

## Original Article

### Knowledge of alcohol consumers towards alcoholic liver disease in Afikpo, Ebonyi, Nigeria: A community-based cross-sectional study.

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#### Abstract

**Background:** Daily alcohol consumption above recommended limits is an important cause of Alcoholic Liver Disease. Hence, this study aimed to assess the knowledge of Alcoholic Liver Disease among alcohol consumers and screen for alcohol misuse, dependence, and disorder.

**Methods:** A community-based cross-sectional survey using simple random sampling technique was conducted on residents of Afikpo age 15 and above who consume alcohol using a structured questionnaire to obtain information on alcoholic use disorder and alcohol dependence. The sample size was determined with the aid of a Raosoft sample size calculator. Data obtained was entered into an excel spreadsheet for data cleaning. The frequency, percentages and mean and Standard deviation was also obtained. Data was exported into IBM SPSS to determine the relationship between knowledge of Alcoholic Liver Disease and demographic variables using One-way ANOVA and Chi-Square where appropriate at P-value <0.05 and 5% significance level.

**Results:** The total number of study participants was 435 with a response rate of 97%. Out of which 361(80.8%) had a good knowledge of Alcoholic Liver Disease. Adults above the age of 60 had a mean audit score of 12.808 while male respondents had a mean audit score of 11.395. Adolescents had a mean CAGE test score of 1.89 while adults above 60 scored 2.48. However, participants with no education had the highest mean CAGE score of 2.27. The males had good knowledge of Alcoholic Liver Disease. (P=0.006).

**Conclusion:** The residents of Afikpo community have a good knowledge of Alcoholic Liver Disease though there is alcohol use disorder, alcohol misuse and dependence amongst residents in the community. Gender is the only demographic characteristics that influenced the knowledge of Alcoholic Liver Disease.

**Keywords:** Alcoholic liver disease; alcohol dependence; alcohol misuse; alcohol disorder; audit; cage

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#### Introduction

The liver is the main organ for alcohol metabolism [1]. Alcohol is metabolized in the liver through three major pathways of which include the enzyme alcohol dehydrogenase pathway, the cytochrome P-4502E1 (CYP2E1) pathway and by mitochondrial catalase pathway. The first two pathways are of practical significance [2]. Alcohol dehydrogenase is involved in the degradation of limited quantities of alcohol, while alcohol-induced CYP2E1 pathway takes place in excessive alcohol intake [3]. Alcohol dehydrogenase is also present in the gastric mucosa; Individuals with low gastric alcohol dehydrogenase activity are more susceptible to alcoholic liver disease [4]. This may also help to explain why women who have decreased gastric alcohol dehydrogenase activity are more sus-

ceptible to developing alcoholic liver disease [5]. Alcohol dehydrogenase and cytochrome P-4502E1 convert alcohol to acetaldehyde. Acetaldehyde when accumulated, causes liver injury. Changes in lipid metabolism and in adipose tissue also enhance the process of liver injury [1]. Although most heavy drinkers do develop fatty liver, only a minority progress to liver cirrhosis; this implies that some other genetic or environmental factors are important for the disease progression [6].

Alcoholic liver disease (ALD) comprises a spectrum of disorders ranging from asymptomatic liver test derangements to severe acute hepatitis and end-stage chronic liver disease [7]. In individuals with concomitant liver diseases such as chronic viral

hepatitis, alcohol consumption promotes liver disease progression [8]. Assessing alcohol abuse in patients with ALD is essential for their treatment and prognosis. Alcoholic cirrhosis is a product of alcoholism (9). Therefore, one cannot examine alcoholic liver disease without a brief discussion of alcoholism [10]. A thorough clinical and psychological examination is crucial for alcohol abuse diagnosis. Information on the patients' clinical history, and social history can be obtained by applying some questioning skills such as a single question inquiring how often the maximum daily alcohol limit has been exceeded) [11]. Liver steatosis is the most prevalent in chronic alcohol abuse [12]. Changes associated with alcohol metabolism may subsequently trigger an inflammatory reaction, resulting in alcoholic hepatitis or chronic liver disease [4]. Simple steatosis is reversible after a number of weeks of abstinence [9]. It is regarded as a benign condition; nevertheless, given continued abuse, it could progress to fibrogenesis. However, about 20% of the patients with simple steatosis are likely to develop fibrosis or cirrhosis within a period of ten years [10].

