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PURPOSE AND SCOPE

The *African Journal of Drug & Alcohol Studies* is an international scientific and peer-reviewed journal published by the African Centre for Research and Information on Substance Abuse (CRISA). The Journal publishes original research, evaluation studies, case reports, review articles and book reviews of high scholarly standards. Papers submitted for publication may address any aspect of alcohol, tobacco or drug use and dependence in Africa and among people of African descent living anywhere in the world.

The term "drug" in the title of the journal refers to all psychoactive substances other than alcohol. These include tobacco, cannabis, inhalants, cocaine, heroin, prescription and over-the-counter medications, and traditional substances used in different parts of Africa (e.g., kola nuts and khat).

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THE RELATIONSHIP BETWEEN ALCOHOL PURCHASING, RURALITY, AND POVERTY STATUS IN ZAMBIA

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ABSTRACT

The Zambian alcohol industry continues to facilitate increasing alcohol purchasing and consumption despite high rates of poverty. Data from the 2006 and 2015 Living Conditions Monitoring Surveys were analyzed to examine relationships between self-reported poverty status, alcohol purchasing, and alcohol expenditure stratified by rural-urban status. Across all poverty levels in 2006 and among the moderately poor in 2015, rural households purchased alcohol at similar or greater levels compared to urban households. Overall alcohol purchasing decreased; however, significant differences in alcohol expenditure from 2006 to 2015 were observed among rural (p = 0.014) and urban (p = 0.009) drinkers. Research is needed, to better understand driving factors for alcohol use and to provide targeted prevention and treatment programs in rural Zambia.

Keywords: alcohol, alcohol use, poverty, rurality, Zambia

INTRODUCTION

Alcohol misuse is a growing issue in low-and-middle-income countries (LMICs) and remains a major risk factor for mortality and disease to which the country of Zambia is not immune (Benegal et al., 2009; Shield et al., 2020; Taylor & Paltzer, 2019). According to the Ministry of Health, 21.7% of Zambians report drinking alcohol and 10.9% of Zambians report engaging in heavy episodic drinking, which is classified as having 6 or more standard drinks (Zambia Ministry of Health, 2017). Furthermore, harmful alcohol use and alcohol use disorders in Zambia are associated with numerous negative health and social outcomes among youths and adults, making the case for the importance to further explore context-specific determinants of alcohol use and abuse in Zambia (Taylor & Paltzer, 2019).

The expansion of the alcohol industry and commercialization of alcoholic

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beverages in rural and urban areas in recent decades continues to increase alcohol use and abuse in Zambia (de Bruijn, 2014; Freund & Kalumba, 1982). The occurrence of alcohol marketing, advertising, promotion, sponsorship, and production has increased due to the growth of the alcohol industry in multiple African countries, Zambia included (de Bruijn, 2014; Swahn et al., 2011). The increased production of and exposure to alcohol from the alcohol industry in Zambia has also contributed to an increase in self-produced, and often unrecorded, traditional beverages (Freund & Kalumba, 1982; McBride & Mosher, 1985). In Zambia, the low-cost commercialized alcoholic beverages and the prevalence of self-produced traditional alcoholic beverages enables the wide accessibility of alcohol in rural and urban areas (Crane et al., 2018; McBride & Mosher, 1985). Therefore, it is clear that the growth of the alcohol industry in Zambia continues to play an important role in the prevalence of alcohol purchasing and consumption in rural and urban areas alike.

Additionally, poverty is a social determinant of health greatly influencing alcohol use and abuse in LMICs, including Zambia (Crane et al., 2018; Manthey et al., 2019). In Zambia, poverty and unemployment contribute to alcohol consumption among adults (Crane et al., 2018). Alcohol consumption often serves as a means to cope with the financial stress that comes with living within a low socioeconomic status (Crane et al., 2018). Youths and young adults in Zambia also face an increased risk for alcohol consumption if they are impoverished. Low socioeconomic status can make it increasingly difficult for youths to obtain an education due to the ever-rising cost of private and public primary and secondary school fees (Crane et al., 2018; Kaluba, 1986). The inability to obtain an education can mediate unemployment and poverty among young adults and increase the risk for alcohol use and abuse (Crane et al., 2018; Peltzer, 2009).

Poverty as a determinant of alcohol use in Zambia is a widespread issue with 54% of Zambians living in poverty (UNICEF Zambia, n.d.). This means that over half of the population faces an increased risk for alcohol use and abuse (Crane et al., 2018). Furthermore, 42% of the Zambian population lives in extreme poverty with major income disparities existing among urban and rural geographic areas (United Nations Children's Fund, 2015). According to UNICEF, 58% of Zambians living in rural areas compared to 13% of Zambians living in urban areas are extremely impoverished (United Nations Children's Fund, 2015). Poverty and extreme poverty in rural and urban areas vary greatly and should be considered when exploring the relationship between poverty and alcohol consumption and contextualized treatment programs.

In summary, the growing alcohol industry in Zambia continues to facilitate increasing rates of alcohol purchasing and consumption despite high rates of poverty experienced by over half of the Zambian population. Disparities in poverty exist between urban and rural areas indicating that the risk for alcohol use and abuse may vary by rurality or urbanicity. However, despite the differences in poverty status among rural and urban areas, there remains a lack of information specific to peri-urban or rural areas regarding the prevalence and impact of alcohol use. Therefore, further investigation is warranted to understand the role of poverty status and rurality on alcohol

purchasing and consumption. This study aims to answer the following questions: 1) what is the relationship between alcohol purchasing, rural-urban status, and poverty status in Zambia, and 2) has the relationship between alcohol purchasing, rural-urban status, and poverty changed from 2006 to 2015?

METHOD

Study design

The present study is a secondary data analysis using large previously collected survey data. Two surveys administered over nine years were utilized. The surveys used in this analysis were obtained through the Zambia Central Statistical Office.

Living Conditions Monitoring Surveys

In 1991, the Zambian government introduced the Structural Adjustment Programme (SAP) to reform the economy. To monitor the effects of this program on the living conditions of the population, the Living Conditions Monitoring Survey (LCMS) was developed. The survey was first conducted in 1996, then subsequently administered in 1998, 2002/2003, 2004, 2006, 2010, and 2015 (Republic of Zambia Central Statistical Office, 2016). LCMS serves to measure the wellbeing of the population of Zambia and to discover trends in various societal wellbeing measures (Republic of Zambia Central Statistical Office, 2016).

Data used in this analysis were from the LCMS V (2006) and the LCMS VII (2015). The LCMS V was administered in both rural and urban areas in all 9 Zambian provinces at the time. The intended sample size was 20,000 households with 97.77% of the originally selected households responding to the survey. Similarly, the LCMS VII was administered in rural and urban areas in all 10 of the current provinces. The survey was designed to reach a sample of 12,260 households with a 98% national response rate.

A two-stage stratified cluster sample design was employed for both the LCMS V and LCMS VII to select the samples. In this sampling design, all provinces were divided into districts and subdivided into constituencies, wards, and then Census Supervisory Areas (CSA). CSAs were further subdivided into Standard Enumeration areas (SEAs) for the LCMS V or Enumeration Areas (EAs) for the LCMS VII which were the primary sampling units for each survey (Republic of Zambia Central Statistical Office, 2012; Republic of Zambia Central Statistical Office, 2016). Data were collected for both surveys through personal interviews with a structured questionnaire; however, the LCMS VII used an electronic questionnaire with the Computer Assisted Personal Interviewing (CAPI) technique (Republic of Zambia Central Statistical Office, 2012; Republic of Zambia Central Statistical Office, 2016).

Measures

The measures used to evaluate the relationship between alcohol purchasing, rural-urban status, and poverty status in Zambia include self-reported poverty status, region (rural-urban), alcohol purchasing, and mean alcohol expenditure. Self-reported poverty status is a measure of self-perceived poverty status categorized as either extremely poor (listed as very poor in the LCMS VII), moderately poor, or non-poor. Region is based on the rural or urban location of the respondent's household. Alcohol purchasing

was measured as either *Yes* or *No* and was determined from any reported alcohol expenditures (> 0 Kwacha). Alcohol expenditure is a self-reported value of the household's total expenditure on alcohol. Annual alcohol expenditure was converted to 2019 U.S. dollars using the U.S. Bureau of the Fiscal Service historical currency exchange rates and the U.S. Bureau of Labor and Statistics Consumer Price Index tool (U.S. Bureau of the Fiscal Service, 2020; U.S. Bureau of Labor and Statistics, 2020). Demographic data for the head of households were also collected, as it was assumed that the head of the household completed the survey and represents the family. Head of household demographic information included average age in years, household size, and sex.

Analysis

Data were analyzed using STATA version 16 (StataCorp LLC, College Station, TX, USA). Frequencies and proportions stratified by rural-urban status were reported for all categorical variables while means and standard deviations stratified by rural-urban status were reported for all continuous variables. Demographic variables, self-reported poverty, alcohol purchasing, and mean alcohol expenditure were compared by rural-urban status using chi-square tests for categorical variables and independent samples t-tests for continuous variables. Chi-square tests were also used to determine statistically significant differences in rural-urban status and alcohol purchasing by self-reported poverty status. Lastly, non-parametric Mann-Whitney U tests were used to determine statistically significant differences between median alcohol expenditure among all, rural, and urban drinkers in 2006 and 2015.

RESULTS

Demographics

Among LCMS V respondents (N = 18,677), the mean age was 41.5 years. 77.2% of all respondents were male and 22.8% were female. The mean household size was 5.2 ± 2.8 persons. Among LCMS VII respondents (N = 12,251), the mean age was 43 years. 76.3% of all respondents were male and 23.7% were female. The mean household size was 5.1 ± 2.6 persons. Independent-samples t-tests results indicate that rural-urban differences in the average age of the head of household and household size were statistically significant in the LCMS V; $t(18663) = 10.59$, $p < 0.01$) and LCMS VII; $t(12249) = 8.27$, $p < 0.01$). However, chi-square tests indicate that rural-urban proportions of the male and female heads of households were not significantly different. Demographic information for rural and urban groups in the LCMS V and LCMS VII is provided in Table 1.

Poverty Status, Alcohol Purchasing, and Alcohol Expenditure

For LCMS V rural respondents, 44% reported being "Extremely Poor", 26.4% reported "Moderately Poor", and 29.5% reported being "Non-Poor". Among urban respondents, 9.0% reported "Extremely Poor", 14.0% reported "Moderately Poor", and 77.0% reported "Non-Poor". In rural areas, 17.7% of participants reported spending any money on alcohol compared to 20.3% in urban areas. Mean 2019 U.S. dollars spent among rural respondents and urban respondents were $19.10 and $71.90, respectively. For LCMS VII rural respondents, 51% reported being "Very Poor", 39.1% reported "Moderately Poor", and 9.7% reported being

Table 1. Living Conditions and Monitoring Survey Respondents Head of Household Demographics

Living Conditions and Monitoring Survey V (2006)				
	Total (*n* = 18677), *n* (%)	**Rural (*n* = 9138), *n* (%)**	**Urban (*n* = 9539), *n* (%)**	***p*-value[a]**
Age in years	41.5 (14.0)	42.6 (15.4)	40.5 (12.4)	<0.01*
Household size	5.2 (2.8)	5.2 (2.8)	5.3 (2.7)	<0.01*
Sex				
Male	14427 (77.2)	7005 (76.7)	7422 (77.8)	0.061
Female	4250 (22.8)	2133 (23.3)	2117 (22.2)	
Living Conditions and Monitoring Survey VII (2015)				
	Total (*n* = 12251), *n* (%)	**Rural (*n* = 6547), *n* (%)**	**Urban (*n* = 5704), *n* (%)**	***p*-value[a]**
Age in years	43.0 (14.4)	44.0 (15.5)	41.9 (12.9)	<0.01*
Household size	5.1 (2.6)	5.2 (2.7)	5.0 (2.5)	<0.01*
Sex				
Male	9346 (76.3)	5030 (76.8)	4316 (75.7)	0.127
Female	2904 (23.7)	2133 (23.3)	2117 (22.2)	

Note: Independent-samples *t*-tests were used to determine statistically significant differences between rural-urban status and continuous variables (age and household size) and chi-square tests were used to determine statistically significant differences between rural-urban status and categorical variables (sex).
Note: LCMS V (2006) age $t(18667) = 10.59$, household size $t(18663) = -3.03$, sex $\chi^2(1) = 3.51$
Note: LCMS VII (2015) age $t(12248) = 8.27$, household size $t(12249) = 3.70$, sex $\chi^2(1) = 0.13$
[a] *p*-values < .05 are considered statistically significant
*Statistically significant

"Non-Poor". Among urban respondents, 19.8% % reported being "Very Poor", 48.8% reported "Moderately Poor", and 31.4% reported "Non-Poor ". In rural areas, 11.4% of participants reported spending any money on alcohol, compared to 12.7% in urban areas. Mean 2019 U.S. dollars spent among rural respondents and urban respondents were $15.90 and $53.90, respectively. Chi-square and independent-samples t-tests indicate that rural-urban differences in self-perceived poverty status (2006 $\chi^2(2) = 4500$, $p < 0.01$) (2015 $\chi^2(2) = 1600$, $p < 0.01$), alcohol purchasing (2006 $\chi^2(1) = 20.14$, $p < 0.01$) (2015 $\chi^2(1) = 4.76$, $p < 0.05$) and mean alcohol expenditure are all statistically significant (2006 $t(18660) = -15.95$, $p < 0.01$) (2015 $t(12249) = -9.68$, $p < 0.01$). Self-reported poverty, alcohol purchasing, and mean alcohol expenditure compared by rural-urban status are provided in Table 2.

As presented in Table 3, the proportion of respondents who purchased alcohol in rural areas was higher across all poverty status groups in the LCMS V. However, among those who self-reported being moderately poor, there was a significantly higher proportion of those in rural areas who purchased alcohol compared to those in urban areas, 19.1% versus 13.1%, respectively ($\chi^2(1) = 22.47$, $p < 0.01$). Contrastingly, in the LCMS VII, the proportion of respondents who purchased alcohol in rural areas was only higher among the moderately poor with purchasing being higher among very poor and non-poor

Table 2. Self-Reported Poverty Status, Alcohol Purchasing, and Mean Alcohol Expenditure Stratified by Rurality

Living Conditions and Monitoring Survey V (2006)	**Total (*n* = 18662), *n* (%) or Mean ± SD**	**Rural (*n* = 9132), *n* (%) or Mean ± SD**	**Urban (*n* = 9530), *n* (%) or Mean ± SD**	***p*-value[a]**
Self-Perception of Poverty				
Extremely Poor	4877 (26.1)	4022 (44)	855 (9.0)	<0.01*
Moderately Poor	3751 (20.1)	2413 (26.4)	1338 (14.0)	
Non-Poor	10034 (53.8)	2697 (29.5)	7337 (77.0)	
Alcohol Purchasing				
Yes	3544 (19.0)	1614 (17.7)	1930 (20.3)	<0.01*
No	15118 (81.0)	7518 (82.3)	7600 (79.7)	
Mean Alcohol Expenditure in 2019 US dollars	46.1 ± 227.8	19.1 ± 93.8	71.9 ± 303.1	<0.01*
Living Conditions and Monitoring Survey VII (2015)	**Total (*n* = 12251), *n* (%) or Mean ± SD**	**Rural (*n* = 6547), *n* (%) or Mean ± SD**	**Urban (*n* = 5704), *n* (%) or Mean ± SD**	***p*-value[a]**
Self-Perception of Poverty				
Very Poor	4481 (36.6)	3351 (51.2)	1130 (19.8)	<0.01*
Moderately Poor	5338 (43.6)	2557 (39.1)	2781 (48.8)	
Non-Poor	2427 (19.8)	634 (9.7)	1793 (31.4)	
Alcohol Purchasing				
Yes	1473 (12.0)	748 (11.4)	725 (12.7)	<0.05*
No	10778 (88.0)	5799 (88.6)	4979 (87.3)	
Mean Alcohol Expenditure in 2019 US dollars	33.6 ± 217.7	15.9 ± 102.7	53.9 ± 298.3	<0.01*

Note: Independent-samples *t*-tests were used to determine statistically significant differences between rural-urban status and continuous variables (mean alcohol expenditure) and chi-square tests were used to determine statistically significant differences between rural-urban status and categorical variables (self-perceived poverty status and alcohol purchasing).
Note: LCMS V (2006) poverty $\chi^2(2) = 4500$, alcohol purchasing $\chi^2(1) = 20.14$, alcohol expenditure $t(18660) = -15.95$
Note: LCMS VII (2015) poverty $\chi^2(2) = 1600$, alcohol purchasing $\chi^2(1) = 4.76$, alcohol expenditure $t(12249) = -9.68$
[a] *p*-values < .05 are considered statistically significant
*Statistically significant

urban compared to very poor and non-poor rural respondents. While the proportion of respondents who purchased alcohol is still higher among moderately poor rural than moderately poor urban, this difference was not found to be statistically significant in the LCMS VII. The percentage of rural and urban respondents who reported purchasing alcohol is stratified by poverty status for the LCMS V and LCMS VII in Figures 1 and 2, respectively.

Despite decreases in alcohol purchasing observed for rural and urban respondents and across all poverty status groups, alcohol expenditure among those who reported purchasing any alcohol increased slightly from 2006 to 2015. As seen in Table 4, the median annual alcohol 2019 U.S. dollars spent on alcohol among drinkers were found to be $83.8 and $101 in 2006 and 2015, respectively. The Mann-Whitney U test revealed no significant differences in median alcohol expenditure between drinkers in 2006 and 2015. However, a 20.5% increase in median alcohol expenditure among all drinkers from

2006 to 2015 was observed. A significant difference in alcohol expenditure from 2006 to 2015 was observed among rural (p = 0.014) and urban (p = 0.009) drinkers and the percent increase in median annual alcohol expenditure from 2006 to 2015 among urban and rural drinkers was 11.6% and 33.9%, respectively.

