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Liver Function Status of Indian Hemp Smokers And Alcohol Consumers In Shendam Town Plateau State, Nigeria

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ABSTRACT: Cannabis and alcohol are among the substances in Nigeria that are widely consumed owing to the societal acceptance particularly among the young age group. Unfortunately, lack of the political will and poor government policies on those substances have led to their abuse despite the health and social effect they have on people between the ages of 14 – 64; making it one of the leading causes of liver diseases and deaths. The aim of this study was to investigate the effects of cannabis and alcohol on the liver of its consumers in Shendam town with a view to create awareness of the dangers imposed by these substances which are commonly consumed by residents of the town. A total of 86 blood samples were collected from subjects that consumed these substances. Samples were processed and assayed for liver enzymes with lobes to determine the liver function status of participants. The results of the tests indicated that there were 50% of the sampled populations, 27.9% consumed alcohol and Indian hemp, 12.8% consumed alcohol, Indian hemp, and are on medication; 3.5% consumed alcohol, Indian hemp, and Tramadol, 3.5% consumed alcohol, Indian hemp and tobacco while 2.0% consumed alcohol and more (a form of drug gin). Also, it was discovered that more males (79.1%) are involved in the consumption of these substances as against females (20.9%). Surprisingly, it was observed that their liver enzymes showed no appreciable increase and were statistically not significant ($P>0.05$) effect for Aspartate Amino Transferase (AMT) results across substances consumed were not significant ($P<0.05$). The albumin (Alb) result in the age group 40 – 49 was also significant ($P<0.05$). The results revealed that consumers aged 25 – 39 were most involved (32.6%) in the consumption of Indian Hemp, Alcohol and other substances. Based on the result of this research, we concluded that there were signs of liver damage among consumers of Alcohol, Indian hemp, and other substances of abuse among people of Shendam town.

KEYWORDS; Alcohol, Cannabis, Consumers, Liver enzymes

I. INTRODUCTION

The liver as an organ plays a vital and a central role in biotransformation of toxic xenobiotics, detoxifying metabolites produced into less harmful substances through oxidative reaction, reduction reaction, hydrolysis and conjugation that can be excreted easily from the body via the urine, stool and or sweat. In order to minimize the potential injury or impact cause by these toxic substances, the liver is well equipped with metabolizing enzymes including Phase I and Phase Il metabolizing enzymes as well as Phase Ill transporters [19].

Therefore, its anatomical and physiologic structure is prone to xenobiotic induced injury caused by some common factors linked with liver damage such as Indian hemp (cannabis), alcohol, tobacco and other substances of abuse with resultant increase in serum enzymes leaked from the liver to the peripheral blood circulation[16]. [15].

The rate of liver diseases is steadily increasing over the years and mortality and morbidity varies with age, sex and region and deaths from cirrhosis have been estimated to increase and would make it as the 12th leading cause of death in

2020 [14]. Cannabis and alcohol abuse are among the main leading causes of chronic liver disease in both developed and developing countries of the world [17]. The World Health Organization (WHO) estimates showed that 3.8% people worldwide smoke cannabis and drink alcohol and these may lead to cirrhosis and hepatocellullar carcinoma. In 2013, an estimated 181.8 million people aged 15-64 years used cannabis for non-medical purposes globally [14].

In a similar report by WHO it showed 5.6% of the global population mostly between the ages of 15-64 years abusing these substances especially young people. Cannabis and alcohol and may act synergistically and accelerate the development of liver disease by increased oxidative stress and generation of reactive oxygen species (ROS), Iron accumulation, immune modulation and stimulating fat synthesis [17]. Cannabis in many areas or regions, are typically smoked as marijuana in a hand rolled cigarette or "joint" which may include tobacco to aid burning. A water pipe or "bong" is also a popular means of using all cannabis preparations (Hall and Degenhardt, 2009). The harmful use of alcohol according to WHO Global Status Report on Alcohol and Health was responsible for 2-3 million deaths worldwide in 2004 accounting for 3.8% of all global mortality and has grown to 5% recently. In 2011, Nigeria tops amongst the countries in WHO African region in alcohol consumption with a national per capita consumption estimated at 12.3% and the recent report released by WHO (2018), showed an increase to 13.4% measured in equivalent liters of pure alcohol consumed per capita per year. Total consumption for only drinkers in liters of pure alcohol from 15 years above among both sexes is 25.5 liters; males with 32.7 liters and females 12.2 liters. In Nigeria, liver disease cases have been reported to be 1.5 million people per year (Samuel et al., 2012). WHO (2018) reported that liver cirrhosis and cancer per 100,000 population 1 5 years above-age standardized death rates is 1 16 and146 in males and 57 and 135 in females respectively; and road traffic injury per 100,000 populations, 15 years above-age standardized death rates males 48, and females 22.

