

AIM OF THE WORK

The aim of the current study is to adapt the international guidelines for the management of acute alcohol intoxication to local use in order to improve the quality of medical service provided at Alexandria main university hospital (AMUH) poison unit by comparing what will be done in Alexandria poison unit with the international guidelines and find out how this influenced the outcome of these patients.

General objectives:

To assist poison center personnel in the appropriate pre-hospital triage, diagnosis and management of patient with suspected acute alcohol poisoning.

Specific objectives:

1. To identify socio-demographic characteristics and clinical profile of patients with acute alcohol toxicity.
2. To describe the manner by which acute alcohol poisoning is being diagnosed and managed in the poison unit.
3. To identify specific patients care decisions that may be at variance with the international guidelines.
4. To provide clear and practical recommendations that reflect the current state of knowledge based on the international guidelines.

SUBJECTS

All patients with acute alcohol toxicity admitted to the poison unit of Alexandria main university hospital in the period from (1st December 2012 to 31st May 2013) the following were included in the study.

The diagnosis of acute alcohol toxicity will be based on the following criteria:

- 1- History of ingestion of alcohol.
- 2- Characteristics clinical signs and symptoms of acute alcohol toxicity.
- 3- Detection of serum ethanol level.

METHODS

1. **Study design:** A hospital-based prospective, descriptive case series will be conducted
2. **Study setting:** Poison unit of Alexandria main university hospital
3. **Study subjects and unit of observation:**
 - Patients with acute alcohol toxicity.
 - Medical records
4. **Study time:** The field work will be carried through six months starting from 1st December 2012 to 31st may 2013.
5. **Sampling:** All admitted patient with acute alcohol toxicity who are receiving medical care from 1st December 2012 to 31st may 2013.

Collective agreement:

Getting permission:

The permission of the head of the poison unit will be obtained. A copy of the protocol will be given. The importance of the research and its future impact on the services will be stressed.

Training:

Supervisors will train the researcher on skills required to carry this research efficiently.

Pilot study:

Before the collection of data, a pilot study will be conducted on poisoned patients (n=10) to test:

The suitability of the used research tool as regards to phrasing and culture of interviewees.

- Estimated average time of filling the questionnaire.
- The whole administrative technique.

Ethical considerations:

Approval for this study will be obtained from the research ethics committee of Alexandria faculty of medicine.

Informed consent will be obtained from all participant or their families included in the study after explaining the aim and procedures of the study.

Complete confidentiality will be insured, all through the study procedures.

Data collection tools and techniques:

A structured interview format (**appendix 1**) related to patient history and demographic data will be completed.

Physical examination sheet (appendix 2):

General physical examination and systemic examination were performed and recorded.

Patients medical record:

A transfer sheet (**appendix 3**) was used to collect data related to diagnosis and medical management of individual patients in all domains of clinical care.

Initial assessment by checking breathing, airway, circulation, baseline Glasgow coma score will be recorded to help in the subsequent monitoring of the patients' condition.

The clinical manifestations (whether organic or neurogenic)

Vital signs and pupil size will be recorded.

Grading of poisoning will be done using the poisoning severity score/

Routine biochemistry on arrival to emergency department and on admission.

Treatment will be implemented as soon as the diagnosis of acute alcohol toxicity is suspected

Assessment of severity of the poisoning:

Poisoning severity score:

A standardized applicable scheme was used for grading the severity of poisoning. This classification scheme is used for both adult and children poisoning. it is used for the classification of acute poisoning regardless of the type and number of agents involved however, modified schemes may eventually be required for certain poisoning and this scheme may then serve as a model 1 data related to patients outcome of care totally recovered, died, complications and referral to emergency department, discharged before complete recovery.

Study and clinical trials applied on 69 cases of alcohol ingestion presented in emergency department and admitted cases to the poison center of Alexandria University after obtained permission from the observer and head of emergency department and head of poison center of Alexandria University.

The study was performed according to clinical manifestations included general manifestations and scoring system (GCS, PSS) and investigations available included arterial blood gases for evaluation of metabolic acidosis and electrolyte disturbance which was the most common and dangerous presentation or further more complications of acute alcohol toxicity, and blood glucose level indicating hypoglycemia which also was common complication.

Radiological investigations were used for further assessment of toxicity and complications especially CT brain unless patients refused.

Found that majority of cases due to ethanol toxicity which was the most applicable alcohol for human use for enjoyment which presented by little dangerous manifestations and outcome more than methanol ingestion which almost ingested accidentally due to its industrial use or either attempted suicide.

The present work founded that a very good response from emergency department and doctors for the acute alcohol toxicity on patient arrival with no delay of medical care.

Majority of cases of methanol toxicity had very bad outcome according to time lapsed to see physician or started of clinical manifestation and almost this cases in urgent needs for admission and special care in the poison center.

All patient with acute alcohol toxicity received primary medical care on time of arrival with follow up unless the patient refused or escaped from emergency department.

Accidental ingestion of methanol explained how much dangerous of onset of symptoms on the outcome which is very bad against excellent outcome and little dangerous manifestations of that of ethanol.

Statistical analysis of the data ⁽¹⁴⁰⁾

Data were fed to the computer and analyzed using IBM SPSS software package version 20.0. ⁽¹⁴¹⁾ Qualitative data were described using number and percent. Quantitative data were described using range (minimum and maximum) mean, standard deviation and median.

RESULTS

Table (VII) illustrated that:

I-Demographic data:

Males outnumbered females in both ethanol and methanol intoxicated patients (58.0% and 63.2% respectively).

The age of the patient ranged from 20 to 67 Years with a mean of 30.6 ± 8.12 and 31.84 ± 11.68 years for ethanol and methanol respectively.

Nearly half of the studied cases (46.30%) were single, and 10% were divorced for ethanol toxicity.

As regard the educational level of cases intoxicated with ethanol it was found that 68% of them were highly educated (university/above) and none was illiterate, on the other hand, the percentage of illiterate and highly educated patients intoxicated with methanol was the same (15.8%).

Most of cases of methanol toxicity (47.4%) were manual worker while 22 cases (44.0%) of the studied cases of ethanol were unemployed.

Only 30.4% of all patients with alcohol toxicity were professional workers.

The high percentage (78.9%) of the methanol cases was lived in urban area and the percentage reached 94% with ethanol toxicity.

Table (VII): Distribution of the studied cases according to demographic data.

	Ethanol (n =50)		Methanol (n=19)	
	No.	%	No.	%
Sex				
Male	29	58.0	12	63.2
Female	21	42.0	7	36.8
Age				
<20	2	4.0	3	15.8
20 - <30	26	52.0	6	31.6
30 - <40	14	28.0	4	21.1
≥40	8	16.0	6	13.6
Min. – Max.	18.0 – 54.0		16.0 – 52.0	
Mean ± SD.	30.60 ± 8.12		31.84 ± 11.68	
Marital status				
Single	23	46.0	9	47.4
Married	22	44.0	10	52.6
Divorced	5	10.0	0	0.0
Education				
Illiterate	0	0.0	3	15.8
Read/write	8	16.0	9	47.4
High school/technical	8	16.0	4	21.1
University/above	34	68.0	3	15.8
Occupation				
Not working	22	44.0	6	31.6
Manual worker	11	22.0	9	47.4
Professional	17	34.0	4	21.1
Residence				
Urban	47	94.0	15	78.9
Rural	3	6.0	4	21.1

