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NEED FOR SCREENING FOR ALCOHOL AND DRUGS IN EMERGENCY TRAUMA UNITS

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ABSTRACT

Objectives: To examine the prevalence of alcohol and drug use and abuse, to identify socio-demographic characteristics that correlated with injury and to identify risk factors for injury in a Nigerian Trauma unit.
Design: Descriptive cross sectional study.
Setting: The study was carried out a general hospital trauma unit in Nigeria.
Subjects: One thousand one hundred and twenty one trauma patients and 303 controls.
Results: Of all injuries, 50.1% were road accidents, mean injury severity score was 41.3 SD (11.2), prevalence of alcohol abuse was 27.9%, cannabis abuse 14.0% and pre-trauma alcohol use 41.2%, pre-trauma cannabis use was 6.9%. Multivariate analysis shows that age < 31 years 95% CI (0.26-0.89), alcohol abuse 95% CI (1.84-4.64), binge drinking in the previous 30 days 95% CI (1.76-6.46), cannabis abuse 95% CI (1.45-2.88) and pretrauma combined alcohol and cannabis use 95% CI (3.34-11.78) were risk factors for severe injury.
Conclusion: Use and abuse of alcohol and drugs is highly prevalent among trauma patients seeking emergency care. Therefore trauma patients require routine toxicological screening to provide basis for preventive programmes or referrals for them.

INTRODUCTION

Research evidence indicates that in most urban trauma centers, alcohol and drugs are often common risk factor for a substantial portion of injuries (1-4). In some instances, a high proportion of trauma patients meet both lifetime and current criteria for alcohol abuse or dependence (5). In others, a substantial proportion report binge drinking prior to injury (5). Illegal drugs, such as cannabis, cocaine, and opiates have also been reported (6-7).

In Nigeria, most of the available data on alcohol and drug have been carried out among sub-populations such as students,(8) hospital patients,(9) and commercial drivers,(10-12) there is no available data that shed light on the association between substance use and injuries taking in trauma units which presumably are the first point of call after sustaining injuries.

Although the research presented herein is drawn from a sample in Nigeria, which is socio-demographically different from most developed countries of the world; the results should generalise the association between alcohol use and injury and

strengthen the estimates.

Objectives of the current study were:
(i) to examine the prevalence of alcohol use and abuse and other drug use in an emergency trauma unit center patients in Ibadan, Nigeria;
(ii) to identify sociodemographic characteristics that correlated with injury and
(iii) to identify risk factors for injury severity. This analysis was conducted among a sample of trauma patients treated in emergency trauma unit of Ring Road State Hospital, Ibadan, Nigeria.

MATERIALS AND METHODS

This was a descriptive cross sectional study. We recruited the study sample between February 2004 and August 2009 from the casualty department of Ring Road State Hospital, Ibadan, Oyo state, Nigeria, a 600 bedded general hospital . Ibadan is the capital of Oyo state, Nigeria and it is the third largest city in Nigeria. The city is located in the southwestern part of the country. It has a population of over 3.5 million people and eleven local government areas (13).

The casualty department is 60 bedded and is the

emergency trauma unit of this general hospital. It is the largest trauma unit of all the hospitals under the control of Oyo State Hospitals Management Board and the catchment area include all the 33 Local Government areas of Oyo State, and some neibouring states.

Participants were either Yoruba or English speaking, were over 18 years of age and were identified through the medical records department. They were the primary initiators of the injury or were contributors.

Their injuries met any of the following criteria:
(a) were such that they required a surgical intervention
(b) must have sustained a bodily injury including fractures and closed injuries
(c) were due to a penetrating or blunt trauma

The control group was a sample of attendees of the annexed general out patient department of the same hospital.

Casualty officers and nurses identified and recruited 1,722 patients who met the screening criteria and subsequently notified research staff. They were thereafter screened in a face-to-face interview to assess additional eligibility criteria. Ethical approval was obtained from the ethical review committee of the Oyo State Ministry of Health in January 2004, and informed consent was obtained from each participant. In this multistage study, 21.1% were excluded because they were unable to converse in either English or Yoruba, were not able to give consent, or were incapable of following the proceedings of the interview. Of the 1358 patients identified as eligible, 237 either did not respond or had missing data and were excluded from the analysis. Analyses were based on a sample of 1121 injured subjects and 303 controls. .

For each participant, sociodemographic characteristics and information on any substance related legal problem and substance use in family members was obtained from the patient or a family member or friend if patient was too ill to give such information. The alcohol and drug section of the Composite International Diagnostic Interview (CIDI) was also administered. Each patient was thereafter physically assessed in order to obtain the Injury Severity Score (ISS).