In assessing cannabis and alcohol abuse, measurements reflect the frequency and quantity of substance use over some fixed period of time. Previous research has failed to address adequately pertinent issues in relation to liver injury but rather substance intoxication, addiction and withdrawal syndrome efTects on the central nervous system (CNS). then late into advanced stage of damage, the liver serum enzymes are assayed and an ultrasound scan imaging of the liver of an individual to ascertain the extent of damage (Frone, 2008). Liver diseases or damage are diagnosed by means of assessing the liver function status of patients, these are a group of clinical biochemical laboratory blood assays designed to give information about the state of a patient's liver. Thus testing is performed on a patient's serum or plasma obtained by phlebotomy [10].

Most frequently and which is the major concern of this study, enzymes will be used as biomarkers of liver diseases. Following hepatocelluller damage, these biomarkers leak into the blood and hence their activity in serum or plasma is increased. The markers include: markers of hepatocelullar injury-Aspartate aminotransferase (AST) and Alanine aminotransferase (ALT); markers of synthetic functions/dysfunction of the liver-Albumin, Bilirubin and Total protein; markers of obstructive liver disease-Alkaline Phosphates (ALP) and Gamma-glutamyl transferase (GGT) [10]. Cannabis and alcohol consumption have been incriminated in deaths resulting from hepatic disease. [16].

Statement of the Research Problem

Acute liver disease is common among young people and becomes advanced overtime. Cannabis and alcohol abuse is most likely the cause in developing and developed countries and emphasis has been placed on its psychoactive effects than its toxicity on the liver. In Nigeria about 80% of substance abuse, trade and use is cannabis (Marijuana) [8]. Alcohol alone caused over 3 million related deaths in 2016 globally, shoping I in 20 deaths among alcohol users. Harmful use of alcohol especially among young people between the ages of 15-19 causes more than 5% globally of the disease burden. There is an increasing trend and the dimensions of violence, crime and suicide among adolescents and the aged especially the married [18] WHO alerts on the rise in alcohol related deaths globally among ail her regions-WHO regions. The ban placed on substances of abuse has now introduced the use of unconventional substances "for high" mostly organic solvents [8]. Nigeria, with an annual population growth rate of 2.67% has no national monitoring on consumption of alcohol, its health consequences, social consequences and alcohol policy responses [18].

Justification of the study

Currently young people as early as 14 years smoke cannabis, abuse alcohol and other substances

of abuses; and so there is an increasing demand for treatment for cannabis-use and alcohol disorders and associated health conditions in middle-and-high-income countries of the world and hence the dire need to assess liver function status of abusers and advocate early and regular monitoring of liver function among abusers since the only curative measure to liver damage is liver transplant which only a few persons can afford. [18], [7].This has posed a significant threat to health, social and economic fabrics of the family, society and Nigerian state as a whole [3], [11]. This has brought compounded problems with increased violence and crime with its changing patterns, viral hepatitis B and C, increased spread of HIV/AIDS diseases and collapse of our moral and social structure [15],[12].

The aim of the study therefore is to investigate biochemical parameters of the liver (AST, ALT, GGT, Total Protein and Albumin), among cannabis and alcohol abusers; between the ages of 14-65 years.

Objectives

i. To determine the extent of damage caused by cannabis, alcohol and other substance of abuse on the liver to help advice on early monitoring of liver damage.

ii. To understand liver function status patterns among cannabis smokers and alcohol abusers across ages in Shendam Town.

II. MATERIALS AND METHODS

Study area

Study was done in Shendam town, the Headquarters of Shendam Local Government Area in Plateau State-Nigeria, has an area of 2477km2and a total population of 208,017according to 2006 population census; with Shendam town densely populated and located at latitude 8.430N to longitude 9.300E/8.70N to 9.50 E (PLSG, 2017). Residents of the town are mostly Business men/women, farmers and civil servants (PLSG, 2017).

Study Population

The study population was abusers of Indian hemp, Alcohol and other Hard Drugs/Substances who are residents of Shendam town.

Informed Consent

Informed consent of the subjects was obtained by self-administered written informed consent form and questionnaire.

Data analysis

The data for this research project was collected from questionnaires and test results and analyzed with Analysis of Variance (ANOVA) and the results presented in tables size

Study duration

The study lasted for 3 months from 2020- 2021.

Inclusion criteria

The inclusion criteria included drug abusers of cannabis and alcohol in Shendam town who consented to take part in the study.

Exclusion criteria

The exclusion criteria included all drug non-abusers of cannabis and alcohol in Shendam town and drug addicts who did not consent to take part in the study.

Limitations of the study

1. The limitation of time could not allow for collection of samples from every part/area of Shendam town.

2. 2. Due to cost implication involved in carrying out the project research, other areas/towns in the Local Government Area could not be covered even though there are drug addicts in those areas.

