



Knowledge and Perception of Alcohol Abuse as a Risk Factor of Non-Communicable Diseases among Undergraduate Students in Lead City University

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Abstract: Low- and middle-income countries are experiencing a transition from a preponderance of infectious to Non-Communicable Diseases (NCDs). Many of the behaviours that produce these risks often commence in late adolescence. The study assessed knowledge and perception of alcohol abuse as a risk factor for NCDs among undergraduate students in Lead City University Ibadan, Oyo state.

This was a cross-sectional study using a systematic random sampling technique. Data were collected using the semi-structured interviewer-administered questionnaire and were entered and analysed using SPSS version 21. Data were analysed with descriptive statistics such as frequency tables and percentages, and a Chi-square test at $p < 0.05$ were used to determine the level of association between two different variables.

Of 216 undergraduates, 132 (61.1%) were male and 103 (47.7%) were aged 26 years and above; the mean age was 22.4 (+/-8.437) years; 139 (64.4%) were singles. Only 69.9% of the respondents were current drink containing alcohol with 84.4 % classified as having excess alcohol use. Moreover, 79.6% were classified as having good knowledge toward NCDs. The most prominent influence sources of alcohol intake reported by the students were friends. It was revealed in this study that knowledge of alcohol as a risk factor for NCDs was found to be statistically significant with perception of alcohol abuse of the respondents. These findings highlight the need of developing school-based health awareness and promotion programs in Lead city University. The findings of this study will serve as the baseline data to develop new programs and to evaluate existing programs (if any), as limited data are available related to the implementation of NCDs prevention efforts in Lead city University.

Keywords: Risk factors, non-communicable diseases, university students.

INTRODUCTION

Alcohol consumption is socio-economic and socio-cultural among individuals in the society, especially students. Alcohol consumption appears very rampant in schools and in the society at large. It seems to be the source of one of the country's major health challenges as well as a risk factor of NCDs (Islami F et al 2010). The impact of alcoholism has remained a source of negative effect on the society and educational advancement cum achievement of the students.

Alcohol among the youth is a cause of increasing concern, alcohol has historically been part of the human culture. The general societal acceptability of the use of alcohol. It is also for this reason that alcohol is easily accessible for young people, even minors who are by law prohibited from drinking alcohol (Pflaum T, Hausler T, Baumung C, Ackermann S, Kuballa T, Rehm J 2016).

Heavy alcohol consumption and misuse is observed among the young adults. In another study was reported that the abuse of alcohol and other substances in many cases would be associated with the environmental and contextual risk factors. These authors indicate that environmental factors include, amongst others, family-related characteristics such as family functioning, parenting practices, and child maltreatment².

Alcohol is the most commonly used psychoactive substance in most parts of the world, and heavy alcohol consumption is associated with many health and social problems. In 2010, alcohol accounted for 4.9 million deaths and 5.5% of the global burden of disease and injury

(Lim et. al., 2013). This buttresses the view that "disease outcomes are among the most important alcohol-related problems" Alcohol related mortality and mortality per litre of pure alcohol per capita is highest in low-income countries (F. Stickel & C. Moreno 2017). Alcohol problems are major public health concern in developing countries, and there is growing concern over a "perfect storm" of alcohol availability, consumption and the paucity of effective alcohol control policies in these countries (Caetano & Laranjiero, 2006).

Nigeria ranks second for per capita alcohol consumption and heavy episodic drinking in

Africa (WHO, 2014). This does not include the fact that a quarter of the alcohol consumed in the country is unrecorded (Obot, 2007). An early study of alcohol in Nigeria pointed out that increased alcohol availability correlated with changes in drinking pattern, including earlier age of onset of drinking, and increased drinking by young people and women (Q.M Anstee & A.K Daly, Day CP 2015). Alcohol related problems are on the increase in Nigeria, especially among young people. The burden of health problems associated with alcohol consumption imposes serious cost on a developing country such as Nigeria where the health system is still under-developed and resources are over-stretched.

The physical and commercial availability of alcohol correlates with its high usage among the youth with devastating effects. In the same vein, it was showed that when under the influence of alcohol, young people engage in risky behavior such as fighting, driving, and engaging in risky sexual behaviour (M.R Thursz 2015).

Alcohol use is a major cause of mortality and disease globally (Ayinde et al, 2020). Furthermore, alcohol use as a risk factor is unique in that it leads to an increased risk of death and disability from many different causes, with the harms caused by alcohol across these diseases, conditions and injuries cumulatively summing to a relatively large burden of disease. Specifically, alcohol is causally related to more than 200 International Classification of Disease (ICD-10) three-digit codes, including infectious diseases, non-communicable diseases (NCDs) and injuries. Consumption of alcohol has been identified as one of the main determinants of NCDs, and while it is an individual-level risk factor⁶. According to World Bank data [2021], it has been established that of the over 7.9 billion people on earth, over 71% are 18 years and above i.e., are of legal age to consume alcohol, this indeed has become a high risk, and hence why NCDs are now a major focus of national and global preventative efforts to curb this menace (WHO, 2017).

Consumption of alcohol has been identified as one of the main determinants of NCDs, and while it is an individual-level risk factor (J. W. Creswell & J. D. Creswell., 2018)

Non-communicable diseases (NCDs), also known as chronic diseases, tend to be of long duration and are the result of a combination of genetic, physiological, environmental and behavioural factors. The main types of NCDs are cardiovascular diseases (such as heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructive pulmonary disease and asthma) and diabetes (Shield K, Rehm M, Patra J, Rehm J 2011). NCDs disproportionately affect people in low- and middle-income countries where more than three quarters of global NCD deaths occur. NCDs occur between the ages of 30 and 69 years. Each year, non-communicable diseases claim 41 million lives: That's about 70 per cent of all global deaths.

Alcohol is one of the four major risk factors for NCDs mentioned in the WHO's Global Action Plan for the Prevention and Control of NCDs 2013–2020, with a specific target of reducing the harmful use of alcohol by 10% (Samokhvalov AV, Irving HM, Rehm J 2010). This is a relatively less ambitious target compared to other risk factors mentioned in the Global Action Plan, and its potential contribution to the overall reduction of NCDs was estimated to be smaller than achieving the targets set for other risk factors.

Furthermore, within the WHO Global Action Plan for NCDs, a restrictive definition of NCDs was used, which is limited to cardiovascular disease, cancer, chronic lung diseases, and diabetes. This definition was based mainly on mortality caused by these disease categories and thus overlooked mental disorders, where a large portion of the global disability caused by alcohol is concentrated. Moreover, the NCD Global Action Plan excluded gastrointestinal diseases, which are a leading source of the disease burden globally and responsible for the stagnating life expectancies observed in some countries (WHO 2018).

Statement of the Problem

Alcohol consumption has been implicated as a risk factor for non-communicable diseases such as liver malfunction, cancer and kidney failure (WHO 2018).. According to WHO (2014) frequent alcohol consumption is directly linked to cancer and diseases of the liver, kidney and the heart, all of which leads to a decrease in the overall life span and quality of life of its youthful consumers.

Alcohol consumers, especially the youth, consume alcohol for pleasure and as a result of peer pressure. Undergraduate students are usually youths at an impressionable age. They feel the pressure to belong and be heard, hence fall to the effects of peer pressure. (Babor T, Caetano R, Casswell S, Edwards G, Giesbrecht N, Graham K, 2010)There is an increased trend of heavy alcohol consumption rate among the youths that it has become a societal menace and resulted in lots of negative consequences on mental health. (Johnson and Johnson 2000). The recent rise in obesity and mental health disorders among youth especially have been linked to alcohol abuse and addiction (WHO 2004). Alcohol abuse has also been linked to addiction, obesity and cancer, lack of self-control, especially when with the opposite sex which constitutes to a rise in non-communicable diseases (WHO 2010). Therefore, this study aims to investigate the knowledge and perception of alcohol abuse as a risk factor for NCDs among undergraduate students in Lead city University Ibadan.

Justification of the study

Alcohol use is a major risk factor for non-communicable diseases (NCDs). Undergraduate students are young adults who are at a life determining stage of their live. This stage is where most decisions, action and inactions have an overall effect on their older years. NCDs (Non-Communicable Diseases) such as liver malfunction which can result from alcohol abuse are totally avoidable when the risk factors are known. The importance of alcohol as a major risk factor for NCDs is evidenced by its inclusion as one of only four behavioural risk factors (tobacco use, unhealthy diet, physical inactivity, and harmful use of alcohol) into the World Health Organization's Global Action Plan for the Prevention and Control of NCDs. However, there is strong epidemiological evidence of the differential harms caused by alcohol use among undergraduate students in Lead City University.

Therefore the significance of this study is to create awareness and provide facts to the youth about alcohol abuse as a risk of NCD's.

Objectives of the Study

The main objective of this study is to determine the knowledge and perception of alcohol abuse as a risk factor of Non-communicable diseases among undergraduate students in Lead City University Ibadan, Oyo state.