Table 3. Differences in Rurality and Alcohol Purchasing by Self-Reported Poverty Status

Living Conditions and Monitoring Survey V (2006)						
		No Alcohol Purchased, *n* (%)	**Alcohol Purchased, *n* (%)**	χ^2	***df***	***p*-value[a]**
Extremely Poor	Rural	3486 (86.7)	536 (13.3)	1.65	1	0.198
	Urban	755 (88.3)	100 (11.7)			
Moderately Poor	Rural	1951 (80.9)	462 (19.2)	22.47	1	0.000*
	Urban	1163 (86.9)	175 (13.1)			
Non-Poor	Rural	2081 (77.2)	616 (22.8)	0.09	1	0.764
	Urban	5682 (77.4)	1655 (22.6)			
Living Conditions and Monitoring Survey VII (2015)						
		No Alcohol Purchased, *n* (%)	**Alcohol Purchased, *n* (%)**	χ^2	***df***	***p*-value**
Extremely Poor	Rural	2996 (89.4)	355 (10.6)	1.80	1	0.180
	Urban	994 (88.0)	136 (12.0)			
Moderately Poor	Rural	2239 (87.6)	318 (12.4)	1.01	1	0.315
	Urban	2460 (88.5)	321 (11.5)			
Non-Poor	Rural	559 (88.2)	75 (11.8)	3.75	1	0.053
	Urban	1525 (85.0)	268 (15.0)			

[a] p-values < .05 are considered statistically significant
*Statistically significant

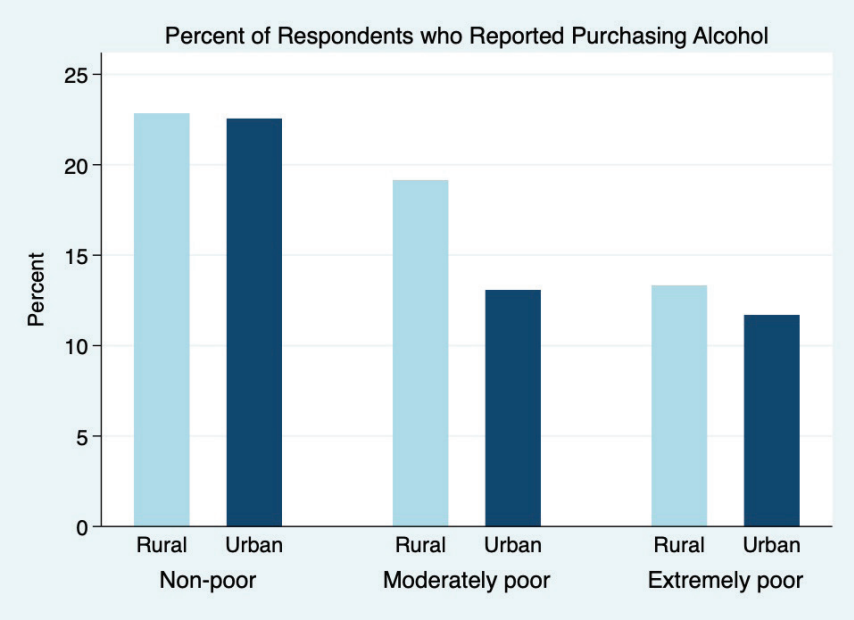

Figure 1. Percent who purchased alcohol by rurality and self-reported poverty status in 2006.

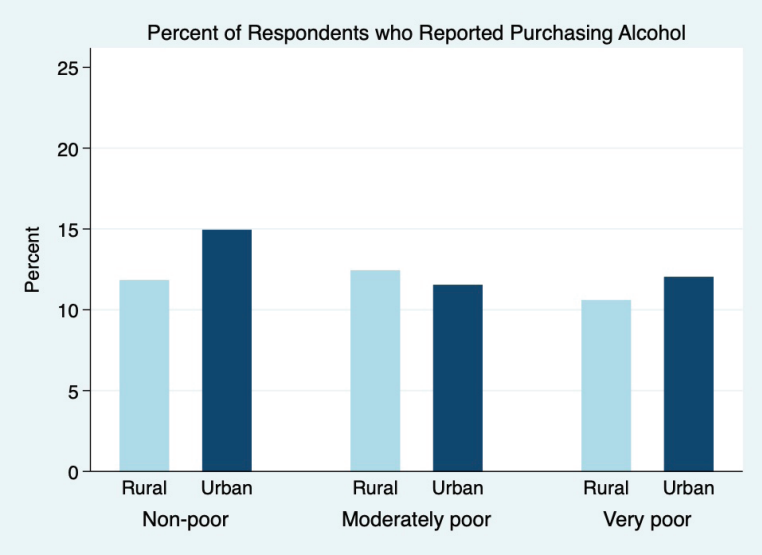

Figure 2. Percent who purchased alcohol by rurality and self-reported poverty status in 2015.

Table 4. Comparison of Alcohol Expenditure Among Drinkers in 2006 and 2015

	Median (US$2019)		*z*	*p*-value[a]	2006-2015 Percent change
	2006	2015			
All drinkers	83.8	101.0	-1.565	0.118	+20.5
Rural	41.9	56.1	-2.462	0.014*	+33.9
Urban	167.6	187.0	-2.631	0.009*	+11.6

Note: Alcohol expenditure is presented in 2019 U.S. dollars.
Note: All drinkers N = 5,017, rural drinkers N = 2,362, urban drinkers N = 2,655
[a]*p*-values < .05 are considered statistically significant

DISCUSSION

The main finding of this study is that across all poverty levels in 2006 and among the moderately poor in 2015, rural households purchase alcohol at similar or greater levels compared to urban households. This finding supports other studies comparing rural versus urban differences in substance use but is one of the first to show the reality in central Africa (Borders, 2007; Morojele et al. 2010). This difference is critical to understanding the risk factors and determinants around alcohol use in rural areas. This observation may be explained by the fact that rural areas in sub-Saharan Africa tend to have fewer safety nets available to minimize the impacts of mental and behavioral health disorders including limited access to mental health treatment services which can propagate further hazardous drinking (Ng et al., 2019). These results are in line with studies that suggest the prevalence of alcohol use disorders is greater in rural versus urban areas and highlight the need to test interactions with other social and economic factors (Borders, 2007; Dixon & Chartier, 2016; Morojele et al. 2010; Judd et al. 2002).

Another finding of this study is the overall decrease in alcohol purchasing between 2006 and 2015. The decrease in overall alcohol purchasing may be due to

many factors such as the increase in rural and urban poverty or governmental efforts to address alcohol in these years. In recent decades, the relatively weak nature of alcohol policies in sub-Saharan Africa and the need to enforce the policies that do exist has been widely established in the literature (Ferreira-Borges et al., 2015). However, efforts to address alcohol use in Zambia have been initiated in recent years. For example, the Ministry of Health's 2008 study to explore non-communicable diseases (NCDs) and the 2013-2016 2016 strategic plan for addressing NCDs, provided prevalence rates of alcohol consumption and estimated the health risk of alcohol in Zambia (Zambia Ministry of Health, 2008; Zambia Ministry of Health, 2015). In 2011, the Zambian Parliament also passed the Liquor Licensing Act establishing manufacturing, possession, supply, and sales regulations for alcoholic beverages (Parliament of Zambia, 2011). While these early efforts were limited in their scope and depth, they may have contributed to the decrease in alcohol purchasing from 2006 to 2015.

The results also show an increase in annual median alcohol expenditure among drinkers from 2006 to 2015. While the overall population may have decreased their alcohol purchasing, drinkers were spending significantly more money on alcoholic beverages. A possible explanation for this observation could be the increased emphasis of the global alcohol industry in rural and urban communities in sub-Saharan Africa including Zambia (de Bruijn, 2014; McCall, 2017). This increase in alcohol expenditures was also observed when drinkers were stratified by rural-urban status, with an 11.6% increase in median alcohol expenditure observed among urban drinkers compared to a 33.9% increase among rural drinkers. This observation may be related to the increase in alcohol advertising combined with changes in employment opportunities resulting in greater poverty across rural and urban populations alike, with rural areas in Zambia tending to already have higher levels of poverty (Crane et al., 2018; Peltzer, 2009). This finding highlights the need to focus on rural drinkers as they continue to increase their alcohol expenditure but also remain more impoverished compared to urban drinkers.

This study contributes to the knowledge base regarding alcohol use disorders in Zambia in multiple ways. First, this study highlights the need for research to better understand the different peri-urban and rural factors leading to alcohol use and alcohol use disorders that can inform appropriate treatment and prevention programs for these communities. There is a dearth of epidemiologic data on alcohol and substance use in Zambia and the available data comes primarily from urban areas (Swahn et al. 2011; Kane, 2016). Research is needed to better understand the cultural, social, spiritual, and economic drivers of substance use in rural areas to adapt existing evidence-based screening and diagnostic tools for identifying substance use disorders. Failure to understand these underlying drivers will result in inefficient and ineffective interventions to address rural alcohol consumers, especially in impoverished rural communities.

Second, the concurrent decrease in alcohol purchasing and increase in alcohol expenditure among drinkers, especially in rural areas, highlights the need to build on community capacity for mental health treatments and enhance the perceived need for screening and brief interventions to address alcohol use disorders in rural

areas. Rural populations are at a greater vulnerability when it comes to healthcare access, in general, but even more so when the treatment options are simply not available or surrounded by stigma. The higher prevalence of poverty, the increasing influence from the alcohol industry and alcohol commercialization, and the limited availability of healthcare resources in rural areas exacerbate the vulnerability related to substance use not only for the individual but for entire rural communities (Morojele et al. 2010).

Strengths of this study include the population-based data used to determine the difference between urban and rural expenditures. The study was able to stratify by rurality and poverty levels to understand how poverty modifies the effect of rurality on alcohol expenditure. This study was also able to compare poverty, rural-urban status, and alcohol purchasing and expenditure over time using the 2006 LCMS V and the 2015 LCMS VII which span nearly ten years.

Limitations include the inability to link the demographic and alcohol expenditure sections of the LCMS V data set given the lack of a household identifier in the sections used for this analysis. The measures of poverty status and alcohol expenditures were based on self-report, which could be a source of information bias. The study did not control for other potential confounding variables such as age, sex, and health status given the inability to link sections. Additionally, this study utilized the LCMS which was not developed to intentionally quantify and understand alcohol use and abuse. However, the socio-economic implications of the alcoholic expenditure questions from the survey were utilized to explore alcohol expenditure and assumed consumption.

Future research should examine cultural, social, spiritual, and economic determinants of substance use in peri-urban and rural areas. Studies should aim to increase alcohol and substance use epidemiological data specific to peri-urban and rural contexts. Such data will improve the identification of alcohol and substance use disorders utilizing evidence-based screening and diagnostic tools. Accurate and culturally appropriate tools are important to understand the specific health outcomes associated with substance use and measure the true health burden in the community. Additionally, research that discriminately explores peri-urban and rural areas will be able to assist researchers, policymakers, and mental health professionals in informing, developing, and supporting appropriate and effective prevention and treatment programs for alcohol and substance use disorders in Zambia.

CONCLUSION

In summary, the proportion of those reporting alcohol purchasing has decreased in rural and urban areas across all poverty status groups from 2006 to 2015. When stratified by poverty status, alcohol purchasing in 2006 was higher in rural areas across all poverty groups and was significantly higher among the moderately poor. In 2015 however, alcohol purchasing in rural areas was only higher among the moderately poor and was no longer statistically significant. Lastly, despite decreases in rural and urban alcohol purchasing across all poverty groups from 2006 to 2015, alcohol drinkers reported spending slightly more money on alcohol in 2015 than in 2006. There was no observed statistically significant difference between all drinker's

annual median alcohol expenditure in 2006 and 2015; however, differences in annual median alcohol expenditure from 2006 to 2015 were significant for rural and urban drinkers. The percent increase in median annual alcohol expenditure from 2006 to 2015 among urban and rural drinkers was 11.6% and 33.9%, respectively. The findings presented in the study highlight the need for research to better understand the different driving factors leading to alcohol use and alcohol use disorders in rural areas in Zambia and the need to enhance capacity for behavioral health screening and treatment interventions to address alcohol use disorders in rural areas in Zambia.

CONFLICT OF INTEREST

Authors report no conflicts of interest.

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MORBID RISK OF ALCOHOL AND CANNABIS USE DISORDERS AMONG RELATIVES OF PROBANDS IN A NIGERIAN PSYCHIATRIC HOSPITAL

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ABSTRACT

The generation of genetic epidemiological data in Africa to drive public education on the biological basis of substance use disorders (SUDs), which has been popularly misconstrued as a moral failure, has become imperative, in order to encourage access to formal care by patients. This study aimed to determine the morbid risks of SUDs among the first-degree relatives (FDRs) of probands with alcohol use disorder (AUD) and cannabis use disorder (CUD), in comparison with the families of healthy control group. The study elicited information on the morbid risk of SUDs among FDRs of probands with AUD and CUD and relatives of a healthy control group through direct interview or by proxy interview of relatives using the Family Interview for Genetic Studies (FIGS). The best-estimate method was used for the diagnosis in the relatives of the probands and a comparison group. Logistic regression was used to estimate the odds ratios (OR) and 95% confidence intervals (CI) for the differences in proportion of the affected versus unaffected FDRs, while the Weinberger method was used to estimate morbid risks. The morbid risks among FDRs of probands with AUD and CUD were 17.5(95% CI, 17.1-17.9) and 11.6(11.2-12.0), respectively, in comparison with 7.8(95% CI, 7.6-8.0) and 5.7(95% CI, 5.5-5.9), respectively, for the FDRs of the controls. The increased familial risk of SUDs among FDRs of probands with alcohol and cannabis use disorders in an African population is similar to that in the Western population. Therefore, preventive strategies involving the family may be useful.

Keywords: Morbid risk; alcohol; cannabis; first-degree; relatives

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INTRODUCTION

Substance Use Disorders (SUDs) also known as Drug Use Disorders (DUDs), refers to a condition in which the use of one or more substances leads to a clinically significant distress or impairment (Van Den Bree & Pickworth, 2005). The term encompasses acute intoxication, harmful use, dependence syndrome, withdrawal states with or without delirium, psychotic disorders, and amnesic syndrome (World Health Organization, 1994). The health consequences of illicit drug use continue to be a matter of global concern, as a majority of problem drug users continues to have no access to treatment (United Nation Office on Drug and Crime, 2015). The use of psychoactive substances poses a significant threat to the health, social, and economic fabric of families, communities, and nations (United Nation Office on Drug and Crime, 2015). According to the World Health Organization Global Burden of Diseases report, substance use disorders contributed 12.4% of cases of death worldwide in the year 2000. It also accounted for 8.9% of total years lost to disability (World Health Organization, 1994). Understanding its etiology especially in low resource settings will guide the development of evidence-based preventive interventions.

There is increasing evidence that substance use disorders are familial and that genetic factors explain a substantial degree of their familial aggregation (Weissman et al., 1986; Meller et al., 1988; Bierut et al., 1998; Verhulst et al., 2015; Merikangas et al., 2009; Merikangas et al., 1998). Controlled family studies as well as clinical and epidemiological studies have demonstrated the extent to which substance use disorders are familial, with some specificity of familial aggregation found for some drugs (Weissman et al., 1986; Meller et al., 1988). In one controlled family study of SUDs, an eightfold increased risk of drug use disorders among relatives of affected probands was found compared to those of psychiatric and unaffected controls (Merikangas et al., 1998).

The identified pathways of familial aggregation include shared genetic environments in which, for some substances like alcohol use disorders have been estimated to have 50% heritability (Verhulst et al., 2015). Twin studies have shown that genetic factors explain a portion of the variance in the familial aggregation of substance use disorders (Verhulst et al., 2015; Heath, 1995), while, adoption studies have confirmed the heritability of substance use disorders, they also highlight the importance of the interaction between genetic and environmental factors in the development of substance use disorders (Verhulst et al., 2015; Heath, 1995). Other pathways include, parental and sibling substance abuse (Ouzir & Errami, 2016), and assortative mating, where a high concordance was observed for SUDs between spouses (Homish et al., 2007).

There is dearth of data on the heritability of SUDs in Africa. To the best of the authors' knowledge this was the first report from our continent regarding the familial and morbid risks of SUDs using our methodology. This study addressed this question; what is the morbid risk of alcohol use disorder and cannabis use disorder among the first-degree relatives of probands with alcohol and cannabis use disorders compared to first-degree relatives of a healthy control group?

METHOD

Study design and population

This was a controlled family study using a cross-sectional design. Patients admitted into the drug treatment unit of the Federal Neuropsychiatric Hospital, Enugu, South-Eastern Nigeria were the probands for this family study. The hospital serves the entire South-Eastern states and neighboring geopolitical zones. The hospital offers both acute and long term care for psychiatric in-patients with a comprehensive drug treatment program in collaboration with United Nations Office on Drug and Crime (UNODC). The healthy control group consisted of physically and mentally healthy staff of Enugu North council secretariat.

Probands

Probands with lifetime diagnoses of alcohol and cannabis use disorders that were stable enough to understand and follow the interview process, and gave permission for their relatives to be approached were included in the study. Those with significant organic mental impairment and other major psychiatric disorders (schizophrenia, schizoaffective disorders, bipolar disorders, and major depressive disorders) were excluded based upon review by clinicians with expertise in substance abuse. The sample was composed of a total of 112 probands with diagnosis of SUDs (34 probands of alcohol use disorder and 43 probands of cannabis use disorder), and 35 control from the Local Council secretariat staff. The comparison group was conveniently selected to match similar characteristics of age and sex of the probands. Participants in the comparison group were included if they had no history of substance use disorders and gave permission for the relatives to be approached.

Relatives

There were a total of 940 first-degree relatives, 315 relatives of probands with alcohol use disorder (68 parents, 155 siblings and 92 children), 347 relatives of probands with cannabis use disorders (86 parents, 237 siblings and 24 children), and 278 relatives of the control (70 parents, 172 siblings and 36 children). Fifty nine, 64 and 13 relatives of the probands with alcohol use disorder, cannabis use disorder and the healthy control group, respectively were interviewed directly (in person or via phone call). The rest were interviewed by proxy informants.

Procedure and Measurement

Diagnostic interview

Substance use disorders were established using Mini International Neuropsychiatric Interview (MINI), current and lifetime versions (Sheehan et al., 1998). The MINI differs from other diagnostic instruments in that is semi-structured and administered by experienced clinical interviewers in a much shorter time, as opposed to highly structured Composite International Diagnostic Interview (CIDI) or Diagnostic Interview Schedule (DIS) used by lay interviewers. Two interviewers with experience in clinical psychiatry and substance abuse conducted the diagnostic interviews to establish the diagnosis of substance use disorder using DSM-5 criteria. Kappa derived from joint ratings of individual interviews were good (0.64-0.86) for substance use disorders in the first six training sessions.