Sample collection

Samples were collected aseptically in vacutainers between the hours of 8am-I lam by Venipuncture and serum separated into cryovials in the Medical Laboratory of the Shendam General Hospital. The sera were transported in icepack cold box the same day to Plateau Specialist Hospital Jos and stored at -20^{0}C till required for analyses.

Estimation of Alanine aminotransferase (ALT) and Aspartate aminotransferase (AST) (Reitman and Frankel, 1957).

Principle: The estimation of ALT follows the recommendation of the International Federation of Clinical Chemistry (IFCC) and optimized for performance and stability.

ALT catalyzes the transfer of amino group between L- alanine and L- glutamate or 2 Oxoglutarate to form pyruvate. The pyruvate formed, is reduced by NADH in a reaction catalyzed by lactate dehydrogenase (LDH) to form La-lactate and NAD*. The rate of the NADH oxidation is directly proportional to ALT catalytic activity which is measured calorimetrically. It is determined by measuring decrease in absorbance at 340/378nm. Pyridoxal phosphate serves as a coenzyme in the amino transfer reaction and ensures maximal activation of enzyme and serves as a preservative,

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ALT:

a. L- alanine + Oxoglutaratc $\xrightarrow{\text{ALT}}$ Pyruvate + L-glutamate

b. Pyruvate + NADH + H^+ $\xrightarrow{\text{LDH}}$ la-lactate + NAD+

AST:

a. L-aspartate + 2- oxoglutarate $\xrightarrow{\text{AST}}$ L- glutamate + oxaloacetate

b. Oxaloacetate + NADH + H^+ $\xrightarrow{\text{MDH}}$ Malate + NAD^+

The reaction in ALT/AST is a reversible one and so it is difficult to measure either the reaction substrates or the products, the initial step is coupled with the second step which utilizes NADH as a coenzyme. The oxidation of NADH is followed by measuring the decrease in absorbance at 340nm.

The tubes were mixed by gentle agitation automatically by Cobas el Il Chemistry Analyzer and samples were incubated at 370C for 5 minutes within the analyzer's closed system and decrease in absorbance were taken at 340nm aner deionized water was used 49 as a zero calibrator and the analyzer automatically calculates the enzyme activity of each sample and the results recorded, stored and printed out.

Estimation of Serum Gamma-Glutamyltransferase (GGT) (Szasz, 1969).

Principle: The substrate L —gamma- glutamyl -3-carboxy -4 -nitroanilide in the presence of glycylgylcineas an acceptor is converted by gamma glutamyltransferase in the sample to 5amino-2-nitrobenzoate sshich can be measure at 405nm. The amount of 5-amino-2- nitrobenzoate liberated is proportional to the GGT activity in the sample. It is determined by measuring the increase in absorbance photometrically. GGT is raised in all liver disease types and induction of microsomal enzymes by alcohol or drugs-barbiturates and phenytoin (Wendy, A. & Jean, B. 2007). L-gamma-glutamyl-3-caboxy-4-nitroaniIide + L-gamma-glutamylglyclglycine glycylglycine GGT nitrcbenzoate.

Estimation of Serum Albumin

Principle: Under acidic conditions (pH 4.2), Serum albumin binds specifically with BC to forms a green coloured complex. Albumin becomes ionized at an acid pH and thus b-o the anionic dye BCG and absorbance is read at 640nm.

Estimation of Serum Total Protein

Principle: Colorimetric assay Divalent copper reacts in alkaline solution with protein peptide bonds to form a characteristic purple-colored biuret complex. Sodium potassium tartate prevents the precipitation of copper hydroxide and potassium iodide prevents auto-reduction of copper.

Protein + Cu^{2+} alkaline solution $\xrightarrow[\text{(Sodium Potassium Tartate/ KI)}]{}$ Cu protein colored complex

The color intensity formed is directly proportional to the protein concentration which can be determined colorimetrically at 552nm.

The tubes were mixed by gentle agitation automatically by Cobas C 111 Chemistry analyzer and samples were incubated at room temperature for 10 minutes within the analyzers closed system and increase in absorbance were taken at 552nm after deionized water was used as a zero calibrator and the analyzer automatically calculates the total protein of each sample and the results recorded, stored and printed out.