Specific Objectives;

- 1 To determine the knowledge of alcohol as a risk factor for Non-communicable diseases among undergraduate students in Lead City University, Ibadan.
- 2 To determine the knowledge of undergraduate students about non-communicable diseases
- 3 To determine the perception of alcohol abuse among undergraduate students at Lead City University, Ibadan.

Research Question.

- a) What is the knowledge of alcohol as a risk factor for non-communicable diseases among undergraduate students in Lead City University, Ibadan?
- b) What is the knowledge of undergraduate students about non-communicable diseases
- c) What is the perception of alcohol abuse among undergraduate students in Lead City University, Ibadan?

Research Hypothesis

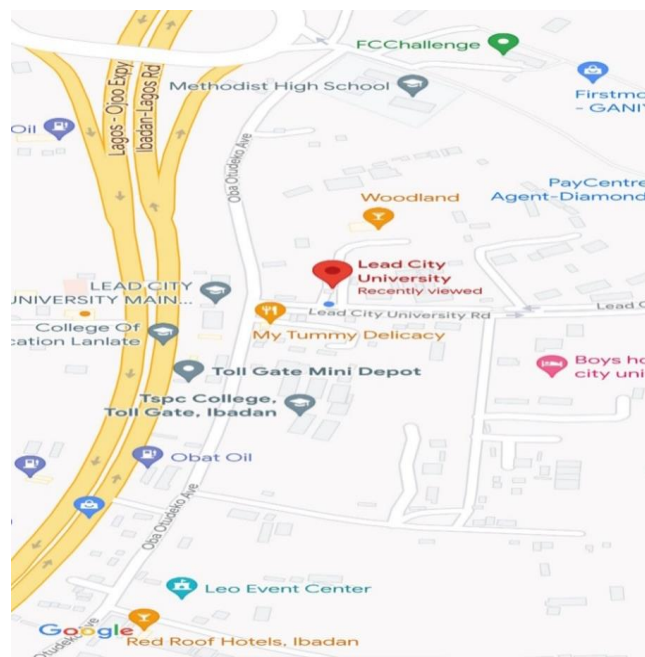
H₀: There is no significant relationship between the knowledge of undergraduate students towards non-communicable diseases and perception of alcohol abuse among undergraduate students in Lead City University, Ibadan

H₀₂: There is no significant association relationship between the knowledge of alcohol as a risk factor of non-communicable diseases among undergraduate students and the perception of alcohol abuse among undergraduate student in Lead City University, Ibadan.

MATERIAL AND METHOD

Study Area

The study was carried out within Lead City University, Ibadan, and Oyo State, Nigeria. First private University in Ibadan, Oyo State. It is located in the South west part of Nigeria with a student community of about 10,000 people with several buildings, theatres and halls housing faculties and departments. Lead City University has four (4) faculties and seventy (70) departments. Nature of dwellers largely literate and educated, religious, free thinkers, introverts and extroverts.



Map of Lead City University.

Study design

The descriptive cross-sectional study was employed due to the nature of the study which entails administering questionnaires to undergraduates who indulge in alcohol by going to various beer spot in school premises and outside the campus. The researcher administered this questionnaire personally and promised them that the research was for academic purpose only in order to provide sincere information

Population of Study

The population of this study comprised of all undergraduate student of Lead City University. The total population of the students are about four thousand five hundred (4500) students.

Respondents

The respondents are undergraduates of Lead City University within the age range 18 above.

Sample size determinant

The sample size for this study was estimated using a single proportion which is as follows;

$$n = \frac{Z^2 pq}{d^2}$$

Where:

n = sample size,

d = desired level of accuracy, set at 0.07

Z_{α} = the standard normal deviate, usually set as 1.96 which corresponds to 95% level of confidence.

P = 50% used (Gidado *et al.*, 2015)

d = Degree of accuracy (precision) set at 7% (0.07)

$$n = 1.96^2 \times 0.5 \times (1 - 0.5)/0.07^2 = 196$$

10% of the sample size will be added to the sample size to make the total sample size 216

Instrument for Data Collection

The study made use of quantitative method of data collection. The instrument that was employed for data collection was a semi-structured interviewer-administered questionnaire designed. The questionnaire was developed to assess the knowledge and perception of alcohol abuse as a risk factor of NCDs among undergraduate Students in Lead City University, Ibadan, Oyo State.

The questionnaire was divided into four sections which are:

- Section A: Socio-demographic characteristics
- Section B: Alcohol consumption knowledge and perception
- Section C: Knowledge of Non-communicable disease
- Section D: Knowledge of alcohol as risk factor of Non-communicable disease

Method for Data Collection

The questionnaires were administered to the respondents with the help of a research assistant. These were retrieved and checked for accuracy and completeness before leaving the field.

Data Analysis

Data collected was cleaned, coded and analysed using the Statistical Package for Social Sciences (IBM-SPSS version 25). Descriptive statistics such as percentages and frequency tables and inferential statistics such as chi-square was used to determine the relationship or level of association between independent and dependent variable at p-value less than 0.05.

Reliability of the Instrument

Reliability is necessary to ascertain whether the instrument is capable of reproducing consistent or similar results after a number of repeated administrations. . Reliability coefficient of 0.72 was considered using Cronbach Alpha.

Ethical Consideration

Ethical approval was obtained from Research Ethics Committee of Lead City University before collecting data. Informed consent was obtained from participants, strict anonymity and confidentiality will be ensured. The nature of the study, benefits and objectives was explained to the respondent before embarking on the process. They were informed that they reserve full rights to withdraw at any stage of the study.

RESULTS

Socio-Demographic Characteristics of Respondents surveyed (n=216)

Variable	Responses	Frequency (216)	Percentage (100)
Age	18-22	59	27.3
	23-25	54	25.0
	26 & above	103	47.7
Mean \pm S.D.	22.04 \pm 8.437		
Sex	Male	132	61.1
	Female	84	38.9
Marital Status	Single	139	64.4
	Co-habiting	77	35.6
Religion	Christianity	59	27.3
	Muslim	157	72.7
Ethnic group	Yoruba	141	65.3
	Igbo	75	34.7
Educational Status	100l	53	24.5
	200l	21	9.7
	300l	142	65.7
Employment Status	Employed	79	36.6
	Unemployed	137	63.4

The table above shows the socio demographic characteristics of the respondents under survey. It was revealed that 59 (27.3%) of the respondents fell within age group 18-22, (25.0%) of the respondent fell within age group of 23-25 and 103 (47.7%) of the respondents were within age group of 26 years and above. The mean and standard deviation of the ages of the respondents were found to be 34.6years and 6.2years respectively. More than half of the respondents 132 (61.1%) were female, and the remaining 84(38.9%) were male.

Out of the total respondent 139 (64.4%) were single and the remaining 77 (35.6%) were co-habiting. The prominent religion practiced was Islam (72.7%) while others (27.3%) practice Christianity. More than half of the participants 141 (65.3%) were Yoruba while others (34.7%) were Igbo. Majority of the participants 142 (65.7%) were 300level students at lead city university, (9.7%) were 200 level students while others (24.5%) were 100 level students. More than half of the participants 137(63.4%) were unemployed while the remaining 79 (36.6%) were employed.

Knowledge of alcohol as a risk factor of NCDs among undergraduate students in Lead City University, Ibadan. (n=216)

Variable	Responses	Frequency (216)	Percentage (100)
How often do you have a drink containing alcohol?	Never	33	15.3
	2-4 times a month	31	14.4
	2-3 times a week	151	69.9
	4 or more times a week	1	0.5

What is your favorite brand of alcohol?	Smirnoff	158	731
	Beer	25	11.6
	Not applicable	33	15.3
What age did you first consume alcohol?	18.00	30	13.9
	19.00	9	4.2
	20.00	11	5.1
	23.00	156	72.2
	25.00	10	4.6
What influenced your alcohol intake?	Friends	205	94.9
	Depression	11	5.1
How many drinks containing alcohol do you have in a typical day?	1-2	191	88.4
	3-4	25	11.6
How often do you feel like taking alcohol?	Occasionally	171	79.2
	Weekly	12	5.6
	Not applicable	33	15.3
How often have you attempted to stop drinking alcohol since you began?	Weekly	172	79.6
	Daily	11	5.1
	Not applicable	33	15.3
Has your intake of alcohol affected your daily performance in anyway?	No	183	84.7
	Not applicable	33	15.3
How often do you need to take on alcoholic drink to start your day?	Less than a month	84	38.9
	Daily	132	61.1
Do you feel guilt or remorse after drinking?	No	142	65.7
	Not sure	74	34.3
Are you often able to remember what happened after taking alcohol?	Yes	183	84.7
	Not sure	33	15.3
Have you or someone else been injured as a result of your drinking habit?	No	176	81.5
	Not sure	40	18.5
Has a relative, a friend, a doctor, or another health worker been concerned about your drinking or suggested you stop.	Yes	92	42.6
	No	124	57.4

The table above shows the respondents knowledge of alcohol as a risk factor of NCDs among undergraduate students in lead city university Ibadan. The study revealed that more than half of the respondents 151 (69.9%) often have a drink containing alcohol 2-3 times in a week, 31 (14.4%) take alcohol 2-4 times in a month, (0.5%) take it more than 4 times in a, while others 33 (15.3%) have never take drink containing alcohol. Majority of the participants 158 (73.1%) like to take Smirnoff, (11.6%) takes beer, while others 33 (15.3%) does not have a favorite brand of alcohol. Out of the total participants. Out of the total participants, 30 (13.9%) start taking alcohol at the age of 18years, (4.2%) start at 19years, (5.1%) start taking it at 20years, (72.2%) start taking it at the age of 23years, while the remaining (4.6%) start taking alcohol at the age of 25years.