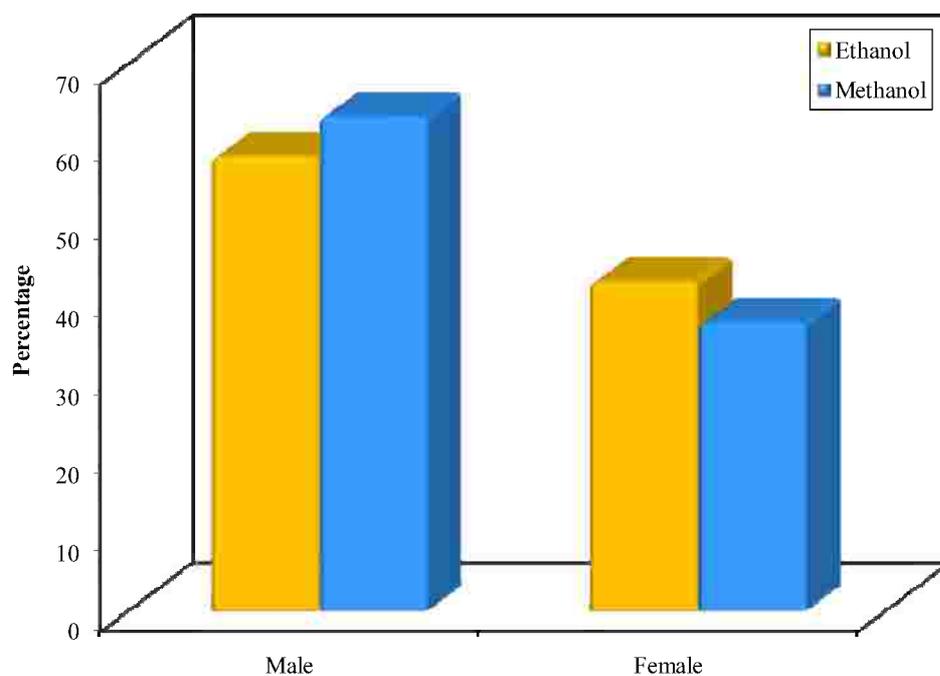


Figure (1): Distribution of the studied cases according to sex

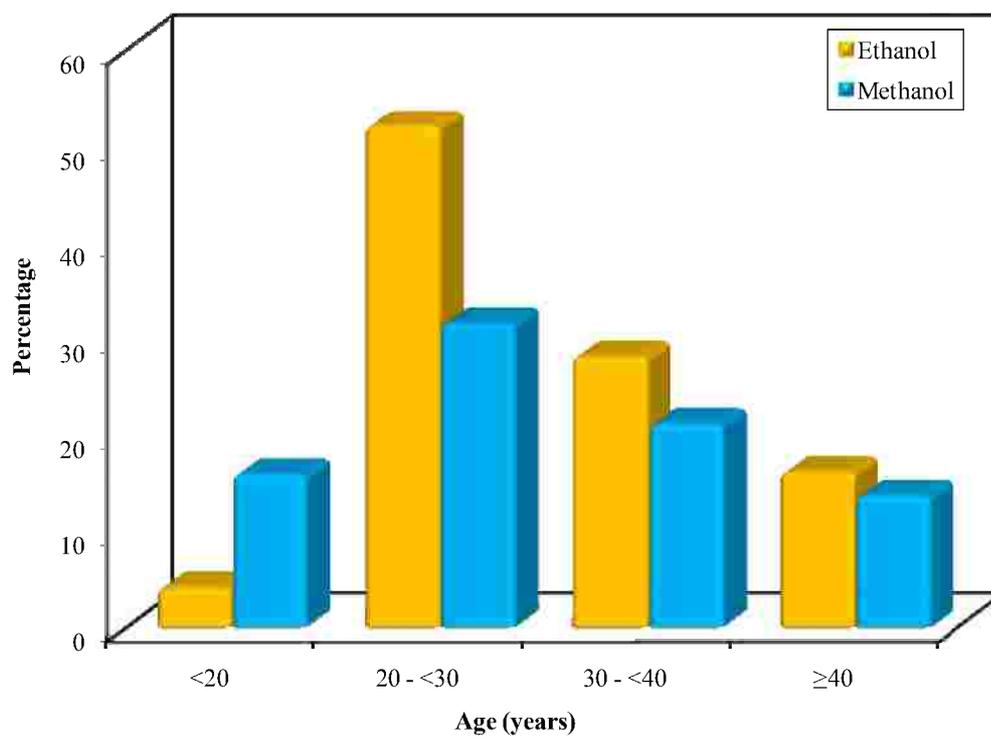


Figure (2): Distribution of the studied cases according to age

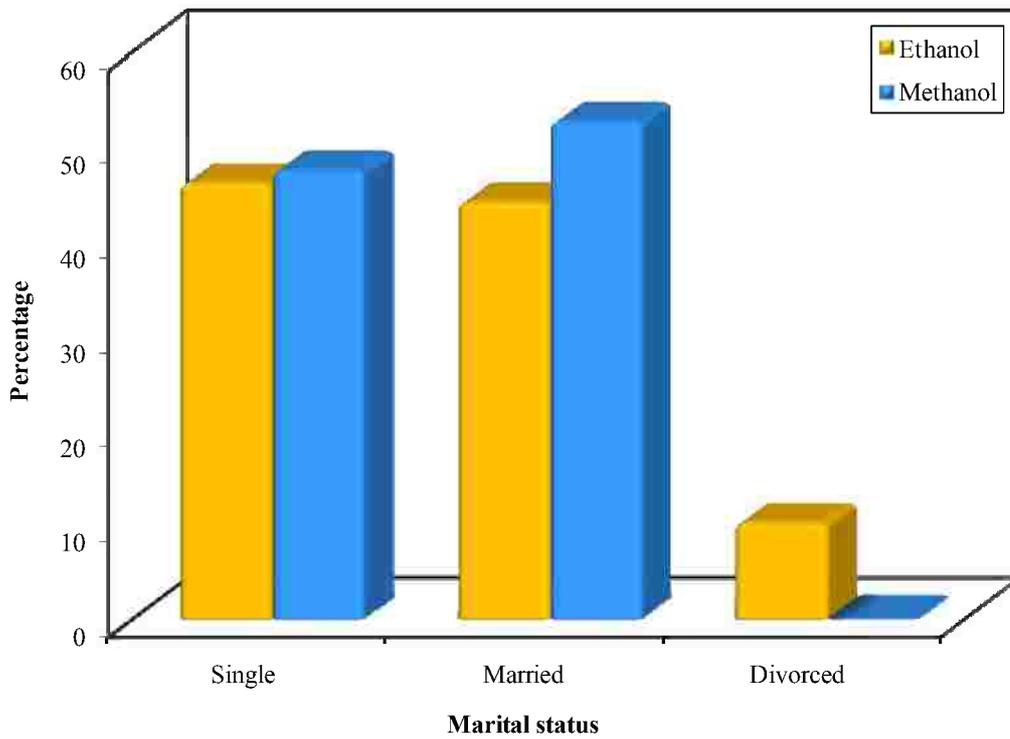


Figure (3): Distribution of the studied cases according to marital status

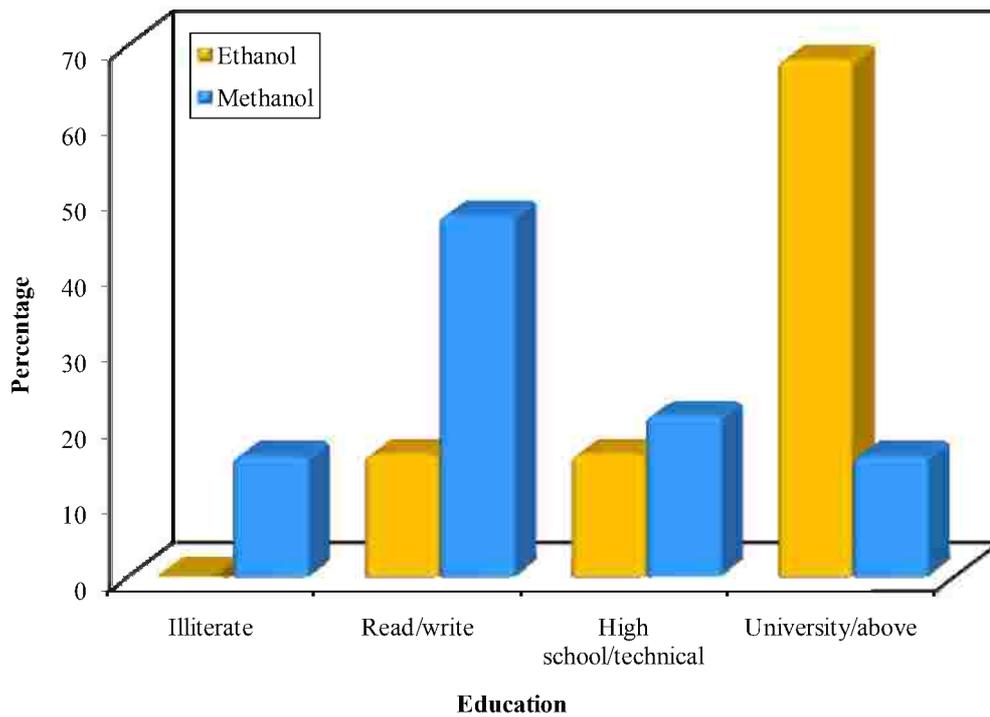


Figure (4): Distribution of the studied cases according to education

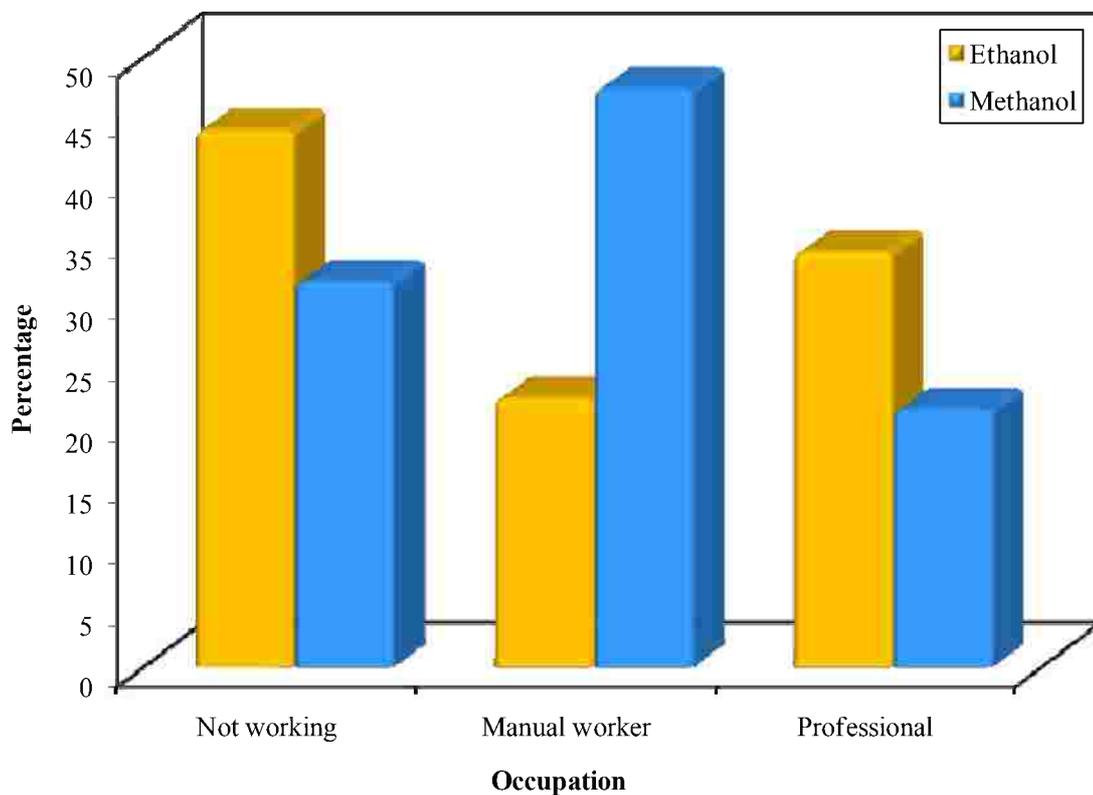


Figure (5): Distribution of the studied cases according to occupation

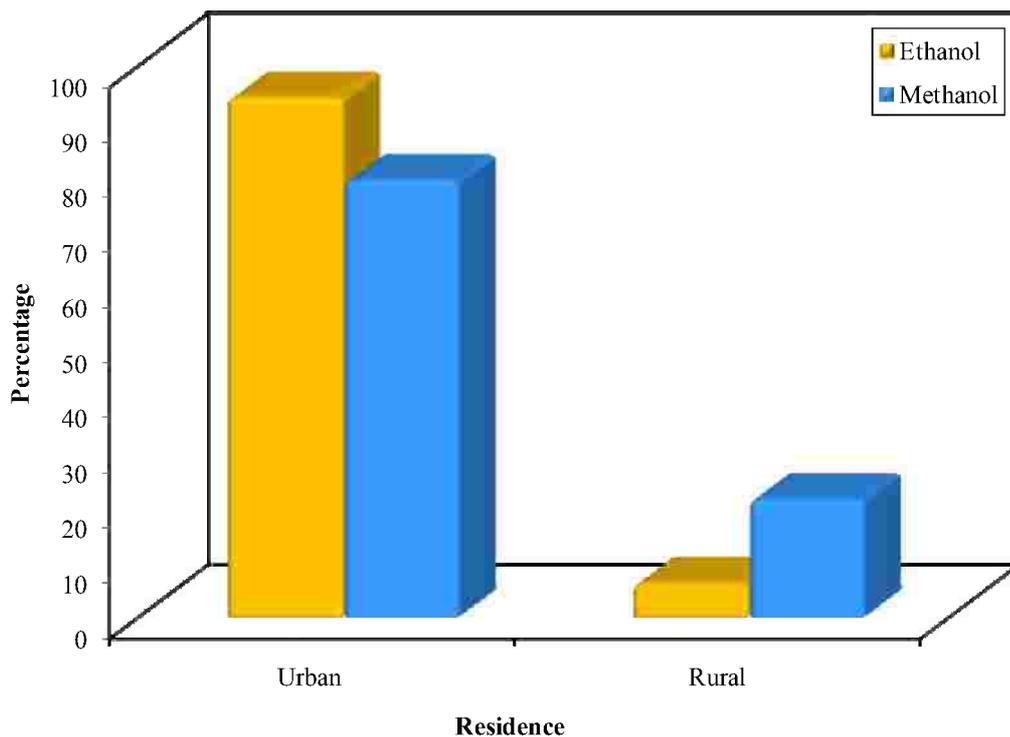


Figure (6): Distribution of the studied cases according to residence

Table (VIII) illustrated that:

II-Clinical characteristics:

- **State of consciousness and their grading according to GCS:**

Most of the studied cases with ethanol were conscious (60%) (GCS of Grade 1), 38% were semiconscious and only 2% were comatosed (GCS of Grade 3). On the other hand, most cases of methanol toxicity (57.8%) were of grade 3 GCS with unconscious state, and 21.0% for each conscious and semiconscious patients.