The family history information

Family history information was obtained via direct interview of available relatives, or through telephone interviews or via proxy interviews for unavailable relatives using the Family Interview for Genetic Studies (National Institute of Mental Health Genetics Initiative, 1992). The Family Interview for Genetic Studies (FIGS) was developed by principal investigators in the National Institute of Mental Health (NIMH) Schizophrenia and Bipolar Disorder Genetics initiatives and NIMH extramural program staff in 1992, as a guide for systematically collecting information about relatives in family genetic studies of these disorders. It comprises of the general screening questions, the face sheet, and the symptom checklists. The most general information is gathered using the general screening questions about all known relatives in the pedigree, regardless of how distantly related. The face sheet is for each of the informant's first degree relatives, and also for any affected relatives about whom the informant can provide the information. The various symptom checklists (depression, mania, alcohol, and other drug abuses, psychosis, schizoid/paranoid/schizotypal personality disorders) are used to ferret out the diagnostic details that help make possible best estimate diagnosis. Direct interviews and family history are far more concordant for observable disorders such as drug abuse and behavior disorders than for less readily observable disorders such as mood and anxiety disorders.

Diagnostic procedures

Diagnoses of substance use disorders among first-degree relatives and spouses were based upon all available information, including the diagnostic interview, family history reports and medical records, using the best estimate method of diagnosis. Best estimate diagnosis was made by two clinicians with extensive experience in the evaluation and treatment of substance abuse, and who were blind with respect to the diagnostic status of the probands when making the best-estimates of the relatives. In case of doubt a third opinion was sought. Interview status was included as a covariate in the analysis because of the well-established underestimation of diagnoses in the non-interviewed relatives.

Ethical Consideration

Ethical approval was obtained from the Research and Ethics Committee of the Federal Neuropsychiatric Hospital Enugu, Enugu state, Nigeria. International Ethical norms and standards were strictly adhered to at all times.

Data Analysis

The Weinberg method for age correction was used to calculate the lifetimes at risk (morbid risk) for each group of first-degree relatives (Weinberg, 2010). The Weinberg estimator for lifetime morbid risk is given by: $W\text{-}MR = A/A + 0.5U_2 + U_3$. Where, A = the number of affected relatives of a certain class (e.g. first-degree, etc.).U_1 = the number of unaffected subjects who were younger than the minimal risk period of age. U_2 = the number of unaffected subjects who were within the period of risk. U_3 = the number of unaffected subjects who were older than the maximal period age. The corrected denominator, often referred to by the German term Bezugsziffer, or BZ, is meant to approximate the number of lifetime at risk subjects. Limits for age of risk of 15-55 years for substance use disorders were used in this study due to a recent report of age distribution of substance use disorder in Nigeria

(Adamson et al., 2015). Logistic regression analyses were used to estimate odd ratios (OR) and 95% confidence interval (CI) for the differences in the proportion of affected versus unaffected first-degree relatives, controlling for probands sex, interview status (direct versus proxy interview).

RESULTS

A total of 112 participants (34 alcohol use disorder, 43 cannabis use disorder and 35 healthy control group) and their 940 relatives (315 of AUD, 347 of CUD and 278 of the control group) participated in the study. The three groups were similar in age ($p = 0.13$) and gender ($p = 0.57$). Majority (71.4%) of the control group were married ($p < 0.001$) as shown in Table 1. The socio-demographic characteristic of the relatives is shown in Table 2. The table shows that the relatives were similar in the number of FDRs ($p = 0.15$), parents ($p = 1.00$), siblings ($p = 0.20$) and age ($p > 0.05$). They however differ in the number of children ($p < 0.001$). The proportion of the affected first-degree relatives of the probands with alcohol use disorder and the control group were 8.9% vs. 4.7%, parents (35.3% vs. 7.1%) and siblings (15.5% vs. 5.2%), respectively. For relatives of the probands with cannabis use disorder, the proportion of the affected FDRs in comparison with the healthy control group were 5.8% vs. 2.0%, parents (8.1% vs. 5.7%), and siblings (9.7% vs. 3.5%), respectively. The morbid risk (95% confidence interval) of alcohol use disorder among the FDRs of the probands with AUD versus the FDRs of a healthy control group were 17.5(95% CI, 17.1-17.9) vs. 7.8(95%CI, 7.6-8.0) for all FDRs, 39.0(95% CI, 37.4-40.6) vs. 7.1(95% CI, 6.2-8.0) for parents and 27.3(95% CI, 26.3-28.3) vs. 4.4(95% CI, 4.0-4.8) for the siblings. Similarly, the morbid risk (95% confidence interval) of cannabis use disorder among the FDRs of the probands with CUD versus the FDRs of a healthy control group were 11.6(95% CI, 11.2-12.0) vs. 5.7(95% CI, 5.5-5.9) for all FDRs, 8.4(95% CI, 7.8-9.0) vs. 6.3(95% CI, 5.5-7.1) for parents and 24.5(95% CI, 23.5-25.5) and 20.7(95% CI, 18.0-23.4) for the siblings.

Table 1. Socio-demographic and clinical characteristics of the study participants

Variables	Alcohol Probands ($n = 34$)	Cannabis Probands ($n = 43$)	Controls ($n = 35$)	Statistics
Mean Age in years (SD)	34.5(9.7)	30.5(6.8)	33.0(9.0)	F = 2.1, $p = 0.13$
Mean Age at First Use (SD)	19.9(6.6)	20.9(7.1)		$t = –0.6$, $p = 0.54$
Mean Duration of Use (years)	7.4(11.0)	6.4(6.1)		$t = 0.5$, $p = 0.63$
Gender				$\chi^2 = 1.1$, $p = 0.57$
Male	30(88.2%)	39(90.7%)	29(82.9%)	
Female	4(11.8%)	4(9.3%)	6(17.1%)	
Marital Status				$\chi^2 = 24.0$, $p < 0.001$
Single	12(35.3%)	31(72.1%)	9(25.7%)	
Married	18(52.9%)	12(27.9%)	25(71.4%)	
Separated/Divorced	4(11.8%)	0(0.0%)	1(2.9%)	
Education				$\chi^2 = 49.1$, $p < 0.001$
Primary	18(52.9%)	4(9.3%)	0(0.0%)	
Secondary	12(35.3%)	19(44.2%)	7(20.0%)	
Tertiary	4(11.8%)	20(46.5%)	28(80.0%)	

NB: SD = Standard Deviation

Table 2. Socio-demographic characteristics of the first-degree relatives of the study participants

Variables	FDRs Alcohol Probands (*n* = 315)	FDRs Cannabis Probands (*n* = 347)	FDRs Controls (*n* = 278)	Statistics
Number of FDRs	315	347	278	F = 1.9, *p* = 0.15
Number of Parents	68	86	70	F = 0.0, *p* = 1.00
Number of Siblings	155	237	172	F = 1.6, *p* = 0.20
Number of Children	92	24	36	F = 12.3, *p* < 0.001
Mean Age of Parents	59.5 ± 7.9	58.0 ± 7.3	59.5 ± 7.9	F = 0.5, *p* = 0.63
Mean Age of Siblings	28.6 ± 10.2	29.4 ± 10.5	30.1 ± 10.3	F = 0.5, *p* = 0.58
Mean Age of Children	7.9 ± 5.6	8.7 ± 5.7	9.4 ± 6.9	F = 0.6, *p* = 0.59
Mean Age of Spouse	25.1 ± 4.6	24.5 ± 4.3	26.7 ± 3.9	F = 0.4, *p* = 0.66
FDRs aged <15years	67	40	35	F = 5.4, *p* = 0.006
FDRs aged 15-55 years	160	228	161	F = 1.2, *p* = 0.31
FDRs aged >55years	88	79	82	F = 4.7, *p* = 0.11

NB: FDRs = First-Degree-Relatives

Table 3. Morbid Risk of substance use disorders among first-degree relatives of probands with alcohol and cannabis use disorders

Variables	Alcohol Use Disorders		Cannabis Use Disorders	
	Probands	Control	Probands	Control
All FDRs				
No of Affected FDRs	28	13	20	7
% Affected FDRs	8.9	4.7	5.8	2.0
BZ (SUD) of FDRs	160	167	172	123.5
% Morbid Risk (FDRs)	17.5	7.8	11.6	5.7
S.E	0.2	0.1	0.2	0.1
95% C.I	17.1-17.9	7.6-8.0	11.2-12.0	5.5-5.9
Parents				
No of Affected Parents	24	5	7	4
% Affected Parents	35.3	7.1	8.1	5.7
BZ (SUD) of parents	61.5	70.5	82	63
% Morbid Risk (FDRs)	39.0	7.1	8.4	6.3
S.E	0.8	0.4	0.3	0.4
95% C.I	37.4-40.6	6.2-8.0	7.8-9.0	5.5-7.1
Siblings				
No of Affected Siblings	24	4	23	6
% Affected Siblings	15.5	2.3	9.7	3.5
BZ (SUD) of Siblings	88	91.5	94	29
% Morbid Risk (FDRs)	27.3	4.4	24.5	20.7
S.E	0.5	0.2	0.5	1.4
95% C.I	26.3-28.3	4.0-4.8	23.5-25.5	18.0-23.4

NB: SUD = Substance Use Disorders, FDRs = First-Degree Relatives, 95%C.I = 95% Confidence Interval, BZ = Bezugsziffer

Table 4. Logistic Regression analyses for the differences in the affected versus unaffected first-degree relatives of probands with alcohol use disorder

AUDs in Relatives	Probands (AUDs)	Control	*p*-value	O.R (95%C.I)
Family History (AUD) in FDRs			<0.001	
Yes	28(82.4%)	13(37.1%)		7.9 (2.6-24.1)
No	6(17.6%)	22(62.9%)		
History of AUD in Parents			<0.001	
Yes	24(70.6%)	5(14.3%)		14.4 (4.3-47.8)
No	10(29.4%)	30(85.7%)		
History of AUD in Siblings			<0.001	
Yes	24(70.6%)	4(14.3%)		18.6 (5.2-66.6)
No	10(29.4%)	31(88.6%)		
History of AUD in Children			1.000	
Yes	0(0.0%)	0(0.0%)		
No	34(100.0%)	35(100.0%)		
History of AUD in Spouse			1.000	
Yes	0(0.0%)	0(0.0%)		
No	34(100.0%)	35(100.0%)		

NB: AUDs = Alcohol Use Disorder; FDRs = First-Degree Relatives; O.R = Odd Ratios; 95%C.I = 95% Confidence Intervals

Table 5. Logistic Regression analyses for the differences in the affected versus unaffected first-degree relatives of probands with cannabis use disorder

CUDs in Relatives	Probands (CUDs)	Control	*p*-value	O.R (95%C.I)
Family History (CUD) in FDRs			0.01	
Yes	20(47.6%)	7(20.0%)		3.6 (1.3-10.4)
No	22(52.4%)	28(80.0%)		
History of CUD in Parents			<0.001	
Yes	7(16.7%)	4(11.4%)		1.2 (0.3-4.2)
No	35(83.3%)	31(88.6%)		
History of CUD in Siblings			<0.001	
Yes	23(54.8%)	6(17.1%)		9.4 (2.8-31.3)
No	19(45.2%)	29(82.9%)		
History of CUD in Children			1.000	
Yes	0(0.0%)	0(0.0%)		
No	42(100.0%)	35(100.0%)		
History of CUD in Spouse			1.000	
Yes	0(0.0%)	0(0.0%)		
No	42(100.0%)	35(100.0%)		

NB: CUDs = Cannabis Use Disorder; FDRs = First-Degree Relatives; O.R = Odd Ratios; 95%C.I = 95% Confidence Intervals

DISCUSSION

The general aim of the current study was to determine the morbid risk of alcohol and cannabis use disorders among FDRs of probands with alcohol and cannabis use disorders, in comparison with a sample of healthy control population. This study to the best of authors' knowledge is the first African study to examine familial transmission of SUDs using this methodology. The highlights of the findings of this genetic epidemiology study are: (1) the proportion of affected FDRs of probands with alcohol use disorder, in comparison with FDRs of the control group were 8.9%

and 4.7%, respectively; (2) the proportion of affected FDRs of probands with cannabis use disorder, in comparison with FDRs of the control group were 5.9% and 2.0%, respectively; (3) the proportion of affected spouse and young children in probands with substance use disorders were not different from those of the control group; (4) the morbid risk of alcohol use disorder among FDRs of probands with alcohol use disorder and FDRs of a healthy control group were 17.5(95% C1, 17.1-17.9) and 7.8(95% CI, 7.6-8.0), respectively; and (5) the morbid risk of cannabis use disorder among FDRs of probands with cannabis use disorder and FDRs of a healthy control group were 11.6(95% C1, 11.2-12.0) and 5.7(95% CI, 5.5-5.9), respectively.

The results of the present study show that alcohol and cannabis use disorders aggregate in the families of probands with alcohol and cannabis use disorders. The morbid risk of AUD and CUD among FDRs of probands with AUD and CUD were 17.5 and 11.6 versus 7.8 and 5.7 of the controls, respectively. The elevation of risk of substance use disorders among FDRs of the probands as shown in the study demonstrates that having a family history of substance use disorder is one of the most potent risk factors for the development of SUDs. The increased risk of SUDs among FDRs of probands with SUDs is consistent with previous family reports (Verhulst et al., 2015; Merikangas et al., 2009; Merikangas et al., 1998). Merikangas et al., (1998) found an 8-fold increased risk of drug use disorders among FDRs of relatives with wide range of SUDs.

The results also show a significant degree of familial clustering of SUDs among parents and siblings of probands with SUDs. This is consistent with reports that show high level of familial transmission of SUDs within sibling pairs relative to control (Merikangas et al., 2009; Merikangas et al., 1998). Familial aggregation was not demonstrated among children of the probands with SUDs in this study. This is contrary to a previous report which found increased risk of SUDs in adult children of probands with SUDs (Merikangas et al., 1998). One plausible explanation of our result is the age of the children involved in our study. The mean age of the children in this study were 7.9 years, 8.7 years and 9.4 years for AUD probands, CUD probands and controls, respectively. These age groups are below the age at maximal risk for SUDs (Adamson et al. 2015). Studies that reported familial aggregation among children were on adult children of the probands (Merikangas et al., 2009; Merikangas et al., 1998). Similarly, the present study did not find any concordance between probands with SUDs and their spouses. Some family studies have reported high concordance rate between probands and their spouses (Merikangas et al., 1998; Homish et al., 2007), a phenomenon they explained using assortative mating (Homish et al., 2007). Our finding could be explained by the small number of married probands (18 for AUD probands and 12 for CUD probands). In addition, cultural factors in some African societies that restrict certain behaviors among females (e.g., smoking and drinking) may have influenced our findings.

Familial aggregation has been described as the occurrence of a trait in more members of a family than can be readily accounted for by chance alone (Mifflin, 2004)]. Though this is not a sufficient proof of genetic transmission, it is a prerequisite for further genetic studies. The pathways to familial clustering of SUDs may be related to either common genetic

or environmental factors (Verhulst et al., 2015; Bailey & Hubbard, 1990). Genetic factors could increase the vulnerability to the development of SUDs through individual differences with respect to the drug effects (e.g., pharmacokinetic or pharmacodynamic differences) (Bailey & Hubbard, 1990). Families may transmit the risk of SUDs through direct mechanisms (e.g., genes, increasing environmental exposure to drugs or facilitating drug availability) or through indirect mechanisms (e.g., impaired parenting behavior, exposure to marital discord, social deprivation etc.) (Robins, 1980; Brown, 1989).

One limitation of this study was the use of family history method predominantly to elicit family history information; although it saved cost and time, the lack of sensitivity for many psychiatric disorders is a major drawback. Direct interview, while having its problems such as selection bias could have made more rigorous diagnosis possible. However, in this study the magnitude of this problem was reduced by controlling for the interview status in the analysis, and the finding that family history methods is more concordant to direct interviews for observable disorders like substance use disorders. In addition, the relatively small sample size in our study is another limitation. The number of female participants was too small to make comparison whether the risk is different between the genders.

CONCLUSION

The findings of this study suggest that alcohol and cannabis use disorders aggregate in the families of the probands with SUDs. This study has enriched the field of genetic epidemiology of SUDs in Africa by providing valuable data to aid clinicians' public education and preventive services of genetic counseling in Africa.

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STATEMENT OF AUTHORSHIP

The first and fourth authors contributed to the study design, analysis and interpretation of data. Drafting of the manuscript was by the first and second authors. Data collection was done by the first and third authors. Supervision of the research project was done by the second and fourth authors. All authors read and approved the manuscript.

CONFLICT OF INTEREST

The authors declare no conflict of interest

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THE ROLES OF NICOTINE DEPENDENCE AND DEMOGRAPHIC VARIABLES ON INTERNET GAMBLING ADDICTION AMONG YOUTHS IN A NIGERIAN CITY

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ABSTRACT

This study investigated the relationship among nicotine dependence, demographic variables and Internet gambling addiction. It was a survey, utilizing ex-post facto design. A total of 291 youths (156 males and 135 females) were purposively selected from major joints and sit-outs in the Metropolis of the ancient city of Ikot Ekpene. Simple Screening Instrument for Internet Gambling Test Adopted from South Oaks Gambling Screen (Gainsbury & Blaszczynski, 2014) and The Nicotine Dependence Syndrome Scale (Shiffman, Waters & Hickcox, 2004) were used to collect data. Pearson r results [r= .71; df = 289; p<.05] showed that the higher the nicotine dependence the higher the Internet gambling addiction among youths selected. The results further showed that demographic factors jointly predicted Internet gambling addiction among youths [R=0.356; R^2=.031; F(5, 189)=.34, p<.05] accounting for 31% of the variance observed. It was concluded that a good understanding of the relationship between nicotine intake and Internet gambling is important for developing regulatory initiatives, awareness, and prevention programmes for responsible Internet use.