Alcohol Abuse or dependence: The alcohol and drug sections of the Composite International Diagnostic Interview (CIDI) version 2.1 was used to determine the diagnosis of alcohol abuse or dependence in the past 12 months.(14) The CIDI is a cross cultural valid and reliable instrument for the diagnosis of mental disorders and alcohol and drug abuse and or dependence.(15)

The CIDI produces information on pattern of lifetime and current use of alcohol and drugs and also provides scores for a positive diagnosis of alcohol or drug dependence, abuse, and other syndromes. Diagnoses were generated using the CIDI algorithms.

Assessment of Pre-trauma substance use

Question: *In about the 2-hour preceding your injury, did you take any alcohol or drugs during those 2 hours?*

The Construct of the question in the control group was: *In about the 2-hour preceding when you got to this emergency department, did you take any alcohol or drugs during those 2 hours?* It is assumed that information obtained from patient about alcohol and other drug use prior to injury may be a reliable assessment,(16) since toxicological assessments were unavailable in the study setting because of cost.

Assessment of Binge drinking

Question: *During the 30 days before your injury,* (for the control group, before being brought to the hospital), *how many times did you have 5 or more drinks on one occasion?* ("4 or more drinks" for females).

Question: *In the last 30 days, was there an occasion when you sustained any injury after you had taken 5 or more drinks?*

Other drug abuse or dependence: Past 12 months other drug abuse or dependence was also determined by using the drug section of the CIDI.

Other Measures: Socio-demographic information obtained from participants included age, ethnicity, marital status, years of education and employment status. History of injury related legal problems and family history of alcohol or drug problems were obtained in from the informants, patients and or family members. Injury types were categorized into assaults, automobile accidents and falls. Assaultive injury was defined as sustaining an injury while trying to assault someone else.

Injury severity score (iss): The Injury Severity Score (ISS) is an anatomical scoring system that provides an overall score for patients with multiple injuries. According to ISS, each injury is assigned an abbreviated injury score (AIS) and is allocated to one of six body regions (Head, Face, Chest, Abdomen, Extremities (including Pelvis), External). The Abbreviated Injury Scale (AIS) is ranked on a scale of 1 to 6, with 1 being minor, 2 moderate, 3 serious, 4 moderate, 5 critical, and 6 a non-survivable injury. Only the highest AIS score in each body region is used. The three most severely injured body regions have their score squared and added together to produce the ISS score.

The ISS score takes values from 0 to 75. If an injury is assigned an AIS of 6 (unsurvivable injury), the ISS score is automatically assigned to 75. The

ISS was employed in this study as it is virtually the only anatomical scoring system in use that correlates linearly with mortality, morbidity, hospital stay and other measures of severity (17).

Analysis: A descriptive analysis of socio-demographic and clinical characteristics as well as pattern and prevalence of substance use and substance use disorder was sought followed by a bivariate analysis of all socio-demographic and clinical characteristics and alcohol and cannabis abuse using chi-square statistics.

For multivariate risk analysis, the association between age, gender, ethnicity, marital status, alcohol abuse, pre-trauma alcohol use, binge drinking, cannabis abuse, pre-trauma cannabis use, and pre-trauma multiple alcohol and cannabis use and injury Severity score was determined multinomial regression analysis. All analyses were performed with the SPSS Version 13.0 (18).

RESULTS

Descriptive statistics of the analysed sample (N = 1121, control N=303) are presented in Table I (demographics and injury characteristics), Table II (alcohol and substance use and DSM IV disorder), Table III (risk factors for injuries). Proportion of injured participants significantly reduced with increasing age, was significantly more common in males and among those with family history of drinking problems (Table 1).

Table 1

Socio-demographic characteristics of Trauma Patients and Control Group

Demography and Clinical Characteristic	Injured N = 1121			Non Injured N = 303			
Age	%	N	%	n	%	X²	Sig
<31	53.3	809		196	64.9	9.5	0.02
31-40	34.2	127		35	11.6		
41-50	10.1	78		34	11.2		
>50	2.4	107		38	12.5		
Sex							
Male	88.1	594		140	46.2	4.2	0.03
Female	11.9	526		163	53.8		
Ethnicity*							
Yoruba	35.7	238		64	21.1	0.02	0.9
Hausa	21.4	332		90	29.7		
Igbo	31.2	221		59	19.5		
Middle belter	10.1	137		37	12.2		
Others	1.6	193		53	17.5		
Marital Status							
Married	58.6	509		134	44.2	2.0	0.7
Widowed	19.6	158		42	13.9		
Separated	9.0	175		41	13.5		
Divorced	3.3	63		18	5.9		
Never Married	9.5	216		68	22.4		
Substance related Legal problems							
No	66.2	727		209	69.0	1.6	0.2
Yes	33.8	394		94	31.0		
Employment Status							
Employed	27.9	334		92	30.4	0.01	0.9