Table (VIII): Distribution of the studied cases according to conscious level and their grading according to GCS:

	Ethanol (n =50)		Methanol (n=19)	
	No.	%	No.	%
Conscious level				
Unconscious (3-8)	1	2.0	11	57.9
Semiconscious (9-13)	19	38.0	4	21.1
Conscious (14-15)	30	60.0	4	21.1

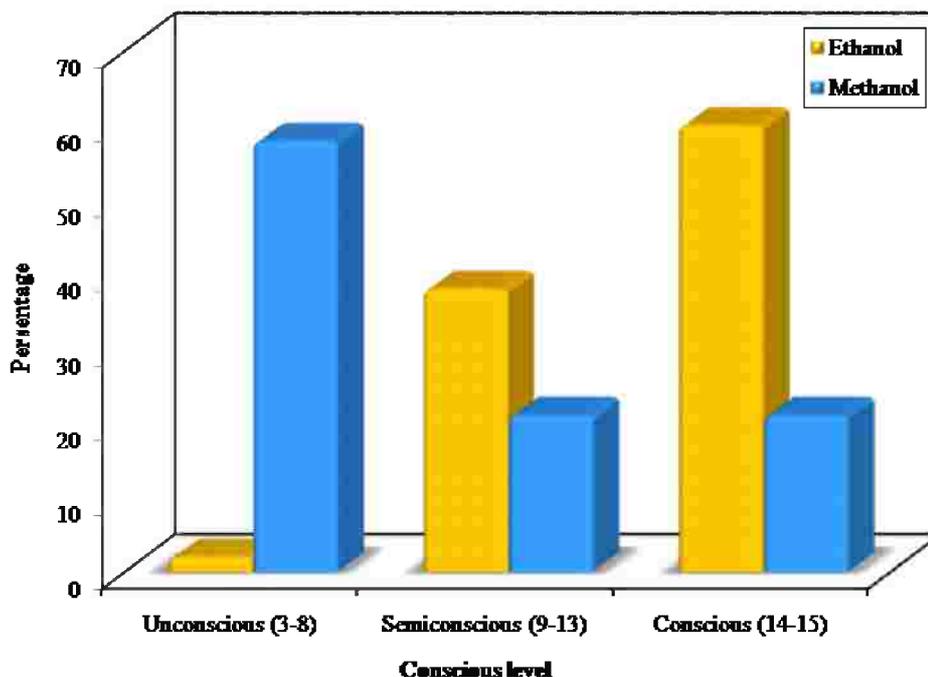


Figure (7): Distribution of the studied cases according to GCS

Table (IX) illustrated that:

Distribution of the studied cases according to clinical signs:

- Dyspnea was the most common clinical sign noticed in the patient with alcohol toxicity 36.2%.
- Dyspnea, tachypnea, palpitation, cyanosis, and cardiac arrest were more common in methanol intoxicated patients than in those intoxicated with ethanol.

Table (IX): Distribution of the studied cases according to clinical signs.

	Ethanol (n =50)		Methanol (n=19)	
	No.	%	No.	%
Clinical signs				
No signs	24	48.0	1	5.3
Dyspnea	21	42.0	4	21.1
Arrested	0	0.0	3	15.7
Cyanosis	0	0.0	5	26.3
Dyspnea, tachypnea	4	8.0	2	10.5
Cyanosis, tachypnea	0	0.0	3	15.8
Gaspings	0	0.0	1	5.3
Dyspnea, tachypnea, palpitation	38	76	4	21
Dyspnea, cyanosis	0	0.0	2	10.5
Siezuers	6	12.0	4	21.1

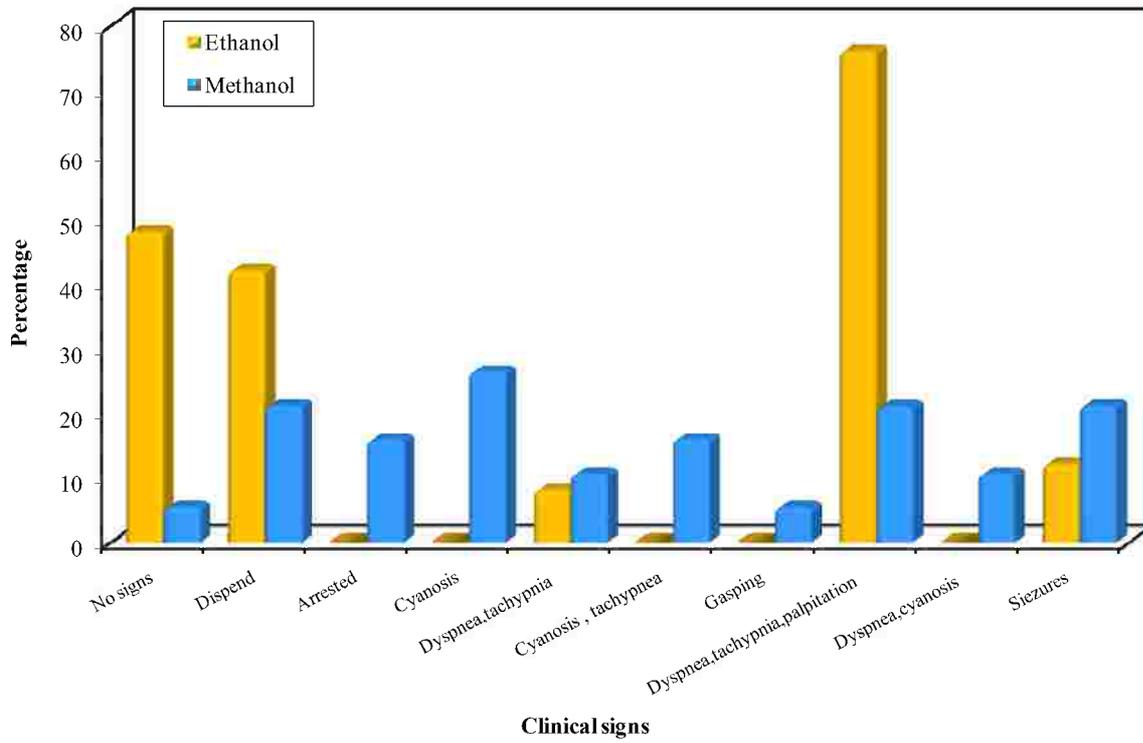


Figure (8): Distribution of the studied cases according to clinical signs.

Table (X) illustrated that:

Grading of toxicity:

More than half (57.9%) of the studied cases of methanol toxicity were in severe toxicity, while most cases of ethanol toxicity in mild severity (60.0%)

Table (X): Distribution of the studied cases according to grading of toxicity.

	Ethanol (n =50)		Methanol (n=19)	
	No.	%	No.	%
Grading of toxicity				
Mild	30	60.0	1	5.3
Moderate	14	28.0	7	36.8
Severe	6	12.0	11	57.9

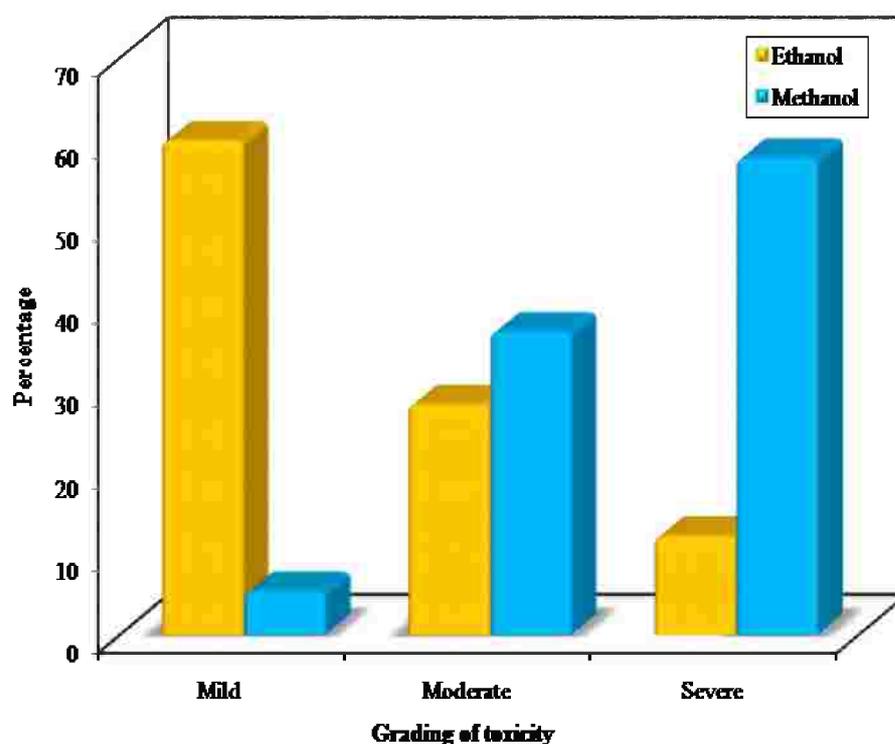


Figure (9): Distribution of the studied cases according to grading of toxicity.

Table(XI) illustrated that:

Distribution of the studied cases according to HR and B/P:

HR:

Sinus tachycardia less than 140 b/m is the common rhythm among all the presented cases of alcohol toxicity (76% in ethanol and 36.85% in methanol).

On the other hand 10.5% of the studied cases intoxicated with methanol presented with sinus bradycardia and only 4% of ethanol intoxicated patients presented with tachycardia more than 180 b/m.

B/P:

In cases of ethanol toxicity, 22 patients presented with hypertension and only 3 patients had hypotension.

52.60% of methanol intoxicated patients were hypotensive and 21.1% developed unrecorded B/P.

Table (XI): Distribution of the studied cases according to heart rate and blood pressure (n=69).

	Ethanol (n =50)		Methanol (n=19)	
	No.	%	No.	%
HR				
Normal	3	6.0	7	36.8
Less than 60B/M	0	0.0	2	10.5
Less than 140	38	76.0	7	36.8
141-180	7	14.0	0	0.0
Unrecorded	0	0.0	3	15.8
More than 180	2	4.0	0	0.0
B/P				
Normal	25	50.0	1	5.3
Elevated	22	44.0	4	21.1
Decreased	3	6.0	10	52.6
Unrecorded	0	0.0	4	21.1

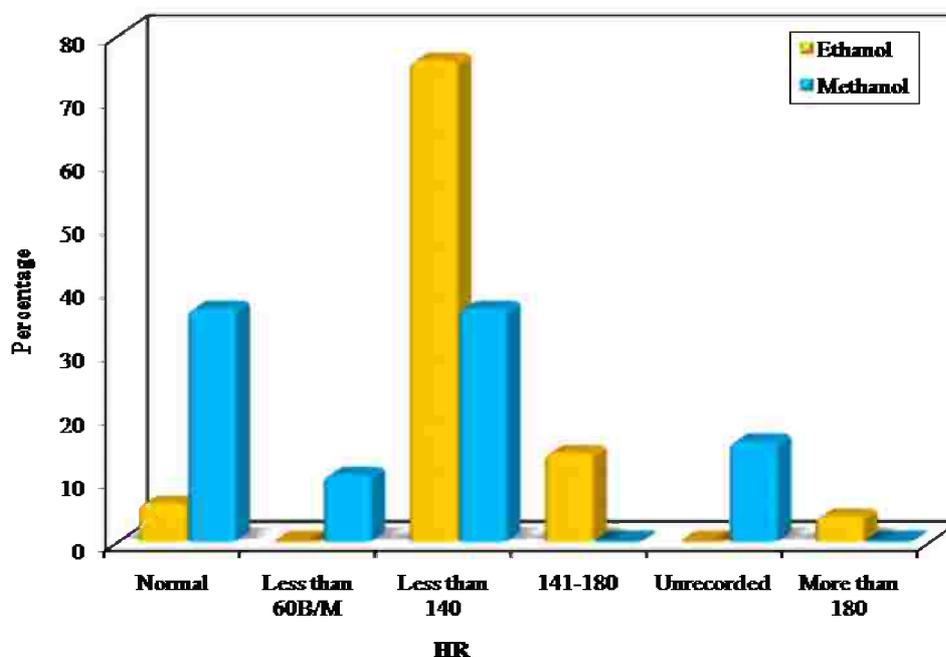


Figure (10): Distribution of the studied cases according to heart rate.