Keywords: Nicotine dependence, demographic variables, Internet gambling addiction

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INTRODUCTION

A number of problematic issues have been associated with the Internet use. Some issues include underage accesses, increased addiction, and escalating fraudulent activities. The Internet has remained a major universal tool of exploration that is commonly used among people of all ages, especially the youths. The influence of technology in the field of gambling innovation continues to grow at a rapid pace (Schwartz, 2006). Public and commercial use of the Internet began in early 1990s and soon became apparent that it could also be a medium used for gambling (Palmer, 2014) and necessitated coaching (Stewart, Palmer, Wilkin, & Kerrin, 2008). Internet gambling refers to the range of wagering and gaming activities offered through Internet-enabled devices, including computers, mobile and smart phones, tablets, and digital television sets. The ability for large wagers, continuous gambling, rapid feedback, and instant, easy access to a vast number of betting options have resulted in concerns that Internet gambling could contribute to excessive gambling (Petry & Weinstock, 2007).

New forms of gambling and new sites are added each year. Moreover, the number of peripheral or supporting sites is also growing, including gambling website portals, information pages containing odds and payout figures, and pages for sports handicappers (Petry, 2003).

Experts have given the criteria for Internet addiction to include: excessive mental effort on the internet, spending longer time than originally intended, continuously waiting for the next connection time, feeling more comfortable contacting people over the internet than talking face to face, feeling a continuous desire for checking emails and social networking sites for something new, staying connected, trying to give or spread the mail address, chat room names, chat sites and social networking sites to everybody, continuously feeling speechless and tired because of staying awake and connected to the internet until late, inability to stop or reduce amount of time spent online, telling lies to family members, therapist or others to be able to stay connected to the internet, and having affection changes in the duration of internet connection (Öztürk, Eraslan, Genç & Kalyoncu, 2007; Young, 1999). Possible reinforcements leading to Internet gambling have been listed to include: convenience, accessibility, greater value for money including payout rates and bonuses, the speed and ease of online gambling, greater number of betting products and options, and the physical comfort of being able to gamble from home (Ellery, Stewart, & Loba, 2005).

The prevalence of internet gambling in the general population tends to be increasing by the day (Derevensky, Gupta, & McBride, 2006; Gambling Commission, 2006; Sproston, Erens, & Orford, 2000). Experts believe that there is still insufficient knowledge about Internet gambling, including the characteristics of gamblers, the social and psychological dynamics of Internet gambling behaviour, the potential link between Internet gambling and problem gambling, and the most appropriate regulatory and legislative stance to take with respect to Internet gambling (Romney, 1995 cited in Wood & Williams, 2009). Literature on disordered computer use has focused on excessive use of the Internet (Griffiths, 1995). Internet gambling represents a fundamental shift in

how consumers engage in gambling, and concerns have been expressed by various stakeholders about these changes. These concerns have led to recommendations for Internet gambling to be prohibited, or conversely regulated, in an attempt to institute policies to minimize harms (Griffiths, Wood, & Parke, 2006). Others have considered legalization in the belief that such legalization will result in increased security by enforcing personal identification and legal conduct (Schwartz, 2006).

Gambling has been considered a socially deviant or immoral behaviour in some cultures and throughout history. Internet Gambling Addiction has been listed in Section 3 of the DSM-V but as a condition warranting more clinical research and experience before it might be considered for inclusion in the main book as a formal disorder (American Psychiatric Association, 2013; Korn & Shaffer, 1999). Clinical psychologists and other experts in related fields have been researching for the real characteristics of this phenomenon and to establish a uniform definition which may be used in the DSM (Block, 2008). The DSM-V includes a new category of Non-Substance Behavioural Addiction within the substance addictions category. Meanwhile, treatment or intervention packages have been developed for persons whose conditions meet the criteria for Internet addiction (Shaffer, 1996).

Internet gambling and problem gambling have been associated with some psychological factors such as personality traits (Zuckerman, 2007). Ineme, Ineme, Akpabio & Osinowo (2017) found a significant positive relationship between depression and Internet addiction among students of a Nigerian university. Pathological and recreational gambling are associated with elevated proportions of nicotine dependence, and in clinical samples, pathological tobacco smoking has been associated with increased gambling and more frequent psychiatric problems (Fong, Campos, Brecht, Davis, Marco, Pecanha, & Rosenthal, 2011). Previous study tends to suggest that multiple disorders are linked (Grant, Desai, & Potenza, 2009). Gambling problems often co-occur with substance abuse and nicotine dependence (Lorains, Cowlishaw, & Thomas, 2011). Regular use of nicotine-containing products has been implicated in impulsivity (Higgins & Conner, 2003). It has been reported that adults who gamble are more likely to report smoking than adults who do not gamble (Black, 2013). While fewer studies have explored the relationship between youthful gambling and smoking, there is evidence for similar patterns in adolescents and adults, with adolescents who gamble reporting higher smoking rates (Jacobs, 2000; Kong, Tsai, Pilver, Tan, Hoff, Cavallo, & Potenza, 2013).

Studies in treatment samples of pathological gamblers also have shown comorbid substance use disorders (Maccallum & Blaszczynski, 2002). A review found that youths who reported serious gambling-related problems used tobacco at twice the rate of their non-problem gambling counterparts (Jacobs, 2000). Petry and Oncken (2002) reported a strong co-occurrence of gambling and substance use in a sample of young people. However, what is not very clear is the direct of the relationship, that is, whether it is smoking that leads to gambling or vice versa.

Demographic factors have also been implicated in Internet gambling behaviour. Wiber & Potenza (2006) established significant influence of gender and peer

group on gambling behaviour but suggested more research be carried out for more reliable results. Ineme, et al (2017) reported that demographic factors (age, sex, employment status, family type, marital status, and year of study) jointly predicted Internet addiction among student samples. The consistent relationship found between problematic Internet gambling and young age suggests that this population is particularly vulnerable to harms related to this problem, and use of Internet gambling among young males is an area that warrants further attention in terms of research as well as harm minimization (Lesieur & Blume, 1987). Consistently, it has been found that males are more likely to be involved in gambling than females (Chiu & Storm, 2010; Clark & Walker, 2009; Ellenbogen, Derevensky & Gupta, 2007; Gambling Commission, 2010; Olason & Gretarsson, 2009; Splevins, 2010). In different parts of the world, age has also been implicated in problem gambling with adolescents and young adults being more involved (Delfabbro, Lambos, King, & Puglis. 2009; Delfabbro, Lahn & Grabosky, 2005; Derevensky, Dickson, & Gupta, 2008; Molde, Pallesen, Bartone, Hystad, & Johnsen, 2009; Wickwire, Whelan, Meyers, McCausland, Luellen, & Studaway, 2008). It is reported that gambling increased considerably between the ages of 15 and 16 years and then remains relatively stable (Olason & Gretarsson, 2009). Reviews have consistently concluded that young males (18–30 years) are overrepresented amongst problem gamblers, while unemployment, divorced and single marital status, reliance on social welfare, low income, low education, and ethnic minority status have also been correlated (Delfabbro, King, & Griffiths 2012; Williams, Volberg, & Stevens, 2012). McCormack (2014) suggested that gambling online may be a potential risk factor in females due to enhanced feelings of safety over land-based venues. Some studies have linked higher rates of problem gambling to lower levels of educational attainment (Sproston, Hing & Palankay, 2012; Wardle & Griffiths, 2011; Young, Abu-Duhou. Barnes, Creed, Morris, Stevens, & Tyler, 2006). Kellie (2014) found that 16.6 per cent of people seeking treatment for gambling problems were unemployed and looking for work, compared with 3.7 per cent of the general population. Wickwire, Whelan, Meyers, McCausland, Luellen, & Studaway 2008) found that students over 21 years of age were more likely to gamble than younger students. Wood & Williams (2009) found that the most common marital status of Canadian Internet gamblers was being single and this marital category was statistically predictive of Internet gambling. Pierce, Wentzel, and Loughnan (1997) reported different sexes engaged in gambling for different reasons; women engaged in problem gambling to fight off stress and while men engage in gambling to make extra money.

However, there appears to be contrasting findings concerning the relationship between demographic factors and Internet gambling addiction with specific reference to age, educational level, and socioeconomic status (Gainsbury, Russell, Wood, Hing, & Blaszczynski, 2011; Gainsbury, Russell, Hing, Wood, Lubman, & Blaszczynski, 2015 versus Jiménez-Murcia, Stinchfield. Fernández-Aranda, Santamaría, Penelo, Granero, et al, 2011) thus warranting this study.

This study was guided by the Cognitive-Behavioural Theory (CBT) which holds that behaviour is initiated, maintained

(or discontinued) based on principles of learning (such as imitation, observation, schedules of reinforcement), and cognition (how the individual attends to interpret and draw conclusions about events that go on around him or her) (Sharpe & Tarrier, 1993). It further explains that gambling behaviour is acquired through operant and classical conditionings and can be reinforced on a partial and variable reinforcement schedule, through a combination of financial rewards and increased physiological arousal levels. Using operant conditioning (which involved interaction with the environment), the availability of the substance and the gambling centres in the environment may have led to the onset of the substance use/abuse and the gambling behaviour. But with the principles of classical conditioning, gambling behaviour would become maintained by pairing the gambling behaviour with real or perceived financial rewards obtained (which served as reinforcement to the gambling behaviour). The reward would further get the brain (pleasure centre) involved each there is real or perceived win, thus making the individual to repeat the gambling behaviour. Repeating the behaviour would leads to addiction.

The problem warranting this study is the fact that there are conflicting findings in the relationship between nicotine intake and Internet gambling. Secondly, a vast majority of the studies have shown conflicting results concerning the relationship between demographic factors and Internet gambling addiction. Also, most of the studies are foreign leading paucity of indigenous literature in this area. This study therefore examines the relationship among nicotine dependence, demographic variables, and Internet gambling among youths in Ikot Ekpene Metropolis-an ancient city in South South Nigeria.

Consequently, it was hypothesized that:

1. Nicotine dependence will have a significant positive relationship with Internet gambling addiction among youths in Ikot Ekpene Metropolis.
2. Demographic variables (age, gender, marital status, employment status and academic qualification) will independently and jointly predict internet gambling addiction among youths in Ikot Ekpene Metropolis.

METHOD

Design: The study was a survey utilizing an ex-post facto design.

Setting: The study was conducted in Metropolis of the ancient city of Ikot Ekpene also known as The Raffia City. Ikot Ekpene Local Government Area of Akwa Ibom State is a historic ancient town in South-South Nigeria. It is the political and cultural capital of the Annang ethnic group in Nigeria. Ikot Ekpene is located between latitudes 5° 10` and 5° 30` North and longitudes 7° 30` and 7° 45` East. It lies on the North-Western flank of Akwa Ibom State. Its position makes it one of the economic gateways to Akwa Ibom State. It became a premier model local government administration in 1951. Ikot Ekpene is the headquarters of Ikot Ekpene Senatorial District that has altogether 10 Local Government Areas. The population of Ikot Ekepene had a population of 143, 077 (Males = 75,548, Females = 67,529) (National Population Commission, 2006).

Sampling Technique: Purposive sampling technique was used to select participants

for the study; only young people (aged between 14 and 30) who confessed to using nicotine participated in the study. Those below 14 years and those above 30 were not allowed to participate in the study.

Participants: Two hundred and ninety one (291) youths (156 males and 135 females) participated in the study. They were purposively selected from major joints and sitouts in Ikot Ekpene Metropolis. The ages of the participants ranged between 14 and 30 years old and their mean age was 23.77 years. The educational qualifications ranged from First School Leaving Certificate (FSLC) to Doctorate Degree (Ph.D).

Instrument: The study made use of a structured questionnaire with three sections

Section A: This section contained demographic variables, namely, age, gender, marital status, employment status, and academic qualification.

Section B: The Index of Internet Gambling Test adopted from South Oaks Gambling Screen by Gainsbury & Blaszczynski (2014). It is a 15-item scale designed to measure Internet gambling perpetuation among the youths. The items on the scale are rated on a 5-point Likert-type format of 1-5. All items are indirectly scored. The lowest possible score is 0 while the highest possible score is 75. For the purpose of this study, a pilot study was conducted to revalidate this instrument using 30 participants. Item by Item analysis revealed that all items in the scale loaded up to .30. They were all retained and used for the main study. A Cronbach's Alpha Coefficient of 0.80 was also obtained. The norm of the instrument was 37.5, established at two standard deviations above the mean. Scores of 37.5 and above indicated high Internet gambling addiction. Scores below the norm indicated low Internet gambling addiction. Therefore, the higher the score, the higher the Internet gambling addiction.

Section C: Nicotine Dependence Syndrome Scale by Shiffman, Waters & Hickcox (2004). It is 19-item scale rated on a 5-point Likert-type format of 1-5. It was used to measure nicotine among participants. All items were directly scored. The least possible score is 0 while the highest possible score is 95. For the purpose of this study a pilot study was conducted to revalidate the instrument and a Cronbach's Alpha Coefficient of 0.76 was obtained. The norm of the instrument is 47.5 established at two standard deviations above the mean. Scores of 47.5 and above indicated nicotine dependence behaviour. Scores below 47.5 indicated non-nicotine dependent behaviour.

Procedure: The Department of Psychology, University of Uyo, Nigeria provided the reference. The study was conducted in two phases-the pilot study and the main study. During the pilot study, the initial instruments were presented to two clinical psychologists for face/content validity. Forty (40) copies were then administered to youths at a viewing centre and a betting centre at Ikot Ekpene town but 30 were correctly filled and retrieved. Their responses were analyzed using SPSS Version 20. All the items were found reliable and used for the second phase. For the second phase (main study), a total of 315 copies of the valid and reliable instruments were issued to respondents at 4 places but 291 were correctly completed and used for the study. They were: 83 respondents at Ikot Ekpene plaza, 76 at Raffia City Lounge-Umuahia Road,

81 at Ikot Ekpene New Stadium, and 51 at Ikot Ekpene Cultural Centre. A total of 4 got missing while 12 were not correctly filled. In both phases, permissions of the managers of the centres were sought and obtained, the participants were contacted individually, the purpose of the study was explained to them, and the instruments were administered to volunteers. They were informed of their freedom to withdraw from the study at any point. Administration of the instruments lasted for eleven days during the main study.

Statistics: Pearson r correlation was used to test for the first hypothesis while multiple regression was used to test for the second hypothesis.

RESULTS

Results presented in Table 1 reveal that younger youths [aged 14-22 years] constituted a higher number of participants (Internet gamblers) [N = 201] than older youths (aged 23-30 years) [N = 90]. Also, the young participants reported a higher mean score of Internet gambling addiction than the older ones [$\overline{X}$ = 60.20 vs $\overline{X}$ = 57.54]. Male participants had a higher mean score of Internet gambling addiction than their female counterparts [$\overline{X}$ = 54.58 vs $\overline{X}$ = 52. 61 respectively]. This implies that male participants reported higher level of Internet gambling addiction than their female counterparts. Furthermore, Table 1 reveal that single participants had a higher mean score of Internet gambling addiction than married participants [$\overline{X}$ = 54.22 vs $\overline{X}$ = 49.88 respectively]. This implies that single participants reported higher level of Internet gambling addiction than married participants. Table 1 further reveal that unemployed participants had a higher mean score of Internet gambling addiction than employed participants [$\overline{X}$ = 53.37 vs

Table 1. The predictive roles of nicotine dependence and demographic variables on Internet gambling behaviour

Variables	N	$\overline{X}$	SD
Age	201	60.20	19.20
Young	90	57.54	18.41
Old			
Gender	188	54.58	18.95
Male	103	52.61	8.51
Female			
Marital status	230	54.22	14.16
Single	61	49.88	12.88
Married			
Employment status	163	53.26	11.31
Employed	128	53.37	15.28
Unemployed			
Acad. Qualification	214	57.00	11.07
OND and below	77	52.66	12.48
B. Sc and above			
Nicotine dependent	163	55.04	15.89
Dependent	128	51.11	08.13
Non-dependent			

$\overline{X}$ = 53.26 respectively]. This implies that unemployed youths reported higher Internet gambling addiction level than employed youths. In addition, participants with OND and below had a higher mean score than participants with B.Sc and below [$\overline{X}$ = 57.00 and $\overline{X}$ = 52.66 respectively]. This means that participants with lower academic qualifications (OND and below) reported a higher level of Internet gambling addiction than participants with higher academic qualifications (B.Sc and above). Table 1 also reveal that participants who were nicotine dependents had a higher mean score of Internet addiction than those were non-dependents [$\overline{X}$ = 55.04 vs 51.10 respectively]. This implies that participants who were nicotine dependents reported higher levels of Internet gambling addiction than participants who were non-dependents.

The hypothesis which stated that nicotine dependence will have a significant positive relationship with Internet gambling addiction among youths in Ikot Ekpene Metropolis was tested using Pearson Product Moment Correlation and summary of results is presented on Table 2.

Results presented in Table 2 reveal a significant positive relationship between nicotine dependence and Internet gambling addiction among youths in Ikot Ekpene metropolis [r = .71; df = 289; p < .05]. This implies that nicotine dependence predicted Internet gambling behaviour among youths in Ikot Ekpene metropolis; that is, the higher the nicotine dependence the higher the internet addiction. Therefore the hypothesis which stated that nicotine dependence will have a significant positive relationship with Internet gambling addiction among youths in Ikot Ekpene metropolis was accepted.

The second hypothesis stated that demographic variables (age, gender, marital status, employment status, and

Table 2. Pearson Product Moment Correlation Summary table showing the relationship nicotine dependence and Internet gambling addiction among youths in Ikot Ekpene metropolis.

	Nico. Depend.	N		Std	r-cal	P	Remark
	Dependent	163	55.04	15.89			
Inter. Gam.					.71	<.05	Sig.
	Non-dependent	128	51.11	08.13			

Note: Nico. Depend. = Nicotine dependence; Inter. Gam. = Internet gambling

Table 3. Summary of Multiple Regression Analysis showing the predictive role of demographic variables on Internet gambling addiction among youths in Ikot Ekpene metropolis

Predictors	β	*t*	P	R	R^2	F	P
Age	–.373	–2.961	<.05				
Gender	–.078	–.082	>.05				
Marital status	2.66	2.384	<.05	0.356	0.031	.34	<.05
Emply. Status	.326	.356	>.05				
Acad. qual.	–.488	.556	<.05				

Coding: age = old (1) and young (2), gender = male (1) and female (2), marital status = singles (1) and married (2) employment status = employed (1) and unemployed (2), academic qualification = high (1) and low (2)

academic qualification) will independently and jointly predict Internet gambling addiction among youths in Ikot Ekpene Metropolis. This was tested using multiple regression and summary of results is presented in Table 3.

