Investigating the Frequency of Alcohol Intoxication Among the Patients Referred to Ahvaz Razi Hospital during 2005 to 2008

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ABSTRACT

In today's societies, alcohol is used and abused commonly and thus it has caused a lot of problems that by understanding its possible causes, prevalence and consumption pattern, an appropriate approach to deal with its adverse effects will be achieved. This study is a descriptive study based on the medical records of all cases of alcohol intoxication patients referring to Razi Hospital during 2005 to 2008. The required data were obtained from medical records. After studying the cases, a questionnaire was set based on desired variables and the questionnaire was completed by available information in cases. Then, the data were analyzed by using SPSS software. The level of significance in above tests was considered equal and less than 0.05. The number of alcohol intoxication referring patients to Razi hospital during 2005 to 2008 was 121 cases. In this study, 2 patients were passed away, but there was no significant association between mortality and alcohol consumption type ($p = 0.349$). Statistical analysis showed that the possibility of creating serious complications following the use of methanol is higher ($p = 0.00001$). It was found that there is a significant association between the alcohol consumption type and acidosis in patients ($p < .000001$). A significant association was found between the need for hemodialysis and the use of antidotes ($p < 0.00001$) that was related to the use of antidote in cases of needing hemodialysis when using homemade alcohol and methanol ($p = 0.011$). In addition, there was a significant association between the alcohol consumption type and the need for ICU in patients ($p = 0.007$). The results represented that alcohol consumption background in males is higher than females ($p = 0.026$). In this study, 10.6% of patients had acidosis.

Key words: Acidosis, Mortality, Hemodialysis, Antidote, Alcohol.

INTRODUCTION

Ethanol or ethyl alcohol normally is known as an alcohol and is probably the most common drug that is used and misused worldwide, according to international epidemiological (NALES) studies, the prevalence statistics in men was 3 times more than women and the consumption rate is higher below the age of 45 years. Alcohol directly or indirectly is a major killer of people aged 45-15 years. As, 50% of deaths related to traffic accidents, and 5% of deaths related to fire, 67% of drowning and 67% of murder and killing others in this age group is associated with alcohol[1].

In genetic studies that have been done on identical twins, have been shown that genetic factors will effect on individual's control in normal alcohol consumption. Ethyl alcohol is an aliphatic hydrocarbon, odorless, colorless, with mild polarity that passes easily through cell membranes. Commercial products containing ethyl alcohol, including wine, aromatic solvents, mouthwash solution are medical solutions which contain almost 20% ethanol[2].

There is lots of evidence that the ethanol effects by interfering with various neurotransmitters operations. Ethanol important actions include increasing the effect of gamma-amino butyric acid (GABA) in GABA receptors and block receptor is the subset of glutamate, N-methyl-D- Alpartat (NMDA) respectively. NMDA receptor by increasing neurons permeability to calcium influx will cause the neurotoxicity and long-term potentiating of neurons.

Animal studies also show that the acute effects of ethanol include competitive inhibition of Glysin connection to the NMDA receptor and blocking the neuronal glutamate transmission through inhibition of NMDA receptors. Glutamate transmission undermining in long-term drinkers of alcohol will lead to excessive regulation and NMDA receptors compensation and the development of tolerance to it (1). Therefore, considering the importance of this issue, social, economic and health problems because of alcohol consumption and taking into account the differences in religion, culture of Iran society and west and different patterns of alcohol consumption in Iran, we decided in this study to determine the prevalence of alcohol intoxication in referring patients to Razi hospital during 2005 to 2008.

MATERIALS AND METHODS

The study was a descriptive study based on hospital information. Accordingly, the records of all referring patients with alcohol intoxication to Razi hospital in Ahvaz during 2005 to 2008 were investigated and studied and required information in these files was extracted.

A questionnaire was set based on the favorable factors and was completed with the information contained in the files. Then the data were analyzed by using SPSS software that initially with descriptive statistical methods and then by using chi-square statistic test and Fisher test the relation between variables were compared (the above test level of significance was considered equal and less than 0.05).