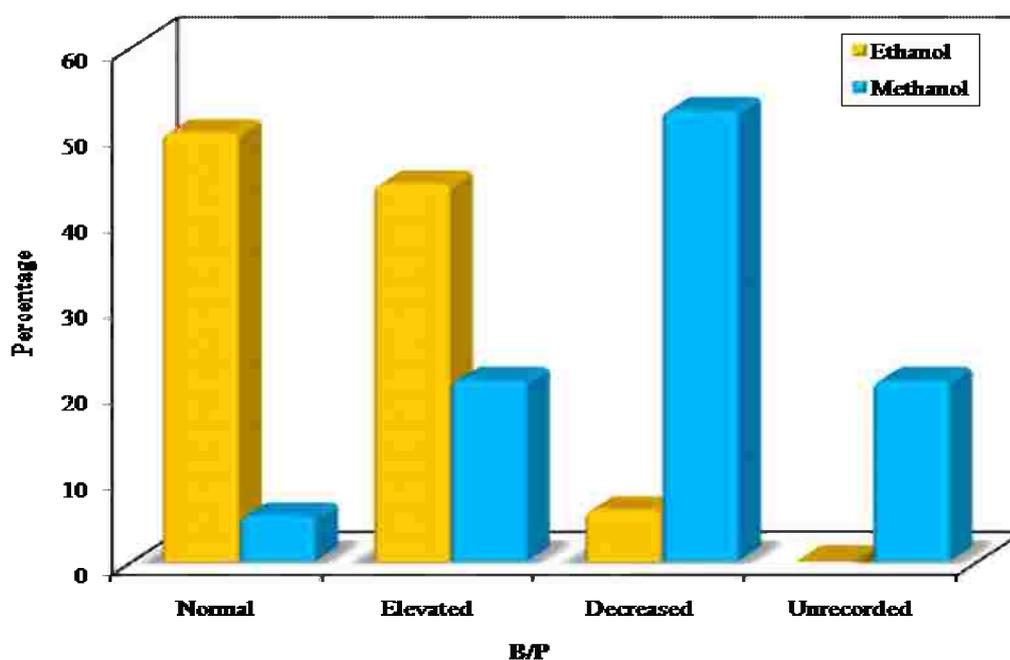


Figure (11): Distribution of the studied cases according to blood pressure.

Table (XII) illustrated that:

III-Assessment of quality of care offered to the studied patients:

a- Time lapse since treatment started:

Distribution of the studied cases according to time lapse since alcohol ingestion and seeing by a physician:

All cases (100.0%) of alcohol toxicity were see physician in less than 15 minutes of hospital attendance. 86% of ethanol intoxicated patients were attending hospital in less than 12 hours of alcohol ingestion while 63.2% of the studied cases of methanol toxicity attended hospital in more than 12 hours after cases worsen explained also bad outcome of this cases.

Table (XII): Distribution of the studied cases according to time laps.

Time labs	Ethanol (n =50)		Methanol (n=19)	
	No.	%	No.	%
Since hospital attendance				
Less than 12 hour	43	86.0	7	36.8
More than 12 hour	7	14.0	12	63.2
Before see physician				
Less than 15 minute	50	100.0	19	100.0
More than 15 minute	0	0.0	0	0.0

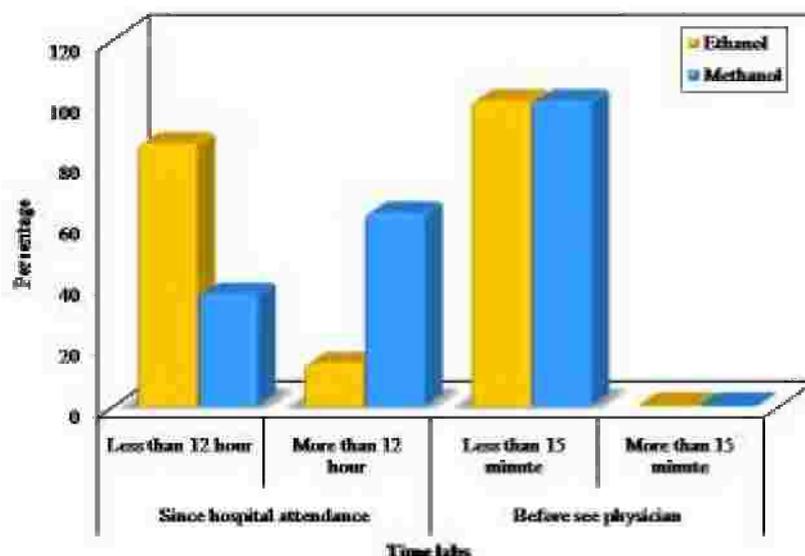


Figure (12): Distribution of the studied cases according to time laps since seeing a physician.

Table (XIII) illustrated that:

b- Way of referral:

Distribution of the studied cases according to way of referral and transportation:

- Most cases of alcohol toxicity (73.9%) transferred to hospital by their relatives.
- Higher percentage (63.2%) of methanol toxicity transferred by ambulance.

Table (XIII): Distribution of the studied cases according to way of referral and transportation.

	Ethanol (n =50)		Methanol (n=19)	
	No.	%	No.	%
Way of referral				
Ambulance	1	2.0	12	63.2
Relatives	44	88.0	7	36.8
Self	4	8.0	0	0.0
Private physician	1	2.0	0	0.0

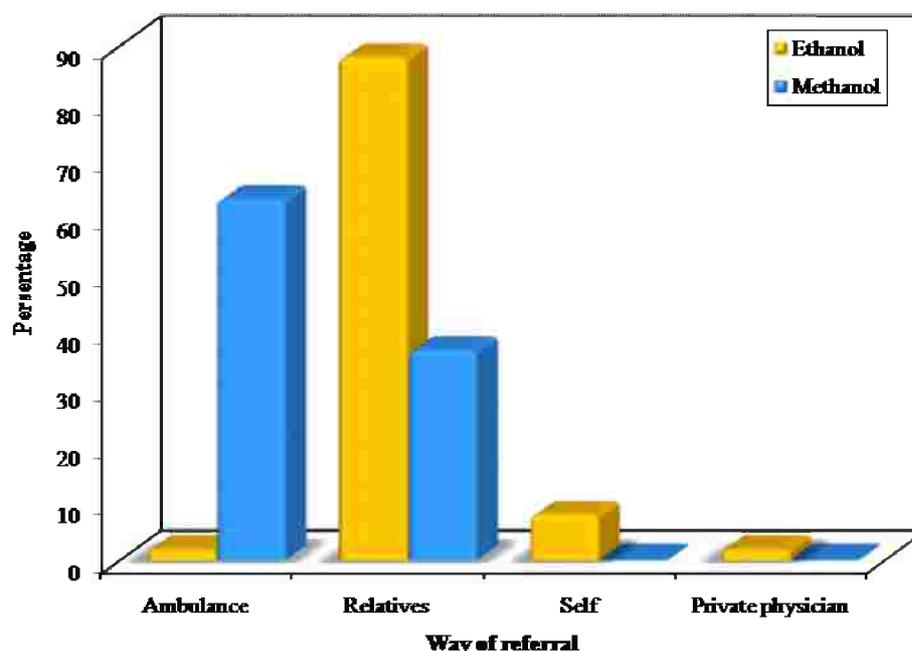


Figure (13): Distribution of the studied cases according to way of referral and transportation.

Table (XIV) illustrated that:

Pre-hospital care:

Primary medical care:

- Almost all cases received medical care in the form of respiratory and circulatory support.
- The majority (63.2%) of methanol intoxicated patient received pre-hospital care as O₂ inhalation, fluid therapy, secured airway, care of respiration.
- Intubation for cases of methanol toxicity outnumbered that of ethanol (6% of cases of ethanol and 57.9% of cases of methanol toxicity)

Table (XV) illustrated that:

Heart failure and infarction:

- All the studied cases (100.0%) of methanol toxicity were risky for HF and infarction depending on time lapse since seeing physician and progression of the case, grade of toxicity, care of the toxicated cases.
- Near half as awhile (56.5%) of alcohol toxicity were risky for HF and infarction.

Table (XIV): Distribution of the studied cases according to medical care parameters.

	Ethanol (n =50)		Methanol (n=19)	
	No.	%	No.	%
Pre-hospital care	3	6.0	12	63.2
Intubation	3	6.0	11	57.9
Care airway	48	96.0	19	100.0
Care of respiration	50	100.0	19	100.0
Gastric lavage	29	58.0	7	36.8
Care of circulation	50	100.0	19	100.0
Fluid therapy	49	98.0	19	100.0
Follow up	11	22.0	14	73.7
Antidotes	0	0.00	0	0.00
Hemodialysis	0	0.00	2	10.5

Table (XV): Distribution of the studied cases according to risk of HF and Infarction.

	Ethanol (n =50)		Methanol (n=19)	
	No.	%	No.	%
Risk of heart failure and infarction				
No risk	30	60.0	0	0.0
High risk	20	40.0	19	100.0

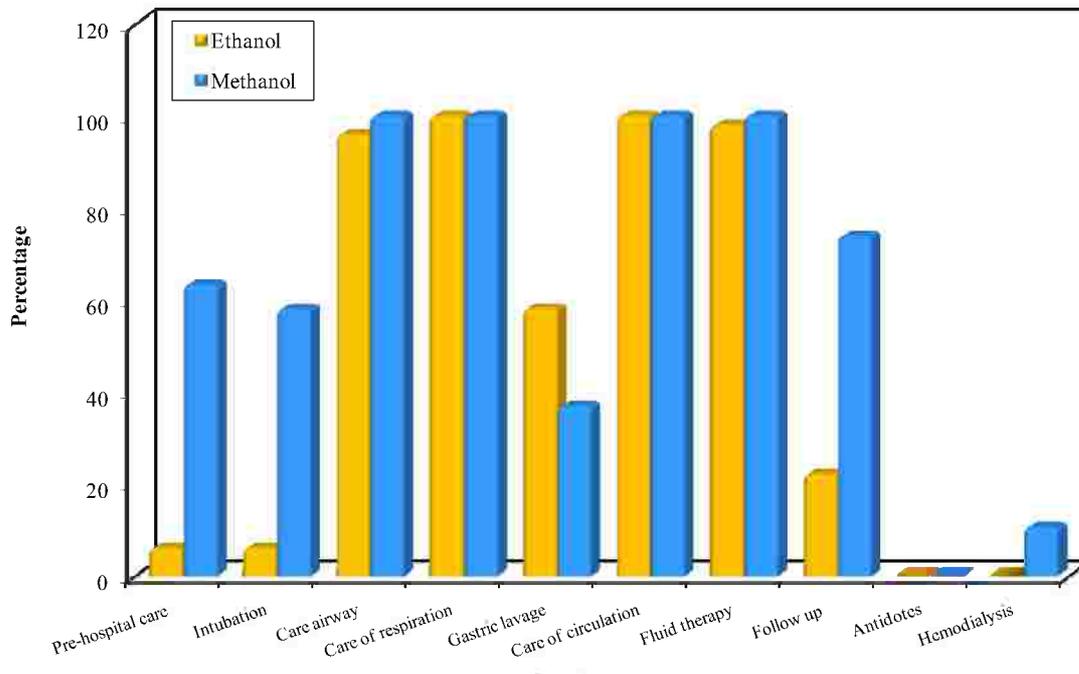


Figure (14): Distribution of the studied cases according to primary medical care parameters

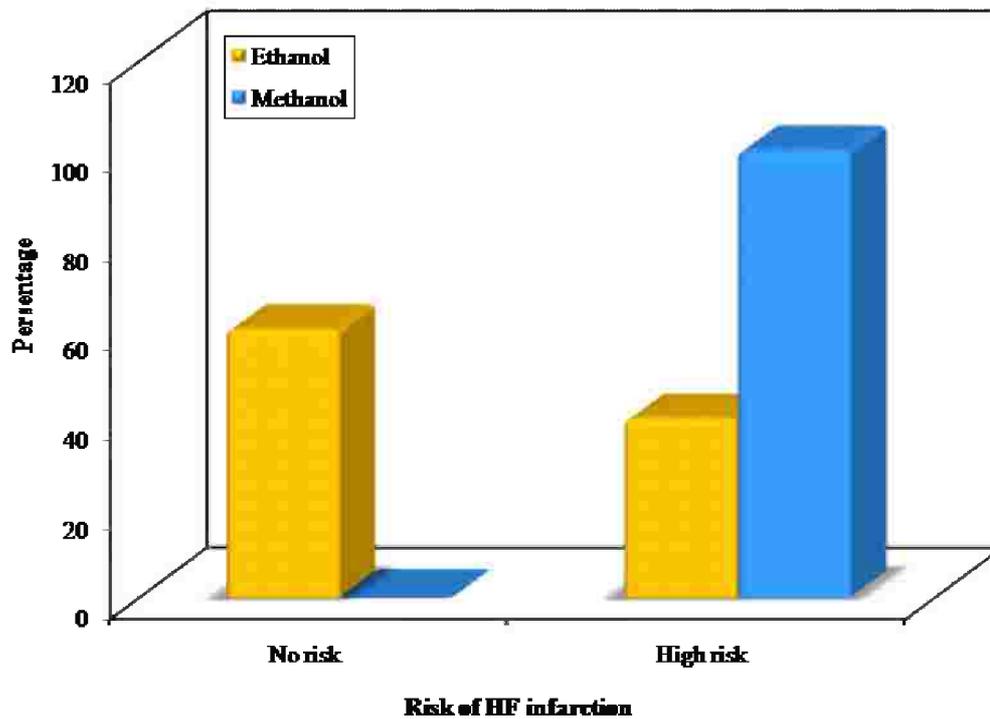


Figure (15): Distribution of the studied cases according to risk of HF and infarction.