Results presented in Table 3 reveal that demographic variables (age, gender, marital status, employment status, and academic qualification) yielded a coefficient of multiple regression (R) of 0.356 and a multiple correlation square (R^2) of .031. This shows that demographic variables (age, gender, marital status, employment status, and academic qualification) jointly predicted Internet gambling addiction among youths, accounting for 31% of the variance observed [$R = 0.356$, $R^2 = .031$, ($F = (5,294) = 0.34$; $p < .05$]. Table 3 further indicates that age showed a significant negative prediction of Internet gambling addiction among the youths studied [$\beta = –.37$; $t = –2.96$; $p < .05$]. The result indicates that participants who were younger reported higher level of Internet gambling addiction than those were older. Furthermore, it is shown that gender did not show a significant prediction on Internet gambling addiction among youths sampled [$\beta = –.78$; $t = –.82$; $p > .05$]. Marital status showed a significant positive prediction of Internet gambling addiction among youths studied [$\beta = 2.665$; $t = 2.384$; $p < .05$]; implying that the singles reported higher Internet gambling addiction than those who were married. Employment status [$\beta = .326$; $t = .356$; $p > .05$] did not show significant prediction of Internet gambling addiction among the youths sampled but academic qualification [$\beta = –.49$; $t = –.56$; $p < .05$] indicated that the youths with lower academic qualifications (FLSC to OND) reported higher Internet gambling addiction than those higher academic qualifications (HND/BSc and above).

DISCUSSION

The result of analysis of hypothesis one showed that there was a significant positive relationship between nicotine dependence and internet gambling addiction. This finding was consistent with the findings of Petry and Oncken (2002) who reported that there was a strong co-occurrence of gambling and substance use in a sample of young people. Correlations between gambling and substance misuse showed that times gambled and gambling problems were each significantly related to the frequency of heavy alcohol use, tobacco and marijuana use, and with problems/symptoms associated with each of the three substances. It also supported the findings of Lorains (2004) who discovered that 60.1% of nicotine dependence was implicated in pathological and problem gambling. It is also in line with Maccallum and Blaszczynski's (2002) finding that pathological gamblers had rates of substance-use problems which were higher than those in the general population and Jacobs' (2000) review which found that youths who reported serious gambling-related problems used tobacco at twice the rate of their non-problem gambling counterparts, with gambling in both adults and adolescents being associated with high rates of smoking.

Supporting the position of Cognitive-Behavioural Theory (Sharpe & Tarrier, 1993), it is suggestible that the continued Internet gambling addiction may have been reinforced by financial rewards obtained as well as physiological arousal of the reward and pleasure centres in the brain each time the participants won. The brain centres may already have been influenced by the active ingredient in nicotine making them and the entire brain

to malfunction, resulting in poor social judgment as well as dependence and tolerance. Operantly, the participants may have taken advantage of the availability of the substance and the gambling centres in their environments to start the gambling behaviour. But these became maintained classically by pairing the gambling behaviour with real or perceived financial rewards so obtained (which served as reinforcement to the gambling behaviour). Still, the brain gets involved by repeated exposure to the "reward" making the individual to be physiological and physically arousal and involved. Under such conditioning, the behaviour is likely to be repeated.

The second hypothesis which stated that demographic variables (age, gender, marital status, employment status, and academic qualification) will independently and jointly predict Internet gambling addiction among youths in Ikot Ekpene Metropolis was not fully confirmed. However, the finding that younger participants reported higher level of Internet gambling addiction than their older counterparts contradicted the findings of Wickwire, et al. (2008) that students over 21 years of age were more likely to gamble than younger students.

The finding that the singles reported higher internet addiction than the married could be attributed to the fact that the married have more responsibilities that pre-occupy them or are socially more responsible. This may be in line with the assertion that gambling is viewed as a socially deviant or immoral behaviour in some cultures and throughout history (Korn &Shaffer, 1999). This result also supported an earlier finding that the most common marital status of Canadian Internet gamblers was being single and this marital category was statistically predictive of Internet gambling (Wood & Williams, 2007). The results that gender was not a significant predictor of Internet gambling supported the some earlier findings that both sexes equally engaged in gambling; women engaged in problem gambling to fight off stress and while men engage in gambling to make extra money (Loughan, 1996). The results that employment status was not a significant predictor of Internet gambling addiction contradicted that the findings that some high percentage of people seeking treatment for gambling problems were unemployed and looking for work (Kellie, 2014). These differences could be attributed to differences in population and time. However, the result that educational qualification significantly predicted Internet gambling addiction with those with lower academic qualifications reporting higher Internet gambling addiction supported some earlier studies which linked higher rates of problem gambling to lower levels of educational attainment (Wardle, et al., 2010; Sproston, et al., 2012).

In conclusion, a total of 291 youths purposively selected to participate in this study which examined the relationship among nicotine dependence, demographic variables, and Internet gambling addiction among youths in the ancient city of Ikot Ekpene Metropolis. Results revealed that nicotine dependence positively related to Internet gambling addiction among the youths sampled; the results showed that the higher nicotine dependence the higher the Internet gambling addiction. Also, demographic variables (age, gender, marital status, employment status, and educational qualification) jointly predicted Internet gambling addiction among the participants, accounting for

31% of the variance observed. However, it was found that the younger and unmarried participants reported higher Internet gambling addiction than the older and married participants (youths). Other demographic variables (gender, employment status, and educational qualification) did not independently predict Internet gambling addiction among the participants. Therefore, it is suggestible that reducing nicotine intake could lead to a reduction in Internet gambling addiction. The younger population and the unmarried should be given therapeutic attention to reduce their proneness to Internet gambling addiction.

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PERCEPTION OF NIGERIAN TOBACCO CONTROL LAW BY CONSUMERS OF TOBACCO PRODUCTS IN IBADAN, OYO STATE, NIGERIA

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ABSTRACT

Tobacco use in any form has been identified for decades as a source of diseases and avoidable deaths all over the world. Cognizant of this fact, the Federal Government of Nigeria has, over the years, put in place successive laws to control the consumption of tobacco products. This study surveyed the awareness of tobacco control law by consumers of tobacco products; reasons for tobacco consumption; knowledge of harmful effects of tobacco consumption on smokers; adverse effects on non-voluntary smokers; willingness to quit smoking; and reasons for unwillingness to quit. Neutralization and Rational Action theories were used as the basis for the study while survey research design was adopted. Multi-stage sampling technique was adopted to select the eight wards in the two communities while simple random sampling technique was used to select four hundred and ninety-four participants for the study. The respondents completed standardised questionnaire which measured the constructs under study. Descriptive statistics were used to analyse the data collected. Among other findings, 103 (15%) of the respondents are aware that cigarette smoking can cause cancer while 85 (13%) are aware that non-voluntary smokers could develop heart diseases. A good number of the respondents 193 (41%) opined that tobacco warning messages are exaggerated; 209 (45%) – that the messages are distorted; 212 (45%) that the messages are boring. From the totality of the opinions expressed by respondents on the various issues covered by this study, it is obvious that many consumers of tobacco products are not aware of the measures put in place to curtail the consumption of tobacco products. To achieve the goal of safeguarding public health through tobacco smoking control, the paper recommends effective enforcement by the regulatory agencies and intensive awareness creation to educate members of the public on the health risks associated with consumption and exposure to tobacco products.

Keywords: tobacco, Nigerian tobacco law, smokers, anti-smoking messages, tobacco warnings

INTRODUCTION

Smoking is a major health problem threatening the lives of people of all ages (Demir, Karadenio, Demir, Karadeniz, Kaya, Yenibertiz, Taylan, Yilmaz, & Sen, 2015). The global tobacco epidemic, according to Peto and Lopez (2001), threatens the lives of at least one billion people. The World Health Organization (2004) indicated that the impact of smoking on developing countries could be particularly devastating when compared to developed countries. Moreover, the American Cancer Society (2005) stated that tobacco smoking among the youth is a public health concern because of the immediate and long-term health risks associated with tobacco use such as asthma, chronic cough, chronic obstructive airways disease, cancers and cardiovascular diseases.

The Centre for Disease Control and Prevention (2002) estimated the number of tobacco consumption-related deaths between 1950 and 2000 to be 70 million. According to the data released by the Centre in 2019, smoking leads to disease and disability and harms nearly every organ of the body and is the leading cause of preventable deaths (Centers for Disease Control and Prevention, 2019).

Studies have shown that non-smokers also suffer the health consequences of tobacco. Involuntary exposure to tobacco smoke puts non-smokers at a greater risk of diseases associated with smoking including sudden death syndrome in infants (Woodward & Langsen, 2001; Anderson & Cook, 1997; US Department of Health and Human Services, 2010). The World Health Organisation (2018) has predicted that if the current pattern of tobacco smoking among the youths continues, it would result in the death of 250 million children and young people, most of them in developing countries. The Organisation further states that every year, more than eight million people die from tobacco use and that most tobacco-related deaths occur in low- and middle-income countries; areas which are the targets of intensive tobacco industry interference and marketing (WHO, 2019).

Governments in different countries are making efforts to control tobacco use. Jha, Musgrove, Chaplouka, and Yurekli (2000) observed that government responses to incomplete or erroneous information provided by tobacco industries with regards to the risks involved in tobacco consumption include: mass information campaigns, warning labels, and publicly-financed research to create better or more easily assimilated information. The report of Health Bridge (2009) contends that the passage of a strong comprehensive tobacco control law that bans all forms of promotion and sponsorship mandates, promotes smoke-free public places and workplaces, and places large clear pictorial warnings on tobacco packages is an essential step for protecting public health, the environment, and reducing poverty. However, this same report lamented that many laws passed are never properly implemented and thus fail to achieve the anticipated benefits.

The Nigerian Government has also taken steps to address the prevalence of tobacco use in Nigerian. For instance, the commitment of Nigeria was demonstrated through the signing and ratification of the World Health Organisation Framework Convention on Tobacco Control (WHO-FCTC) in 2004 and 2005 respectively (United Nations Treaty Collection, 2019). In addition, a one-time Nigeria's Minister of Health inaugurated

a multi-sectorial/inter-ministerial committee on tobacco control in Nigeria in June, 2006 (Kale, Olarewaju, Usoro, Ilori, Ogbonna, Ramanandraibe, & Musa, 2012). Similarly, in 2016, the immediate past Federal Minister of Health inaugurated the National Tobacco Control Committee (NATOCC) to advise and make recommendations on the development and implementation of tobacco control policies, strategies, plans, programmes and projects in accordance with the World Health Organisation Framework Convention on Tobacco Control (WHO-FCTC), implementing guidelines and protocols with the overall aim of "safeguarding and protecting the health of Nigerians from the risks posed by the use of tobacco and tobacco products" (Tobacco Control Index, 2016). A further step to discourage tobacco consumption was the approval of increased excise duty rates on tobacco and related products by the Federal Government in March 2018. According to the then Minister of Finance, the new duty regime which followed all-inclusive stakeholder engagements by the Tariff Technical Committee of the Federal Ministry of Finance was to achieve a dual benefit of raising government's fiscal revenues and reducing the health hazards associated with tobacco-related diseases and alcohol abuse (The Guardian, 2018).

The first statutory enactment to control the consumption of tobacco in Nigeria was the Tobacco Smoking (Control) Act 1990. This was repealed and replaced with the National Tobacco Control Act 2015 which has greatly widened the areas of control. Acts prohibited by the new Act include sale of tobacco or tobacco products to a person below 18 years of age; sale through mail, the Internet or other online devices; false, misleading and deceptive labelling; smoking in the listed public places; advertising, promotion and sponsorship of tobacco and tobacco products; and sale without health warning on every packet of the product. As regards the last item, it is required that the warning shall cover not less than 50 percent of the total surface area of the package and shall be in English language. Stiff penalties ranging from huge fines, imprisonment, confiscation and destruction of the offending products are imposed.

This study is intended to ascertain the perception of tobacco control law by consumers in the study setting. The general objective of this study is to explore and evaluate the impact of Nigerian Tobacco Control Law on consumers of tobacco products in the city of Ibadan. The specific objectives are to identify the motives for smoking among tobacco consumers in Ibadan and examine the knowledge of respondents on the effects of second-hand smoke on non-smokers in Ibadan. Others are to examine the impacts of Nigerian Tobacco Control Law on indoor and public smoking in Ibadan and identify any other possible factors that impact cigarette smoking, cessation and control among smokers in Ibadan.

Given the socio-demographic characteristics of the respondents, the phrases "Nigerian Tobacco Control Law" and "Tobacco Law" are used instead of the National Tobacco Control Act 2015 which is the title of the current law. The latter phrase is considered too technical and legalistic for the respondents who cut across diverse social groups. At any rate, using the title of the new law might have been confusing to the majority of the respondents and would not have made any difference to the results of the study.

STATEMENT OF THE RESEARCH PROBLEM

Tobacco smoking is a serious public health challenge. Adejuwon (2009) opines that smoking, other uses of tobacco and exposure to secondhand smoke constitute one of the most significant risk factors for premature and preventable deaths from cancer and other diseases across board in Nigeria. Statistics released by the World Health Organisation on the health effects of tobacco are startling. According to the Organisation, tobacco kills up to half of its users and more than eight million people each year; more than seven million of those deaths are the result of direct tobacco use while around 1.2 million are the result of non-smokers being exposed to second-hand smoke, (WHO, 2002).

More than one billion people worldwide are smokers (Philips, 2010; World Health Organisation, 2002). Tobacco use is growing fastest in low-income countries due to steady population growth (Odey, Okokon, Ogbeche, Jombo, & Ekanem, 2012). Although there is no known direct link between population growth and tobacco use, Ham, Przybeck, Strickland, Luke, Bierut, and Evanoff (2011) suggest that people with low socioeconomic status tend to smoke cigarettes more heavily.

Governments in different countries are making efforts to control tobacco use. However, evidence shows that many laws passed are never properly implemented and thus fail to achieve the anticipated benefits (Health Bridge, 2009). Nigeria has been making efforts to control the consumption of tobacco and tobacco products. A prominent legislative effort in this regard is the enactment of the National Tobacco Control Act 2015 which repealed and replaced the Tobacco Smoking (Control) Act 1990.

Some efforts have been made by the Federal Ministry of Health to ensure that the current Act achieves the set objectives. These include the inauguration of the National Tobacco Control Committee (NATOC) and Tobacco Free Nigeria. The aim of the 'Tobacco-Free Nigeria' is to educate Nigerians on the National Tobacco Control Act 2015, raise awareness on the dangers of tobacco smoking through social media and offline interactions to reach young Nigerians especially secondhand smokers who need to be aware of the ban on smoking in public places. Another step is the release of two sets of advertisements that illustrate the negative health effects of tobacco consumption including passive smoking. According to the Ministry, about 10% of the six million annual tobacco-related deaths are those of people who do not directly smoke a cigarette or use tobacco (FMOH, Undated).

Despite these efforts, some challenges and gaps still exist in the National Tobacco Control Act (NTCA). These include revision of textual health warnings and lack or inadequacy of pictorial health warnings on cigarette packs, poor taxation and the NTCA's lack of regulatory autonomy which has resulted in poor policy implementation (Udokanma, Ogamba, & Ilo, 2021). Consequently, the level of consumer awareness of the Tobacco Control Law has remained low as demonstrated by anti-smoking behaviours such as smoking in public places, poor response to tobacco smoking messages, exposure to secondary smoking and poor disposition towards government regulation of tobacco use. This state of affairs shows that the implementation techniques are yet to yield the desired results.

SIGNIFICANCE OF THE STUDY

This study will provide information on the various dimensions of tobacco use among consumers in Ibadan. The study will facilitate better understanding of the impact of Nigerian Tobacco Control Law on consumers of tobacco products in Ibadan. It will contribute to the existing body of literature on public health generally and smoking and smoking hazards in particular. The findings of this study will also be useful for research, clinical practice, such as counselling and rehabilitation.

Additionally, this study will contribute to existing understanding and information on causes and effects of smoking. Such knowledge will provide a solid foundation for effective implementation of the Nigerian Tobacco Control Law.

LITERATURE REVIEW

Tobacco smoking is by far the most popular form of smoking being practised by over one billion people worldwide (Philips, 2010; World Health Organisation, 2002). Tobacco use, according to Odey, Okokon, Ogbeche, Jombo, and Ekanem (2010), is growing fastest in low-income countries due to steady population growth. Similarly, Blecher and Ross (2013) contend that tobacco industries are increasingly turning to low- and middle-income countries, particularly Africa, Asia, and Eastern Europe because the use of tobacco has declined in high-income countries. The findings of a report by the Committee of Experts on Tobacco Industry as far back as 2000 concluded that tobacco companies engage in activities that slow and undermine effective tobacco control programmes around the world at the expense of public health. They achieve this especially in developing countries by influencing agencies and representatives through well calculated strategies and tactics (WHO, 2000).

Jha, Musgrove, Chaloupka, and Yurekli (2000) contend that incomplete information about the risks of smoking leads to behaviour that smokers would not otherwise choose for themselves. In a similar vein, Weistein (1998) asserts that poorly informed smokers often underestimate the risks of their action. Also, Sweda and Daynard (1996) argue that the tobacco industry, like other industries, has no financial incentive to provide health information that would reduce consumption of its products. On the contrary, the industry has consistently hidden product information on the ill effects of smoking or actively misinformed smokers about tobacco-smoking associated risks.

Ekrakene and Igeleke (2010) categorise individuals into active smokers, passive smokers (second-hand smokers) and non-smokers. According to them, active smokers are those that voluntarily inhale tobacco smoke, while passive smokers are individuals who inhale smoke from tobacco products involuntarily. The non-smokers are individuals who do not inhale tobacco smoke whether voluntarily or involuntarily (Ekrakene & Igeleke, 2010). Paavola, Vartianinen and Haukkala (2004) note that most adult smokers begin to smoke or are already addicted to smoking before the age of 18. Furthermore, Baker (2007) laments that despite several warnings from medical professionals that smoking is hazardous to human health, many consumers are smoking more than ever.

In Nigeria, tobacco is used in many forms, varying from rolled cigarettes and shredded tobacco inserted into pipes for smoking to finely pulverized tobacco for inhalation referred to as snuff (Federal Ministry of Health, 2012). Odukoya, Odeyemi, Oyeyemi, and Updhyay (2013) submit that the prevalence of tobacco use in Nigeria among adults (12.3% males <1% in females) is generally lower than in more developed countries; however, its prevalence among the youths tends to be higher than among adults. Equally, Uguru, Mbachu, Ibe, Uguru, Odukoya, Okwuosa, and Onwujekwe (2015) assert that about 20 billion sticks of cigarette, valued at 200 billion Naira are consumed in Nigeria annually.