Mortality from alcoholic liver disease closely follows per capita alcohol consumption. Malnutrition is another risk factor of ALD [13]. Heavy alcohol drinkers often times feed poorly or consume unbalanced diet.

Excessive alcohol consumption is one of the world's leading risk factors for morbidity, disability, and mortality. Approximately 3.3 million deaths (5.9% of all global deaths) and 139 million disability-adjusted life years (5.1% of the global burden of disease and injury) are attributable to alcohol use [14]. Reducing and preventing alcohol misuse and abuse is a public health concern as high rate of alcohol consumption has become a great social-health problem [15]. Alcohol-related disease results in approximately 2.5 million deaths each year and almost 4 % of all deaths worldwide are attributed to alcohol [16]. Alcohol abuse could lead to premature death, increased disease and injury; property damage from fire and motor vehicle crashes; alcohol-related crime; and lost productivity [14]. Research has also shown that the socio-economic effects associated with alcohol abuse include unemployment, violence, risky sexual behavior, and disruptions to family life and work performance [17]. Cultism may also be a big issue in some areas of the world. A popular myth in Ebonyi State, Nigeria, is that; the average Afikpo man is friendly with alcohol and loves to drink a lot, whether it is beer (5%), spirit (40%), or wine (12%). Therefore, there is need to assess the level of knowledge of ALD amongst Afikpo as the adverse effects of alcohol abuse on the liver could result in poor quality of life, low productivity, and countless deaths due to ALD that would have otherwise been avoidable.

This study aimed to assess the knowledge of ALD and screen for alcohol misuse, dependence, and disorder among alcohol consumers in Afikpo, Afikpo-North Local Government Area of Ebonyi State. Findings from this study will provide information on the extent of alcohol abuse and dependence amongst residents of Afikpo community. It will also enable policymakers and public health multidisciplinary bodies to determine if there is a need for health promotion and education in Afikpo community so as to reduce the risk and prevalence of liver diseases related to the abuse of alcohol.

## Methods

### Study settings

Eleven autonomous communities in Afikpo North LGA Afikpo.[18]. The study was conducted in Afikpo autonomous community, formerly known as Ehugbo land. The community is settled at two localities: the upper undulating settlers (due to the basement rock) and the lower land settlers (the settlement that is close to the Cross-river floodplain's lower shore). The people of Afikpo are mostly known for subsistent farming, and they also engage in trading. The Afikpo clan is called Ehugbo people, and their famous greeting is 'Jookwa', which means good day or well done. The total population as at the last census held in 2006 was 156 611 with a projected population of 233,300 as at 2022[19]. Afikpo has a land mass of 204 square kilometers [18]. The community is the second largest urban area in Ebonyi State, Nigeria. It is the headquarters of the Afikpo North LGA. It is situated in the southern part of Ebonyi State. It is bordered to the north by the town of Akpoha, to the south by Unwana town, to the southwest by Edda, a community in Afikpo South LGA, to the east by Cross River State and the west by the town of Amasiri [18].

**Study design:** A community based cross-sectional study using simple random sampling technique was employed.

**Study population:** The respondents in this study are made up of a sample of Nigerians resident in Afikpo community who are 15 years and above and who consume alcohol. The respondents were grouped into three categories of the age range – Adolescents aged between 15 to 19 years, Adults aged 20 to 60 years, and the elderly aged 60 and above in correspondence with the criteria for a positive screening test [20].

**Sample size:** The sample size was calculated with the aid of a sample size calculator Raosoft ([www.raosoft.com/samplesize](http://www.raosoft.com/samplesize)) to be approximately 384, for a population size of 233,300[19] at a 95% confidence level, with a margin of error of 5% and a standard deviation of 50%. To account for non-responses, 450 questionnaires were distributed for this survey.