Unemployed	72.1	787		211	68.6	
Year of Education						
1-6	37.7	417		106	35.0	0.5	0.9
7-12	51.1	573		159	52.5	
13-15	10.1	113		32	10.6	
>15	1.1	18		5	1.7	
Problem drinking in family						
Yes	33.6	374		79	26.1	5.3	0.02
No	66.4	757		223	73.9	
Drug problem in family						
Yes	31.4	346		89	29.5	0.2	0.6
No	68.6	769		214	70.5	
Injury Mechanism						
Domestic Injury	4.9					
RTA	50.1					
Falls (non domestic)	9.6					
Assault	33.7					
Others	2.0					

*Ethnic composition in Nigeria: most populous and politically influential: Hausa and Fulani 29%, Yoruba 21%, Igbo (Ibo) 18%, Ijaw 10%, Kanuri 4%, Ibibio 3.5%, Tiv 2.5%, others 12%. Source: http://www.indexmundi.com/nigeria/ethnic_groups.html

Table 2

Alcohol and Drug using Behaviour and DSM IV Disorders among Trauma Patients and Control Group

Variables	Injured N = 1121		Non-injured N=303		X^2	Sig
Alcohol using behavior/DSM disorder						
Alcohol use (12 months)	861	76.8	212	70.0	5.6	0.02
Alcohol Abuse (12 months)	312	27.9	65	21.4	4.7	0.03
Alcohol dependence (12 months)	122	10.9	23	7.6	2.5	0.1
Pre-trauma Alcohol use	462	41.2	99	32.7	6.9	0.01
Binge Drinking (30 day)	461	41.1	100	33.0	6.3	0.01
12 month Drug Use /DSM disorder						
Cannabis use (12 months)	499	44.5	110	36.3	6.3	0.01
Cannabis abuse (12 months)	157	14.0	32	10.6	2.2	0.1
Pre-trauma Cannabis use	77	6.9	17	5.6	0.4	0.5
Cocaine Use	20	1.8	3	1.0	0.1*	0.3

Cocaine abuse	4	0.35	1	0.3	0.00*	0.3	
Heroin Use	13	1.2	2	0.7	0.7*	0.5	
Other Drug Use	69	6.2	16	5.3	0.1	0.8	
Prescription Drug Use	42	3.7	10	0.1	0.7	0.6	
Benzodiazepine abuse	36	3.2	8	2.6	0.1	0.7	
Multiple Substance Use							
Alcohol/Cannabis (12 months)	520	46.8	118	38.9	5.		
Pre-traumatic Alcohol/drug use	480	42.8	104	34.3	6.7	0.01	

Table 3

Multivariate Associations with Severity of Injury

Sociodemographic/ clinical characteristics	Bivariate			Multivariate		
	OR*	95% CI**	Sig	Exp(B)	95% CI	Sig
Age						
< 31	0.42	0.09-0.67	0.02	0.56	0.16-0.89	0.04
31-40	0.51	0.08-0.78	0.04	0.78	0.31-1.52	0.1
41-50	0.82	0.43-1.56	0.1	0.89	0.73-1.34	0.2
>50	1			1		
Gender						
Male	3.73	1.67-6.78	0.02	1.41	0.71-2.13	0.09
Female	1					
Ethnicity*						
Yoruba	1.62	0.9-2.31	0.06	1.14	0.52-1.64	0.1
Igbo	1.44	0.56-2.22	0.08	0.92	0.41-1.31	0.2
Hausa	1.33	0.89-2.14	0.09	1.13	0.72-1.64	0.1
Minority Tribes	1					
Marital Status						
Currently Married	0.52	0.09-0.78	0.04	0.82	0.43-1.12	1.0
Not currently married	1			1		
Alcohol Using Behaviors						
Alcohol Abuse	5.19	3.23-10.13	0.01	2.73	1.84-4.64	0.01
Pretrauma alcohol use	6.21	2.92-10.32	0.001	3.11	2.33-6.53	0.001
Binge Drinking (30 days)	4.90	2.28-9.41	<0.01	2.91	1.76-6.46	0.01
No alcohol use	1			1		
Drug Using behaviour						
Cannabis Abuse	3.94	2.19-7.44	0.03	2.14	1.45-2.88	0.01
Pretrauma cannabis use	1.92	1.17-2.54	< 0.05	1.24	0.67-2.04	0.08
Pretrauma alcohol & cannabis use	7.78	4.29-15.63	<0.001	5.62	3.34-11.78	< 0.001
Benzodiazepine Abuse	1.17	0.56-1.93	0.9	0.83	0.42-1.13	0.9
No drug use (Ref)	1			1		