Majority of the participants (94.9%) were influenced by their friends in taking alcohol. (88.4%) of the participants take drinks containing alcohol in 1-2 days. More than half of the participants (79.6%) often attempt to stop drinking alcohol but to no avail. The study also revealed that majority of the participants (84.7%) intake of alcohol affected their daily performance and (61.1%) of the total participants need to take alcohol drinks before starting a new day.

More than half of the total respondents (65.7%), always feel remorseful after drinking alcohol, and majority of the participants (84.7%) often remember what happened after taking their alcohol. Majority of the participants (81.5%) has injured someone and themselves as a result of their drinking habit. While a bit more than half of the participants (57.4%) has a relative, friend, doctor or health worker been concerned about their drinking and suggested that they should stop.

Knowledge of undergraduate students toward non-communicable disease (n=216)

Variable	Responses	Frequency (216)	Percentage (100)
Have you heard of non-communicable diseases?	No	172	79.6
	Not sure	44	20.4
What do you understand by NCDs?	Disease that is not transmissible to others	192	88.9
	Diseases that are not communicable at all	24	11.1
Can you give an example of NCD?	Boil	16	7.4
	Hypertension	62	28.7
	Malaria	138	63.9
Do you think NCD is an important health issue?	Yes	196	90.7
	No	20	9.3
Are you aware that alcohol increases the risk of NCD	Yes	96	44.4
	No	120	55.6
Do you think NCDs are deadly?	Yes	186	86.1
	No	30	13.9
Are NCDs treatable?	Yes	149	69.0
	No	67	31.0

From the table above, it was revealed that more than half of the participants (79.6%) have not heard of non-communicable diseases. It was also revealed that (88.9%) of the participants understand non-communicable diseases as a disease that is not transmissible to others. (63.9%) of the respondents choose malaria as an example of non-communicable diseases.

Majority of the participants 196 (90.7%) think that non-communicable diseases is an important health issue. A bit more than half of the respondents (55.6%) is aware that alcohol increase the risk of non-communicable diseases. (86.1%) of the participants think that non-communicable diseases are deadly. While more than half of the respondents (69.0%) said non-communicable diseases are treatable.

Perception of the undergraduate student towards alcohol as risk factor of non-communicable disease (N=216)

Variable	Responses	Frequency (216)	Percentage (100)
People suffer from health damage(s) /medical problems due to alcohol abuse	Strongly Agree	180	83.3
	Disagree	36	16.7
Students encounter academic difficulties/have problems with cognition due to alcohol intake	Strongly Agree	173	80.1
	Disagree	43	19.9
Alcohol abusers are more likely to have strained relationships with friends/family	Strongly Agree	173	80.1
	Disagree	43	19.9
Alcohol abuse can make one develop mental condition(s) or worsen an existing	Strongly Agree	173	80.1
	Disagree	43	19.9
Heavy alcohol users have the tendency to have a change in personality and behavior	Strongly Agree	193	89.4
	Disagree	23	10.6
Alcohol abusers usually get into fights and/or exhibit more aggressive outbursts while under influence	Strongly Agree	193	89.4
	Disagree	23	10.6
Alcohol availability and ease of access	Strongly Agree	193	89.4

in the society is a major factor causing alcohol abuse.	Disagree	23	10.6
People who consume alcohol may take it to reduce stress and forget about the problems they're facing.	Strongly Agree	193	89.4
	Disagree	23	10.6
People are not aware of NCD because they don't believe alcohol abuse is a risk factor.	Strongly Agree	173	80.1
	Disagree	43	19.9
Academic challenges might be a major reason people get involved in alcohol abuse	Strongly Agree	173	80.1
	Disagree	43	19.9
Do you bath with soap water?	Strongly agree	374	88.6
	Strongly disagree	48	11.4

The above table shows the perception of the participants towards alcohol as a risk factor of non-communicable disease. It was revealed that majority of the participants (83.3%) strongly agreed that people suffer from health damages and medical problems due to alcohol abuse. Majority of the participants (80.1%) strongly agreed that students encounter academic difficulties and have cognitive problems due to alcohol intake, and alcohol abusers are more likely to have strained relationships with friends and family. As well as (80.1%) of the participants strongly agreed that alcohol abuse can make one develop mental condition or worsen an existing one.

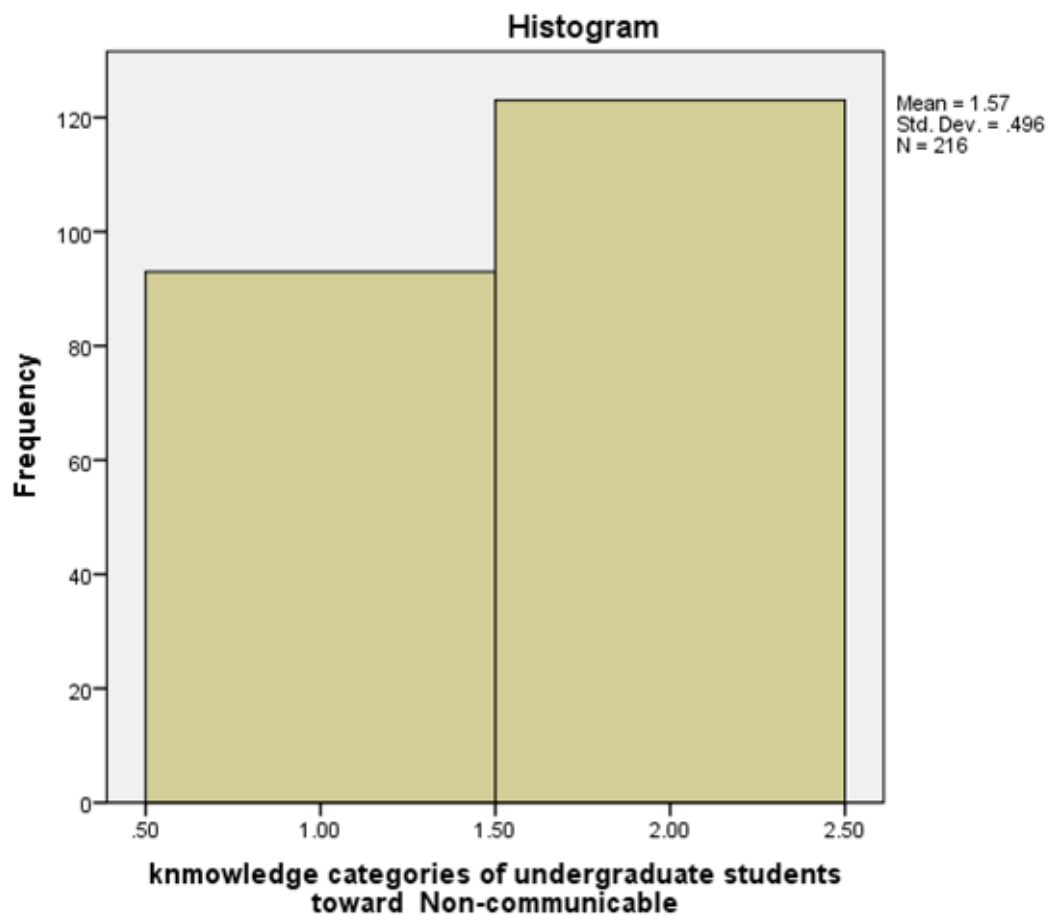
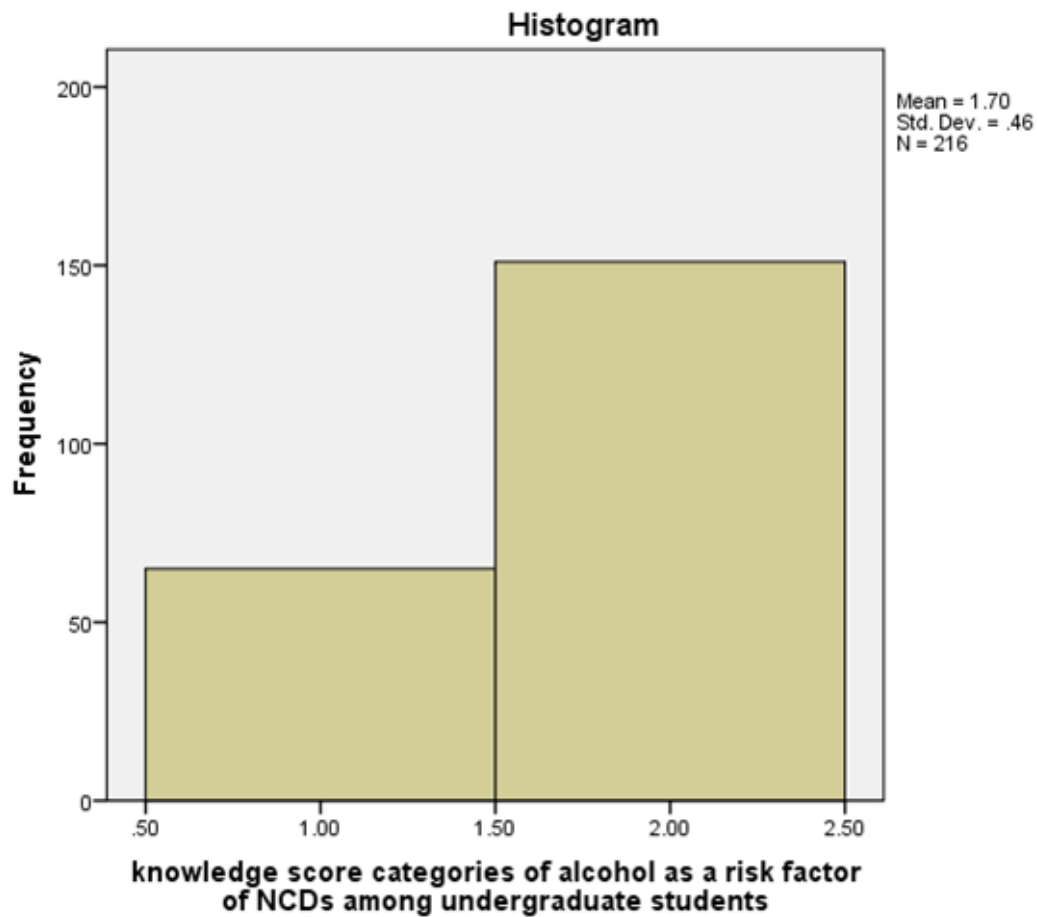
Majority of the participants (89.4%) strongly agreed that heavy alcohol users have the tendency to have a change in personality and behaviors, and they usually get into fight or exhibit more aggressive outbursts while under influence. It was also revealed that majority of the respondents (89.4%) strongly agreed that alcohol availability and ease of access in the society is a major factor causing alcohol abuse and people who consumed alcohol may take it to reduce stress and forget about the problems they are facing.