THEORETICAL FRAMEWORK

Two major theories have been reviewed in this study; and these are neutralization theory and rational choice theory (Scot, 2010). The neutralization theory is employed to explicate the reasons behind the decision of some individuals to violate the National Tobacco Control Law which proscribes public smoking in Nigeria while the rational action theory provides explanations about why some individuals choose to consume tobacco products in spite of its attendant socio-economic and health hazards.

NEUTRALIZATION THEORY

This theory was developed by Gresham Sykes and David Matza in 1957. It provides explanations on how deviants justify their acts by developing some special sets of techniques to neutralize and temporarily suspend their commitment to societal values thereby providing them with the freedom to commit unlawful acts. This theory argues that contrary to the popular notion that individuals who violate laws do so because they have subcultural values at odds with those held by members of conventional society; these individuals are, in fact, committed to the rules and laws of the society. According to the theory, though individuals who violate the law are committed to the rules and laws of society, they, however, make exceptions to these rules with rationalizations called neutralization techniques. These rationalizations are devices which deviants use temporarily to excuse or justify behaviour that runs counter to dominant normative standards of the society. Hence, through rationalizations, deviants do not hold a guilty conscience and/or have a negative self-image.

RATIONAL CHOICE THEORY

Rational choice theory (Scott, 2010) adopts a methodological individualist position to explain all social phenomena in terms of the rational calculations made by self-interested individuals (Scott, 2000). The basic premise of the theory is that the aggregate social behaviour results from the behaviour of individual actors, each of whom is making their individual decisions. According to rational choice theory, individuals must anticipate the outcomes of alternative courses of action and calculate that which will be best for them. Rational individuals choose the alternative that is likely to give them the greatest satisfaction (Heath, 1976; Carling, 1992; Coleman, 1973). The rational agent is assumed to take account of the available information, probabilities of events, and

potential costs and benefits in determining preferences and to act consistently in choosing the self-determined best choice of action. At its core, the theory opines that, when making a decision, people first weigh the likely positive benefits against likely negative consequences, and then base their choice on what they think will ultimately benefit them the most. The decision to use tobacco by an individual therefore could be a result of complex mixture of factors. Adejuwon (2009) found that individual characteristics, environmental, parental, biological, behavioural, psychological, cultural and social factors are associated with tobacco use and involuntary exposure to second hand smoke.

METHOD

Design

This study adopted descriptive survey research design. Focus was on awareness of tobacco control law, knowledge of the law and effect of the law on use of tobacco. A descriptive survey research design attempts to establish the range and distribution of some social characteristics (in this case awareness of Nigerian tobacco control law and knowledge of the law) and to discover how these characteristics may be related to certain behavior patterns or attitudes (again use of tobacco in this case). The research design was best suited for the study as it enabled these present researchers to describe the qualifications possessed by the employed demographics of the surveyed population. In this study, use of tobacco refers to how frequent a respondent consumes tobacco as well as the quantity of tobacco consumed.

Setting

The setting of the study was Egbeda town and Bere-Mapo areas of Ibadan, Oyo State, Nigeria. Egbeda town is the headquarters of Egbeda Local Government, while Bere-Mapo area is situated in Ibadan North East Local Government of Oyo State with its headquarters in Mapo. The area covers 17 square kilometres (National Population Commission of Nigeria, 2006; National Bureau of Statistics, 2017). These two locations were selected because of their unique socio-geographical features which provided bases for studying and understanding the subject comprehensively. Bere-Mapo is an inner-city and core area of Ibadan that is predominantly occupied by the locals. Conversely, Egbeda town is in the peripheral part of the city that is composed of people of diverse ethnic backgrounds.

Population

The estimated total population of Egbeda town and Bere-Mapo areas based on the 2011 population projections is 652,030. Egbeda Local Government Area had population density of 1,760.2 inhabitants per square kilometre as of 2011. It had a population of 283,643 in 2006 and a projected population of 336,200 in 2011. Egbeda's population grew by 3.46% between 2006 and 2011 (National Population Commission of Nigeria, 2006). Ibadan North East Local Government where Bere-Mapo area is located had a population density of 18,578.2 inhabitants per square kilometre as at 2011. It had a population of 266,457 in 2006 and a projected population of 315,830 in 2011 (National Bureau of Statistics, 2017). Adult residents of Egbeda town are mainly farmers and petty traders whereas adult residents of Bere-Mapo area are mainly petty traders

and artisans. Many younger residents of these areas attend schools mainly at primary and secondary levels.

Sample and sampling technique

Four hundred and ninety-four respondents were sampled from both Egbeda and Bere-Mapo communities. The sample population had diverse socio-demographic attributes such as age, religion, ethnicity, marital status and socio-economic status. The gender-neutral approach was adopted considering the focus of the study which was on perception of Nigerian Tobacco Law by consumers of tobacco products irrespective of gender. The multistage sampling technique was adopted to pick participants from Egbeda town and Bere-Mapo community. The communities were stratified into wards (based on existing political ward delineations). Four wards were randomly selected from each of the two communities using a table of random numbers. The age range of respondents was expected to be between 18 and 60 years.

The survey

The survey was carried out for approximately four weeks. Four field assistants were engaged and trained over a period of two days. All questions in the survey instrument were critically studied and pilot-tested.

Inclusion criteria

The inclusion criteria encompassed being resident of the study community and falling within the age bracket of 18 and 60 years.

Instrument

The instrument for data collection was structured and semi-structured 30-item questionnaire, which consisted of demographic data as well as tobacco use and knowledge of tobacco control law. While some of the questionnaire items required "yes" or "no" responses, there were others that were open-ended. A 15-item 5-point Likert-type response sub-scale scale measured respondents' perception of anti-smoking messages.

Validation of instrument

The study instruments were validated through a pilot study involving 48 respondents drawn from the study population. The validation yielded a Cronbach's Alpha of .14 and .77 for tobacco smoking and perception of anti-smoking messages respectively.

Procedure

The researchers obtained ethical approval from the Research Committee of the Social Sciences and Humanities, University of Ibadan. The researchers administered the questionnaire individually on the respondents. Consent of each respondent was sought and obtained. All educated respondents were instructed to fill the questionnaire privately and to submit to the researcher(s) the same day or at the earliest mutually agreed convenient time. For the uneducated respondents, the researchers read out the questions and the listed answers without influencing the choice of the respondents. Furthermore, it is important to point out that a major challenge experienced during the process of data collection was the unwillingness on the part of some respondents to answer some questions in the designed questionnaires. Consequently, this brought about some discrepancies in the total of numbers of variables analyzed and presented.

However, in spite of this identified challenge, this study provided significant insight into the phenomenon of study.

Data Analysis

The study utilised frequencies, simple percentages and charts for data analysis. The Statistical Package for the Social Sciences (SPSS) was used.

RESULTS

The major results of this research are presented and discussed in this section. The major sub-themes covered are the socio-demographic characteristics of respondents, reasons for smoking, the impacts of second-hand smoking on non-smokers and the impact of the Nigerian Tobacco Control Law on indoor and public smoking in Ibadan.

Socio-demographic characteristics of respondents

Table 1 presents the socio-demographic characteristics of the respondents according to location, age, marital status, academic qualifications, job status, type of work, position at work, duration at vocation, monthly income and period of residence at location.

Table 1. Socio-demographic characteristics of the respondents

Variable	Frequency	Percentage	
Location			
Egbeda Town	200	40%	
Bere-Mapo Area	294	60%	
Total	**494**	**100%**	
Age			Mean age =
18-30 years	151	31%	38.61
31-43 years	178	37%	Std.
44-56 years	94	20%	Deviation =
57-69 years	44	9%	13.965
70 years and above	14	3%	
Total	**481**	**100%**	
Marital Status			
Single	160	32%	
Married	292	59%	
Divorced	21	4%	
Widowed	11	2%	
Separated	10	2%	
Total	**494**	**100%**	
Highest Academic Qualification			
None	21	4%	
Primary	89	18%	
School-Cert/SSCE	210	43%	
OND/NCE	65	13%	
B.Sc/HND	78	16%	
Post graduate	31	6%	
Total	**494**	**100%**	
Job status			
Not working	90	18%	
Working	404	82%	
Total	**494**	**100%**	

Table 1. Socio-demographic characteristics of the respondents *(continued)*

Variable	Frequency	Percentage
Type of work		
Artisan	222	45%
Teaching	34	7%
Trading	82	17%
Civil servant	49	10%
Farming	16	3%
Professional	23	5%
Unemployed	68	14%
Total	**494**	**100%**
Position at work		
Owner of business	205	49%
Apprentice	69	17%
Partner	34	8%
Junior staff	31	8%
Middle level officer	37	9%
Senior staff	26	6%
Manager	13	3%
Total	**415**	**100%**
Duration at Vocation/Work		
1-10 years	240	56%
11-20 years	111	26%
21-30 years	54	13%
31-40 years	19	4%
41-50 years	8	2%
Total	**432**	**100%**
Monthly income range		
Less than #10,000	20	5%
#10,000-60,000	277	71%
#61,000-110,000	68	17%
#111,000-160,000	15	4%
#161,000-210,000	4	1%
#211,000 and above	9	2%
Total	**393**	**100%**
Number of months you have lived in this location in the last three years	58	13%
1-12 months	190	42%
13-24 months	208	46%
25-36 month	**456**	**100%**
Total		

Table 1 shows the demographic characteristics of residents in the study areas. In terms of age distribution of the respondents, 178 (37%) were between the ages of 31 – 43 years while 151 (31%) were between the ages of 18-30 years. As regards marital status, Table 1 shows that the majority of the respondents 292 (59%) were married while those who were single constituted 160 (32%). The distribution of the highest academic qualification of the respondents shows that 210 (43%) were School Cert/SSCE holders and 89 (18%) primary school certificate holders. In terms of job status, the majority, 404 (82%) were in the working class category. The distribution of the respondents according to the type of work done shows

that 222 (45%) were artisans, 82 (17%) were traders and 68 (14%) were unemployed. As regards position at work, 205 (49%) operated personal businesses. In terms of years spent on present vocation, 240 (56%) had spent between 1 and 10 years.

Respondents' monthly income range shows that majority, 277 (71%) earned between 10,000 and 60,000 naira. In terms of years of residence at locations, 208 (46%) reported to have lived in their present abode between 25 and 36 months while 190 (42%), have lived there for 13-24months. Reasons for smoking as reported by respondents include relaxation (138 responses; 33%) stress relief (132 responses; 32%) enjoyment (14%), achieving calmness (8%) and status symbol (12%). Types of tobacco products used by the respondents included cigarettes (395 responses; 82%), and snuff (89 responses; 18%). Specifically, the majority of the respondents (395; 82%) consumed cigarettes. This finding suggests the popularity of cigarettes among respondents. Reported number of cigarettes smoked daily ranged from 1-5 sticks (206 responses) through 1 packet (94 responses) to 11-19 sticks and 3-5 packets (both 5 respondents). The largest proportion of the respondents, 206 (59%) smoked 1-5 sticks of cigarettes per day, while 94 (27%) disclosed that they consumed 1 packet daily.

The Impacts of Second-Hand Smoking on Non-Smokers

Respondents were also probed on the impacts of second-hand smoking on non-smokers. Findings indicate that smokers recognised the negative impact of their smoking behaviour on the health of non-smokers (Table 2).

Respondents' Opinions on How Exposure to Cigarette Smoking Can be Risky

The opinion of the respondents on how exposure to cigarette smoking can be risky was also sampled. The distribution of their responses is presented in Table 2.

Table 2 shows that the majority, 271 (63%) believed that inhaling cigarette smoke can expose smokers and non-smokers to the risk of heart-related diseases.

Impact of the Nigerian Tobacco Control Law on indoor and public smoking in Ibadan

Analysis was also carried out on respondents' opinions regarding the impact of the Nigerian Tobacco control law on indoor and public smoking in Ibadan as a way of determining its efficacy. Result showed that the majority of the respondents (59%) in the two selected communities were of the view that the Nigerian Tobacco Control Law had no impact on their indoor and public smoking behaviours, while the remaining 41% asserted that the law impacts on their smoking behaviours.

Table 2. Opinions on how exposure to cigarette smoking can be risky

Risks Associated with Exposure to Cigarette Smoke	Frequency	Percentages
By inhaling it you are prone to heart-related diseases	271	63%
The smoke causes cough/other diseases	78	18%
It can cause heart attack to an asthmatic patient	45	11%
It affects respiratory organs and tracts	36	8%
Total	**430**	**100%**

Respondents' Opinion on the Need for Government Regulation of Tobacco Use

Table 3 shows the respondents' opinions distribution on the need for the government to regulate tobacco use.

Table 3 shows that the majority 123 (61%) wanted government to regulate tobacco use as a way of protecting the health of smokers and non-smokers. Six (4%) mentioned that government regulation of tobacco use will help in controlling the high prevalence of smoke-related diseases.

Respondents' Knowledge of the Existence of the Nigerian Tobacco Control Law

Information was sought on the respondents' knowledge on the existence of the Nigerian Tobacco Law as a way of understanding their familiarity with its prescriptions. The distribution of respondents' opinions is presented in Figure 1.

It is clear from Figure 1 that most of the respondents 310 (64%) were aware of the existence of the Nigerian Tobacco Law compared to 177 (36%) respondents who were not aware its existence.

Knowledge of the Nigerian Tobacco Control Law by respondents

The perspectives of the respondents were sought on the provisions of the Nigerian Tobacco Control Law (Table 4).

From the data shown in Table 4, the highest number of the respondents, 189 (41%) submitted that the law prohibits smoking in public places while a substantial proportion, 167 (36%) stated that the law proscribes smoking by people less than 18 years. Also, 169 (15%) mentioned

Table 3. Respondents' opinions on why government should regulate tobacco use

Why Government Should Regulate Tobacco Use	Frequency	Percentage
To protect smokers'/non-smokers' health	123	61%
To control air pollution of public places by tobacco smoke	61	30%
Because of high prevalence of smoke-related diseases	6	3%
To regulate the age of tobacco users	11	6%
Total	201	100%

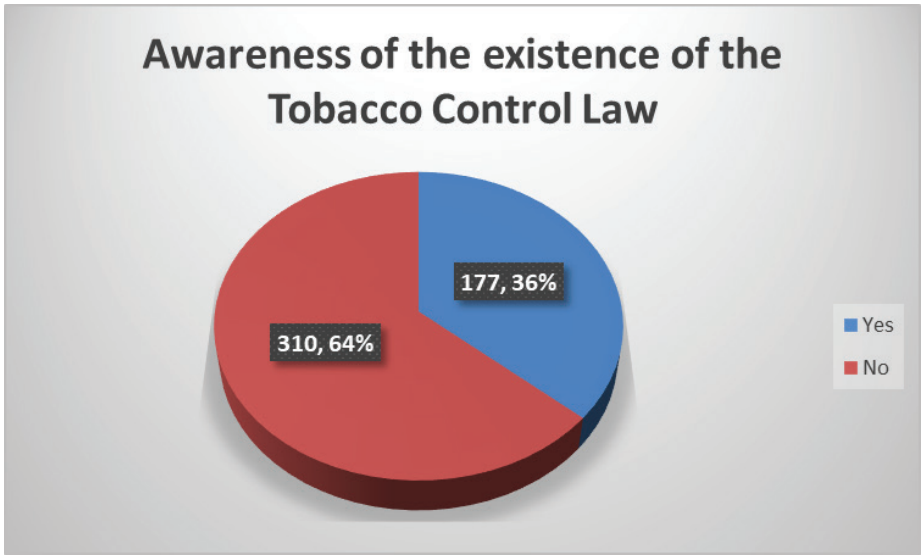

Figure 1. Respondents' Awareness of the Existence of the Nigerian Tobacco Control

that the law forbids indoor smoking while 37 (8%) maintained that the law prohibits smoking while driving. The conclusion from these responses is that the respondents are not sufficiently conversant with the provisions of the Nigerian Tobacco Law.

Respondents' Disposition towards Government Regulation of Public Smoking

Responses on disposition towards government regulation of public smoking show that the majority (287) of the respondents (59%) oppose the regulation on smoking by the Nigerian Government, while 197 (41%) expressed support for it. It is not certain from the findings of this study whether peoples' disposition towards government regulation of public smoking is influenced by location.

Possible Factors that can Impact Cigarette Smoking, Cessation and Control among Smokers

In order to understand factors that can impact on cigarette smoking cessation and control, respondents were asked to indicate the best possible ways to quit. Table 5 presents the result of the analysis.

Table 5 shows that the highest proportion of the respondents, 127 (35%) believed that reducing the quantity of tobacco smoked daily can help to quit the habit while 93 (26%) suggested change of friends and environment.

Respondents' responses on whether tobacco warnings have effects on their smoking habit

Investigation was also conducted on the effects that tobacco smoking warnings have on the respondents. The outcome of the analysis is depicted in Figure 2.

Figure 2 shows that tobacco smoking warning had no effect on the smoking habit of the majority of the respondents, 298 (65.4%) compared to 158 (34.6%) that claimed that it had effect. The implication of this finding is that majority of the smokers are not likely to be influenced by the warning to quit the habit.