### Inclusion and Exclusion Criteria

Every member of Afikpo community who resides in Afikpo, aged 15 years or above and who consume alcohol is eligible for this study. Pregnant women and individuals less than 15 years of age were excluded from this study.

**Sampling instrument:** The data collection instrument used for this study was a structured questionnaire which was developed after extensive literature review and with expert opinion. The questionnaire was face validated by three experts. Reliability analysis was conducted to check the reliability of the questionnaire using Cronbach Alpha.

The questionnaire is four sectioned with 29-item questions. Section A is to obtain information of respondents' demographics such as age, gender, education, and occupation. Section B is to assess respondents' knowledge about ALD. Respondents whose response was 'Yes' to seven (7) out of the ten (10) questions in section B; have good knowledge, while respondents whose response was 'No' to seven (7) out of the ten (10) questions in section B have poor knowledge.

Section C uses the AUDIT model [20] to screen for alcohol use disorder. The WHO developed a simple ten-question test to determine if a person's alcohol consumption may be harmful. In this section the questions are anchored on a 5-point likert scale as 'Never' which is scored '0', 'Monthly or less' which is scored '1', '2-4 times a month' which is scored '2', '2-3 times a week' which is scored '3', '4 or more times a week' which is scored '4'. A total of  $\geq 8$  for men up to age 60 or  $\geq 4$  for women, adolescents, or men over age 60 is considered positive test [14] and indicates a strong likelihood of hazardous or harmful alcohol consumption, which could result to a negative effect on the liver. A score of 20 or more suggests alcohol dependence [21], but that is outside the scope of this present study. The AUDIT screening thresholds for the detection of alcohol abuse are  $\geq 4$  points for men (sensitivity 86%, specificity 89%) and  $\geq 3$  points for women (sensitivity 73%, specificity 91%) [20].

Section D employs the CAGE questionnaire, developed in 1968 by Ewing. The acronym CAGE represents the questions; 'Cut down', 'Annoyed', 'Guilty', 'Eye-Opener'. Hence the questions; Have you ever felt that you ought to Cut down on your drinking? Have people annoyed you by criticizing your drinking? Have you ever felt bad or Guilty about your drinking? Have you ever had a drink first thing in the morning to steady your nerves or to get rid of a hangover (Eye-opener)?"

Individual item responses are scored 0 if the person answers "No" and 1 if the person answers "Yes". The total score can range from 0 to 4. The recommended cutoff for CAGE is  $\geq 2$  to screen for alcohol misuse and de

pendence [22]. The CAGE questionnaire has a sensitivity of more than 70% and a specificity of more than 90%. The CAGE and AUDIT questionnaires may be helpful tools to screen for maladaptive alcohol use, which could indicate an underlying ALD [20]. The questionnaire was given out to 50 persons who are not part of the study population and it was found to be easily understood and was able to obtain the required information.

### Sampling Procedure

Popular sites, including P. Noble Hotel, Ndibe beach hotel, Focus hotel, and beer parlors and bars within Afikpo, where people converge in mass during the weekends, were visited for data collection. Hospitals within Afikpo, including Mater Misericordiae hospital Afikpo and Romec hospital was also visited. The respondents were approached and given the questionnaire while seated at the bar or while waiting to see the doctor after verbal consent was obtained from the respondents and/or from their guardians (for the adolescents). They were given 5 minutes to read and respond to the questions after which the questionnaire was retrieved from them. The respondents who had difficulty reading had a trained data collector who understood the local language (Ehugbo) to assist in interpreting and recording responses. Two data collectors were trained and employed for this survey.

### Data Analysis

Data obtained was coded and entered into an excel spread sheet for data cleaning. The frequencies, percentages, standard deviation were also obtained. The data was then exported into the software IBM SPSS Statistics for Windows Version 21.0 (IBM Corp, Version 21.0, Armonk, NY, USA) to determine the relationship between knowledge and the demographic variables using One-way ANOVA and Chi-square where appropriate with the statistical significance set as  $P < 0.05$ .

