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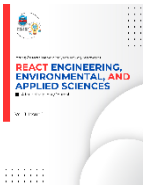

Survey on Alcohol mixed with Energy Drinks Consumption (AmED) Patterns in Federal Polytechnic Ede, Osun State Nigeria

Dawodu O.G., Adegboye F., Ajao E., Peter N.E., Ulorshi D.E.

Department of Biochemical Sciences, Federal Polytechnic Ede, Osun State, Nigeria

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Corresponding author: dawgrace@yahoo.com, dawodu.olufunke@federalpolyede.edu.ng | Dawodu O. G.

Abstract

AmED, the combination of alcoholic beverages with energy drinks, has gained popularity in recent years. This survey aims to explore the consumption patterns of AmED amongst the undergraduates in Federal Polytechnic Ede, Osun State. The survey questionnaire included sections on demographics, frequency and quantity of AmED consumption, reasons for AmED consumption, concurrent substance use, and perceptions of its effects on behavior and well-being. The data was analyzed with both descriptive and inferential statistics using SPSS version 20 software. A significant portion of respondents reported consuming AmED at least once a month, with variations in the type of energy drink and alcoholic beverage. 95.97% have not heard about the word AmED but are familiar with the practice while 4.03% have heard about AmED. Male respondents were 76.61%, female respondents 23.39%. 19.35% of the respondents were 15-19 years, 19.35%-20-24 years, 28.23%, 25-29 years, and 37.1% 30 years above. 15.32%, revealing that majority of AmED consumers are young adults. The survey revealed that 83.87% were single, 16.13% were married, 62.1% were Christians while 37.9% were Muslims. The survey sheds light on the multifaceted aspects of AmED consumption, indicating diverse preferences (black bullet and fearless, origin and predator, skirt and fearless) and motivations among the surveyed population. The correlation between AmED use and risky behaviors emphasizes the importance of understanding the potential health implications and promoting responsible consumption. The study recommends that appropriate undergraduate AmED use prevention and monitoring policy should be established in Nigeria.

Keywords Alcohol, AmED, Energy drink, survey

1. Introduction

In the last decades, there has been a huge increase in the consumption of both Energy Drinks (EDs) and alcohol and, concurrently, these two trends generated the additional practice of mixing ED with alcohol, known as Alcohol mixed with Energy Drink (AmED) (De Giorgi et al., 2022). One of the most important group of AmED consumers are represented by young adults. For example, Surveys among U.S. students and young adults reported AMED consumption to vary from 8.1% to 64.7% of their cohorts (Berger et al., 2013). In the year 2000, the U.S. Surgeon General established a 50% reduction in college binge drinking by the year 2010 as one of its health goals for the United States.

AmED is alcohol mixed with energy drink in the same container for consumption. AmED is an artefact of heavy drinking. Mixing alcohol with energy drink is a common practice among young adults, particularly those in their late teens and twenties. One potential explanation for this is the stimulant effects of caffeine may counteract the depressant effects of alcohol (Marczinki et al., 2012). Compared with alcohol alone, consuming AmED increases total alcohol consumption; one hypothesis which justifies this increase is that the stimulant effects of caffeine, one of the main ingredients of EDs, may counteract the depressant effects of alcohol.

In the Netherlands, Verster et al., (2014), surveyed 6,002 university students, of whom, 1,239 reported consuming AMED. Most of the research comparing AmED consumers with alcohol-only consumers reported higher levels of alcohol in AmED consumers with respect to alcohol users. Usually, the target of these studies is the university students population, emphasizing how dangerous are alcohol-related negative consequences and how susceptible

is the undergraduate population (Vester et al., 2018). Alcohol consumption among college students contributes to a range of negative alcohol-related consequences; for example, in the United States each year, approximately 1825 deaths, 97,000 sexual assaults, and 600,000 injuries are alcohol-related. In South Korea, around 10.8% of deaths among college students are attributed to alcohol, while more than 50% of colleges experience alcohol-related problems like campus vandalism and violence by intoxicated students (Oh et al., 2019). The risks are even greater with the consumption of AmEDs, which has been associated with increased odds of driving a car under their influence, being hurt or injured, experiencing unwanted sexual contact, having unprotected sex, and using drugs. Then again, heavy consumption of AmEDs may lead to alcohol addiction, liver diseases, and obesity or diabetes related with the high-caloric content of these drinks. The caffeine content of EDs increases the need for more alcohol consumption, leading frequently to alcohol intoxication, not to mention all other caffeine adverse effects, such as to anxiety, irritability, restlessness, sleep disorders, gastrointestinal upsets, tremors, tachycardia, and psychomotor agitation. According to so many side effects, risky behaviors and health outcomes, there is a need for an appropriate and detailed assessment of this issue throughout scientific literature, to estimate consumption prevalence and to assess the reasons for their use, the associated health-related behaviors and their adverse effects, especially in high-risk groups such as university students. Moreover, several surveys have been performed in different countries to evaluate alcohol-related impact, instead of a fair amount for energy drinks related issues, but there are very few studies concerning AmED consumption which go beyond the simple comparison between AmED and alcohol only.