III. RESULTS

A study of the liver function status of Indian hemp smokers and Alcohol consumers Shendam town was conducted from November 2018 to January 2019. The results of work are here presented below:

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Table 4.1: The Mean and Standard Deviation of Liver Function Status of Indian Hemp Smokers and Alcohol Consumers on Based Substances consumed

PARAMETERS	SUBSTANCES CONSUMED							
	ALC	AI	AE	AIT	AITb	AIM	F. VALUE	F. VALUE
Freq (%)	43(50)	24(28)	2(2.3)	3(3.5)	(3(3.5)	11(12.7)		
AST	38.3±19.14	43.3±22.23	93.4±52.33	21.13±4.3	34.7±20.38	43.97±26.83	3/128	0.012*
ALT	17.87±11.6	20.58±12.13	22.0±3.4	12.70±1.9	13.13±4.83	17.09±10.87	0.548	0.740
GGT	103.1±113.9	165.05±2.55	135.4±68.7	38.87±22.3	82.7±48.7	127±110.87	0.631	0.677
TP	76.3±15.3	69.7±8.91	67.50±0.71	67.0±5.3	62.7±4.2	75.91±8.9	1.655	0.155
ALB	47.33±6.94	50.05±6.20	54.38±5.05	44.95±6.56	52.12±2.23	46.28±	1.447	0.216

Table 4.1 shows that the most consumed substance is alcohol alone (50%), followed y Indian hemp alone (27.9%), Indian hemp/Tramadol (3.5%), Alcohol/Indian hemp/Tobacco (3.5%) followed by Alcohol/Erin more (2%). There was no statistical significant difference in the results.

Key: ALC = Alcohol only, AI = Alcohol and Indian Hemp, AE = Alcohol and Erin More, AIT = Alcohol, Indian Hemp and Tramado, AITb = Alcohol, Indian Hemp and Tobacco, AIM = Alcohol, Indian Hemp and Medication, *= Significant result.

Table 4.2: Mean and Standard Deviation of AST Enzyme Level (U/L) of Indian Hemp Smokers and Alcohol consumers

AGE AND GENDER DIFFERENCE					
AGE GROUP	**GENDER**	**FREQ (%)**	**MEAN±SD**	**F-Value**	**P-Value**
20-29	M	19(22.1)	41.7±26.12	1.438	0.243
	F	5(5.8)	27.20±9.6		
30-39	M	25(29. l)	46.0±24.2	2.139	0.156
	F	3(3.5)	25.0±11.7		
40-49	M	9(10.5)	33.2±9.8	0.890	0.368
	F	3(3.5)	27.03±9.7		
50-59	M	10(11.6)	51.3±29.72	0.042	0.841
	F	3(3.5)	47.30±28.31		
>60	M	5(5.8)	28.9±17.1	3.239	0.115
	F	4(4.6)	48.3±14.62		

Table 4.2 shows that males in that the groups 20-29; 30-39 and 50-59 had higher mean values of AST 41.7±26.12, 46.0±24.2 and 51.3±29.72 respectively, though they were not statistically significant. The female age group 50-59 and >60 had higher mean values of AST 47.30±28.31 and 48.3±14.62 though they also were not statistically significant.

Key: AST = Aspartate aminotransferase, M = Male, F = Female, FREQ = Frequency, SD = Standard Deviation

Table 4.3: Mean and Standard Deviation ALT enzyme Level (U/L) of Indian Hemp Smokers and Alcohol consumers.

AGE AND GENDER DIFFERENCE					
AGE GROUP	GENDER	FREQ (%)	MEAN±SD	F-Value	P-Value
20-29	M	19(22.1)	20.96±12.2	2.575	0.123
	F	5(5.8)	12.06±2.02		
30-39	M	25(29. l)	20.3±12.9	0.954	0.388
	F	3(3.5)	12.83±6.2		
40-49	M	9(10.5)	17.03±7.9	0.043	0.840
	F	3(3.5)	15.96±6.9		
50-59	M	10(11.6)	18.6±10.80	0.188	0.673

	F	3(3.5)	15.73±3.70		
>60	M	5(5.8)	14.92±14.7	0.000	0.987
	F	4(4.6)	14.75±14.62		

Table 4.3 shows the ALT mean values across all age groups within the normal range, but a low value in the female age group of 20-29 (12.06±2.02) and 30-39 (12.83±6.2). There was no statistical significant difference in the results.

Key: ALT= Alanine aminotransferase, Male, F= Female, FREQ— Frequency, Standard Deviation.

Table 4.4: Mean and Standard Deviation of GGT enzyme Level (U/L) of Indian Hemp Smokers and Alcohol consumers.

AGE AND GENDER DIFFERENCE					
AGE GROUP	GENDER	FREQ (%)	MEAN±SD	F-Value	P-Value
20-29	M	19(22.1)	1 11.07±116.5	2.388	0.137
	F	5(5.8)	29.26±3.4		
30-39	M	25(29. l)	126.9±189.5	0.266	0.610
	F	3(3.5)	189.53 ±288.08		
40-49	M	9(10.5)	65.3±32.53	0.003	0.956
	F	3(3.5)	64.53±52.46		
50-59	M	10(11.6)	186.05±266.12	0.004	0.952
	F	3(3.5)	196.43±211.5		
>60	M	5(5.8)	105.7±105.32	0.645	0.448
	F	4(4.6)	165.5±118.2		

Table 4.4 also shows that the female age group 20-29 had a lower mean value (29.26±3.4) of GGT and all mean values across the age groups have mean values above the normal value. There was no statistical significant difference in the results.
Key: GGT = Gamma-glutamyl transferase, M = Male, F = Female, FREQ = Frequency, SD— Standard Deviation.