Table (XVI) illustrated that:

Admission to hospital:

Distribution of the studied cases according to hospital admission:

Three patients intoxicated with methanol died these represented only 4.3% of all cases of alcohol poisoning.

Table (XVI): Distribution of the studied cases according to admission to hospital (n=69).

	Ethanol (n =50)		Methanol (n=19)	
	No.	%	No.	%
Length of hospital stay				
Discharged	34	68.0	1	5.3
Admitted	16	32.0	15	78.9
Dead	0	0.0	3	15.8

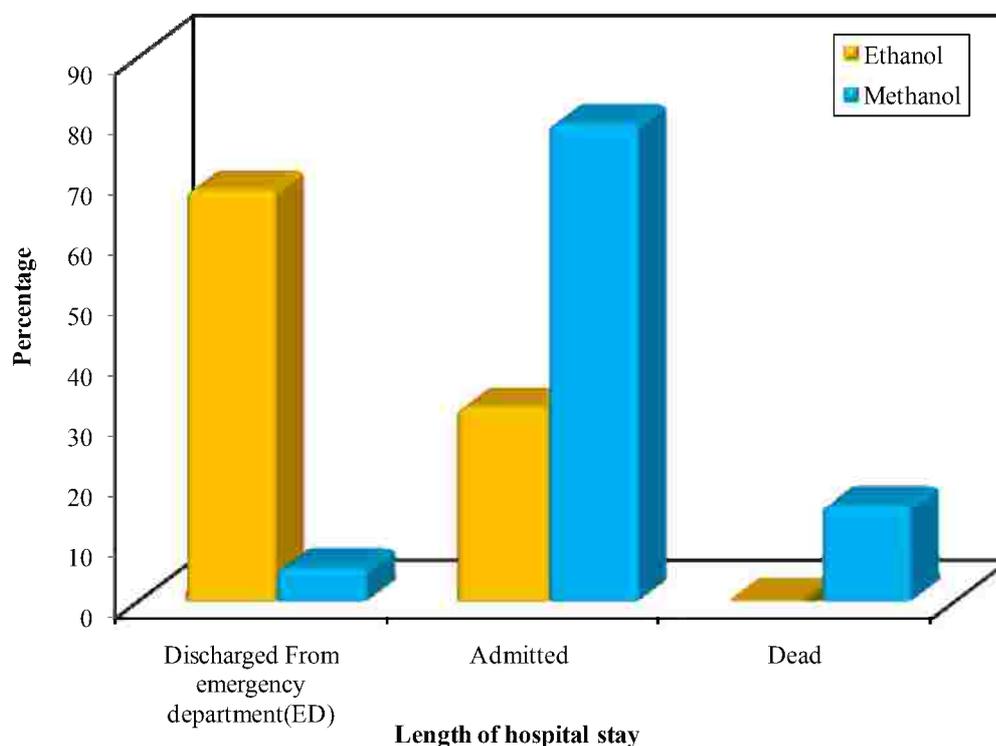


Figure (16): Distribution of the studied cases according to hospital admission.

Table (XVII) illustrated that:

Investigations:

Laboratory investigations:

Blood glucose level (mg/dl):

Hypoglycemia was common presentation with alcohol toxicity with mean blood glucose level 71.04 ± 16.66 while for methanol toxicity were 70.58 ± 16.09 .

Arterial blood gases (ABG):

In the present study alcohol intoxicated patient suffered metabolic acidosis of mean PH for studied cases of ethanol toxicity were 7.32 ± 0.10 while for methanol toxicity were 7.11 ± 0.26 and mean HCO_3 for ethanol toxicity were 21.10 ± 2.98 while for methanol were 14.68 ± 5.75 .

PO₂:

Hypoxia was presented in higher percentage of cases of methanol toxicity as the mean of PO₂ was 79.68 ± 11.87 .

Sodium:

Hyponatremia was recorded in patients with methanol toxicity with mean of 129.53 ± 8.79 . Normal sodium 135-145mEq/l.

Potassium:

Hyperkalemia one of the most common and dangerous complications of methanol toxicity in the studied cases of mean K⁺ were 5.82 ± 1.08 with its accompanying renal failure which was not common presentation with ethanol toxicity. Normal potassium 3.5-5.5 mEq/l.

Table (XVII): Distribution of the studied cases according to investigations.

	Ethanol (n =50)	Methanol (n=19)
Blood glucose level mg/dl		
Min. –Max.	50.0 – 130.0	45.0 – 100.0
Mean ± SD.	71.04 ± 16.66	70.58 ± 16.09
Median	65.0	68.0
ABG parameters		
PH		
Min. –Max.	6.91 – 7.43	6.80 – 7.82
Mean ± SD.	7.32 ± 0.10	7.11 ± 0.26
Median	7.34	7.01
HCO₃ (mEq/l)		
Min. –Max.	12.0 – 26.0	6.0 – 26.0
Mean ± SD.	21.10 ± 2.98	14.68 ± 5.75
Median	21.0	14.0
PCO₂(mmHg)		
Min. –Max.	25.0 – 50.0	33.0 – 57.0
Mean ± SD.	38.88 ± 4.57	45.89 ± 7.58
Median	38.0	45.0
PO₂(mmHg)		
Min. –Max.	80.0 – 130.0	56.0 – 98.0
Mean ± SD.	96.10 ± 8.08	79.68 ± 11.87
Median	95.0	82.0
Electrolytes		
Na⁺ (mEq/l)		
Min. –Max.	126.0 – 142.0	104.0 – 140.0
Mean ± SD.	135.82 ± 3.89	129.53 ± 8.79
Median	137.0	132.0
k⁺ (mEq/l)		
Min. –Max.	3.30 – 5.80	3.20 – 7.0
Mean ± SD.	4.18 ± 0.58	5.82 ± 1.08
Median	3.95	6.0

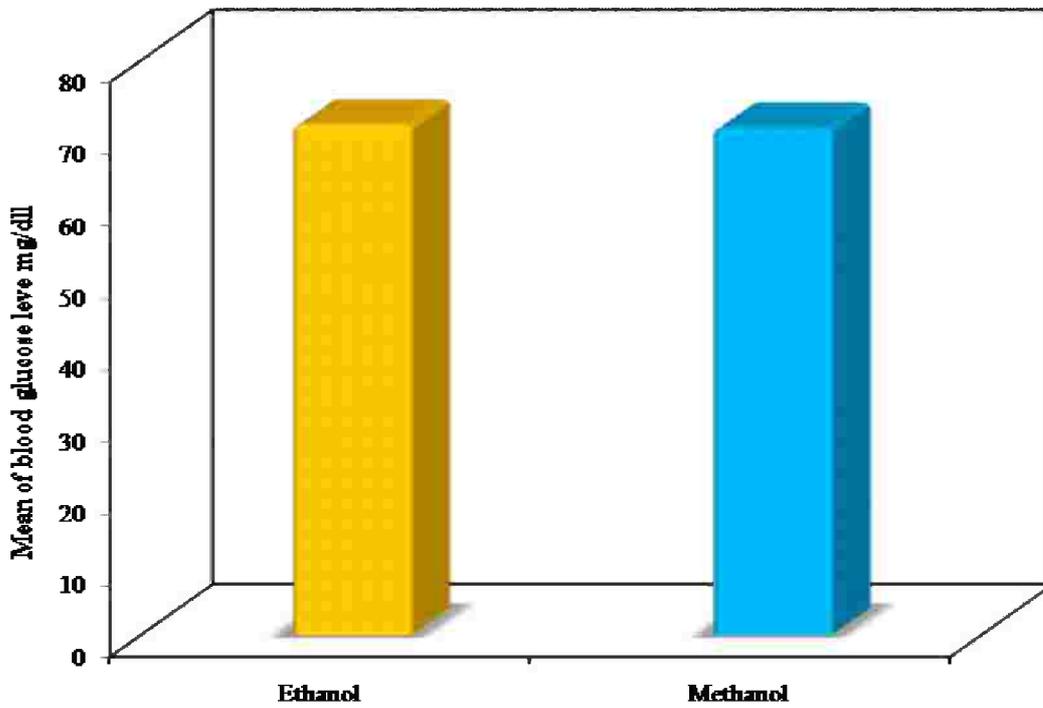


Figure (17): Distribution of the studied cases according to blood glucose level mg/dl