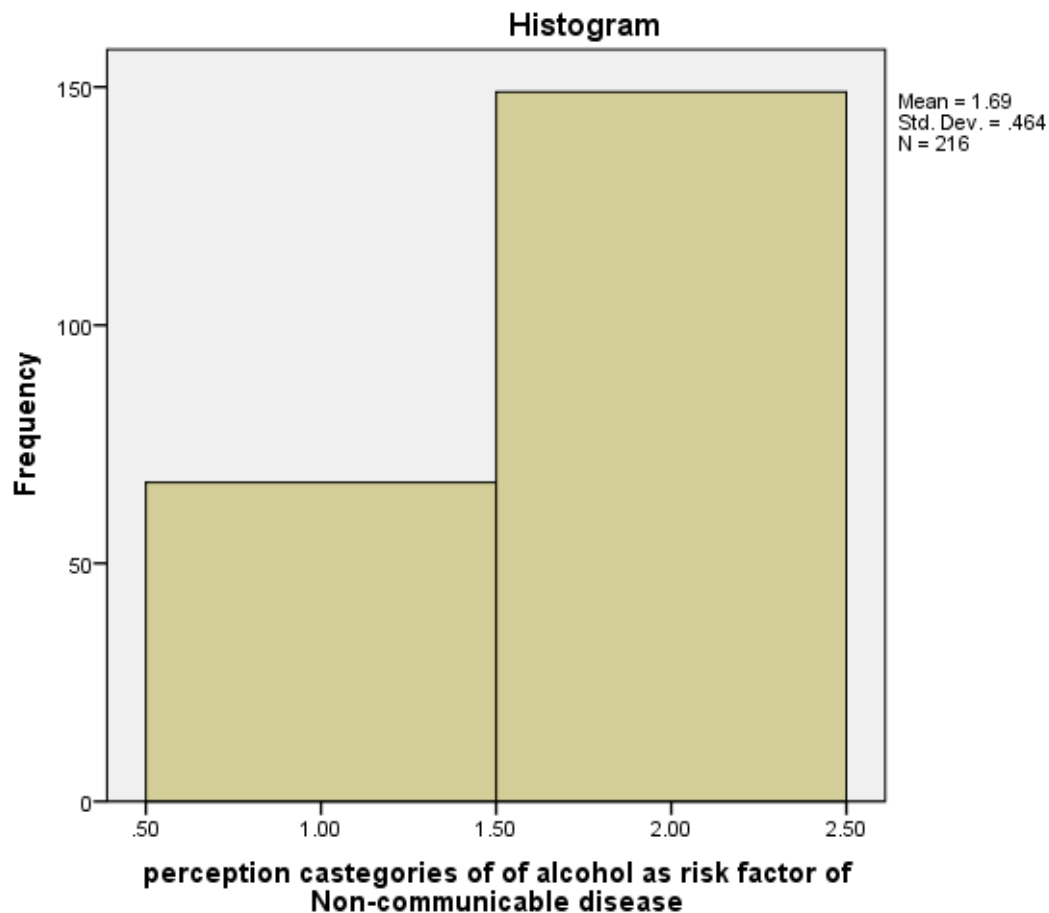
Majority of the respondents 173 (80.1%) strongly agreed that people are not aware of non-communicable disease because they don't believe alcohol abuse is a risk factor and academic challenges might be a major reason people get involved in alcohol abuse.

Respondent's Level of Knowledge and perception of alcohol abuse as a risk factor of NCDs among undergraduate students. (N=216)

Variable	Responses	Frequency (216)	Percentage (100)
Knowledge as a risk factor of NCDs among undergraduate. Mean \pm S.D.	Poor Knowledge	65	30.1
	Good Knowledge	151	69.9
		1.699 \pm 0.459	
Knowledge of undergraduate toward NCDs. Mean \pm S.D.	Poor Knowledge	93	43.1
	Good Knowledge	123	56.9
		1.57 \pm 0.496	
Perception of alcohol as risk factor of NCDs Mean \pm S.D.	Poor Knowledge	67	31.0
	Good Knowledge	149	69.0
		1.69 \pm 0.464	

The table above shows the level of respondent's knowledge and perception of alcohol abuse as a risk factor of NCDs among undergraduate students in Lead city university Ibadan. Oyo state. It was revealed that more than half of the participants (56.9%) have good knowledge of non-communicable diseases, and (69.9%) have good knowledge of the risk factor of non-communicable diseases, as well as (69.0%) have good perception of alcohol as a risk factor of non-communicable diseases. The mean and standard deviation of the respondent's knowledge of risk factor of NCDs among undergraduate were found to be 1.699 and 0.459, while the mean and standard deviation of the level of respondent's level of knowledge towards non-communicable diseases were found to be 1.57 and 0.496, and the mean and standard deviation of respondent's perception of alcohol as risk factor of non-communicable diseases were found to be 1.69 and 0.464 respectively.





Test of Hypothesis

H₀1: There is no significant association relationship between the knowledge of undergraduate students towards non-communicable and perception of alcohol abuse among undergraduate student in Lead City University, Ibadan.

Association between knowledge of undergraduate toward NSDs and perception of alcohol as risk factor of NCDs.

Knowledge	Perception				
	Poor Perception (%)	Good Perception (%)	df	Chi-square	P-value
Poor Knowledge	31 (33.3)	62 (66.7)	1	0.409	0.522
Good Knowledge	36 (29.3)	87 (70.7)			
Total	67 (31.0)	149 (69.0)			

The above table shows the result of using a Pearson chi-square test of independence to show the relationship between the knowledge of undergraduate students towards non-communicable diseases and perception of alcohol abuse among undergraduate students. Here, a layered crosstab of the knowledge of non-communicable diseases was shown alongside the Chi Square value, degree of freedom, p-value and the outcome of the chi square test. It was revealed that there is no significant association between the knowledge of non-communicable diseases with perception of alcohol abuse of the respondents. Therefore, the null hypothesis is hereby accepted, and the alternative hypothesis rejected.

H₀2: There is no significant association relationship between the knowledge of alcohol as a risk factor of NCDs among undergraduate students and perception of alcohol abuse among undergraduate student in Lead City University, Ibadan.

Association between knowledge of alcohol as a risk factor of NCDs among undergraduate students and perception of alcohol as a risk factor of NCDs.