Table 4.5: Mean and Standard Deviation of Total Protein Level in (g/L) of Indian Hemp Smokers and Alcohol consumers.

AGE AND GENDER DIFFERENCE					
AGE GROUP	GENDER	FREQ (%)	MEAN±SD	F-Value	P-Value
20-29	M	19(22.1)	50.20±5.4	1.678	0.419
	F	5(5.8)	79.0±15.5		
30-39	M	25(29. l)	48.23±6.2	0.266	0.611
	F	3(3.5)	75.33±2.51		
40-49	M	9(10.5)	73.0±7.53	0.156	0.701
	F	3(3.5)	71.0±7.81		
50-59	M	10(11.6)	71.9±11.23	2.070	0.178
	F	3(3.5)	82.0±7.6		
>60	M	5(5.8)	74.80±13.9	0.425	0.353
	F	4(4.6)	80.0±8.52		

Table 4.5 shows that the mean values of Total Protein levels were within normal range, with no statistical significant difference.
Key: TP = Total Protein, Male, F= Female, FREQ= Frequency, SD= Standard Deviation.

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TABLE 4.6: Mean and Standard Deviation of Albumin hemp Smokers and Alcohol Consumers

AGE AND GENDER DIFFERENCE					
AGE GROUP	GENDER	FREQ (%)	MEAN±SD	F-Value	P-VaIue
20-29	M	19(22.1)	50.20±5.4	1.051	0.316
	F	5(5.8)	53.53±9.9		
30-39	M	25(29.1)	48.23±6.2	0.459	0.504
	F	3(3.5)	45.8±3.5		
40-49	M	90(0.5)	51.52±5.05	6.853	0.028*
	F		42.63±5.73		
50-59	M	10(1 1.6)	46.7±7.2	0.349	0.567
	F	3(3.5)	44.04±4.41		
>60	M	5(5.8)	45.5±7.0	1.047	0.340
	F	4(4.6)	40.69±6.9		

Table 4.5 shows the mean values of albumin in the male age group 40-49 were elevated above the normal values (51.52±5.05) and was statistically significant. Normal mean values of Albumin were observed across the other age groups which were not statistically significant.

Key: ALB= Albumin, Male, Female, FREQ= Frequency, Standard Deviation Significant result

IV. DISCUSSION

In the study conducted on the Liver Function status of Indian Hemp Smokers and Alcohol Consumers in Shendam town, based on substances consumed as shown in Table 4, I, we observed that consumers of Alcohol only were 43 representing 50% of the sampled population. Indian hemp smokers only were 24(27.9%) Tobacco 3(3,5%), Tramadol 3(3.5%), Alcohol and Erin more 2(2.3%). Alcohol was found to be the most consumed substance. This finding supports the earlier study that showed alcohol as the most consumed substance in Ekiti State [12]. Apart from consuming cannabis and alcohol, other substances above too are consumed to get "high" and recently has taken another dimension where embalming oil and super glue are consumed [8],[11].

There were noticeable differences also between males 68(79.1%) and females 18(20.9%) in Indian hemp & alcohol consumption and, across other substances consumed; across age group 20-29 males 19(22.1 ^{0}/0), females 5(5.81 ^{0}/0); 30-39 males 25(29. l), females 3(3.5%); 40-49 males 9(10.5%), females 3(3.5%); 50-59 males 10(11.6%); females 3(3.5%) and 60 above males 5(5.8%), females 4(4.65%). The age group 20-29 had the highest frequency of female consumers as compared with other age groups. These findings above are similar to the reports that every 1 in 4 users of Indian hemp and alcohol in Nigeria is a female (NBS, 2018) and also agrees with earlier research showing that there are more male users of the Indian hemp than female users [18],[11], [1].