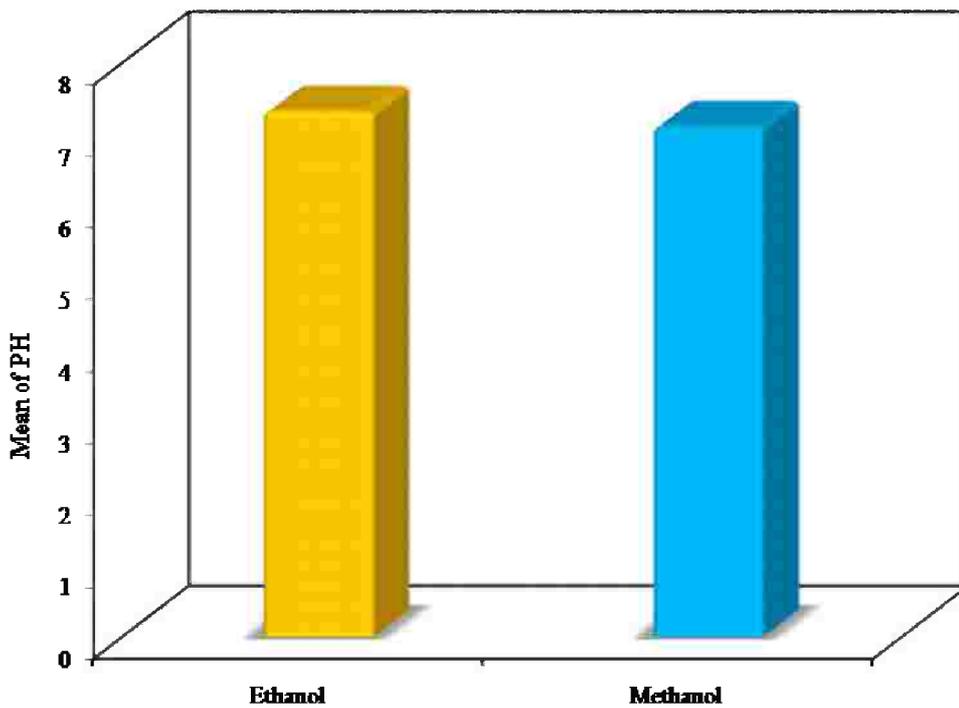


Figure (18): Distribution of the studied cases according to PH

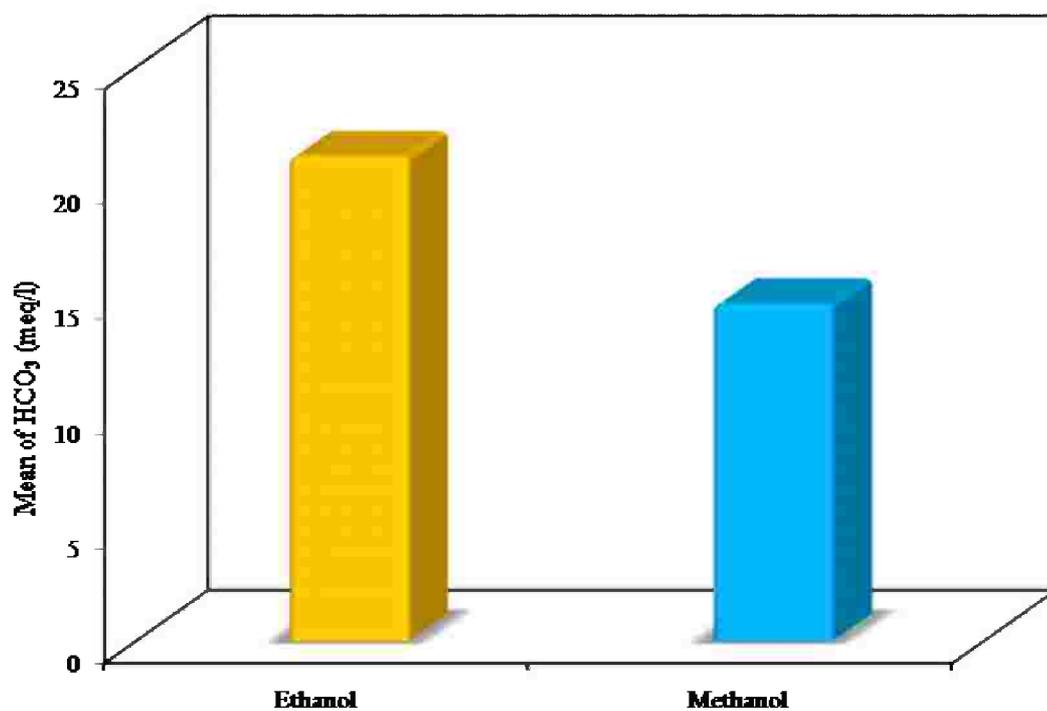


Figure (19): Distribution of the studied cases according to HCO₃⁻ (meq/l)

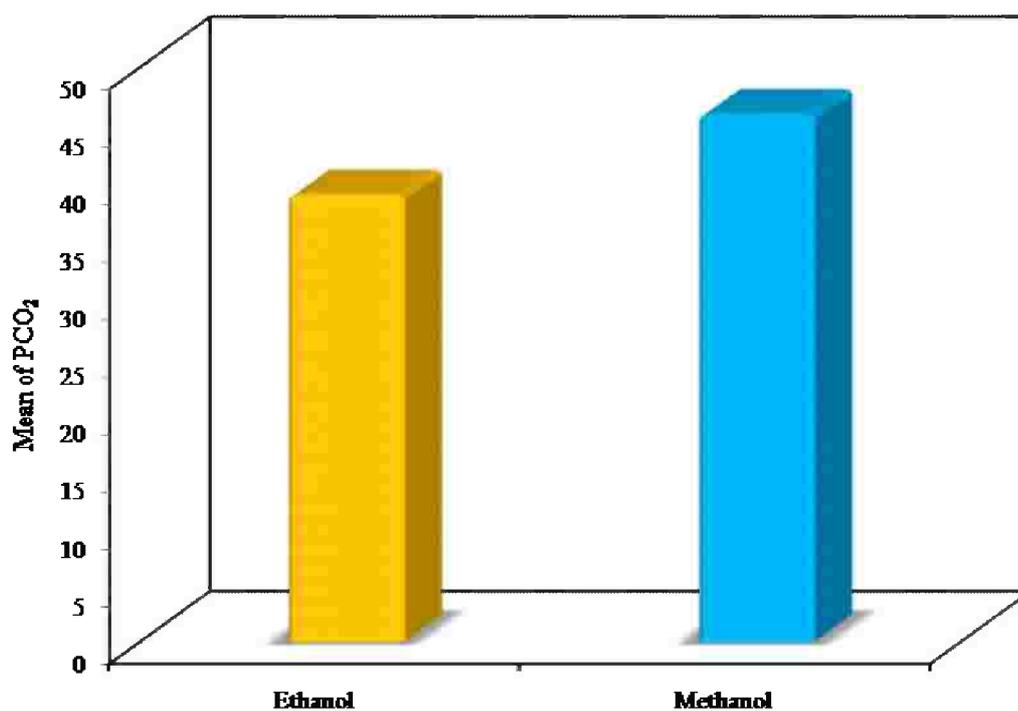


Figure (20): Distribution of the studied cases according to PCO₂

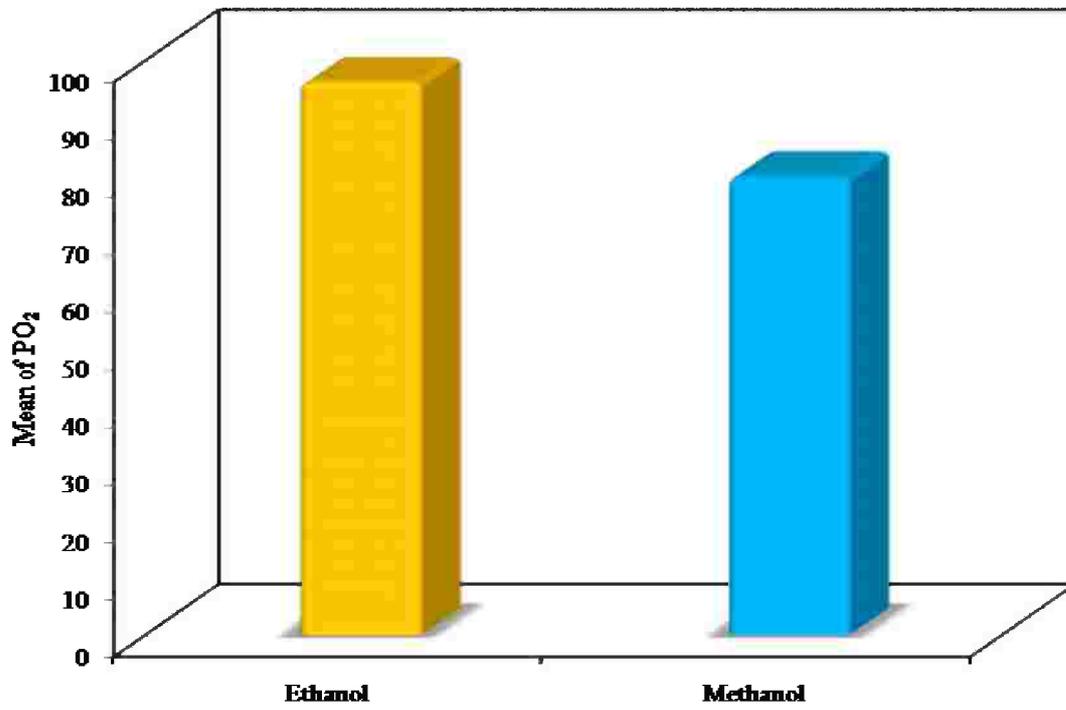


Figure (21): Distribution of the studied cases according to PO₂

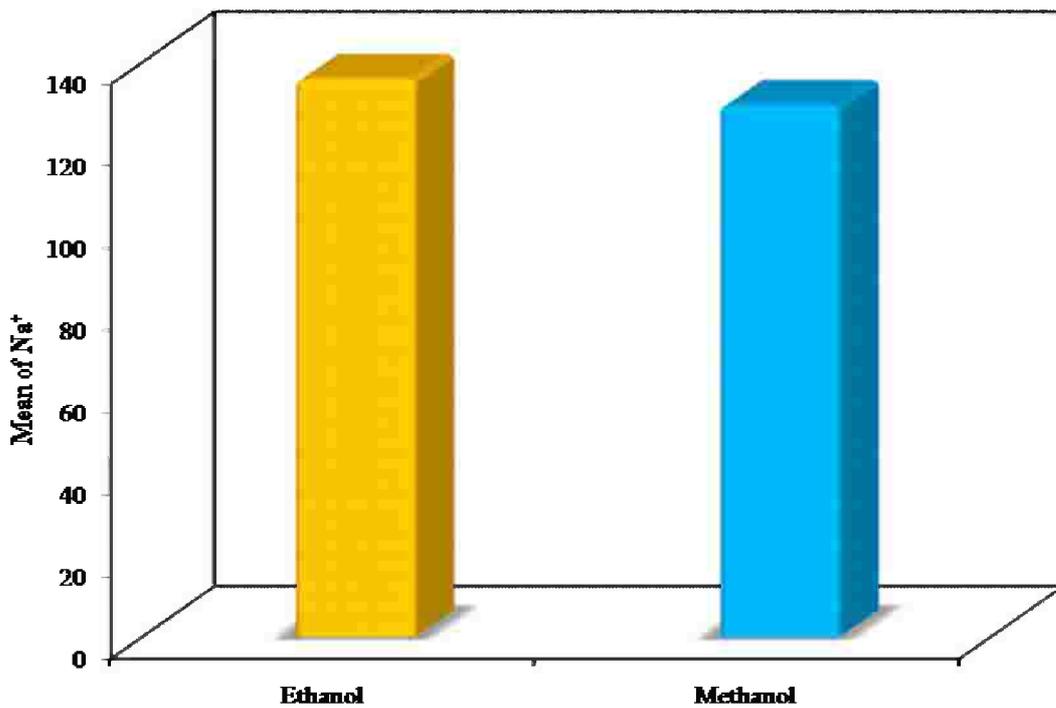


Figure (22): Distribution of the studied cases according to sodium.

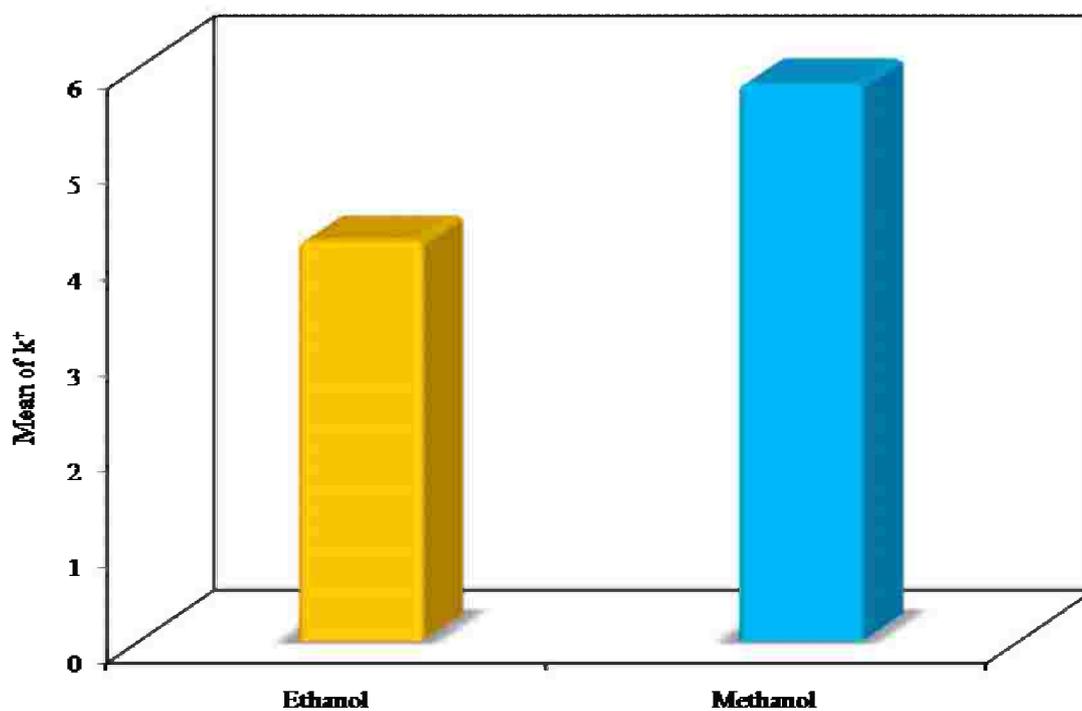


Figure (23): Distribution of the studied cases according to potassium.