Knowledge	Perception				
	Poor Perception (%)	Good Perception (%)	df	Chi-square	P-value
Poor Knowledge	60 (92.3)	5 (7.7)	1	163.232	0.000
Good Knowledge	7 (4.6)	144 (95.4)			
Total	67 (31.0)	149 (69.0)			

The table above shows the result of using a Pearson chi-square test of independence to show the relationship between the knowledge of alcohol as a risk factor of NCDs among undergraduate students and perception of alcohol abuse among undergraduate students. Here, a layered crosstab of the knowledge of alcohol as a risk factor of NCDs was shown alongside the Chi Square value, degree of freedom, p-value and the outcome of the chi square test. The knowledge of alcohol as a risk factor of NCDs was found to be statistically significant with perception of alcohol abuse of the respondents. Therefore, the null hypothesis is hereby rejected, and the alternative hypothesis accepted.

Discussion of findings

The purpose of this study was to investigate knowledge and perception of alcohol abuse as a risk factor of NCDs among undergraduate students in Lead City University Ibadan, Oyo state. To our knowledge, this is the first study that explored the knowledge and perception of alcohol abuse as a risk factor of NCDs among undergraduate students. Nevertheless, the rising numbers of NCDs have become a major problem in Lead City University Ibadan, Oyo state that needs to be addressed from all population subgroups. Thus, this study aimed the knowledge and perception of alcohol abuse as a risk factor of NCDs among undergraduate students in Lead City University Ibadan, Oyo state.

Socio-Demographic Characteristics of Respondents surveyed

This study revealed the socio-demographic characteristics of the respondents under the survey. It was revealed that the majority of the respondents were within the age group of 26 years and above. This is not in line with the research conducted by Babor T et al., (2017) which revealed that Alcohol consumption among the youth continues to rise. The main cause of this is that youth have easy access to alcohol from various sources, including directly purchasing alcohol from commercial establishments, despite laws prohibiting such sales to young people under the age of 18¹³ its consequences can be prevented via broader public health interventions such as those impacting on availability, affordability, and marketing of alcohol. The mean and standard deviation of the ages of the respondents were found to be 34.6years and 6.2years respectively. More than half of the respondents were male and this suggested that more males participated in this survey. The prominent religion practiced in this study was Islam. More than half of the participants were Yoruba. Majority of the participants were 300level students at lead city university. More than half of the participants were unemployed

Knowledge of alcohol as a risk factor of NCDs among undergraduate students in Lead City University, Ibadan.

The study revealed that more than half of the respondents often have a drink containing alcohol 2-3 times in a week. This study also revealed that the majority of the participants like to take Smirnoff. Out of the total participants, less than half of the respondents start taking alcohol at the age of 18 years, 9(4.2%) start at 19years, 11(5.1%) start taking it at 20 years, 156(72.2%) start taking it at the age of 23years, while the remaining 10 (4.6%) start taking alcohol at the age of 25years.

The majority of the participants were influenced by their friends in taking alcohol. More than half of the participants take drinks containing alcohol in 1-2 days. More than half of the participants often attempt to stop drinking alcohol but to no avail. The study also revealed that the majority of the participant's intake of alcohol affected their daily performance and of the total participants need to take alcohol drinks before starting a new day.

More than half of the total respondents always feel remorseful after drinking alcohol, and the majority of the participants often remember what happened after taking their alcohol. The majority of the participants have injured someone and themselves as a result of their drinking habit. This is in line with the study conducted by Rehm J et al., (2015) where it was stated that the scope of alcohol-related social harm and of harm to others stretches well beyond these items. Thus, the researchers estimated that within 1 year, more than 350 deaths were attributed to drinking by others, and more than 10 million Australians (or 70 percent of all adults) were negatively affected by a stranger's drinking. Also similar to the research conducted by Idowu, A., et al (2018) where it was stated that there is also a clear link between alcohol consumption and aggression, including, but not limited to, homicides. While a bit more than half of the participants 124(57.4%) has a relative, friend, doctor or health worker been concerned about their drinking and suggested that they should stop.

Knowledge of undergraduate students toward non-communicable disease

This study also shows the knowledge of undergraduate students toward non-communicable disease. It was revealed in this study that more than half of the participants have heard of non-communicable diseases. It was also revealed that majority of the participants understand non-communicable diseases as a disease that is not transmissible to others. This study also revealed that the majority of the respondents choose malaria as an example of non-communicable diseases. This is also similar to the example from the research conducted by J. W. Creswell & J. D. Creswell (2018) where they stated that Studies have proved that alcoholic beverages are carcinogenic to humans. Generally, alcohol increases the risk of cancers of the upper digestive track, the lower digestive track, and the female breast. Stomach cancer has also been linked to alcoholism. This is similar to the survey conducted by M.R Thursz (2015) where it was stated that the association between receiving alcoholic drinks and the spread of laryngeal cancer was first reported in the early 1900s through clinical reports and mortality statistics, and then confirmed by ecological studies

It was also revealed in this study that the majority of the participants think that non-communicable diseases is an important health issue. This is in line with the study conducted by Shield K et al (2011) where it was stated that Alcohol has been found to be associated with diseases like tumors, cancers, numerous cardiovascular and digestive diseases and neuropsychiatric conditions. This is also similar to the research conducted by Rehm J et al., (2009) where it was stated that, alcohol has a sizable effect on the burden of disease associated with infectious diseases, cancer, cardiovascular disease, and liver cirrhosis. However, alcohol consumption also has beneficial effects on the burden of disease, mainly on diabetes and the ischemic disease subcategory of cardiovascular diseases. A bit more than half of the respondents was aware that alcohol increases the risk of non-communicable diseases. This is similar to the survey conducted by B.P. Lee & Vietinghoff (2019) where it was stated that these same risk factors together account for over three quarters of deaths from ischemic and hypertensive heart disease. Alcohol use is overwhelmingly detrimentally related to many cardiovascular outcomes, including hypertensive disease, haemorrhagic stroke, and atrial fibrillation. Majority of the participants think that non-communicable diseases are deadly. While more than half of the respondents said non-communicable diseases are treatable.

Perception of the undergraduate student towards alcohol as risk factor of non-communicable disease

It was also shown in this study, the perception of the participants towards alcohol as a risk factor of non-communicable disease. It was revealed that majority of the participants 180(83.3%) strongly agreed that people suffer from health damages and medical problems due to alcohol abuse. This is in line with the survey conducted by Rehm J et al., (2009). Where it was stated that, alcohol has a sizable effect on the burden of disease associated with infectious diseases, cancer, cardiovascular disease, and liver cirrhosis. However, alcohol consumption also has beneficial effects on the burden of disease, mainly on diabetes and the ischemic disease subcategory of cardiovascular diseases. Furthermore it was also revealed that the majority of the participants 173(80.1%) strongly agreed that students encounter academic difficulties and have cognitive problems due to alcohol intake, and alcohol abusers are more likely to have strained relationships with friends and family. As well as the majority of the participants strongly agreed that alcohol abuse can make one develop a mental

condition or worsen an existing one. This study also revealed that the majority of the participants strongly agreed that heavy alcohol users have the tendency to have a change in personality and behaviours, and they usually get into fights or exhibit more aggressive outbursts while under influence. It was also revealed that the majority of the respondents strongly agreed that alcohol availability and ease of access in society is a major factor causing alcohol abuse and people who consumed alcohol may take it to reduce stress and forget about the problems they are facing. The majority of the respondents strongly agreed that people are not aware of non-communicable diseases because they don't believe alcohol abuse is a risk factor and more than half of the respondents agreed that academic challenges might be a major reason people get involved in alcohol abuse, all most all the respondents strongly agreed that they used to bathe with soap

It was revealed in this study that the level of respondents' knowledge and perception of alcohol abuse as a risk factor for NCDs among undergraduate students at Lead city university Ibadan. Oyo state. This showed that more than half of the participants have good knowledge of non-communicable diseases, and more than half of the respondents have good knowledge of the risk factor of non-communicable diseases, as well as majority have a good perception of alcohol as a risk factor for non-communicable diseases. The mean and standard deviation of the respondent's knowledge of risk factor of NCDs among undergraduate were found to be 1.699 and 0.459, while the mean and standard deviation of the level of respondent's level of knowledge towards non-communicable diseases were found to be 1.57 and 0.496, and the mean and standard deviation of respondent's perception of alcohol as risk factor of non-communicable diseases were found to be 1.69 and 0.464 respectively.

Also, it was revealed in this study that there is no significant association between the knowledge of non-communicable diseases with perception of alcohol abuse of the respondents. It was also revealed that knowledge of alcohol as a risk factor of NCDs was found to be statistically significant with perception of alcohol abuse of the respondents.