There exists a difference also generally across age groups of Indian hemp smokers and alcohol consumers 20-29 24(27.9%), 30-39 28(02.6%), 40-19 12(14.0%), 50-5913(15.1%) and 60 above 9(10.5%). In the liver function status of Indian hemp smokers and alcohol consumers; the markers of liver dysfunction total protein and albumin were assayed as well as markers of hepatocellular injury-AST and ALT and the marker of cholestasis-GGT. From the study Table 4.2 showed the individual means and standard deviation for AST levels in (U/L). The male mean values in the age groups shows 20-29; 30-39 and 50-59 had higher mean values of AST above the normal range of 0-35tJ/L 41.7±26.12, 46.0±24.2 and 51.3±29.72 respectively, though they were not statistically significant. It was also observed the female age group 50-59 and >60 had higher mean values of AST 47.30±28.31 and 48.3±14.62 though the result also were not statistically significant. AST results based on substances consumed generally, the result is significant (F-3.128, P-0.012); (p< 0.05)all the substances consumed, consumers of alcohol and Erin More (a form of dry gin) have a greater mean value (93.4±52.33) then followed by the age group 50-59 (5) .3±29.72) above 35 (U/L).

In Table 4.3, the ALT mean values were within the normal range across all age groups and gender between (12.06±2.02-20.96±12.2) and the results below from the F-and P-values were insignificant. Male and female gender (F-3.357, P-0.070 (P>0.05); all age groups (F0.376, P-0.825, p>0.05), substances consumed (F-0.548, P-0.740,

(P>0.05). These observations are similar to previous work that indicated that the pattern of mean values for AST/ALT showed AST has a greater mean value than ALT as observed across all distributions. AST and ALT levels are moderately elevated in Alcoholic hepatitis, drug/toxin induced necrosis and other infections such as acute hepatitis, chronic hepatitis. Although enzyme level reflects the extent of hepatocellular necrosis, in uncomplicated acute viral hepatitis, the very high initial levels approach normal levels in S weeks in 75% ofcases (Friedman et al,' 2003). AST may be more than ALT in alcoholic liver disease but the actual values may show mild elevations. In chronic hepatitis, cirrhosis, and tatty liver, serum ALT correlates with the degree of liver cell damage [16].

Also in Table 4.4 the GOT mean values were above the normal range of (551J[I,) among male and female gender (17-0.001, P-0.971; (p>0.05), , age groups (F-1.124, P-O.351; 13>0.05 which were all insignificant, Among all the substances Consumed Alcohol/lndian hemp have higher and the male and female age group 50-59 (1 12) and (1 1 above normal the range and the results were all statistically insignificant (13>0.05).

GGT level is most useful in the diagnosis of cholestasis in chronic alcohol or drug ingestion and liver metastases, Drug induced elevations of GGT precedes a change in other liver enzymes but there are reversible liver enzyme changes if drugs is stop at this point. GGT in alcoholic liver disease roughly parallels the alcohol intake as there is genetic variation in the metabolism of alcohol among consumers [16], [6].

Total protein level in Table 4.5 showed mean values across all distributions with normal mean values between 60-83g/L with (13>0.05) and hence the results is not significant.

Table 4.6 for Albumin levels, results showed statistically significant difference (F-6.583, P- 0.028; in the male and female age group 40-49, with the mean value 52±5.0) slightly elevated above the normal range (50g/L). Albumin decreases in dehydration due to alcohol consumption as it is a strong dehydrating agent, chronic liver disease and generally accompanied by an increased in the Beta and Gamma globulins as a result of Immunoglobulinmu (IgM) and Immunoglobulin gamma (lgG) production in chronic active hepatitis, and of IgM and Immunoglobulin alpha (IgA) in biliary and alcohol cirrhosis respectively. The albumin globulin fraction remains constant if both protein components of the blood remain the same (Vasudevan and Sreekumari, 2007).

V. CONCLUSION

Cannabis and Alcohol use or in association with other drugs/substances of abuse such as tramadol, tobacco etc are associated with hepatic and morphologic alteration and this occurs overtime. Albumin levels were significant due to liver damage. Also, AST results across substances consumed in the age group 40-49 was also significant. Other parameters assayed across distribution generally showed high mean values though statistically insignificant indicating some level of cell damage in the liver. Based on the results of this project, we concluded that there were signs of liver damage among consumers of Alcohol, Indian hemp and other substances of abuse among people in Shendam town.

VI. RECOMMENDATIONS:

Based on the results and observations of this work, we wish to make the following recommendations:

1. All efforts must be geared towards sensitizing young people and even the aged about substance consumption/abuse, the dangers it portends and the consequences which significantly outweigh all perceived benefits attached to it; loaded contents in adverts by alcohol producing companies especially for alcohol portraying it in good light should be reviewed as the patterns and dimension of drug consumption/abuse is rapidly evolving.
2. Most users of these substances are not truly aware of the dangers of substances use and that unemployment, frustration, emotional stress and peer influence, experimental curiosity, broken and lack of parental care are driving forces in the abuse of these substances, as most users are mostly young people between the age group of 20-39. There is an urgent need to formulate policies in line with 10 proposed WHO, 2008 target resolution and strategies to reduce harmful consumption of alcohol and other substances of abuse.
3. Presidential Action Committee one the Elimination of Drug Abuse (PACEDA) emphasis should not focus on the elimination of drug abuse but rehabilitating those with CUD/SUD and attending to the health needs of affected persons-especially in ascertaining the extent of damage on withdrawal methods are employed.