### Results

#### Characteristics of the study participants

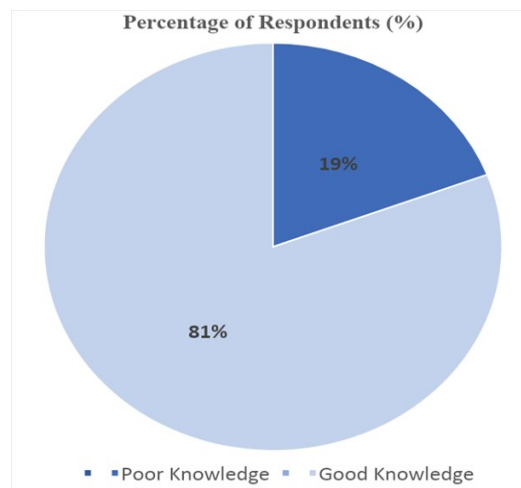
The reliability analysis of the questionnaire scored approximately 0.8. A total of 435 responses were retrieved and found usable giving a response rate of approximately 97%. Of the 450 respondents. 73.1% were males, while 48.8% had some form of tertiary education or currently have some form of tertiary education. About 62.7% of the respondents were aged between 20 to 60 years, while 20.8% were adolescents. Most of the participants were students (28.4%), 24.4% were self-employed, and 9.1% were farmers (Table 1).

**Table 1:** Demographic characteristics of residents of Afikpo community in Ebonyi State Nigeria, 2020

Variables	Frequency (n)	Percentage (%)
<b>Gender</b>		
Male	318	73.1
Female	117	26.9
<b>Age</b>		
15-19	93	20.8
20-60	281	62.7
>60	74	16.4
<b>Educational Level</b>		
Nil	104	23.61
Primary	17	3.91
Secondary	105	23.8
Tertiary	215	48.8
<b>Occupation</b>		
Private Sector	42	9.3
Civil Servant	85	18.9
Farmers	41	9.1
Students	128	28.4
Self-employed	110	24.4
Others	44	9.8

#### Knowledge about Alcoholic Liver Disease

Of the 450 respondents, 361(80.8%) had a good knowledge of ALD while 86 (19.2%) had poor knowledge of ALD (Figure 1).



**Figure 1:** Pie chart showing knowledge about alcoholic liver disease among residents of Afikpo community in Ebonyi State Nigeria, 2020.

#### Relationship between Knowledge of Alcoholic Liver Disease and Demographic Variables.

About 221(61.4%) of respondent aged 20 to 60 years, had good knowledge of ALD, while 11.8 (10%) of respondents aged >60 years had poor knowledge of ALD. Though not at significant level.

The relationship between gender and knowledge of ALD was very significant. About 225(73.1%) males had good knowledge of ALD, while 22 (26.5%) females had poor knowledge of ALD. Findings also shows that 175(49.7%) respondents with tertiary level of education had good knowledge of ALD. However, a higher percentage of those who do not have any form of education 75(21.3%), had good knowledge of ALD compared to those with primary level of education . In comparison, 88(25.0%) with good knowledge of ALD had attained only secondary education.

Most students 107(29.6%) who participated in this study had good knowledge of ALD compared to the civil servants75(25.8%). Although occupation was not associated with knowledge of ALD (Table 2).

**Table 2:** Relationship between knowledge of Alcoholic liver disease and demographic variables of residents of Afikpo community in Ebonyi State Nigeria in 2020.

Variables	Poor knowledge n (%)	Good Knowledge n (%)	Chi-Square	df
Age				
15-19	17(20.0)	76(21.1)		
20-60	58(68.2)	221(61.4)	1.934	2
>60	10(11.8)	63(17.5)		
Gender				
Male	61(73.5)	225(73.1)	0.006	1
Female	22(26.5)	94(26.9)		
Education				
Primary	3(3.5)	14(4.0)		
Secondary	16(18.6)	88(25.0)		
Tertiary	39(45.3)	175(49.7)	5.223	3
Nil	28(32.6)	75(21.3)		
Occupation				
Private sector	6(7.0)	36(10.0)		
Civil servant	10(11.6)	75(20.8)		
Farmer	6(7.00)	35(9.7)		
Student	21(24.4)	107(29.6)	14.493	5
Self-employed	28(32.6)	79(21.9)		
Others	15(17.4)	29(8.0)		

**Alcoholic-use disorder identification screening test**

Alcohol use disorder was evaluated using the alcohol use disorder identification test (AUDIT). Adolescents aged 15 to 19 had a mean audit score of 10.774, while respondents between the ages of 20 and 60 had a mean audit score of 11.266. Adults above the age of 60 had a mean audit score of 12.808. Male respondents in the study had a mean audit score of 11.395, and female respondents had a mean score of 11.139 (Table 3).