Conclusion and Recommendation

The aim of this study was to determine the knowledge and perception of alcohol abuse as a risk factor of NCDs among undergraduate students in Lead City University Ibadan, Oyo state. The results of the study revealed a high prevalence of these risk factors among the participants. The study calls for the importance of the implementation of educational and awareness programs on NCDs risk factors to Nigeria's young population. These programs should focus on the importance of adopting healthy lifestyles in this young age, to avoid the occurrence of NCDs in adulthood. Further studies should be done to assess knowledge and perception of alcohol abuse as a risk factor on non-communicable diseases among undergraduate study of lead city university, Ibadan, Oyo State to healthy lifestyles, and to address barriers towards adopting it

REFERENCES

1. D. De Andrade, R.A.Elphinston & C.Quinn. The effectiveness of residential treatment services for individuals with substance use disorders: A systematic review. *Drug Alcohol Depend.*, 201, 227–235, 2019.
2. De Bruijn, D.M.; de Graaf, I.M. The role of substance use in same-day intimate partner violence: A review of the literature. *Aggress. Violent Behav.* 2016, 27, 142–151.
3. J.A Heerde,.; Bailey, J.A.; Toumbourou, J.W.; Catalano, R.F. Longitudinal associations between the adolescent family environment and young adult substance use in Australia and the United States. *Front. Psychol.*, 10, 821, 2019.
4. Rehm J, Mathers C, Popova S, Thavorn Charoensap M, Teerawattananon Y, Patra J. Global burden of disease and injury and economic cost attributable to alcohol use and alcohol use disorders. *Lancet.* 2009;373(9682):2223–33. [https://doi.org/10.1016/S0140-6736\(09\)60746-7](https://doi.org/10.1016/S0140-6736(09)60746-7).
5. F.Ayuka, R.Barnett & J.Pearce,. Neighbourhood availability of alcohol outlet and hazardous alcohol consumption in the African region *Addiction* 110(4), 561-571, (2014)

6. Lutz W, Sanderson W, Scherbov S. The coming acceleration of global population ageing. *Nature*. 2008;451(7179):716–9.
7. Rehm J, Baliunas D, Borges GLG, Graham K, Irving HM, Kehoe T, et al. The relation between different dimensions of alcohol consumption and burden of disease -An overview. *Addiction*. 2010;105:817–843.
8. Babor, T. F., Robaina, K., & Jernigan, D. (2015). The influence of industry actions on the availability of alcoholic beverages in the African region. *Addiction*, 110(4), 561-571, (2014).
9. Ayuka, F., Barnett, R., & Pearce, J. (2014). Neighbourhood availability of alcohol outlets and hazardous alcohol consumption in New Zealand. *Health & Place*, 29, 186-199.
10. Babor, T. F., Robaina, K., & Jernigan, D. (2015). The influence of industry actions on the availability of alcoholic beverages in the African region. *Addiction*, 110(4), 561-571.
11. Revill J Mid-Life Drinkers Who Booze at Home Risk Disease. (accessed 12 september 2010); Observer (cited 2005).
12. Rehm J, Mathers C, Popova S, Thavorn Charoensap M, Teerawattananon Y, Patra J. Global burden of disease and injury and economic cost attributable to alcohol use and alcohol use disorders. *Lancet*. 2009;373(9682):2223–33. [https://doi.org/10.1016/S0140-6736\(09\)60746-7](https://doi.org/10.1016/S0140-6736(09)60746-7).
13. Babor T, Caetano R, Casswell S, Edwards G, Giesbrecht N, Graham K, et al. Alcohol: No ordinary commodity. Research and public policy. 2. Oxford and London: Oxford University Press; 2010. [Google Scholar]
14. Hunt W. A. (2006). Role of acetaldehyde in the actions of ethanol on the brain: A review. *Alcohol*, 13, 147-151.
15. J. H Fowke & D. F McLerran. Associations of body mass index, smoking, and alcohol consumption with prostate cancer mortality in the Asia Cohort Consortium. *Am J Epidemiol.*; 182: 381-389, 2015.
16. World Health Organization. *The global burden of disease: 2004 update*. Geneva, Switzerland: World Health Organization; 2008.
17. Samokhvalov AV, Irving HM, Rehm J. Alcohol as a risk factor for atrial fibrillation: a systematic review and meta-analysis. *Eur J Cardiovasc Prev Rehabil*. 2010;17:706–712.
18. Shield K, Rehm M, Patra J, Rehm J. Global and country specific adult per capita consumption of alcohol, 2008. *Sucht*. 2011;57:99–117.
19. J. W. Creswell & J. D. Creswell,. *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications (2018).
20. Global information system on alcohol and health. [https://www.who.int/data/gho/data/themes/global-information-system-on-alcohol-and health](https://www.who.int/data/gho/data/themes/global-information-system-on-alcohol-and-health), 2019.
21. WHO, Tackling NCDs: best buys and other recommended interventions for the prevention and control of non-communicable diseases <https://apps.who.int/iris/handle/10665/259232>, 2017
22. M.R Thursz. STOPAH Trial. Prednisolone or pentoxifylline for alcoholic hepatitis. *N Engl J Med.*;373(3):282-3. 2015.
23. S. Singh Comparative Effectiveness of Pharmacological Interventions for Severe Alcoholic Hepatitis: A Systematic Review and Network Meta-analysis. *Gastroenterol.*;149(4):958-70. 2015
24. V. Singh. Granulocyte colony stimulating factor in severe alcoholic hepatitis: a randomized pilot study. *Am J Gastroenterol*.109(9):1417-23, 2018
25. O.J Kennedy, P.Roderick & R. Buchanan. Systematic review with meta-analysis: coffee consumption and the risk of cirrhosis. *Aliment Pharmacol Ther*;43:562-574, 2016.

26. Q.M Anstee & A.K Daly, Day CP. Genetics of alcoholic liver disease. *Semin Liver Dis*;35:361-374. 2015
27. F. Stickel & C. Moreno .The genetics of alcohol dependence and alcohol-related liver disease. *J Hepatol*;66:195-211, 2017.
28. Pflaum T, Hausler T, Baumung C, Ackermann S, Kuballa T, Rehm J, et al. Carcinogenic compounds in alcoholic beverages: an update. *Arch Toxicol*. 2016;90:2349–2367.
29. Islami F, Tramacere I, Rota M, Bagnardi V, Fedirko V, Scotti L, et al. Alcohol drinking and laryngeal cancer: overall and dose-risk relation—A systematic review and meta-analysis. *Oral Oncol*. 2010;46:802–810.
30. Hashibe M, Brennan P, Benhamou S, Castellsague X, Chen C, Curado MP, et al. Alcohol drinking in never users of tobacco, cigarette smoking in never drinkers, and the risk of head and neck cancer: pooled analysis in the International Head and Neck Cancer Epidemiology Consortium. *J Natl Cancer Inst*. 2007;99:777–789.
31. Altieri A, Garavello W, Bosetti C, Gallus S, La Vecchia C. Alcohol consumption and risk of laryngeal cancer. *Oral Oncol*. 2005;41:956–965.
32. Popkin BM, Armstrong LE, Bray GM, Caballero B, Frei B, Willett WC. A new proposed guidance system for beverage consumption in the United States. *Am J Clin Nutr*. 2006;83:529–542.
33. Goldenberg D, Golz A, Joachims HZ. The beverage mate: a risk factor for cancer of the head and neck. *Head Neck*. 2003;25:595–601.
34. Brooks PJ, Enoch MA, Goldman D, Li TK, Yokoyama A. The alcohol flushing response: an unrecognized risk factor for esophageal cancer from alcohol consumption. *PLoS Med*. 2009;6:e50.
35. Oze I, Matsuo K, Wakai K, Nagata C, Mizoue T, Tanaka K, et al. Alcohol drinking and esophageal cancer risk: an evaluation based on a systematic review of epidemiologic evidence among the Japanese population. *Jpn J Clin Oncol*. 2011;41:677–692.
36. Baan R, Straif K, Grosse Y, Secretan B, El Ghissassi F, Bouvard V, et al. Carcinogenicity of alcoholic beverages. *Lancet Oncol*. 2007;8:292–293.
37. Testino G. The burden of cancer attributable to alcohol consumption. *Maedica (Buchar)* 2011;6:313–320.
38. Bouvard V, Baan R, Straif K, Grosse Y, Secretan B, El Ghissassi F, et al. A review of human carcinogens—Part B: biological agents. *Lancet Oncol*. 2009;10:321–322.
39. Franke A, Teyssen S, Singer MV. Alcohol-related diseases of the esophagus and stomach. *Dig Dis*. 2005;23:204–213.
40. Ma K, Baloch Z, He TT, Xia X. Alcohol consumption and gastric cancer risk: a meta-analysis. *Med Sci Monit*. 2017;23:238–246.
41. Kwiecień S, Brzozowski T, Konturek SJ. Effects of reactive oxygen species action on gastric mucosa in various models of mucosal injury. *J Physiol Pharmacol*. 2002;53:39–50.
42. He H, Chi J. A case-control study of smoking-alcohol consumption and the occurrence of stomach cancer. *Chinese J Dis Control*. 2012;8:10–20.
43. Freedman ND, Abnet CC, Leitzmann MF, Mouw T, Subar AF, Hollenbeck AR, et al. A prospective study of tobacco, alcohol, and the risk of esophageal and gastric cancer subtypes. *Am J Epidemiol*. 2007;165:1424–1433.
44. Bagnardi V, Rota M, Botteri E, Tramacere I, Islami F, Fedirko V, et al. Alcohol consumption and site-specific cancer risk: a comprehensive dose-response meta-analysis. *Br J Cancer*. 2015;112:580–593.