Table 4. Respondents' opinions on the provisions of the Nigerian Tobacco Control Law

Tobacco law in Nigeria by respondents	Frequency	Percentage
Prohibition of smoking by people under 18 years	167	36%
Prohibition of indoor smoking	69	15%
Prohibition of smoking in public spaces	189	41%
No smoking while driving	37	8%
Total	**462**	**100%**

Table 5. Respondents' Opinions on Possible Ways to Quit Smoking

Respondents' responses	Frequency	Percentage
Reduction of quantity of tobacco smoked per day	127	35%
Change of friends/environment	93	26%
Counselling and rehabilitation	45	13%
Personal determination/self-discipline	51	14%
Smokers' education on the dangers of smoking	39	11%
Total	**355**	**100%**

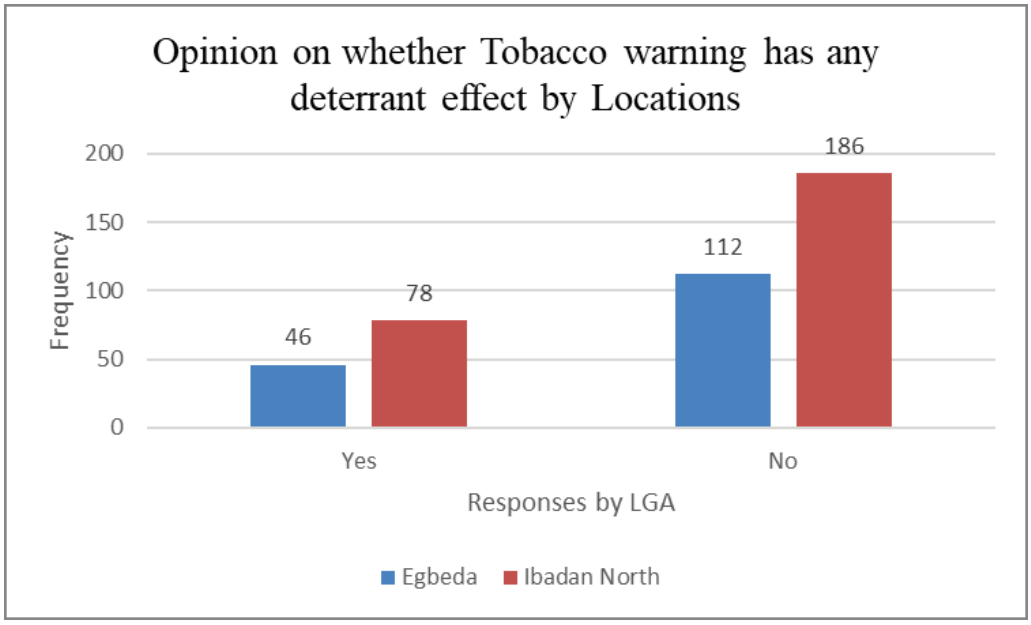

Figure 2. Effects of Tobacco Warning on Respondents

Respondents' opinions on why tobacco smoking warning has no effect on their smoking habit

There were four main reasons the participants gave as to why tobacco smoking warning does not have any effect on their smoking habit.

Ninety-nine (38%) of the respondents believed that the tobacco smoking warning is unnecessarily exaggerated. Eighty-seven (33%)indicated that they had no side effects since they had started smoking. Forty-three (16%) stated that it was mere propaganda, and 35 (13%) believed the warning was created to instil fear in people so as to discourage smoking.

Respondents' opinions on whether they are willing to quit smoking

To determine the future smoking habits of respondents, opinions were sought on whether they were willing to quit smoking. Their submissions showed that the majority of the respondents, 268 (63%) were willing to quit smoking. Furthermore, respondents who were unwilling to stop the habit were asked the reason behind their decision. Eighty-eight (44.3%) respondents were unwilling to quit smoking because they believed it is not a crime; 44 (24%) because they employ it to reduce anger and stress; and 31 (16.9%) claimed it has no side effects.

Perception of Anti-smoking Messages

Under the repealed Tobacco Smoking (Control) Act 1990, two sets of warning were required, namely, "The Federal Ministry of Health warns that tobacco smoking is dangerous to health", and "The Federal Ministry of Health warns that smokers are liable to die young". The new Act (National Tobacco Control Act 2015) does not specify any particular warning but gives the Minister of Health the mandate to prescribe a new set of warnings and messages after a period of 24 months. At present, the applicable warning is: "The Federal Ministry of Health warns that smokers are liable to die young". This study reveals that this warning is conspicuously written on front and back sides of all packets of cigarettes sold in Nigeria. Respondents were asked to respond to the statements in Table 6 to ascertain the perception of smokers about anti-smoking messages.

The responses to the statements in Table 6 give a clear insight into respondents' perception of anti-smoking messages and indeed other matters related to the control of tobacco consumption. Among other things, the table shows that 265 (54%) agree that the warning emphasises health concerns about smoking why the majority, 271 (57%) agree that this message emphasises the need for smoking regulation. Curiously, a significant per cent, 204 (43%) expressed the view that this message attacks the tobacco industry while 164 (35%) stated that the message is exploitative and tends to manipulate feelings of smokers.

DISCUSSION

This study surveyed the perception of Nigerian tobacco control law by consumers of tobacco products in Ibadan, Oyo State, Nigeria. The justification for the study was that many existing laws in Nigeria are not properly implemented and thus do not achieve the anticipated benefits. With particular reference to tobacco laws,

Table 6. Perception of Anti-smoking Messages
"The Federal Ministry of Health warns that smokers are liable to die young"

S/N	Items	SD	D	U	A	SA	Total
1.	This message emphasises health concerns about smoking	23 (5%)	27 (6%)	33 (7%)	256 (54%)	134 (28%)	473 (100%)
2.	This message emphasises social aspect of smoking	42 (9%)	67 (14%)	80 (17%)	225 (48%)	59 (13%)	473 (100%)
3.	This message emphasises the need for smoking regulation	38 (8%)	43 (9%)	51 (11%)	271 (57%)	69 (15%)	472 (100%)
4.	This message emphasises that people who don't smoke don't fit in the social world	105 (22%)	145 (31%)	115 (25%)	66 (14%)	39 (8%)	470 (100%)
5.	This message attacks the tobacco industry	44 (9%)	100 (30%)	70 (15%)	204 (43%)	59 (12%)	477 (100%)
6.	I think this message is exaggerated	43 (9%)	115 (24%)	70 (15%)	193 (41%)	51 (12%)	**472** (100%)
7.	I think this message is distorted	29 (6%)	110 (24%)	80 (17%)	209 (45%)	40 (9%)	468 (100%)
8.	I think this message is boring	41 (9%)	88 (19%)	77 (16%)	212 (45%)	51 (11%)	472 (100%)
9.	I think this message is exploitative	35 (8%)	111 (24%)	108 (23%)	164 (35%)	45 (10%)	463 (100%)
10.	This message is trying to manipulate my feeling towards smoking	42 (9%)	104 (23%)	104 (23%)	162 (35%)	47 (10%)	459 (100%)
11.	I feel manipulated by this message	66 (14%)	130 (28%)	71 (15%)	153 (33%)	43 (9%)	463 (100%)
12.	I think this advert is convincing	47 (10%)	119 (25%)	58 (12%)	209 (45%)	37 (8%)	470 (100%)
13.	I think anyone can find this message convincing	39 (8%)	111 (24%)	71 (15%)	217 (46%)	33 (7%)	471 (100%)
14.	I think anyone can be persuaded by this warning	48 (10%)	93 (20%)	72 (15%)	218 (46%)	40 (9%)	471 (100%)
15.	This advert is persuasive	44 (9%)	96 (20%)	64 (14%)	226 (48%)	40 (9%)	470 (100%)

despite the efforts to regulate this subject since the enactment of the repealed Tobacco Smoking (Control) Act 1990 and the current 2015 Act, gaps in implementation have continued to persist.

The survey was carried out for approximately four weeks. Data analysis of the study involved frequencies, simple percentages and charts for data analysis. The results of the study showed diversity in respondents' demographic characteristics. For instance, most of the respondents 423 (68%) were in the age range of 18-56; majority, 292 (59%) of the respondents were married; academic qualifications ranged from none to postgraduate; majority 404 (82%) were working; 277 (71%) within the income bracket of 10,000 - 60,000 naira while 240 (56%) have worked for between 1-10 years.

Reasons for smoking also varied among the respondents. Whereas many of them, 138 (33%) reported consuming cigarettes for the purpose of relaxation, a substantial proportion 132 (32%) indicated stress reduction as their reason. The remaining respondents gave other reasons ranging from enjoyment to status symbol. There is an important point to be made from respondents' diverse reasons for consuming tobacco and the location differences in the reasons given. Effective enforcement of Tobacco Law in Nigeria entails first knowing and appreciating people's various reasons for consuming tobacco. There is also a need to study, understand and deal with some socio-cultural and economic realities that promote tobacco consumption in various communities.

Tobacco products mostly used by respondents were snuff and cigarettes. Whereas 206 (59%) respondents reported smoking 1-5 sticks of cigarette daily, only 5 (2%), indicated that they smoked 3-5 packets daily. In this sense also, there is a need for relevant government officials and other stakeholders in tobacco consumption regulation to routinely survey local communities with the aim of knowing tobacco products that are available in those communities and the chain through which those products are supplied to the communities. Knowing tobacco consumption patterns and socio-cultural and economic setup of communities will make tobacco consumption control more effective.

Respondents' opinion on impacts of second-hand smoking on non-smokers also varied with the majority reporting the impact to include cancer, lung disease or chronic cough. Respondents' opinions on how exposure to cigarette smoking can be risky also differed considerably. Most of them 271 (63%) reported that by inhaling cigarette smoke, one is prone to heart-related diseases. This result validates the position of rational choice theory that a rational agent is assumed to take account of the available information, probabilities of events, and potential costs and benefits in determining preferences and to act consistently in choosing the self-determined best choice of action.

With regards to the impact of the Nigerian Tobacco Control Law on their indoor and public smoking behaviours, 59 (59%) of respondents reported that it had no impact. Protection of smokers/non-smokers' health was the reason given by most respondents 123 (61%) in support of government's regulation of tobacco use. 310 (64%) of respondents were aware of the existence of the Nigerian Tobacco Law. This finding corroborates a tenet of neutralization theory which argues that contrary to the popular notion that individuals who violate laws do so because they have sub-cultural values at odds with

those held by members of conventional society; these individuals are, in fact, committed to the rules and laws of the society.

Most respondents opined that possible ways to quit smoking were reduction in the quantity of tobacco consumed daily, change of friends and environment; personal determination/self-discipline; counseling and rehabilitation; and education of smokers on the dangers associated with smoking. This result is in line with an element of rational choice theory which opines that individuals must anticipate the outcomes of alternative courses of action and calculate that which will be best for them.

Tobacco smoking warning generally had no effect on respondents' smoking habit. Among other things, the reasons adduced by respondents were that the tobacco smoking warning was unnecessarily exaggerated, no side effects experienced since the start of the habit; and that the warning is mere propaganda. This outcome buttresses a key proposition of neutralization theory which submits that deviants justify their acts by developing some special sets of techniques to neutralize and temporarily suspend their commitment to societal values thereby providing them with the freedom to commit unlawful acts.

CONCLUSION AND RECOMMENDATIONS

The views of respondents summarised in the foregoing paragraph and other parts of this paper point to the need not only to educate tobacco consumers on the dangers of consuming the product but also support them to quit consumption. Tobacco smoking warning in Nigeria appears to be generally ineffective. Thus, there is a need to design, create and publicise tobacco warning messages that are effective. Furthermore, from respondents' responses on reasons for unwillingness to quit smoking as expressed in Table 6, it is obvious that many smokers indulge in the habit due to insufficient critical awareness. This explains why a significant per cent (44.3%) should indicate that they were unwilling to quit smoking because they believe that "it is not a crime" and 16.9% that "it has no side effect".

Respondents strongly agreeing that anti-smoking message emphasises health concerns about smoking and going ahead to indulge in smoking suggests that such respondents have high risk-taking propensity with regards to smoking. This buttresses the need to address the risk-taking behaviour of tobacco consumers. Similarly, agreeing that anti-smoking message emphasises social aspect of smoking points to the need for understanding the social factors that promote smoking and formulating policies that deal with those factors. Responses on the need for smoking regulation suggest that individual smokers themselves recognise the need for regulation of this subject. Respondents who expressed the opinion that tobacco warning messages are exaggerated or distorted are likely to ignore or rationalise anti-smoking messages and indulge or continue to indulge in tobacco smoking. The response by a good number of respondents 212 (45%) that this message is boring points to the need to modify anti-smoking messages to make them more exciting, more appealing and more efficacious.

From the totality of the opinions expressed by respondents on the various issues covered by this study, it is obvious that more concerted efforts are required in order to achieve the goal of safeguarding public health through tobacco smoking control.

Effective enforcement by the regulatory agencies is essential. Above all, awareness creation in all its ramifications is a key element - awareness about offences and penalties under the current Tobacco Law, existing enforcement agencies and most importantly, health dangers associated with the consumption of tobacco products.

This study has implications on the impact of the Tobacco Law on consumers in Nigeria. A significant number of consumers is reasonably aware of the dangers of tobacco smoking. However, the said awareness does not result in a commensurate change in behaviour in terms of smoking cessation or reduction. The current state of affairs indicates that the implementation techniques are yet to yield the desired results. More tobacco consumers, especially second-hand smokers, need to be further educated through social media and offline interactions. Specifically, awareness should be created about the ban on smoking in public places.

Future research in this area should focus more on understanding psycho-demographic and other cognate variables that hinder effective implementation of of Tobacco Law. Future studies should also improve on the limitations of this present study which includes relatively small sample size, narrow location coverage and research design which limited responses to only self-reports by respondents. Future research should equally seek to establish whether peoples' or respondents' location influences their disposition towards government regulation of public smoking.

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SOCIAL INFLUENCE PROCESSES AND LIFE ORIENTATION IN RISK PERCEPTION OF DRUG USE AMONG UNDERGRADUATES

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ABSTRACT

The current study investigated the role of social influence processes: informational social influence and normative social influence, and life orientation in risk perception of drug use. Using a cross-sectional survey design, 380 undergraduates were recruited using a random sampling technique. Results reveal that within the study sample, which comprised university undergraduates, social influence processes, whether informational or normative, did not influence reported risk perception of drug use. In the same way, life orientation did not also correlate with risk perception of drug use but shows possibility of significant influence at a little above the .05 significant level (p = .059). However, gender showed a significant relationship with risk perception of drug use with females more likely to perceive risk of using drugs than their male counterparts. These results could mean very much to researchers on drug use when we consider other levels of interrelationships among variables. The result indicates that differences in how men and women are socialized form an orientation pattern for each of the sexes and each gender continues in the determined path from generation to generation. An important strategy therefore for men to strengthen their risk perception of dangerous situations is to forge a knit relationship with a network of female folks such as mothers, sisters, co-workers, acquaintances and wives. Female relations on their own part should ensure that they keep a tap on their male relatives and associates show absolute loyalty and allegiance to be able to employ either kinship synergies or diverse forms of sexual politics to restrain them from unwanted and risky behaviours.

Keywords: Social influence, risk perception, life orientation, drug use, undergraduates

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INTRODUCTION

In many countries, there have been grave concerns about the way young persons are involved with drugs. Most youths do not readily consider the risks associated with their use of the various forms of substances available to them. For instance, Maricic, et al. (2013) found that younger, rather than older, persons were associated with different aspects of attitudes toward licit and illicit substance use; specifically higher risk perception of drug use was found among young population. According to Bracken, et al (2013), one important benefit of surveying adolescents about drug use is that research and prevention efforts can be focused on drugs that are increasing in popularity (and therefore severity of harm) and any meaningful pattern to drug use trends can be identified. However, the Substance Abuse and Mental Health Services Administration, Center for Behavioural Health Statistics and Quality (2013) of the United States Department of Health and Human Services suggests that adolescents' perception of the risks associated with substance use is an important determinant of whether they would engage in substance use. For instance, it is contended that youths who perceive high risk of harm are less likely to use drugs compared to youths who perceive low risk of harm (Johnston, et al, 2012). However, while there seems to be a high level of risk perception and reduction of use by mono drug users, people who use multiple drugs (polydrug users) still make the campaign against drug use less successful (Balbo, et al., 2017).

The perception of risk is an essentially cognitive process through which individuals assign positive and/or negative properties to a determined object or event (Bejarano, et al, 2011). In the field of drug use research, the perception of risk has been established as a key factor in the decision of whether or not to use a drug (Bejarano et al, 2011). For example, Knoll, et al. (2015) have shown, in a study of adolescents risk perception, that social influence is a factor in adolescent risk-taking, and this influence increases with decreasing age. Perception of risk has also been associated with beliefs, expectations and affective value(s) people attach to the substance of abuse and expectations of key persons in the life of people examining the risk (Rodriguez, 2002). One qualitative study (Kazdouh, et al., 2018) identified, from a number of focus group studies, six common themes that represent the most salient perceived risk and protective factors regarding substance use, such as perceived benefits, awareness and beliefs, family influence, peer influence, easy accessibility and social norms. Other factors such as low self esteem, anxiety, depression, peer pressure and sexual abuse, can generally influence how people perceive risk (Bejarano, et al. 2011).

Developmental stages in drug involvement describe a variety of human characteristics pertaining to cognitive, psychological and physiological functions and how they follow well-defined developmental sequences (Kandel, 1975, Kandel, et al 1978). According to Kandel (1975) and Kandel, et al (1978), major changes of adolescent drug use involve some significant probabilities of adolescents moving from one stage of drug involvement to another as shown in the flow chart below:

The flow chart explains perceived locus of adolescents' drug activities from onset to addiction. At first (stages 2 and 3), adolescents' drug and substance use is

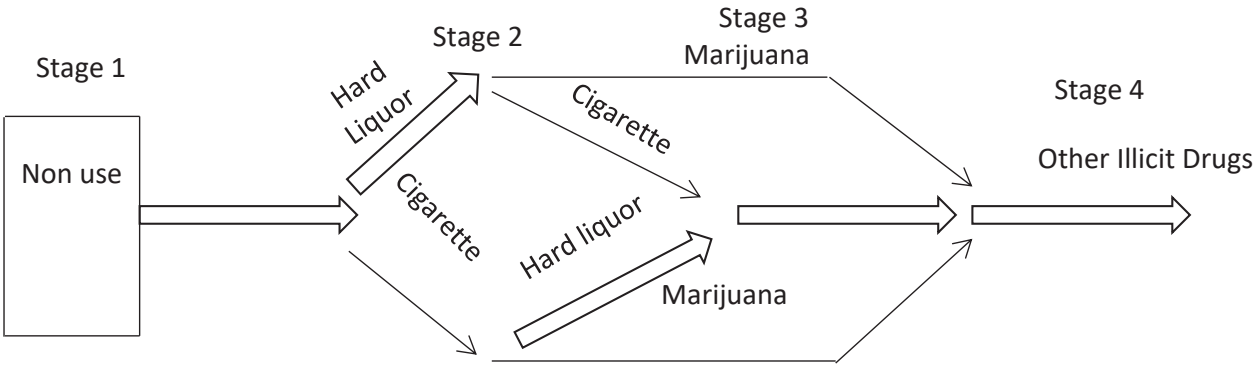

Figure 1. Stages and Major changes of Adolescents' Drug Use (Kandel, 1975)

recreational, and they will be experimenting with different substances from alcohol (hard liquor) to stronger tobacco (marijuana) for purposes such as social conformity and acceptance. At stage 4, they graduate to other illicit drugs (hard drugs) to obtain greater and/or more rewarding effects which are not provided at these stages. Stage 4 is a dangerous route which may lead to addiction and other related risks.