**Table 3:** Mean score of alcoholic use disorder identification test across age and gender variables of residents of Afikpo community in Ebonyi State Nigeria, 2020.

Variables	Mean( $\pm$ S.D)
Gender	
Male	11.39 $\pm$ 7.82
Female	11.14 $\pm$ 7.50
Age (years)	
15-19	10.77 $\pm$ 7.61
20-60	11.27 $\pm$ 7.69
>60	12.81 $\pm$ 7.71

### Screening of alcohol misuse and dependence

Result shows that the adolescents had the lowest mean CAGE test score of 1.89 while adults above 60 had a score of 2.48, which was the highest recorded value. Male subjects in the study had a mean score of 2.17, while the females had a score of 2.10. Respondents with primary education had a mean CAGE score of 2.06, while participants with no education had the highest mean CAGE score of 2.27. The civil servants had a score of 2.39, the farmers had a mean CAGE score of 2.47 while the student had the lowest mean CAGE score of 1.94 (Table 4).

**Table 4:** CAGE test showing alcohol misuse and dependence of residents of Afikpo community in Ebonyi State Nigeria, in 2020.

Variables	Mean (S.D)
Gender	
Male	2.17±1.33
Female	2.10±1.31
Age (yrs)	
15-19	1.89±1.22
20-60	2.15±1.36
>60	2.48±1.25
Educational Level	
Nil	2.27±1.28
Primary	2.06±1.24
Secondary	2.14±1.34
Tertiary	2.09±1.34
Occupation	
Private Sector	2.18±1.36
Civil Servant	2.39±1.28
Farmers	2.47±1.33
Student	1.94±1.38
Self-employed	2.13±1.32
Others	1.95±1.15

### DISCUSSION

Alcohol consumption is a social lifestyle for the residents of Afikpo community. The residents enjoy spending their evenings and weekends in beer parlors. Every neighborhood in the community has at least one beer parlor, and some could have two or more. This study reveals that majority (80.8%) of the respondents demonstrated a good knowledge of ALD. Which implies that they are knowledgeable of the risks involved with excessive alcohol consumption on the liver although there is alcohol use disorder amongst the residents. This reveals a poor attitude toward the risks involved with chronic alcohol consumption.

Findings from this study reveals that there was a high level of alcohol misuse and dependence across all age except the adolescents. This could be because the adolescents and the students are dependent on their parents and their guardian, they do not earn an income so they do not consume alcohol as they desire due to inadequate finance. Although similar study revealed that there is high level of risky alcohol use amongst adolescents [23] which disagrees with the findings of this study.

In all societies, a positive correlation exists between average per capita consumption of alcohol and the frequency of cirrhosis. The amount ingested and the duration of intake correlate with the incidence of alcohol related liver disease, hence, deaths due to cirrhosis are closely tied to per capita alcohol intake [16].

Majority of the males who are within the age of 20-60 had higher level of dependence and misuse. There was an association between gender and knowledge of ALD. This could be as a result of societal influence. Often times the society frowns at a female who takes alcohol. Most females will not want to be seen consuming alcohol and will not want to admit that they consume alcohol nor to admit that they take several bottles in a day. In addition, most females usually prefer to spend their money on other things such as make-up, hair-do etc. which they consider more important than spending on alcohol. The males and the young adult tend to have high risk seeking behavior which includes risky and excessive alcohol drinking [24,25]. Previous studies agree with findings from this study which states that alcohol abuse and dependence rates are higher in men (18%) than in women (10%) and in Caucasians than in black persons; however, the black population is more prone to develop a progression of liver disease to cirrhosis [12]. In addition, men spend a lot of time at work compared to women and may spend several nights a week socializing with work colleagues after work in "drinking meetings," which are usually accompanied with by excessive consumption of alcohol [26].