Several studies have compared alcohol consumption among those who mix alcohol with energy drinks and those who consume alcohol only, using a between-subjects design. The majority of these studies (Brache and Stockwell, 2011; Eckschmidt et al., 2013; O'Brien et al., 2013; Flotta et al., 2014) have consistently found that those who consume AMED drink significantly more alcohol on an average drinking occasion compared to those who consume alcohol only (AO), including driving whilst intoxicated (Brache and Stockwell, 2011; Eckschmidt et al., 2013; O'Brien et al., 2013; Flotta et al., 2014) and having unplanned unprotected sex (O'Brien et al., 2008, O'Brien et al., 2013). Early explanations for these findings purported that AMED consumption leads to a reduced perception of alcohol intoxication (Marczinski, 2011), increasing the amount of alcohol consumed and susceptibility to negative alcohol-related consequences (O'Brien et al., 2008; Miller, 2008; Thombs et al., 2010; Berger et al., 2010; Arria et al., 2010, Arria et al., 2011). The foundations of these claims were based on the hypothesis that the stimulant effects of caffeine counteract the sedative effects of alcohol, resulting in AMED consumers feeling less impaired and less intoxicated than they actually are, and therefore more likely to consume further quantities of alcohol and more likely to take risks. Whilst some studies have found small but statistically significant increases in alcohol consumption and negative alcohol-related consequences on AMED occasions compared to AO occasions (Brache and Stockwell, 2011, Peacock et al., 2012, Price et al., 2010), the majority of research has found no difference (Verster et al., 2015) or statistically significant decreases in alcohol consumption and negative alcohol-related consequences (Woolsey et al., 2010, De Haan et al., 2012a, Lubman et al., 2013). For example, in the first large scale survey (Total N = 6002, AMED consumers N = 1239) applying a within-subjects design, De Haan et al., 2012a, De Haan et al., 2012b found that compared with consuming AO, when consuming AMED, students drank significantly fewer alcoholic drinks, reported significantly fewer drinking days and days being drunk, and significantly fewer occasions of consuming more than five alcoholic drinks. In addition, when consuming AMED, significantly fewer negative alcohol-related consequences were reported. Numerous studies have documented the prevalence and patterns of AmED consumption among young adults. Research by O'Brien et al. (2018) found that approximately 25% of college students reported consuming AmED in the past month. Moreover, it's noted that this trend is not confined to a particular demographic but is observed across various socioeconomic and cultural groups.

Surveys among U.S. students and young adults reported AMED consumption to vary from 8.1% to 64.7% of their cohorts (Berger et al., 2013; Emond et al., 2014; Gonzales et al., 2015; Housman et al., 2016; Martz et al., 2015; Marzell et al., 2014; Miller, 2012; Patrick et al., 2016; Rutledge et al., 2016; Snipes & Benotsch, 2013; Snipes et al., 2014; Snipes et al., 2015).

The combination of alcohol with energy drinks has emerged as a prevalent practice among diverse demographics globally, yet the motivations, consumption patterns, and potential implications of this amalgamation remain relatively underexplored. The aim of this study is to determine the pattern of the use of AmED consumption amongst students in Federal Polytechnic Ede, Osun State, Nigeria.

2. Materials and Methods

2.1 Study setting and population

This was a descriptive cross-sectional study and was conducted here in Federal Polytechnic Ede, Osun State. Inclusion criteria were students between the ages of 15-30 also that takes alcohol mixed with energy drinks.

2.2 Questionnaire preparation and administration

For the investigation of this study, questions were prepared based on yes or no answer in two sections, Demographic characteristics of the respondents and Lifestyle of the respondents, to determine the prevalence, pattern of use, and knowledge regarding Alcohol mixed with energy drink (AmED) by the tertiary level students. 400 questionnaires were administered to the students for between the months of August and October.

