	-0.01(-1.32 to 1.29)	0.96
	Group 2	17.50(0.82)	3.46	16.93(0.62)	1.95	0.21(-0.49 to 0.91)	0.39
	Control	15.57(0.82)	3.66	15.20(0.62)	3.28	0.11 (-0.76 to 0.97)	0.72

Table 3 determine the participants' view with respect to drinking alcohol and smoking cigarettes, their perception was assessed on a 72-point rating scale consisting of various perception domains. Table 3 presents results along the baseline and immediately after the intervention programs, with a significant difference observed within the intervention groups' overall perception (Group 1: p = 0.05, Group 2: p = 0.02). The perceived benefits of not consuming alcohol or smoking cigarette between and among groups shows a statistically significant difference (Group 1: p <0.01, Group 2: p < 0.03), and susceptibility (vulnerable) they perceive themselves to be to the health effects of alcohol and cigarette (Group 1: p =0.01, Group 2 p = 0.03).

Though result for Group 2 revealed a significant difference (p =0.01) in their perception on the seriousness of the effects of alcohol and cigarettes, it was not so for the intervention Group 1(p = 0.43), who only received drug information and life skills training with no motivational counseling compared to Group 1. With reference to self-efficacy, no significant change was observed within all intervention groups (Group 1: p = 0.96, Group 2: p = 0.39) including the Control group (p = 0.72), who only received the normal high school curriculum given to all high school students. Finally, no significant difference was found in the Control Group's perception on all domains (overall perception: p = 0.97; perceived severity: p = 0.55; perceived benefits: p = 0.93; perceived susceptibility: p = 0.72; self-efficacy: p = 0.72).

The overall results showed that the intervention programs were able to bring about change in the high school adolescents' perception of alcohol and smoking cigarette on all domains except self-efficacy. The difference in the result of perceived severity could be due to the differences in interventions given since Group 2 was given the opportunity to internalize the concepts taught and increase their awareness of the severity of the substances on their health. As for self-efficacy, 6 weeks appeared insufficient to bring about observable change. This could be due to the fact that confidence in one's ability improves over time, with practice, as it is a behavioural skill.

Thus four weeks were given to the respondents to go back to their usual environment at school, home and community, where they may be tested by their peers to try drinking or smoking; and to give them time to process and assimilate the information gained from the intervention programs.

Table 4: Participants' Perception of Substance Use within Groups at Baseline and at 4th Week after follow up

Variables	Groups	Pre-test N=30		4th week Post-test N=30		*ES (95% CI)	p-value
		x̄(SE)	±SD	x̄(SE)	±SD		
Overall Perception	Group 1	51.20(1.38)	8.73	65.10(1.33)	6.41	-1.85(-3.75 to 0.06)	0.01
	Group 2	52.77(1.38)	6.80	66.53(1.33)	5.17	-2.32(-3.82 to-0.81)	0.01
	Control	47.30(1.38)	7.02	49.37(1.33)	9.61	-0.25(-2.34 to 1.85)	0.31
Perceived Severity	Group 1	11.37(0.43)	2.85	12.90(0.50)	3.36	-0.50(-1.28 to 0.28)	0.86
	Group 2	11.10(0.43)	1.99	13.60(0.50)	1.89	-1.31(-1.79 to-0.83)	0.01
	Control	10.23(0.43)	2.18	10.60(0.50)	2.70	-0.15(-0.76 to 0.46)	0.55
Perceived Benefits	Group 1	13.43(0.49)	2.74	17.30(0.49)	2.04	-1.63(-2.23 to-1.03)	0.01
	Group 2	14.37(0.49)	2.48	16.30(0.49)	2.45	-0.80(-1.41 to-0.18)	0.01
	Control	12.63(0.49)	2.87	12.57(0.49)	3.39	0.02(-0.76 to 0.80)	0.93
Perceived Suscept-ibility	Group 1	9.97(0.40)	2.54	12.70(0.38)	2.04	-1.21(-1.78to -0.63)	0.01
	Group 2	9.80(0.40)	2.22	12.70(0.38)	2.45	-1.26(-1.84to -0.68)	0.01
	Control	8.87(0.40)	1.78	9.00(0.38)	1.68	-0.08(-0.51 to 0.35)	0.72
Perceived Self-efficacy	Group 1	16.43(0.82)	5.90	22.20(0.54)	2.57	-1.29(-2.42to-0.16)	0.01
							0.01
							0.15

Another assessment was done to compare the difference within each group at baseline and after the 4th week of follow up. Table 4 displays similar results were found regarding significant changes within intervention Group 1 and 2 regarding overall perception (Group 1: p <0.01, Group 2: p <0.01), perceived benefits (Group 1: p <0.01, Group 2: p <0.01),

perceived susceptibility (Group 1: p <0.01, Group 2: p <0.01). The difference in perceived severity remain not significant (p = 0.86) for Group 1. However, self-efficacy or the adolescents' confidence in their ability to say no to alcohol or cigarette smoking when offered showed a statistically significant difference between baseline and at 4th week after follow up. This confirms the importance of longer intervention periods to change behavioral skills. As for the Control Group, no significant changes were observed in all domains of perception including the overall perception, as shown in Table 4.