Table (XVIII) illustrated that:

Distribution of the studied cases according to ECG changes:

- Near half of the studied cases (49.2%) presented with sinus tachycardia with higher incidence with ethanol toxicity (about 66.0% of cases of ethanol toxicity)
- pulseless electrical activity(PEA) presented with 15.7% of the studied cases of methanol toxicity.
- Rarely S-T elevation myocardial infarction(STEMI), Supraventricular tachycardia(SVT) presented with percentage of 6% of the studied cases of ethanol toxicity

Table (XVIII): Distribution of the studied cases according to ECG changes (n=69).

	Ethanol (n =50)		Methanol (n=19)	
	No.	%	No.	%
ECG changes				
Normal	3	6.0	0	0.0
Sinus tachycardia	33	66.0	3	15.8
Ischemic changes	2	4.0	0	0.0
S-T elevation myocardial infarction(STEMI)	1	2.0	0	0.0
Pulseless electrical activity (PEA)	0	0.0	3	15.8
Signs of ischemia , hyperkalemia	0	0.0	2	10.5
Signs of hyperkalemia and sinus tachycardia	0	0.0	1	5.3
Unremarkable	1	2.0	5	26.3
Not done	8	16.0	0	0.0
Supraventricular tachycardia(SVT)	2	4.0	0	0.0
Signs of hyperkalemia	0	0.0	4	21.1

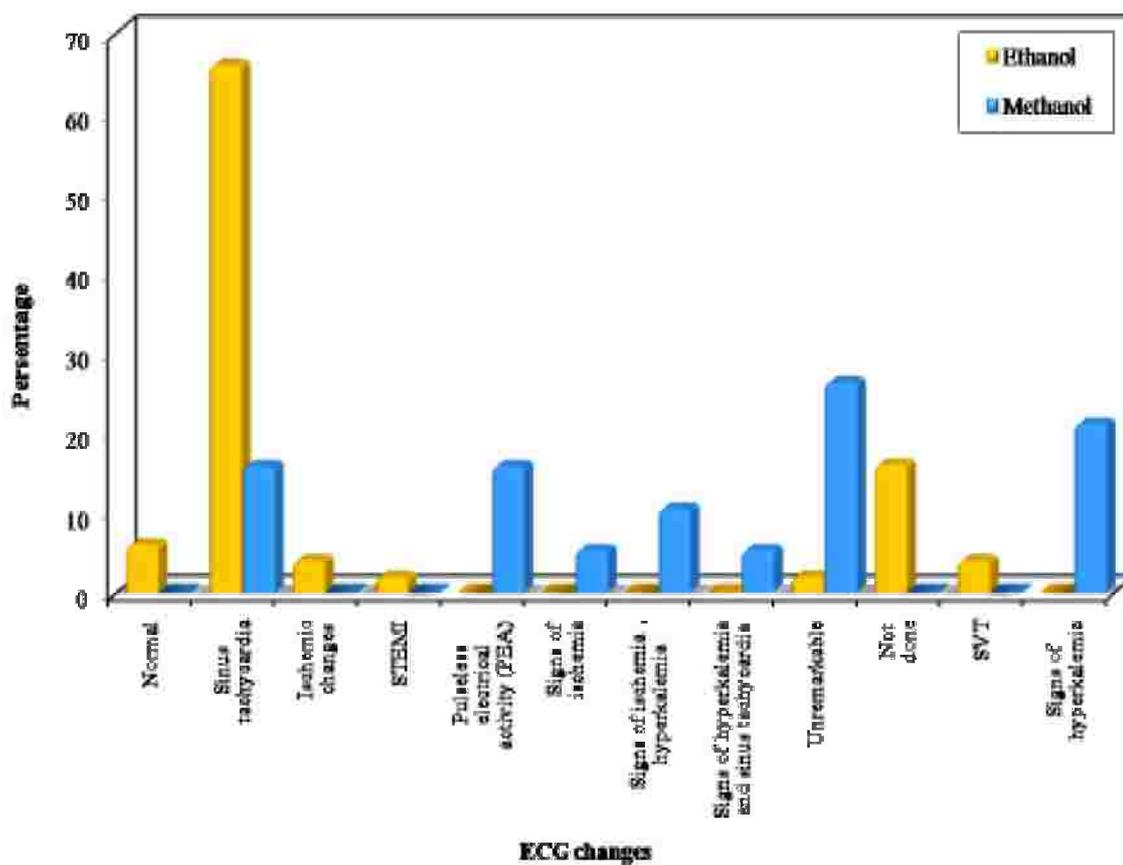


Figure (24): Distribution of the studied cases according to ECG changes.

Table (XIX) illustrated that:

Distribution of the studied cases according to CT brain finding:

- The majority (63.7%) of the studied cases of alcohol toxicity were not performing CT brain and when it was done about 28.9% of cases unremarkable
- Most common finding of CT brain were intracerebral hemorrhage with percentage of 5.7%.

Table (XIX): Distribution of the studied cases according to CT brain (n=69).

	Ethanol (n =50)		Methanol (n=19)	
	No.	%	No.	%
CT brain				
Unremarkable	8	16.0	12	63.2
MRI done(pontine he)	0	0.0	1	5.3
Intracerebral hge	1	2.0	2	10.5
Not done	40	80.0	4	21.1
Brain oedema	1	2.0	0	0.0

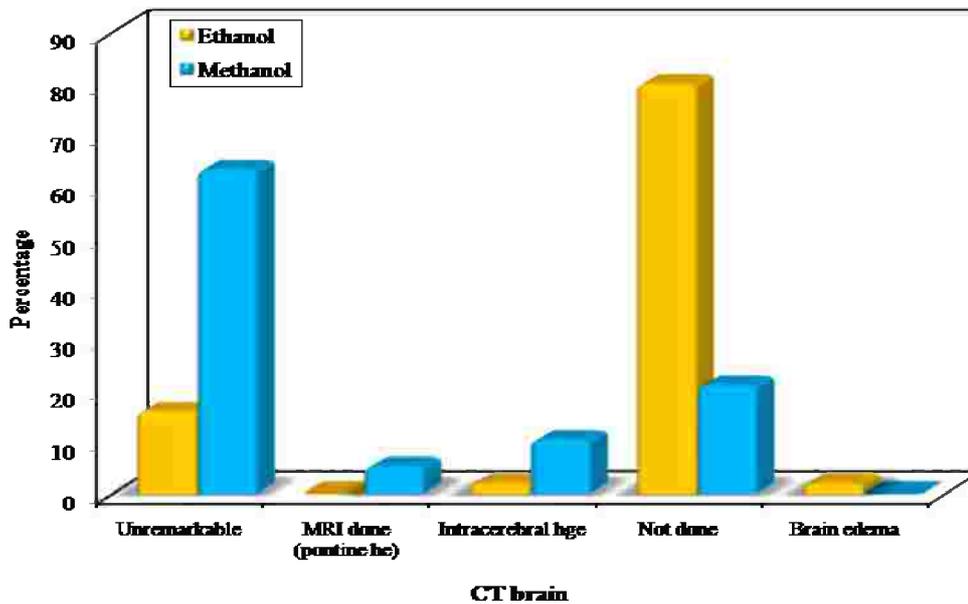


Figure (25): Distribution of the studied cases according to CT brain.

Table (XX), (XXI) illustrated that:

IV-Outcome of care:

Risk factors:

A- Distribution of the studied cases according to smoking:

The current work showed that most of the studied cases of alcohol toxicity were current smoker, 84% of cases with ethanol and 63.15% of cases with methanol toxicity.

Table (XX): Distribution of the studied cases according to smoking.

	Ethanol (n =50)		Methanol (n=19)	
	No.	%	No.	%
Smoking				
Non smoker	8	16.0	7	36.8
Current smoker	42	84.0	12	63.15

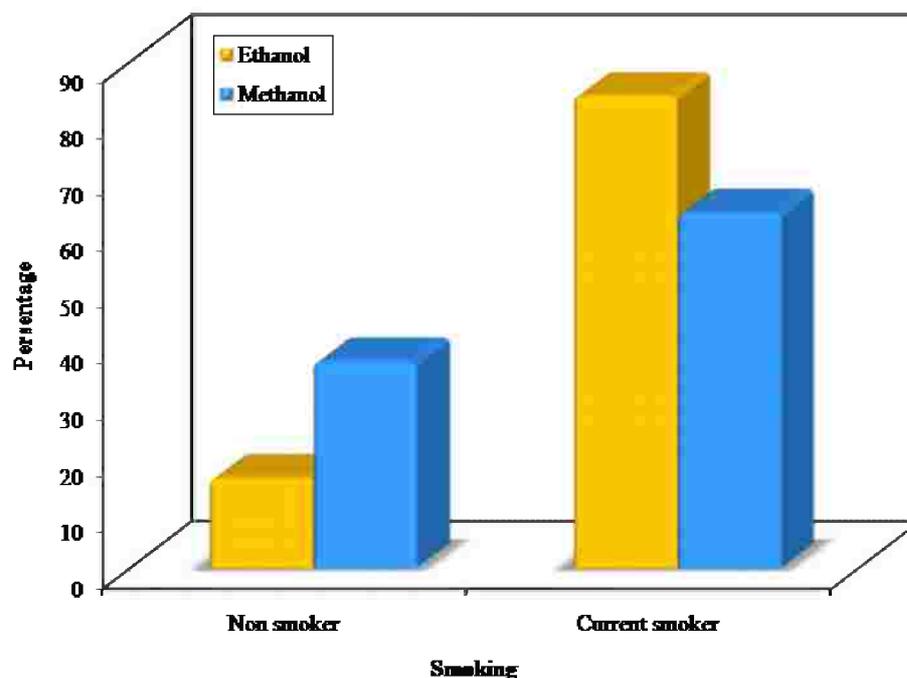


Figure (26): Distribution of the studied cases according to smoking.

B- Distribution of the studied cases according to co-administration:

- Most (79.7%) of the intoxicated patients in the present study consumed alcohol without any co-ingestion of other drugs or chemical. 13% of patients ingested ethanol with other drugs while only 5.3% of patient who consumed methanol and other chemicals.
- Self-joy was the mean reason for drinking ethanol as 90% of cases admitted, rarely (10%) taken accidentally in contrast, 63.2% of methanol ingestion was taken accidentally.

Table (XXI): Distribution of the studied cases according to co – administration.