2.3 Research instrument

Questionnaire was designed and administered to respondents for data collection. The questionnaire was divided into two main sections A and B. Section A focused on socio-demographic data of the respondent, which include age, gender, marital status, religion, where they live and whom they live with. Questions in this section were semi-structured, as such, respondents were restrained to options already provided. Section B was on Lifestyle of the respondents and it includes questions (parameters) strategically coined out to elicit the respondents' opinion on the effects of Alcohol mixed with Energy Drinks. Questions in sections B were structured. Hence, respondents were restricted to thick the box of any option to convey their opinion on the particular question in view. This format made it easy for respondents to respond to the questions and also enhance the easy summarization of their responses during analysis. Options for sections B are provided respectively depending on the structure of the question asked.

2.4 Data collection Procedure

The structured questionnaire was distributed to the participants in their various departments of the school. The participants were guided on how to fill the questionnaire, with emphasis on how important their input is to maintaining the integrity of the research and what detrimental effect inaccurate response from them could cause to the research. The collection of the questionnaire was done at the agreed time by both parties.

2.5 Data analysis

The structured questionnaire was distributed to the participants in their various departments of the school. The participants were guided on how to fill the questionnaire, with emphasis on how important their input is to maintaining the integrity of the research and what detrimental effect inaccurate response from them could cause to the research. The collection of the questionnaire was done at the agreed time by both parties.

3. Results

This chapter presents the detailed analysis and interpretation of data into three parts which contains the analysis of socio-demographic data of the respondents followed by analysis of research questions while the other part presents the discussion of findings on the research topic "Survey on AmED (Energy Drink Mixed with Alcohol) consumption in Federal Polytechnic Ede, Osun State" 400 questionnaire were administered to students of the institution (Federal Polytechnic Ede) and its environment while 124 correctly answered questionnaires were retrieved back for analysis. The analysis of data gathered from respondents is presented below.

Table 1 revealed the gender of the respondents: male respondents were 95(76.61%) while female respondents were 29(23.39%) in the distribution. Findings revealed that higher population of the respondents were male and this showed that males are into Alcohol mixed with Energy Drinks (AmED) than females.

Age of the respondents was indicated in the study as follows; 15-19 years were (19.35%) of respondents; between 20-24 years were (28.23%) of respondents; between 25-29 years were 46(37.1%), between 30 above years were (15.32%) of the total respondents in the study. Findings revealed that most of the respondents were within age 25-29 years (37.1%). This showed that the partakers of the questionnaires are relatively young. This implies that a larger percentage of the respondents were relatively active.

Table 1. Analysis of socio-demographic data of the respondents

Variable	Classification	Frequencies	Percentage
Gender	Male	95	76.61
	Female	29	23.39
Age	15-19years	24	19.35
	20-24years	35	28.23
	25-29years	46	37.1
	30 above	19	15.32
	Total	124	100
Marital Status	Single	104	83.87
	Married	20	16.13
	Total	124	100.0
Religion	Christianity	77	62.1
	Islam	47	37.9
	Total	124	100.0

The marital status of the respondents as indicated in table 1 shows that single respondents were (83.87%), married respondents were (16.13%). Findings revealed that majority of the respondents were single. This implies that most of the respondents have no marital commitments that enable them to have experience of indicating response. The religion of the respondents in hierarchical order as indicated in table 1 revealed that Christianity were (62.1%), Islam were (37.9%) was in the distribution. Findings showed that most of the respondents were Christians.

Table 2. *Analysis of Research Questions:* Life of the Respondents.

Classification	Frequency	Percentage
Numbers of those who have heard about AmED	5	4.03%
Numbers of those who haven't heard about AmED	119	95.97%

Table 3. *Proportion of Mixture in different percentage.*

Classification	Frequency	Percentage
Alcohol 70% and Energy Drink 30%	82	66.13%
Alcohol 60% and Energy Drink 40%	19	15.32%
Alcohol 50% and Energy Drink 50%	15	12.1%
Alcohol 80% and Energy Drink 20%	8	6.45%

Table 4. *Percentage of how often AmED is consumed.*

Classification	Frequency	Percentage
Two to three times in a week	84	67.74%
Four or more times in a week	36	29.03%
Everyday	4	3.23%

Table 5. *Percentage of the population that are aware and not aware of the Side Effect.*