RESULTS

In this study, the number of referring patients to Razi hospital with alcohol intoxication from 2005 to 2008 was 121 cases. 114 cases were male patients (94.2%) and 7 cases were female patients (5.8%) which is clearly alcohol intoxication had occurred more in males (p <.000001). 107 cases were single patients (88.4%), and 14 cases (11.6%) were married. Ethanol and handmade alcohol were used more than other alcohols.

The most common complaints of referring patients were decreasing the level of consciousness (81.8%), digestive problems (55.4%), and neurological symptoms (11.6%), respectively. In some cases, a symptom with other symptoms had occurred in the patient (Table1).

Table 1: Signs and symptoms of alcohol intoxication referring patients to Razi hospital between 2005 to 2008

Decreasing the level of consciousness	(81.8%) 99
Digestive problems	(.55.4%) 67
Neurological symptoms	(11.6%)14
Malaise	(10.7%) 13
Visual impairment	(8.3%) 10
Cardiovascular symptoms	(3.3%) 4
Slight intoxication	(1.7%) 2

Of the total studied patients, 2 patients (1.9%) had died. Both patients were handmade alcohol consumer, but conducted analysis by the chi-square test didn't prove the relation between mortality and alcohol consumption type (p = 0 .349).

In all studied patients, only one patient (0.9%) was suffering a serious complication that due to methanol consumption his blindness was happening. Statistical analysis, which was performed by Chi-square test showed more possibility to create serious complications follow by methanol consumption (p = .000011).

Among all studied patients, 11 patients (10.6%) suffered from acidosis that 4 cases were methanol consumers (100%), 1 case ethylene glycol consumer (50%), 3 cases were handmade alcohol consumers (7%) and 3 cases were ethanol consumers (5.3%), respectively. Using the chi-square test showed a significant correlation between alcohol consumption type and creating

acidosis in patients (p <.000001) (Table 2) both deceased patients in this study had acidosis that Fisher's exact test showed the higher mortality in patients with acidosis than other patients (p = 0.009091).

Table 2: Acidosis based on the type of alcohol consumption in patients with alcohol intoxication

	Acidosis		
	Had	Had not	Total
Ethanol	3	54	57
Methanol	4	0	4
Ethylene Glycol	1	1	2
Handmade	3	40	43
Total	11	95	106

Among all the studied patients, 8 patients (7.5%) were required hemodialysis that 4 cases were the methanol consumer (100%) and 4 other cases were handmade consumers of alcohol (9.3 %). Using the chi-square test showed a significant correlation between alcohol consumption type and creating acidosis in patients (p <.000001) (Table 3) that this relationship seems to be related to the higher need to hemodialysis in intoxicated patients with methanol, respectively.

Table 3: The need for hemodialysis, according to the type of alcohol consumption in patients with alcohol intoxication

	Need for hemodialysis		
	Had	Had not	Total
Ethanol	0	57	57
Methanol	4	0	4
Ethylene Glycol	0	2	2
Handmade	4	39	43
Total	8	98	106

Among all patients, 36 patients (33.9%) were needed the antidote. 4 patients who were intoxicated with methanol had received ethanol and folic acid. Among consumers of ethylene glycol, one patient had received (50%) of folic acid, among handmade alcohol consumers, 13 patients had received folic acid (30.2%) handmade alcohol consumers) and one patient had received ethanol

(2.3%) and among ethanol consumers, 16 patients had received (28.1%) folic acid. Using the chi-square test showed a significant correlation between alcohol consumption type and the use of antidote in patients (p <.000001) (Table 4).