	Ethanol (n =50)		Methanol (n=19)	
	No.	%	No.	%
Route of poisoning				
Pure alcohol ingestion	37	74.0	18	94.7
Alcohol +other chemical	13	26.0	1	5.3
Reason of poisoning				
Self joy	45	90.0	5	26.3
Accidental	5	10.0	12	63.2
Suicidal	0	0.0	2	10.5

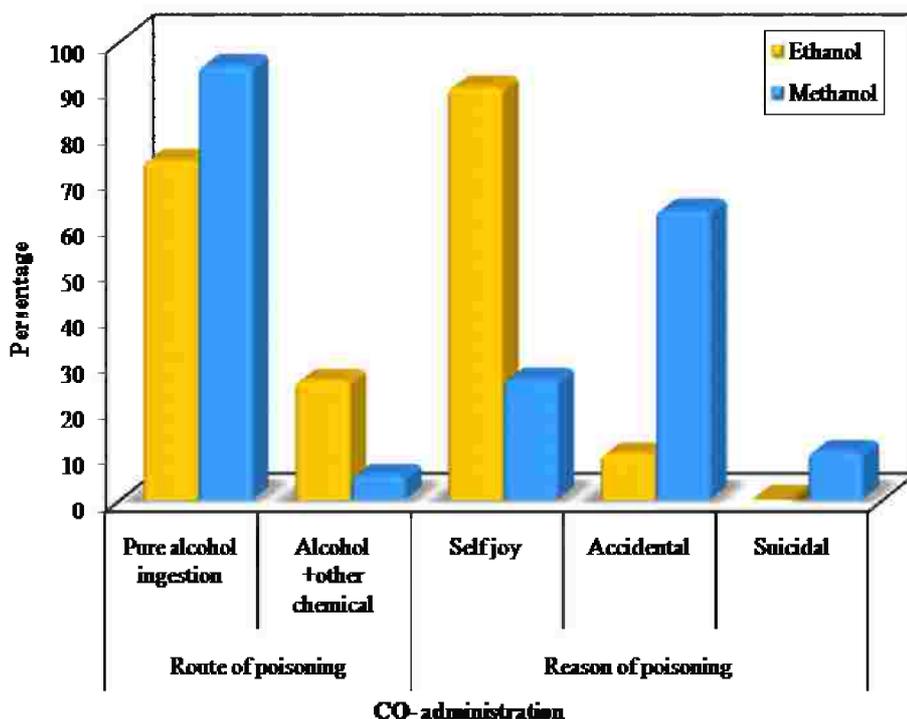


Figure (27): Distribution of the studied cases according to co – administration.

Table (XXII) illustrated that:

IV-outcome and complications:

Outcome:

- The majority (69.5%) of alcohol toxicity recovered with good outcome(72% in ethanol and 63.2% in methanol)

On the other hand death was encountered in 2% and 31.6% in patients intoxicated with ethanol and methanol respectively.

- High percentage of not follow up with methanol toxicity(84.0%) explain how much dangerous of methanol toxicity

Complications:

- DCL was the most common(78.9%) complication with alcohol toxicity(14% of ethanol toxicity and 79% of methanol toxicity)
- Most common complication with methanol toxicity was severe metabolic acidosis (68.4%)

Table (XXII): Distribution of the studied cases according to outcome (n=69).

	Ethanol (n =50)		Methanol (n=19)	
	No.	%	No.	%
Outcome				
Recovered	36	72.0	12	63.2
Complicated	13	26.0	6	31.6
Died	1	2.0	3	15.8
follow up couldn't be completed	0	0.0	16	84.3
Complications				
No	35	70.0	0.0	0.0
Disturbed conscious level (DCL)	7	14.0	15	79.0
Blindness	0	0.0	3	15.8
Adult respiratory stress syndrome (ARDS)	0	0.0	1	5.3
Supraventricular tachycardia (SVT)	1	2.0	0	0.0
Unstable angina	2	4.0	0	0.0
Extrasystoles	1	2.0	0	0.0
Severe met. Acidosis	2	4.0	13	68.4
S-T elevation myocardial infarction (STEMI)	1	2.0	0	0.0
Carpopedal spasm	1	2.0	0	0.0
Renal failure	0	0.0	2	10.5

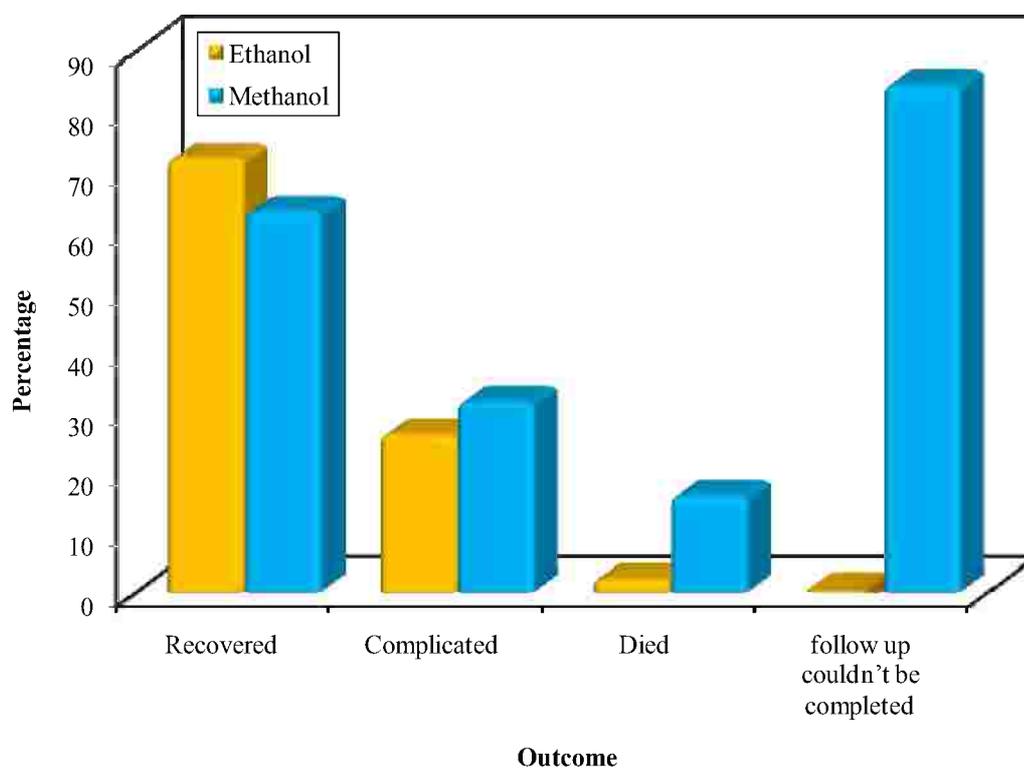


Figure (28): Distribution of the studied cases according to outcome.

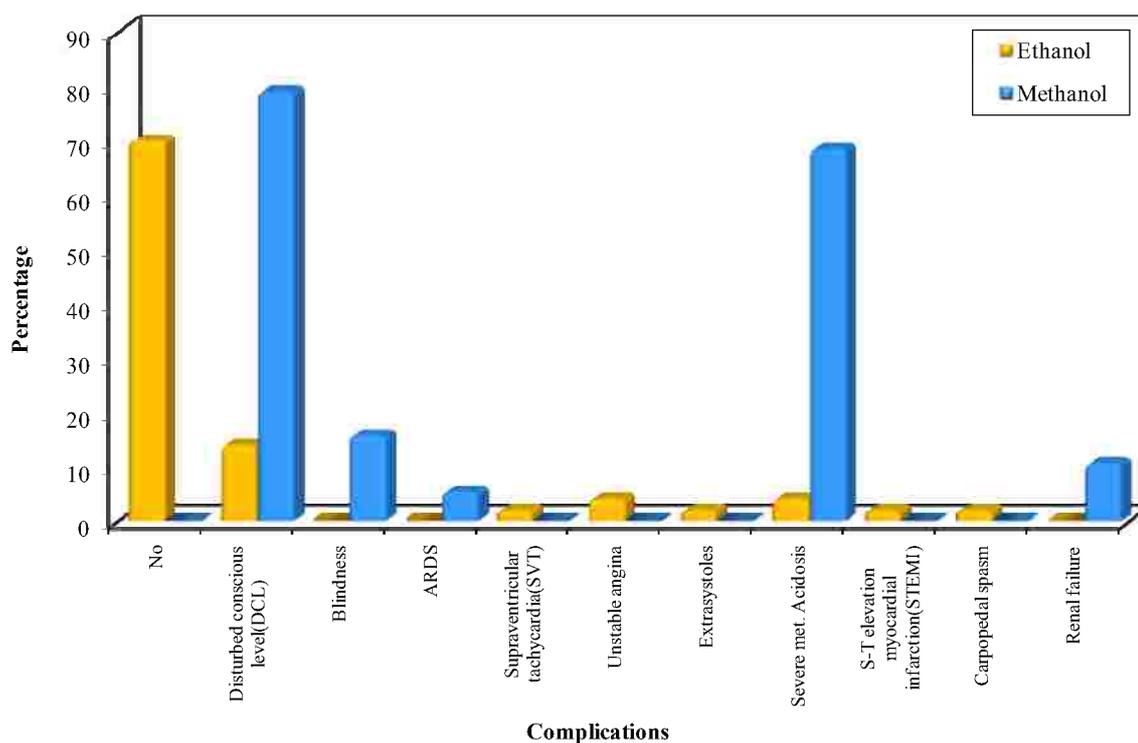


Figure (29): Distribution of the studied cases according to complications.

**Table (XXIII) illustrated that:
Management:**

- All patients with alcohol toxicity received fluid therapy except 2% with one studied case of ethanol, with main fluid received as first aid for ethanol toxicity was dextrose due to developed hypoglycemia
- Normal saline mainly used to correct hypotension in about 6% of whole studied cases with 15.8% of studied cases of methanol toxicity
- Arrested with applied cardiopulmonary resuscitation according to guidelines in 15.8% of the studied cases of methanol toxicity.

Table (XXIII): Distribution of the studied cases according to management (1st aid).

	Ethanol (n =50)		Methanol (n=19)	
	No.	%	No.	%
Management (1st aid)				
No fluids	1	2.0	0	0.0
Fluids (dextrose)	46	92.0	16	84.2
Fluids (normal saline	3	6.0	0	0.0
CPR	0	0.0	3	15.8

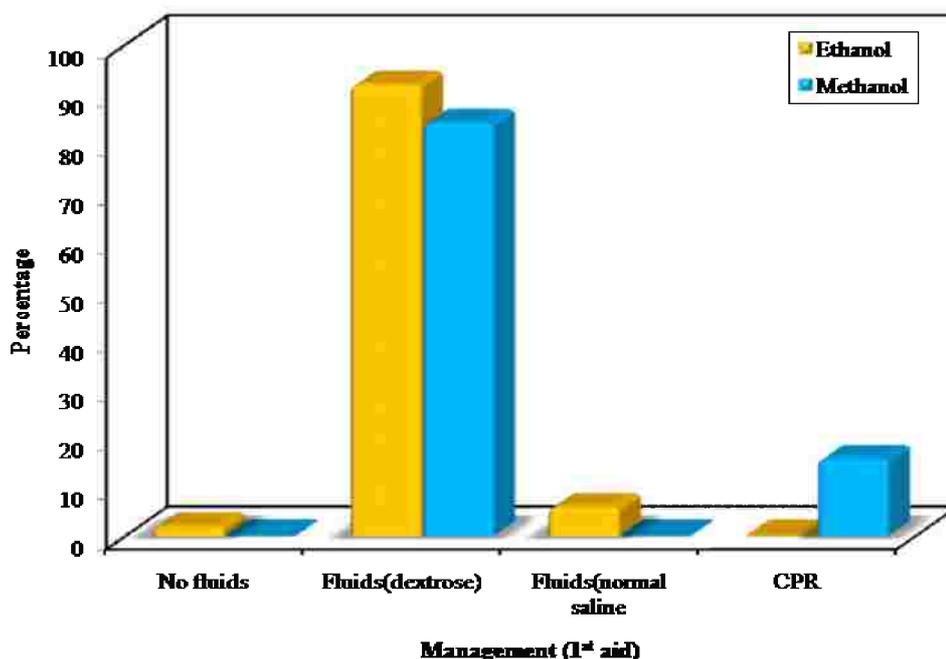


Figure (30): Distribution of the studied cases according to management (1st aid).