45. Wang Y, Duan H, Yang H, Lin J. A pooled analysis of alcohol intake and colorectal cancer. *Int J ClinExp Med*. 2015;8:6878–6889.
46. Dashti SG, Buchanan DD, Jayasekara H, AitOuakrim D, Clendenning M, Rosty C, et al. Alcohol consumption and the risk of colorectal cancer for mismatch repair gene mutation carriers. *Cancer Epidemiol Biomarkers Prev*. 2017;26:366–375.
47. Wang LY, You SL, Lu SN, Ho HC, Wu MH, Sun CA, et al. Risk of hepatocellular carcinoma and habits of alcohol drinking, betel quid chewing and cigarette smoking: a cohort of 2416 HBsAg-seropositive and 9421 HBsAg- seronegative male residents in Taiwan. *Cancer Causes Control*. 2003;14: 241–250.
48. Gutjahr E, Gmel G, Rehm J. Relation between average alcohol consumption and disease: an overview. *Eur Addict Res*. 2001;7:117–127.
49. Turati F, Galeone C, Rota M, Pelucchi C, Negri E, Bagnardi V, et al. Alcohol and liver cancer: a systematic review and meta-analysis of prospective studies. *Ann Oncol*. 2014;25:1526–1535.
50. Seitz HK, Stickel F. Risk factors and mechanisms of hepatocarcinogenesis with special emphasis on alcohol and oxidative stress. *Biol Chem*. 2006;387:349–360.
51. Gapstur SM, Jacobs EJ, Deka A, McCullough ML, Patel AV, Thun MJ. Association of alcohol intake with pancreatic cancer mortality in never smokers. *Arch Intern Med*. 2011;171:444–451.
52. Heinen MM, Verhage BA, Ambergen TA, Goldbohm RA, van den Brandt PA. Alcohol consumption and risk of pancreatic cancer in the Netherlands cohort study. *Am J Epidemiol*. 2009;169:1233–1242.
53. Michaud DS, Vrieling A, Jiao L, Mendelsohn JB, Steplowski E, Lynch SM, et al. Alcohol intake and pancreatic cancer: a pooled analysis from the pancreatic cancer cohort consortium (PanScan). *Cancer Causes Control*. 2010;21:1213– 12
54. Tramacere I, Scotti L, Jenab M, Bagnardi V, Bellocco R, Rota M, et al. Alcohol drinking and pancreatic cancer risk: a meta-analysis of the dose-risk relation. *Int J Cancer*. 2010;126:1474–1486.
55. Gaziano JM, Gaziano TA, Glynn RJ, Sesso HD, Ajani UA, Stampfer MJ, et al. Light-to-moderate alcohol consumption and mortality in the Physicians' Health Study enrollment cohort. *J Am Coll Cardiol*. 2000;35:96–105.
56. Wang YT, Gou YW, Jin WW, Xiao M, Fang HY. Association between alcohol intake and the risk of pancreatic cancer: a dose-response meta-analysis of cohort studies. *BMC Cancer*. 2016;16:212.
57. Welsch T, Kleeff J, Seitz HK, Büchler P, Friess H, Büchler MW. Update on pancreatic cancer and alcohol-associated risk. *J GastroenterolHepatol*. 2006;21:S69–S75.
58. Korte JE, Brennan P, Henley SJ, Boffetta P. Dose-specific meta-analysis and sensitivity analysis of the relation between alcohol consumption and lung cancer risk. *Am J Epidemiol*. 2002;155:496–506.
59. Bagnardi V, Randi G, Lubin J, Consonni D, Lam TK, Subar AF, et al. Alcohol consumption and lung cancer risk in the Environment and Genetics in Lung Cancer Etiology (EAGLE) study. *Am J Epidemiol*. 2010;171:36–44.
60. Rohrmann S, Linseisen J, Boshuizen HC, Whittaker J, Agudo A, Vineis P, et al. Ethanol intake and risk of lung cancer in the European Prospective Investigation into Cancer and Nutrition (EPIC). *Am J Epidemiol*. 2006;164:1103–1114.
61. Chao C, Slezak JM, Caan BJ, Quinn VP. Alcoholic beverage intake and risk of lung cancer: the California Men's Health Study. *Cancer Epidemiol Biomarkers Prev*. 2008;17:2692–2699.

62. Bagnardi V, Blangiardo M, La Vecchia C, Corrao G. A meta-analysis of alcohol drinking and cancer risk. *Br J Cancer*. 2001;85:1700–1705.
63. Dagnelie P, Schuurman A, Goldbohm R, Van den Brandt P. Diet, anthropometric measures and prostate cancer risk: a review of prospective cohort and intervention studies. *BJU Int*. 2004;93:1139–1150.
64. Middleton Fillmore K, Chikritzhs T, Stockwell T, Bostrom A, Pascal R. Alcohol use and prostate cancer: a meta-analysis. *Mol Nutr Food Res*. 2009;53: 240–255.
65. Dennis LK. Meta-analysis for combining relative risks of alcohol consumption and prostate cancer. *Prostate*. 2000;42:56–66.
66. Rota M, Scotti L, Turati F, Tramacere I, Islami F, Bellocco R, et al. Alcohol consumption and prostate cancer risk: a meta-analysis of the dose-risk relation. *Eur J Cancer Prev*. 2012;21:350–359.
67. Jiang X, Castelao JE, Groshen S, Cortessis VK, Ross RK, Conti DV, et al. Alcohol consumption and risk of bladder cancer in Los Angeles County. *Int J Cancer*. 2007;121:839–845.
68. Djoussé L, Schatzkin A, Chibnik LB, D’Agostino RB, Kreger BE, Ellison RC. Alcohol consumption and the risk of bladder cancer in the Framingham Heart Study. *J Natl Cancer Inst*. 2004;96:1397–1400.
69. Zeegers MP, Volovics A, Dorant E, Goldbohm RA, van den Brandt PA. Alcohol consumption and bladder cancer risk: results from The Netherlands Cohort Study. *Am J Epidemiol*. 2001;153:38–41.
70. Pelucchi C, Negri E, Franceschi S, Talamini R, La Vecchia C. Alcohol drinking and bladder cancer. *J ClinEpidemiol*. 2002;55:637–641.
71. S. Buch & F. Stickel. A genome-wide association study confirms PNPLA3 and identifies TM6SF2 and MBOAT7 as risk loci for alcohol-related cirrhosis. *Nat Genet*;47:1443- 1448, 2015.
72. Gerhauser C, Alt A, Heiss E, Gamal-Eldeen A, Klimo K, Knauft J, et al. Cancer chemopreventive activity of Xanthohumol, a natural product derived from hop. *Mol Cancer Ther*. 2002;1:959–969.8
73. Zhao F, Nozawa H, Daikonnya A, Kondo K, Kitanaka S. Inhibitors of nitric oxide production from hops (*Humulus lupulus* -L.). *Biol Pharm Bull*. 2003;26:61–65.
74. Chen WY, Rosner B, Hankinson SE, Colditz GA, Willett WC. Moderate alcohol consumption during adult life, drinking patterns, and breast cancer risk. *JAMA*. 2011;306:1884–1890.
75. Cancer CGoHFiB. Alcohol, tobacco and breast cancer – collaborative reanalysis of individual data from 53 epidemiological studies, including 58,515 women with breast cancer and 95,067 women without the disease. *Br J Cancer*. 2002; 87:1234–1245.
76. Kwan ML, Kushi LH, Weltzien E, Tam EK, Castillo A, Sweeney C, et al. Alcohol consumption and breast cancer recurrence and survival among women with early-stage breast cancer: the life after cancer epidemiology study. *J ClinOncol*. 2010;28:4410–4416.
77. Simapivapan P, Boltong A, Hodge A. To what extent is alcohol consumption associated with breast cancer recurrence and second primary breast cancer?: a systematic review. *Cancer Treat Rev*. 2016;50:155–167.
78. Setiawan VW, Monroe KR, Goodman MT, Kolonel LN, Pike MC, Henderson BE. Alcohol consumption and endometrial cancer risk: the multiethnic cohort. *Int J Cancer*. 2008;122:634–638.