In the Center for Behavioural Health Statistics and Quality (CBHSQ) report analyzing trends in perception of risk and availability of substance use among full-time college students, it was observed that full-time college students aged 18-22 years differed from young adults who are not full-time college students in their perceptions of whether there is great risk of harm from using substances. Perception of risk was also conducted online among 184 young (18-24) and older (45+) people using 11 drugs and 16 drug-related criteria. The 16 harm criteria (Nutt, et al., 2010) were used, with emphasis on the distinctions between harm to the user versus harm to the society. Harms of 11 commonly used drugs were assessed including heroine, crack cocaine, cocaine and others. Results indicated that overall perceived harm rankings identified heroin, crack cocaine and methamphetamine as the most harmful among both young and older people.

Social Influence Processes: Variants and Dimensions

Social influence processes refer to the ways in which the opinions and attitudes of one person affect the opinions and attitudes of another person (Martin, et al., 2007; Martin & Hewstone, 2003). These processes have been delineated to include persuasion, conformity and other forms which are modeled to encourage interdisciplinary collaborations. They can represent either majority or minority influence.

In a study on interactive and higher order effects of social influence on drug use, Stacy, et al., 1992) confirmed the possibility that social influence may predict drug use in non-linear, that is, quadratic forms. This is easily explained by the fact that social influence and social learning theories suggest that individuals learn within a social context, with changes in thoughts, feelings, attitudes and behaviours resulting from interactions with other individuals or groups (Bandura, 1977; Kelman, 1958).

According to Gass and Seiter (2015) social influence involves intentional and unintentional efforts to change another person's beliefs, attitudes or behaviour. It is believed that social influence is ubiquitous in human societies and can be identified in a wide variety of forms such as obedience, conformity, persuasion, social loafing, social facilitation, de-individuation,

observer effect, bystander effect, and peer pressure, reciprocity, commitment, social proof, liking and attractiveness (Gass & Seiter, 2015; Izuma, 2017).The present study is mostly concerned with the two aspects of social influence: informational and normative social influence.

Informational social influence is when a person conforms to gain knowledge or because they believe that someone else is right. Cialdini (1984) was the first to use the term "social proof" to describe informational social influence as a psychological and social phenomenon wherein people copy the actions of others in an attempt to undertake behaviour in a given situation. The place of informational social influence on risk perception has been demonstrated when groups in a risk perception task associated themselves with a social group. In a study of peer influence across five risk behaviours including cigarette smoking, alcohol consumption, marijuana use, tobacco chewing and sexual debit, Maxwell (2002) found that peer influence exerted same influence in the prevention of risky behaviours without aiding drug use.

Normative social influence is also a type of behavioural conformity. Since social life requires some level of conformity to group norms for reasons such as respect, love and approval, this type of social influence remains fundamental to peoples' need to belong to social groups. In choosing to engage in typical behaviours such as drug use, normative social influence may be important. For instance, Rimel and Real (2005) evolved a theory of normative social behaviour which pledges to align with the postulation of normative social influence. Substantiating a study on informational and normative social influences in group-buying behaviours, Kuan, et al. (2014) established the effects of the two (informational and normative) social influence processes on behaviour. A similar finding by Sylvestri and Correia (2016) highlighted the prevalence of self-reported non-medical use of prescription substances and confirmed that normative influence was an important determinant of prescription drug misuse among 18-25 year old college students. Based on these, it was reasoned that social influence may explain differential drug risk perceptions on delineated age groups outlined in Eriksons (1963) "subcultural" theory of psychosocial development. Each age group has been delineated in this study as a subculture.

Life Orientation and Risk Perception of Drug Use

Life orientation is seen as a holistic study of the self, the self in society and an opportunity to develop the emotional side of young people (Finegan, 2011). It has been described by the Western Cape Government's Further Education and Training (FET) Curriculum and Assessment Policy Statement as the study of the self in relation to others and to society. It addresses skills, knowledge and values about the self, the environment, responsible citizenship, health and productive life, social engagement, recreation and physical activity, careers and career choices.

We decided to study life orientation in relation to risk perception of drug use because adolescents or other people who indulge in drugs are like learners. Life orientation is central to the holistic development of learners because it addresses skills, knowledge and values for personal, social, intellectual, emotional and physical growth of people and is also concerned with the way in which these variables are intertwined (Makatu, 2019).

There is a mixed opinion about life orientation. While some see it as something with vast potentials, others view it as very negative (Jacobs, 2011). The South African Department of Education (2002) believes that life orientation is aimed at developing and engaging learners in personal, psychological, neurocognitive, motor, physical, moral, spiritual, cultural and socio-economic areas, so that they can achieve their full potential. How, then, can life orientation be applied in the area of drug use? Relating to drug use, existing literature (Scherzer, 2015) explains that drug use and abuse can occur due to peer pressure, socializing, community mental health, stress and socioeconomic level.

HYPOTHESES

Based on the literature reviewed, the following hypotheses were proposed:

1. Social influence will positively influence participants' perception of risks associated with drugs such that participants on informational influence will report higher levels of risk perception compared to participants under normative influence.
2. Life orientation will positively influence participants' perception of risks associated with drug use such that participants who view their life with optimism will report higher levels of perception on risks associated with drug use compared to participants with pessimistic view about their life.
3. Age will positively influence adolescents' perception of risks associated with drug use such that older people will report higher levels of risk perception on drug use compared to younger people.

METHOD

Design: The study was based on a 2 (social influence: informational vs. normative) × 2 (life orientation: positive vs negative) × 2 (Age: younger vs older) ex post facto design.

Participants: Participants were undergraduates of the University of Uyo drawn from 5 Faculties of Engineering, Social Sciences, Environmental Sciences, Medical Sciences and Arts using the random sampling procedure with a sample size of 380. The characteristics of participants as shown in Table 1 indicate that males were 192 (50.5%) and females 188 (49.5%). A greater percentage of participants were single (91.6%) while 8.4% were married and divorced individuals. The religious affiliation of participants shows that majority were Christians with 95.3%. Participants' age ranges between 17 and 47 years, with average age of 22 years and standard deviation of 4.8.

Informed consent for each participant was obtained by explaining the procedures and reasons for the study to them. They were given the option to either participate or withdraw from the study if they were so convinced.

Instruments

Life Orientation Test-Revised (LOT-R): The life orientation test (Scheier, et al., 1994) was used to measure perspectives of people's optimism versus pessimism about life. It is a 10-item measure with 3 items measuring optimism, 3 items (pessimism) and 4 items as fillers. Respondents rated each item on a 5-point scale: 0 = strongly, 1 = disagree, 2 = neutral, 3 = agree, 4 = strongly disagree. Items 3, 7, and 9 were reverse-scored. Scoring

was kept continuous, that is, there is no benchmark for being an optimist/pessimist. Optimism is a mental attitude tied to the belief that all our actions will have a desirable outcome and is so motivated. The author reported a Cronbach alpha of .78. In this study, the scale had an internal consistency of .59.

Social Influence (Reference Group Influence) Questionnaire: The reference group inference scales (Park & Lessig, 1977) were used to measure social influence dimensions. Previous research has identified three major types of reference group influences – "informational, utilitarian and value – expressive", influence. The 14 items of the scale are subdivided into the following subscales: informational, utilitarian and value-expressive. The scale has a good internal consistency with Cronbach alphas between .43 and .78 across the three subscales and a test retest reliability (between .56 and 91) after two months. The current study reported a Cronbach alpha of .55 indicating a good internal consistency.

The Perception of Risks Associated with Drug Use Scale: This behavioural battery was developed by the European Monitoring body working to campaign against harmful drug use behaviour. It is a 21-item scale on a 5-point Likert-type format. Participants answered the question: "how much risk is there that someone will harm themselves if they….(for instance) (a) try marijuana occasionally, (b) use marijuana regularly (c) try solvents occasionally, etc? A study (Harrmon, 1993) examined the effectiveness of the Drug Abuse Resistance Education (DARE) programme in South Carolina by comparing 24 fifth grade students to a comparable control group. Significant differences were found in prosocial norms, association with drug using peers, positive peer association, attitudes to substance use and assertiveness. No differences were found on tobacco and alcohol use in the last year or during the last month. For the purpose of this study, the scale was revalidated with scale reliability test and the scale presents an excellent internal consistency with Cronbach's alpha of .82.

RESULTS

From the correlation results (Table 1), only gender positively correlates with risk perception, indicating that females perceived more risk in drug use than males. Informational social influence, normative social influence and life orientation did not show any correlation with risk perception of drug use. Moreover, apart from correlating with risk perception of drug use, gender also correlated negatively with informational social influence, positively with normative social influence, negatively with

Table 1. Table of Inter-Correlation among Study Variables of study

S/N	Variables	1	2	3	4	5	6
1.	Risk perception of drug use	1					
2.	Informational Social Influence	–.067	1				
3.	Normative Social Influence	–.027	.016	1			
4.	Life Orientation	–.012	.191**	-.133**	1		
5.	Age	–.066	–.100	–.126*	–.018	1	
6.	Gender	.115*	–.109*	.082	–.076	–.129*	1

life orientation and negatively with age. Informational social influence also correlated negatively with life orientation and age.

Similarly, normative social influence correlated negatively with life orientation, and age. Life orientation associated positively with informational social influence but negatively with normative social influence and gender. The results also showed that age was negatively correlated with all other variables except life orientation. These inter-correlations have implications for the synergy between the independent variables and risk perception of drug use.

In Table 2, the main and interaction influence of social influence, life orientation, gender and age on the risk perception of drug use are reported. The results show that only gender had a significant influence on risk perception [F(1,323) = 4.345, $p < .038$). However, life orientation showed non-significant influence at a *p*-value of .059. Other variables also did not influence risk perception of drug use.

Based on this result, a t-test was conducted to further understand the direction of the influence of gender (Tables 3). From the table, it was found that female participants perceived a higher risk to drug use than their male counterparts and thus based on the results, we elected to examine the possible direction of the effect by testing the mean difference using the *t*-test.

From Table 3, the result shows a significant gender difference on risk perception of drug use (t (378) = –2.138, $p < .033$). Females scored higher on risk perception ($\bar{x}$ = 60.75, SD = 9.23) of drug use than their male counterparts ($\bar{x}$ = 58.83, SD = 8.21).

Table 2. ANOVA Result Showing Influence of Social Influence, Life Orientation, Age and Gender on Risk Perception among Undergraduates

Variables	SS	Df	MS	F	Sig.
Intercept	936835.847	1	936835.847	13618.631	.000
Social Influence (A)	223.053	1	223.053	3.242	.073
Life Orientation (B)	247.980	1	247.980	3.605	.059
Age (C)	14.347	1	14.347	.209	.648
Gender (D)	298.883	1	298.883	4.345	.038
A * B	10.546	1	10.546	.153	.696
A * C	54.767	1	54.767	.796	.373
A * D	48.629	1	48.629	.707	.401
B * C	57.308	1	57.308	.833	.362
B * D	79.501	1	79.501	1.156	.283
C * D	114.943	1	114.943	1.671	.197
A * B * C	44.116	1	44.116	.641	.424
A * B * D	13.141	1	13.141	.191	.662
A * C * D	33.103	1	33.103	.481	.488
B * C * D	3.588	1	3.588	.052	.820
A * B * C * D	16.236	1	16.236	.236	.627
Error	22219.412	323	68.791		
Total	1237069.000	339			

R^2 = .064

Dependent Variable: Risk Perception

Table 3. t-Test Showing Gender Difference on Risk Perception

	Gender	*n*	Mean	SD	DF	T	*p*
Risk Perception	**Male**	192	58.83	8.21	378	–2.138	.033
	Female	188	60.75	9.23			

DISCUSSION

The study investigated the role of social influence processes: informational social influence and normative social influence, as well as life orientation in risk perception of drug use. The results revealed that social influence processes, whether informational or normative, did not affect reported risk perception of drug use. Life orientation showed significant influence on risk perception of drug use among the adolescents. This result did not align with the findings of Knoll et al., (2015) which found that social influence increases risk perception among adolescents such that risk perception increases with decreasing age. These results could mean very much to researchers on drug use when we consider other levels of interrelationships among variables.

For instance, since informational social influence is dependent on group influence for choosing what is right, then participants who were not known to be drug users but asked to give their opinions on risk perception of drug use may either have given their obvious views on their drug involvement or merely displayed expected forms of social desirability. In terms of normative social influence, its non-correlation with risk perception of drug use could be related to the fact that there may be subjective norms guiding undergraduates towards drug use such that their responses may have been given to align with the social expectation that students should stay off drugs. One salient finding of the study is that, students' life orientation predicted risk perception of drug use. This could mean that participants in the study may not have routine contact with drugs physically or may be observing strict monitoring of their overt behaviour in relation to drugs. By implication therefore, there may be personal and/or institutional observation of overlapping life orientation goals – the socially accepted view that drug use is wrong and the other view that "we can always guard against drug use if we chose to".

The reported role of life orientation in risk perception of drug use was not unexpected. Life orientation addresses peoples' social skills, knowledge and values about how the self-interacts within a specific environment. Depending on the direction of such socialization, the person is able to make choices about every life decision. In this study, people whose life experiences engendered optimism were able to understand the risky implications of drug use compared to those who were pessimistic about life. Though social influence did not predict perception of risky drug behaviour, it is important to understand that social influence processes, appear subsumed into people's life orientation as a constant index of subjective norms.

What is however not in doubt is that gender's negative correlation has identified females as those who report more risk in drug use than males. This may be due to their low involvement with drugs on the one hand and the dictum that females are perceived to use less drugs than males on

the other, thus, consolidating their higher estimation of risk more than males. Similarly, this can, as well, be the confirmation that participants may also have engaged in social desirability rather than report the actual situation. The negative correlation of gender with informational social influence and its positive correlation with normative social influence may be a pointer to a labyrinth of hidden implications. It may mean that more women than men rely on oral evidence that drug use is risky while more men than women rely on subjective norms guiding a community's drug-taking behaviour. In addition, empirical evidence has shown that group influence whether at the family, community or peer level, has the tendency to influence drug use. This finding does not align with Kazdouh et al.'s (2018) work concerning gender. That result revealed that women perceived more risk concerning drug use compared to men. The result further explains the negligent posture of our socialization agencies which include families, communities, religious bodies, educational institutions and positive peer influence on oversight functions against drug use.

Generally, in the real world, and consistent with past research, social influence, whether informational and/or normative, is capable of leading people to follow group norms and values. In the present study, the results tend to point to the fact that undergraduates who made up the study population may not have been able to see clearly the risks associated with drug use and this may be due to extant rules against drug use in hostels, classrooms and other parts of the campus. It can suggestively be reasoned that since social influence also encompasses religious practices embedded in social norms, there is a strong interaction of informational and normative variants of social norms in the risk perception of drug use by the group studied.

In another dimension, life orientation did not show a clear difference between optimistic and pessimistic participants in risk perception of drug use. Participants who were optimistic about life were marginally able to report more risks to drug use than those who viewed life pessimistically. It means that both pessimistic and optimistic people may have placed equally the same value for life, which in turn increases their hope for better things in the future, hence their restraint in taking adverse decisions that can jeopardize this hope. On the other hand, both pessimistic and optimistic people may have attached less premium on life and may have become vulnerable to threatening and adverse drug decisions.

Finally, age was implicated in the study in order to contextualize Erikson's "subcultural" stages of human development in risk perception of drug use. Therefore, juxtaposing Erikson's lifespan hypotheses to the study group was difficult due to the age of participants. With an average age of 22 years, it was clear that participants were mostly adolescents and young adults submerged in the crises of identity and identity confusion as well as the need for intimacy which may, in adverse conditions, also result in isolation. Nevertheless, Knoll, et al. (2015) found that risk perception increases with decreasing age, a finding that did not align with the result of the present study. It may also have been possible that young adults who were positively distracted by intimate interests during their young adulthood years would express very high levels of risk perception of drug use since

they were already engaged in positively desirous behavior. It is those who may not have had deep intimate interests that may report very low levels of risk perception of drugs. However, the likely decision to isolate themselves from others may increase their propensity towards drug use.

Limitations of the Study

The results of the present study may be limited by the nature of the population studied as other population types may reveal different results. It means that every group's dynamics would greatly influence the response of the population to risk perception of drug use. This study was based on a population of undergraduate students with peculiar characteristics such as age, life orientation, filial opportunities and socialization goals. As university students with specific (academic) goals and rules of engagement through the matriculation oath, students could have been very cautious in their involvement with reports associated with drugs or may, at the same time, have been very economical on how they divulged information on their involvement with drugs. With this propensity towards social desirability, the study's results should be cautiously applied to the general population. For instance, the report that social influence, whether informational or normative, did not influence students' risk perception of drug use, even with an average (perceptibly youthful) age of 22 years, makes the group an exogenous one, since results of previous studies report risk perception as being inversely proportional to age. Moreover, it cannot be definitely ascertained how students' academic overload affected the quality of their responses, since data were collected in the countdown to their semester examinations.

Implication and Suggestions for Future Research

The present findings have revealed the direction of adolescents' perception of risks in the context of drug use. It points to the reality that life orientation remains an important compass which people could use as a guide in taking many decisions, irrespective of their source and quality of social influence, be it normative or informational. The study's findings may therefore be an emporium of research knowledge for those who may choose to work in the area of people's perception of risks, not only in relation to drug use, but also of many other life threatening decisions available as options for people to take in the face of life's several vulnerabilities. Based on these observations, there is also the need to study populations other than students in order to clearly understand the direction of influence of life orientation and social influence as well as other interacting demographics on risk perception of drug use. When this is done, there will be a clear direction of counseling across different populations on the dangers associated with drug use. Moreover, these efforts will also point to other directions where research and interventions may be targeted to ensure peoples' resilience against the numerous influence and effects of drug use. With these, a significant impetus would have been added to the global synergy towards the eradication of harmful drugs through people's precautionary behaviours.

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