Table 4: Antidote requirement based on the type of alcohol consumed in intoxicated patients with alcohol

	Need for hemodialysis		
	Had	Had not	Total
Ethanol	0	57	57
Methanol	4	0	4
Ethylene Glycol	0	2	2
Handmade	4	39	43
Total	8	98	106

Among all patients, 18 patients (17%) were required ICU. 3 intoxicated patients with methanol (75%), 9 handmade consumer alcohol patients (2.9%) and 6 ethanol consumers (10.5%) were required ICU. Using the chi-square test showed a significant correlation between alcohol consumption type and the ICU requirement in patients (p = 0.006981) (Table 5)

Table 5: ICU requirement based on the type of alcohol consumption in patients with alcohol intoxication

	Need for ICU		
	Had	Had not	Total
Ethanol	6	51	57
Methanol	3	1	4
Ethylene Glycol	0	2	2
Handmade	9	34	43
Total	18	88	106

Eighty two patients (77.4%) were hospitalized less than 24 hours and 13 patients (12.3%) between 24 to 48 hours, and 11 patients (10.4%) more than 48 hours. 3 consumers of ethanol patients, 4 methanol consumer patients, and 4 handmade alcohol consumer patients were more than 48 hours in hospital. Analysis of the chi-square test indicated an association between alcohol consuming type and the duration of hospitalization (p = 0.000002) (Table 6)

Table 6: The relation between the type of alcohol consumed and the patient's duration of hospitalization

	The duration of hospitalization			
	Less than 24 hrs	24 to 48 hrs	More than 48 hrs	total
Ethanol	47	7	3	57
Methanol	0	0	4	4
Ethylene Glycol	2	0	0	2
Handmade	33	6	4	43
Total	82	13	11	106

About the referring time of the patient relation and the incidence of serious complications, analysis by chi-square test indicated a link between alcohol consumption type and the incidence of serious side effects in patients (p = 0.00006) (Table 7).

Table 7: The incidence of serious complications based on the referring time of the patients with alcohol intoxication

	Serious complication		
	had	Had not	total
Referred within the first 6 hours after consumption	92	0	92
Referred between 6:00 till 24:00 after consumption	23	0	23
Referred 24 hours after consumption	5	1	6
total	120	1	121

The relation between hospitalization length and the time interval of alcohol consumption to referring time was statistically significant (p <.00001), but an accurate analysis represents the dependence of this relation on the short duration of hospitalization in the patients who were consumed ethanol (p = 0.009) (Table 8).

Table 8: Patients' hospitalization period based on the referring time after consuming alcohol

	Referring time after alcohol consumption			
	Less than 6 hrs	6 to 24 hrs	After 24 hrs	Total
Less than 24 hrs	79	17	1	97
24-48 hrs	9	3	1	13
More than 48 hrs	4	3	4	11
total	92	23	6	121

In this study, 38 patients drank more than 250 cc alcohol, of which 35 patients (92.1%) were male and only 3 patients (7.9%) were female. However, statistical analyzes indicated that there was no relation between sex and alcohol consumption of the patients (p = .327) (Table 9).

**Table 9: The volume of consuming alcohol
based on alcohol intoxicated patients' sex**

	The volume of consuming alcohol			
	< 250cc	250cc - 500cc	<500 cc	total
male	28	19	16	63
female	3	3	0	6
total	31	22	16	69

In this study, most male patients (51.7% men) had a history of alcohol consumption for more than once. However, only 14.3% of women had a history of previous alcohol consumption. In order to validate the Chi-square test results for patients who had a history of alcohol consumption for one time, were integrated with patients who had a history of more than once consumption together and were compared with patients who had no history of alcohol consumption. The results showed that alcohol consumption in males was higher than females ($p = .026$) (Table 10).

**Table 10: Previous history of alcohol consumption
based on the alcohol intoxicated patients' sex**

	Previous history of alcohol consumption			
	Had not	once	More than once	total
male	36	7	46	89
female	6	0	1	7
total	42	7	47	96

Analysis of the chi-square test showed a significant relation between the need for hemodialysis and the use of the antidote ($p < .00001$). More accurate analysis of Fisher's exact test showed that this relation related to the consumption of antidote in requiring to hemodialysis cases while using handmade alcohol and methanol ($p = .011$) (Table 11).