79. Akhmedkhanov A, Zeleniuch-Jacquotte A, Toniolo P. Role of exogenous and endogenous hormones in endometrial cancer: review of the evidence and research perspectives. *Ann N Y Acad Sci.* 2001;943:296–315.
80. Onland-Moret NC, Peeters PH, van derSchouw YT, Grobbee DE, van Gils CH. Alcohol and endogenous sex steroid levels in postmenopausal women: a cross-sectional study. *J ClinEndocrinolMetab.* 2005;90: 1414–1419.
81. Je Y, De Vivo I, Giovannucci E. Long-term alcohol intake and risk of endometrial cancer in the Nurses' Health Study, 1980–2010. *Br J Cancer.* 2014;111:186–194.
82. Cheng G, Xie L. Alcohol intake and risk of renal cell carcinoma: a meta- analysis of published case-control studies. *Arch Med Sci.* 2011;7:648–657.
83. Lee JE, Hunter DJ, Spiegelman D, Adami HO, Albanes D, Bernstein L, et al. Alcohol intake and renal cell cancer in a pooled analysis of 12 prospective studies. *J Natl Cancer Inst.* 2007;99:801–810
84. Song DY, Song S, Song Y, Lee JE. Alcohol intake and renal cell cancer risk: a meta-analysis. *Br J Cancer* 2012;106:1881–1890.
85. International Agency for Research on Cancer. Alcohol Consumption and Ethyl Carbamate, Vol. International Agency for Research on Cancer, Lyon, France, 2010.
86. Deitrich R, Zimatkin S, Pronko S. Oxidation of ethanol in the brain and its consequences. *Alcohol Res Health.* 2006;29:266–273.
87. Baglietto L, Giles GG, English DR, Karahalios A, Hopper JL, Severi G. Alcohol consumption and risk of glioblastoma; evidence from the Melbourne Collaborative Cohort Study. *Int J Cancer* 2011;128:1929–1934.
88. Allen NE, Beral V, Casabonne D, Kan SW, Reeves GK, Brown A, et al. Moderate alcohol intake and cancer incidence in women. *J Natl Cancer Inst.* 2009;101:296–305.
89. Galeone C, Malerba S, Rota M, Bagnardi V, Negri E, Scotti L, et al. A meta- analysis of alcohol consumption and the risk of brain tumours. *Ann Oncol.* 2013;24:514–523.
90. Qi ZY, Shao C, Yang C, Wang Z, Hui GZ. Alcohol consumption and risk of glioma: a meta-analysis of 19 observational studies. *Nutrients* 2014;6: 504–516.
91. Secretan B, Straif K, Baan R, Grosse Y, El Ghissassi F, Bouvard V, et al. A review of human carcinogens—Part E: tobacco, areca nut, alcohol, coal smoke, and salted fish. *Lancet Oncol.* 2009;10:1033–1034.
92. Tramacere I, Pelucchi C, Bonifazi M, Bagnardi V, Rota M, Bellocco R, et al. Alcohol drinking and non-Hodgkin lymphoma risk: a systematic review and a meta-analysis. *Ann Oncol.* 2012;23:2791–2798.
93. S. Atkinson & M. Way. A genome-wide association study identifies PNPLA3 and SLC38A4 as risk loci for alcoholic hepatitis. *J Hepatol*;64(2 Suppl):S134, 2016.
94. R. Lombardi & E. Buzzetti. Non-invasive assessment of liver fibrosis in patients with alcoholic liver disease. *World J Gastroenterol*;21:11044-11052, 2015
95. Y.C Tung & W.C Tsai, Alcohol related diseases and alcohol dependence syndrome is associated with increased gout risk: a nationwide populationbased cohort study. *Joint Bone Spine.* Epub 2016 May 26. <https://doi.org/10.1016/j.jbspin.02.024>, 2016.
96. J.M Lowe & MG McDonell, Determining ethyl glucuronide cutoffs when detecting self-reported alcohol use in addiction treatment patients. *Alcohol Clin Exp Res*;39:905- 910, 2015.
97. K.Nguyen & M.Torralba, Bacteriophage targeting of gut bacterium attenuates alcoholic liver disease. *Nature* 575, 505–511. (2019).

98. L.Genser & D.Aguanno. Increased jejunal permeability in human obesity is revealed by a lipid challenge and is linked to inflammation and type 2 diabetes. *J. Pathol.* 246, 217–230, (2018).
99. K.E. Kortright & B.K. Chan. Phage Therapy: A Renewed Approach to Combat Antibiotic-Resistant Bacteria. *Cell Host Microbe* 25, 219–232, (2019).
100. O.Krut & I.Bekeredjian-Ding,. Contribution of the Immune Response to Phage Therapy. *J. Immunol.* 200, 3037–3044, (2018).
101. B.P. Lee & Vittinghoff. National Trends and Long-term Outcomes of Liver Transplant for Alcohol-Associated Liver Disease in the United States. *JAMA Intern. Med.* 179, 340–348, (2019).
102. Y.C Tung & W.C Tsai, Alcohol related diseases and alcohol dependence syndrome is associated with increased gout risk: a nationwide populationbased cohort study. *Joint Bone Spine.* Epub 2016 May 26. <https://doi.org/10.1016/j.jbspin.02.024>, 2016.
103. J.M Lowe & MG McDonell, Determining ethyl glucuronide cutoffs when detecting self-reported alcohol use in addiction treatment patients. *Alcohol Clin Exp Res*;39:905- 910, 2015.
104. K.Nguyen & M.Torralla, Bacteriophage targeting of gut bacterium attenuates alcoholic liver disease. *Nature* 575, 505–511. (2019).
105. L.Genser & D.Aguanno. Increased jejunal permeability in human obesity is revealed by a lipid challenge and is linked to inflammation and type 2 diabetes. *J. Pathol.* 246, 217–230, (2018).
106. K.E. Kortright & B.K. Chan. Phage Therapy: A Renewed Approach to Combat Antibiotic-Resistant Bacteria. *Cell Host Microbe* 25, 219–232, (2019).
107. O.Krut & I.Bekeredjian-Ding,. Contribution of the Immune Response to Phage Therapy. *J. Immunol.* 200, 3037–3044, (2018).
108. B.P. Lee & Vittinghoff. National Trends and Long-term Outcomes of Liver Transplant for Alcohol-Associated Liver Disease in the United States. *JAMA Intern. Med.* 179, 340–348, (2019).
109. J.Luther & J.J. Garber, Hepatic Injury in Nonalcoholic Steatohepatitis Contributes to Altered Intestinal Permeability. *Cell Mol. Gastroenterol. Hepatol.* 1, 222–232. (2015).
110. WHO, Tackling NCDs: best buys and other recommended interventions for the prevention and control of non-communicable diseases. <https://apps.who.int/iris/handle/10665/259232>, 2017
111. F.Ayuka, R.Barnett & J. Pearce,. Neighbourhood availability of alcohol outlets and hazardous alcohol consumption in New Zealand. *Health & Place*, 29, 186-199.
112. Babor, T. F., Robaina, K., & Jernigan, D. (2015). The influence of industry actions on the availability of alcoholic beverages in the African region. *Addiction*, 110(4), 561-571, (2014).
113. Ayuka, F., Barnett, R., & Pearce, J. (2014). Neighbourhood availability of alcohol outlets and hazardous alcohol consumption in New Zealand. *Health & Place*, 29, 186-199.
114. Babor, T. F., Robaina, K., & Jernigan, D. (2015). The influence of industry actions on the availability of alcoholic beverages in the African region. *Addiction*, 110(4), 561-571.
115. J. W. Creswell & J. D. Creswell,. *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications (2018).
116. R. R. Greene, Human behavior theory and professional social work practice. In *Human Behavior Theory and Social Work Practice* (pp. 31-62). Routledge. (2017).
117. Idowu, A., Aremu, A. O., Olumide, A., & Ogunlaja, A. O. (2018). Substance abuse among students in selected secondary schools of an urban community of Oyo-state, South West Nigeria: implication for policy action. *African health sciences*, 18(3), 776-785.

118. Leonard KE. Alcohol and intimate partner violence: When can we say that heavy drinking is a contributing cause of violence? *Addiction*. 2005;100(4):422–425
119. Rehm J, Mathers C, Popova S, et al. Global burden of disease and injury and economic cost attributable to alcohol use and alcohol-use disorders. *Lancet*. 2009b;373(9682):2223–2233
120. National Institute on Alcohol Abuse and Alcoholism (NIAAA) *Rethinking Drinking: Alcohol and Your Health*. Rockville, MD: NIAAA; 2010. Pub. No. 10–3770
121. Laslett AM, Catalano P, Chikritzhs T, et al. *The Range and Magnitude of Alcohol’s Harm to Others*. Fitzroy, Victoria, Australia: Turning Point Alcohol & Drug Centre; 2010.
122. Casswell S, Thamarangsi T. Reducing the harm from alcohol: Call to action. *Lancet*. 2009;373(9682):2247–2257.
123. Klingemann H, Gmel G. *Mapping Social Consequences of Alcohol Consumption*. Dordrecht, Netherlands: Kluwer Academic Publishers; 2001
124. Thavorncharoensap M, Teerawattananon Y, Yothasamut J, et al. The economic impact of alcohol consumption: A systematic review. *Substance Abuse Treatment, Prevention, and Policy*. 2009;4:20
125. Janz & Becker (1984) World Health Organization. *Global status report on alcohol and health*. Geneva, Switzerland: World Health Organization; 2014. Most recent monitoring report on alcohol, alcohol control policy and health with detailed profiles on country level.