Classification	Frequency	Percentage
Yes	25	20.16%
No	99	79.84%

Table 6. *Percentage of Preference amongst Respondents.*

Classification	Frequency	Percentage
Alcohol	57	45.97%
Energy Drink	39	31.45%
AmED	28	22.58%

Table 7. *Percentage of Symptoms experienced after consumption.*

Classification	Frequency	Percentage
Insomania	10	8.06%
Headache	22	17.74%
Anxiety	12	9.68%
Elevated Heart-rate	54	43.55%
Jolt	26	20.97%
Insomania	10	8.06%

Table 8. *Percentage of common brands of alcohol mixed energy drink consumed by the population of the study.*

Brands	Frequency	Percentage
Black Bullet with Fearless	34	27.42%
Black Bullet with Predator	25	20.16%
Orijin with Fearless	20	16.13%
Eleot with Fearless	5	4.03%
Seaman with Fearless	15	12.1%
Skirt with Predator	10	8.06%
Skirt with Fearless	15	12.1%

Table 8. *Percentage of common*

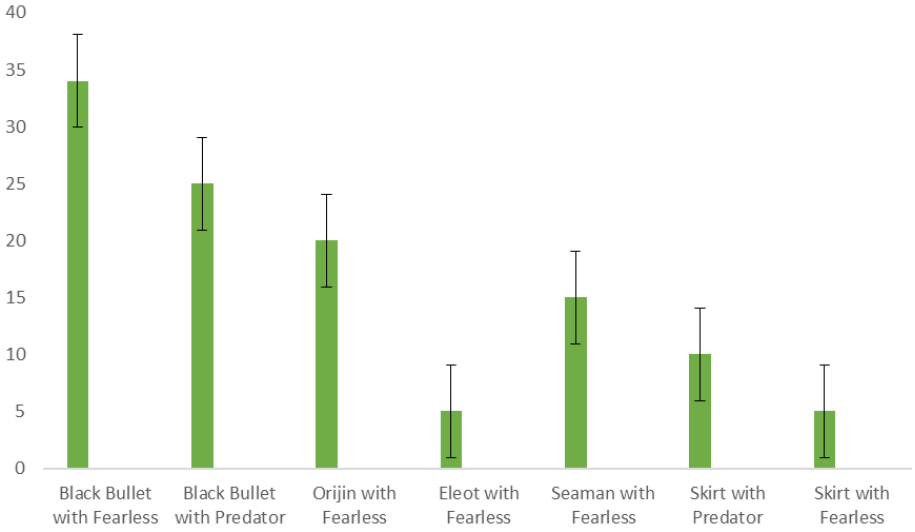


Fig 2. *Age range of the population of study that consume AmED*

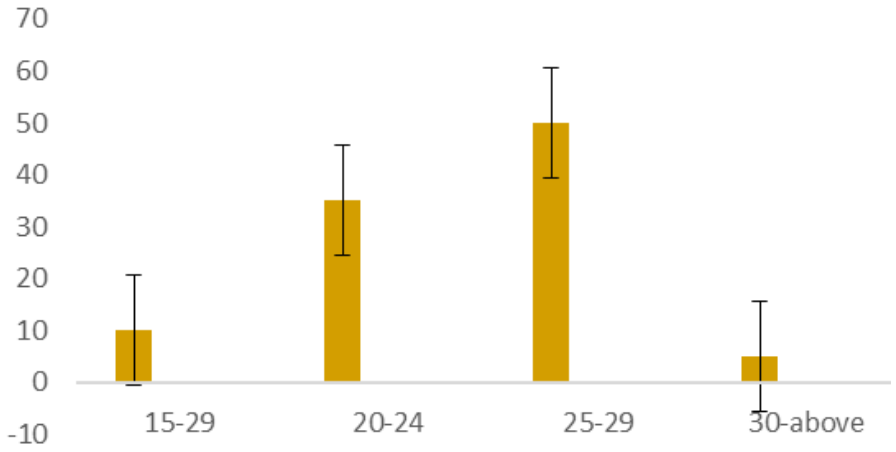
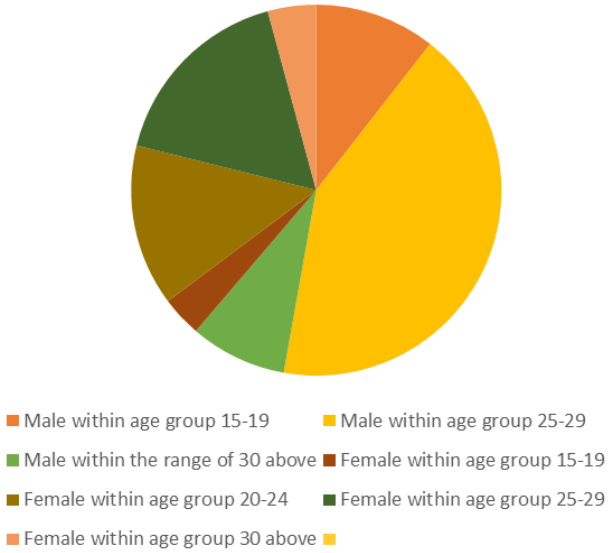