Findings from this study reveals that all the respondents who are employed had alcohol disorder. This could be because they have an income unlike the students, hence have more disposable cash to finance excessive purchase of alcohol [27]. Respondents in this study had alcohol misuse and disorder, irrespective of the occupation of the respondents. This could be due to the fact that safe and high-quality varieties of nearly every kind of alcoholic beverage are available at relatively low prices in Afikpo community. In addition, work-related networking which promotes social drinking could also be a possible explanation to alcohol misuse amongst the working-class respondent. Drinking is often an integral part of social life, especially in the working environments and amongst middle-aged men who are part of the working population.[28]

However, famers appear to have the highest level of dependence. This could be attributed to their low level of education. Going to pubs often and being able to afford several bottles of alcohol seems to be their criteria to measure success and to show-off wealth. Previous studies have shown that alcohol related health issues were more amongst unskilled workers and self-employed and lowest amongst executives and farmers, blue-collar workers and laborers have the highest alcohol misuse and dependence [29]. This could be due to availability of alcohol at work, social pressure to drink while at work, separation from loved ones and lack of supervision. Hence, accessibility and affordability to alcohol and social peer-pressure seems to be a major contributory factor to alcohol misuse and dependence [29].

The respondents who do not have any form of education had the highest level of alcohol misuse and dependence although there was no association between educational level and alcohol misuse and dependence. This implies that excessive alcohol consumption is a part of the town's social fabric. The residents indulge in binge and excessive alcohol use irrespective of their educational level. Alcohol consumption seems to be a cultural practice in Afikpo. A study conducted in Japan agreed that respondents with lower education had significantly higher risks of both non-problematic heavy drinking and problem drinking. This fact is in contrast with the findings of this study [28]. Often times, lower education was significantly associated with increased risks of both non-problematic heavy drinking and problem drinking [30,31,32]. Education increases individual's awareness of healthy behaviors and practices and to acquire skills that affect health-promoting decisions [33,34,35]. Hence, education may increase individual's understanding of the negative effects of heavy drinking and may build individual's capacity to manage drinking by stopping or keeping consumption low [36,37]. Education also shapes cultural behaviors and

practices [38] in the form of health-related values. There is need for a public health campaign designed to address the threat of chronic and excessive alcohol consumption and ALD so as to reduce the risk and prevalence of liver diseases related to the abuse of alcohol in Afikpo. It would therefore be beneficial to improve knowledge and awareness of health hazards of excessive alcohol consumption as well as cultural practices and social networks promote healthy behaviors.

### **Limitations of study**

The respondent used for this study were only those who agreed to participate as some of the respondents did not give consent, therefore the result obtained may not represent the general population.

### **Conclusion**

The residents of Afikpo community have a good knowledge of ALD though there is alcohol use disorder, alcohol misuse and dependence in the community. Gender is the only demographic characteristics that influenced the knowledge of ALD.

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### **Authors contribution**

Research design: Chinelo Nneka Aguiyi-Ikeanyi, Chiagoziem Urom Urom-Ndubisi and Maxwell Adibe. Data Collection: Chiagoziem Urom Urom-Ndubisi and Owoichoche Moses Agene. Data Analysis: Chinelo Nneka Aguiyi-Ikeanyi and Maxwell Adibe. Supervisors: Chinelo Nneka Aguiyi-Ikeanyi and Maxwell Adibe. Manuscript Preparation: Chinelo Nneka Aguiyi-Ikeanyi and Chiagoziem Urom Urom-Ndubisi.

### **Conflict of interests**

There is no conflict of interest

### **Ethical Consideration**

Ethical approval was obtained from the Research and Ethical committee of the Faculty of Pharmaceutical sciences of the University of Nigeria, Nsukka, Enugu State with the reference number FPSRE/UNN/20/0011. Verbal Consent was obtained from every respondent before administering the questionnaire to him/her.

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