Table 5: Paired sample t-test showing differences in the level of perception between baseline and at follow-up.

Group		Paired Differences			T	df	Sig
		Mean	Std. Deviation	Std. Error Mean			Two-Sided p
Group 1	Perception	-13.90000	11.27203	2.05798	-6.754	29	0.001
Group 2	Perception	-13.76667	7.95974	1.45324	-9.473	29	0.001
Control	Perception	-2.06667	10.92587	1.99478	-1.036	29	0.309

Table 5 showed a statistical difference for both intervention groups (Grp1 perception t_{29} =-6.754, p= <0.001; Grp2 perception t_{29} = -9.473, p<0.001) before and at the end of the follow up period. However, there was no statistical significant difference in the level of perception in the Control group (perception t_{29} =-1.036, p=0.309). The result suggested that the intervention programs yielded an increase in the level of perception at the follow-up period. Hence, the null hypothesis was rejected with reference to Table 5. The effect size computations for the pre-test and at 4th week, after follow up, perception mean scores within the groups showed that Group 1 had an effect size of -1.85, Group 2 had an effect size of -2.32 and the Control group had a very small effect size which was not statistically significant -0.25. This means that the intervention programs yielded a better result regarding the participants' overall perception towards psychoactive substance use, compared to the usual high school curriculum or control.

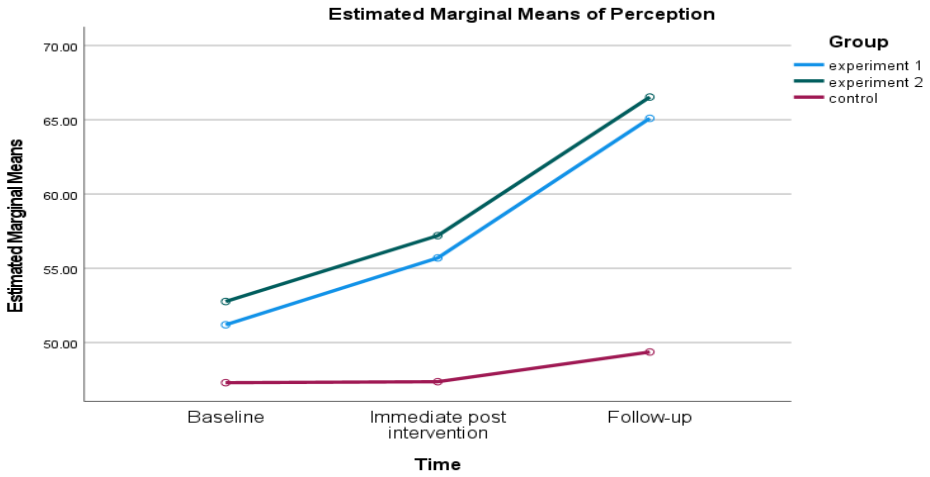

Figure 1: Plot showing the change in Perception across time

5. DISCUSSION

The aim of this study was to evaluate the effects of psycho-cognitive intervention programs on high school adolescents' perception towards psychoactive substance-use prevention in Ogun state, Nigeria. Program one used a peer-led approach in delivering the drug education and life skills training, the second program added motivational counseling by a health education specialist at the end of the drug education and life skills training. The participants were grouped into three; group 1, group 2, and control group (3). The study findings revealed that shaping adolescences' perception induces behavioural change towards psychoactive drug use. The peer-led health education was effective in enhancing high school adolescents' perception towards drug prevention, Program II with motivational counseling proved to be more effective. Each of these two intervention programs were also more effective than the regular high school curriculum which was used as the control.

Empirical evidences have demonstrated that person's perception is important when it comes to psychoactive substance use prevention. [67] found that students who view cigarette smoking as something positive (make them more attractive) increase their likelihood to smoke cigarette (OR=2.03) compared to those who do not share the same view. This is in line with the current study which found that the intervention programs were effective in changing perceived susceptibility among the high school adolescents' in the two intervention groups compared to the control, when comparing baseline with post intervention as well as baseline with after the 4th week of follow up. A study done among adolescents in middle and high schools in Norway found that those who say no to cannabis when offered are the ones with negative drug-related beliefs or view psychoactive substance use as problematic. Not only that, but they also do not regularly use tobacco or are not frequent users of alcohol [68].

Basic health promotion programs for adolescents aimed at preventing psychoactive substance abuse must include life skills training and not mere drug information. This is consistent with the results of a systematic review done by [79] on the effectiveness of prevention, early intervention as well as harm reduction of alcohol and tobacco use among young people from different parts of the world. The study findings are similar to [70], who reported that the mean score on the perception scale for students in their study group increased after being provided with a peer education program, indicating that perception can be increased through training.

In conclusion, an implementation of the intervention programs with the combination of drug information, life skills training using peer-led approach in program delivery, added with motivational counseling in a school setting may be effective in shaping and strengthening individual perception towards psychoactive substance use prevention thereby increasing person's intention to refuse alcohol or smoke cigarette when offered. Further studies can integrate predictors of psychoactive drug use among high school students with personality traits as moderators.

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