Fig 3. *Age range of the males and females of this study that consume AmED*



4. Discussion

This AmED use appears to be particularly common among college students during and immediately following years of college attendance (Brache & Stockwell, 2011; Johnson et al., 2016). As it was revealed in this study, the respondent's age group ranged between 25-29 years which agreed with the fact that young adults in active age participate in AMED consumption. The study also revealed a larger percentage of the respondents to be males(Fig 3) which also support other studies that revealed that AmED consumers are significantly more likely to be males (Berger et al., 2011; Cheng et al., 2012; Eckschmidt et al., 2013; Wells et al., 2013; Flotta et al., 2014; Snipes et al., 2014; Bonar et al., 2015; Martz et al., 2015; Pennay et al., 2015; Housman et al., 2016) with 76.61% and a good number of the respondents were married with 16.13%. Majority of the respondents (79.84%) also attested to the fact that they are not aware of the side effects of AmED.

From this study it has been discovered that AmED is common among young adults which is also in line with the Surveys among U.S. students and young adults reported AMED consumption to vary from 8.1% to 64.7% of their cohorts (Miller, 2012; Berger et al., 2013; Edmond et al., 2014; Gonzales et al., 2015; Housman et al., 2016; Martz et al., 2015; Patrick et al., 2016; Rutledge et al., 2016). And from the age range revealed to mostly consume AmED is 25-29 years of age (Fig 2) almost the same range with a study in 2008 and 2012; students aged 18–30 years old report consuming alcohol mixed with energy drinks (AMED), (O'Brien et al., 2008, Velazquez et al., 2012). This survey also found out that majority of the population are not familiar with the word AmED but they are with the practice.

In term of the proportion of a mixture high percentage of alcohol and low percentage of energy drink has the highest percentage of consumers, there was a good percentage of those that consume in 50/50 proportion, 60/40 proportion and 80/20 proportion. Some of this consumers take it daily but from this survey they are few with just 3.23%, also some consume two to three times a week and four or more times a week but the highest times of all is two to three times a week. From this study there was a comparison between energy drink, alcohol and AmED on which of them is preferred to be taken often and the highest preference was alcohol. Some of the symptoms experienced after AmED consumption are; isomamia, headache, anxiety, elevated heart rate, and jolt but the symptoms with the highest population were found to be elevated heart rate. Different brands of alcohol and energy drinks were also discovered to be commonly mixed by the populations of this study such as; black bullet and fearless, black bullet and predator, origin and fearless, skirt and predator etc., but the most commonly consumed is black bullet with fearless (Fig 1). In comparison to other populations in places like Australia, Europe, the US, etc., other studies have made it known that vodka with Red Bull, and the spirit Jagermeister with Red Bull, (Miller, 2008) are mostly consumed. Also, caffeinated alcoholic drinks are produced and consumed in African countries like Ghana, etc. and in Asian countries with such brands like Four Loko, Vody vodka energy mix, etc.(Oh et al., 2019).

This study also revealed that Christians are the highest consumers than Muslims in terms of religion but this has not been backed by other studies and most of the consumers were found to be the singles. The external validity of these results is restricted to Federal Polytechnic Ede, Osun State sample and although the general AmED

drinking patterns found were consistent with those of studies in other locations, it may be that AmED has a differential effect according to student status amongst various cultures (Droste et al., 2020).

5. Conclusion and recommendations

Based on the findings of this study so far, it is established that AmED consumption is a common practice amongst young adults.

The study recommends that more clinical and research attention should be focused on AmED and how they may be contributing to hazardous drinking practices and future AmED dependence problems in young people.

AmED consumption policy should be established to control the use of AmED amongst students. School authorities should impose strict rules on its use in academic environments to avoid damaged organs, accidents and any other hazardous problem.

Declarations

Data availability Data will be made available upon reasonable request.

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Competing interests Authors declare no known competing or financial interests.

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