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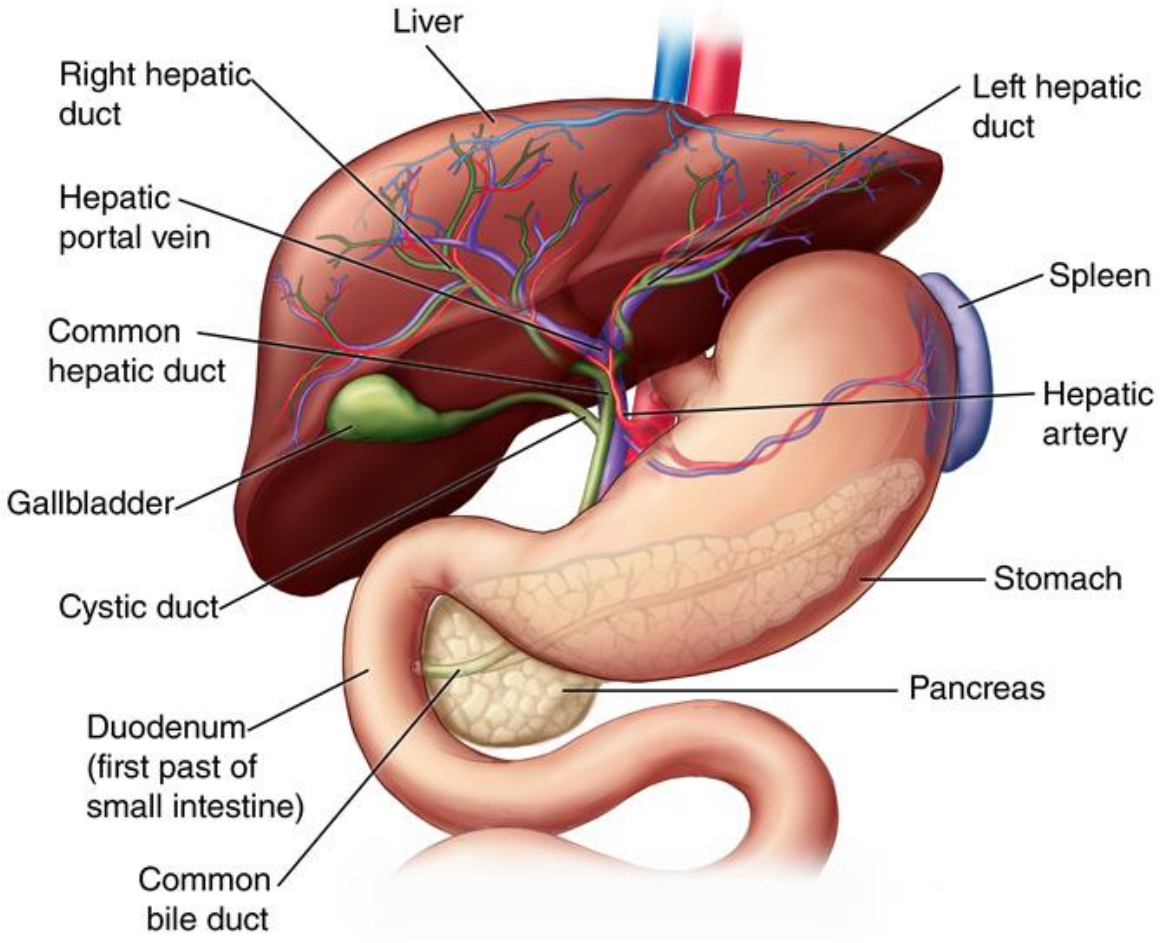
Appendix I