**Table 11. Antidote consumption based on the
need for hemodialysis and the type of consuming alcohol**

Consuming alcohol type	Need for hemodialysis	Antidote consumption		
		had	Had not	total
Ethanol	had	0	0	0
	Had not	16	41	57
Methanol	had	4	0	4
	Had not	0	0	0
ethylene glycol	had	0	0	0
	Had not	1	1	2
Handmade alcohol	had	4	0	4
	Had not	11	28	39

Analysis of the chi-square test indicated a significant association between the incidence of vision problems and alcohol type (p = .000083) (Table 12). The direct calculated values for the chi-square test were suggested higher vision problems after using methanol.

Among the patients, every patient over 30 years had a history of alcohol consumption more than once. Among 87 patients aged 15 to 30 years,

38 patients (43.7%) had a history of alcohol consumption more than once. Statistical analysis were performed by Chi-square test showed a relation between the patients' age and the history of alcohol consumption (p = 0.034874) (Table 13).

DISCUSSION

According to the results of the study it can be concluded that the prevalence of alcohol intoxication in men was more common than in women that were consistent with a study conducted in Turkey (3). In this study, 1.9% of patients had died that were not consistent with the results of several other studies. The cause of this dispute was the reason that in some studies all patients were used ethanol, in another study, all patients were used only methanol, whereas in this study, all the poisoned patients with any type of alcohol were studied (3- 5).

In this study, the most common complaints of referring patients, respectively were reduction of consciousness level, gastrointestinal symptoms and neurological symptoms that were consistent with previous similar studies in this area (3,5,6). Among patients, 100% of methanol consumers had received ethanol and folic acid as an antidote that it was more than the conducted study in Estonia (7), which can be justified in earlier referring patients at the center of intoxication.

Table 12: The vision problems based on the type of alcohol consumption in patients

	Vision problems		
	had	Had not	total
Ethanol	3	54	57
Methanol	3	1	4
ethylene glycol	0	2	2
handmade	3	40	43
total	9	97	106

Table 13: The previous history of alcohol consumption based on alcohol intoxicated patients' sex

	Previous history of alcohol consumption		
	Had not	once	More than once	total
15 to 30 years	42	7	38	87
30 to 45 years	0	0	3	3
More than 45 years	0	0	4	4
total	42	7	47	96

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REFERENCES

1. Richard F.Clark.Gold Franks Toxicologic emergencies thed. MC Grow Hill chapter **64**: 952-957 (2002).
2. Lippincott Williams x wilkens. Medical toxicology: A Synopsis and study GUIDE/ Seth Schonwald MD section: Alcohls and Drugs of abuse, 155-170.
3. Schoberl S, Nickel P, Schmutzer G.Siekmeyerw kiss W.Acute ethanol intoxication among children and adolescents. A retrospective analysis of 173 paitients admitted to a university children hospital klin padiatr. **220**(4): 253-8 (2008).
4. Hassanian- Moghaddam H, Pajoumand A, Dadgar SM shadnia sh. *Prognostic factors in methanol poisoning Hum Exp toxical.* **26**(7): 583-6 (2007).
5. Brahmi N, BleLY, Abidi N/kouraichi N/Thabet

H.Hedhili A/Amamou M.Methanol poisoning in Tunisia: report of 16 cases. *Clin toxical.* **45**(6): 717-20 (2007).

6.   Kalkan S, Cevik AA, Cavdar C, Aygoren O,Akgun A, Ergun N, Tuncoky. Acute methanol poisonings reported to the Drug and poison Information center in Izmir, Turkey. *Vet Hum toxical.* **45**(6): 334-7 (2003).

7.   Paasma R/Hovda KE/Tikkerberi A/ Jacobsen D. Methanol mass poisoning in ESthonia: out break in 154 patients. *Vet Hum toxical.* **36**(7):301-8 (2007).