CI: Confidence Interval

DISCUSSION

In this study, we examined the prevalence of use and abuse of alcohol and drugs as well as socio-demographic correlates and risk factors for injury among trauma center patients in Ibadan, Nigeria. We found that a significantly high proportion of injured patients met criteria for alcohol abuse, reported pretrauma combined alcohol and drug use, and binge drinking in past 30 days compared with their non-injured counterparts.

One of the strength of this study is that it the first study in Nigeria aimed at identifying individuals with substance use problems in a trauma centre. Our findings corroborate other studies reporting a strong association between alcohol and injuries. (19-21). Our sample appeared to be a high-risk population in terms of alcohol and other drug use. This may support a recent report by the World Health Organization that in Nigeria, within the last decade there has been a rapid increase in alcohol availability (production/importation) and alcohol consumption across all age groups (22).

A significant segment of the injured patients reported a history of family alcohol problems, a finding that has implications for the initiation as and the continued use of alcohol by the patients. As with alcohol use, a significant proportion of the respondents reported a family history of drug problem. As with alcohol use patterns, familial influences has a strong effect on substance use patterns and require to be addressed for an effective intervention directed towards drug using behaviors (23).

We found that almost one in three injured patients in this study sample, met the criteria for alcohol abuse or dependence. This figure is within the range of 32% reported in the in United States,(21) and 39% reported in Australia (24). Compared with 1.7% from adults in primary care,(25) and 0.5% in the general population in Nigeria,(26) rates from the present study are disproportionately high. A potential explanation is that primary care patients are typically older and include more women than a group of trauma patient (27).

Although, we found that about 7% of the injured sample reported pre-trauma cannabis use, about two of every five of them reported combined pre-traumatic cannabis and alcohol. Similar reports have been given (11,28).

Our results indicate that prevalence rates of drugs other than cannabis were seemingly low, however, the finding that opioids and prescription medications mostly benzodiazepines were reported in trauma patient substantiates the importance of incorporating alcohol and substance use screening and brief interventions into trauma care.

Reflective of the local context, the estimates of psychoactive substance abuse in trauma patients obtained from this study can be used to inform policy and strategies that aim to use trauma centers to identify persons with substance use problems with the ultimate goal of reducing the prevalence of injuries.

This study highlights that patients who are receiving their healthcare in emergency care settings have high rates of substance use problems that are rarely addressed or that patients are likely to discontinue with, once the emergent health issue is resolved. Thus, it is critical that studies highlighting ways to integrate trauma patients into treatment services for alcohol and substance use should be carried out. Moreover, several of such patients may be willing to address their substance use issues (29).

The present study is limited by a number of factors including inability to carry out toxicological assessment. The generalisability of our research findings to other trauma centres within Nigeria is another area of caution, in view of diverse cultural and religious bias to substance use. The CIDI being a highly structured instrument could have been a bit lengthy for administration in trauma patients who require emergency attention. Although, this potential limitation was overcome among those who were admitted to the trauma unit, short screening instruments would be more appropriate for trauma patients. The possibility of selection bias in our control group should also be entertained.

The ISS also has some limitations, for example, an error in AIS scoring is transferred to the ISS, different injury patterns may yield the same ISS score and injuries to different body regions are not weighted, full description of patient injuries is not known prior to intervention. Also data from the ISS have issues of analysis as results of the somewhat skewed distribution. Also combination of modestly severe injuries may result in a higher ISS score than a fatal head injury. Furthermore, ISS may require special skill to ensure accuracy and reliability (30). There is also the issue of patient's risk profile including age and interval between injury and hospital admission. Which are not evaluated by ISS. For example, we found that the mean ISS score was very high in the present study 41.3 SD (11.2). This may be adduced to a number of factors: firstly, the waiting period before emergency intervention was given was quite long because of dearth in number of health personnel is a potential reason. Secondly, majority of Nigerians pay "out of pocket". Thus services are not offered until payment is made. Thus it is suggested that a fourth obligatory Hospital Trauma Index (31), grading from 0 to 5 be calculated , the maximum 1SS then being 100 (32).

In conclusion, this study has shown that trauma patients have high prevalence of alcohol and drug use and substance related disorders. Therefore trauma

patients require routine toxicological screening to provide basis for preventive programs or referrals for them. There is a need for more research in this area taking into consideration our limitations in this area.

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