1. The liver structure



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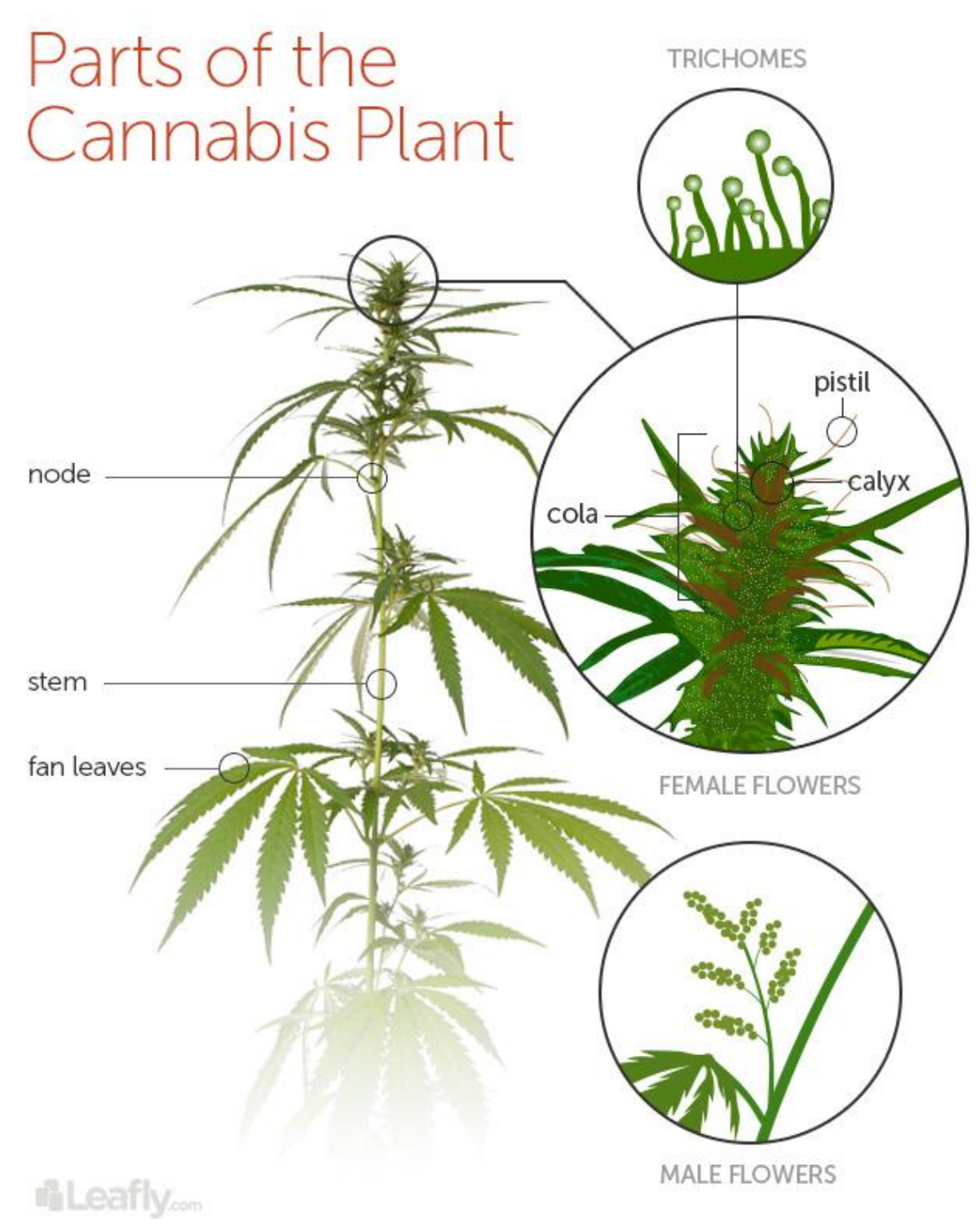
Appendix II

Cannabis plant anatomy



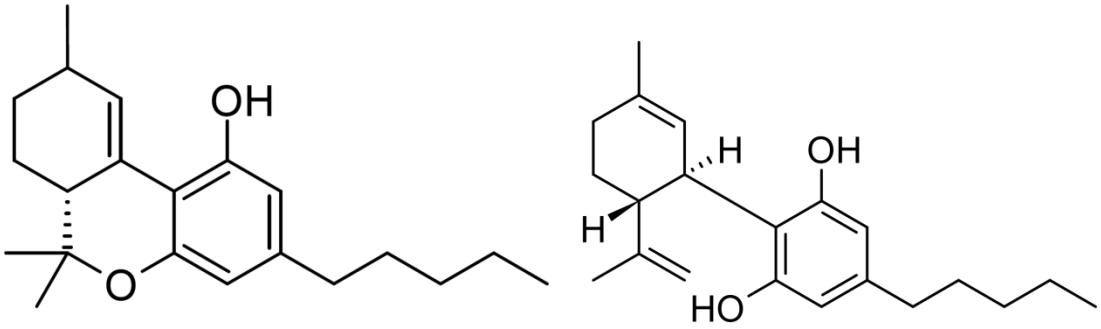
Appendix III

Cannabis biochemical constituents / structure

Cannabis plant biochemical content consist of at least 750 chemical and 104 different cannabinoids (Radwan *et al.*, 2015 and Izzo *et al.*, 2009).

The cannabinoids of significance in Cannabis plant include:

i. Delta-9-tetrahydrocannabinoid (THC)
ii. Cannabidiol (CBD)
iii. Cannabinol (CBN)



Delta-9-THC Cannabidiol

Figure 2: Chemical structures of Cannibas