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ORIGINAL ARTICLE

A DESCRIPTIVE CROSS-SECTIONAL STUDY ON PROFILE AND OUTCOME OF ALCOHOLIC PATIENT ADMITTED IN THE INTENSIVE CARE UNIT

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ABSTRACT

Introduction: *Alcohol consumption is a major public health problem, one of the four major risk factors for non-communicable diseases. This study was conducted to know profile, pattern of alcohol use and outcome of alcoholic patients in the intensive care unit.*

Materials and Methods: *This descriptive cross-sectional study was done in 246 patients of age ≥18 years with a history of alcohol intake admitted in a level three intensive care unit of medical college for more than 24 hours for one year. All the patients admitted to the Intensive Care Unit for 1 year were our sample size. The outcome of the patient was defined as death, and discharge to ward. All data was transferred to the excel sheet and transferred to a Statistical Package for the Social Sciences-16.*

Results: *Two hundred and forty-six patients were included in this study. 194 (78.9%) were males and 52 (21.1%) were females. The current drinker 153 (62.1%), daily 90 (36.5%) drinkers and the combination 69 (28%) of the alcoholic products were more common in this study. 211 (85.7%) and 35 (14.2%) were chronic and acute alcoholic, respectively. Mortality was 40 (16.3%).The mortality in the intubated patient was 22 (29.7%). The duration of delirium, mechanical ventilation, and length of stay was 3.94 ± 3.07, 3.1 ± 1.9, and 5.04 ± 4.8 days, respectively. The dose and duration of lorazepam, midazolam, quetiapine, and haloperidol were 29.96 ± 29.93, 23.27±17.21, 255.3 ± 214.28, 27 ± 25.8 mg, and 3.8 ± 2.81, 3.6 ± 1.7, 3.27 ± 1.92, 2.8 ± 1.03 days respectively.*

Conclusion: *Alcohol consumption causes increase in mortality, duration of delirium, mechanical ventilation and length of stay in the intensive care unit.*

Keywords: *Alcohol, Developing Country, Intensive Care Unit, Mortality*

INTRODUCTION

Alcohol consumption is a major public health problem, one of the four major risk factors for non-communicable diseases, and accounts for 5.9% of all deaths across the globe. [1] Patient with alcohol use disorder is admitted to the intensive care unit (ICU) with alcohol withdrawal syndromes and other conditions, experience a higher rate of medical and surgical complications, longer ICU and hospital length of stay, increased morbidity and mortality.[2,3]

Nepal is an under-developing country, drinking alcohol comes under ambivalent culture, which leads to an increase in the incidence of alcohol-related disorders that requires ICU care. There is a lack of studies on profile and outcome of alcoholic patients in the intensive care unit that required ICU care in a developing country including Nepal.

This study was conducted to know profile, pattern of alcohol use and outcome of alcoholic patients in the intensive care unit.

MATERIALS AND METHODS

It is a descriptive cross-sectional study in a level three intensive care unit of National Medical College, Birgunj between March 1, 2023 to February 29, 2024. The ethical approval from the Institutional Review Committee was obtained before enrolment in this study

(F-NMC/546/078-079). Written informed consent was obtained from the patients or surrogate decision-makers.

All patients >18 years with a history of alcohol intake admitted to the mixed intensive care unit of National medical college for more than 24 hours were included in this study. Patients who were younger than 18 years, surrogate decision-maker, or patient did not give written informed consent, length of stay in the ICU was less than 24 hours, were not included in this study.

The following information was collected from each patient meeting inclusion criteria on the day of study. Age, sex, ethnicity, occupation, Acute physiology and chronic health evaluation II (APACHE), Sequential organ failure assessment (SOFA), injury severity score, diagnosis, trauma, albumin, bilirubin, a ratio of aspartate transaminase/alanine transaminase (AST/ALT), co-morbidity, delirium, drinking pattern, frequency, context and type of alcohol consumed.

The study defined alcohol consumption as consumption of any alcohol products by the respondent at any time in 12 months period before the study. Patient who has consumed alcohol in past 48 hours was acute alcoholic.

Lifetime abstainer: Those respondents who never consumed alcohol in their lifetime were defined as lifetime abstainers.

Former drinker: Those respondents who previously consumed alcohol but not in the previous 12 months were defined as former drinkers.

Current drinker: Those respondents consuming alcoholic drink in the last 12 months were defined as the current drinker

Eligible patients were screened daily for delirium by applying the confusional assessment method (CAM-ICU) score until the day of discharge from the ICU.

The patients who were CAM-ICU positive were labeled as patients having delirium. Then, the detail of individual patients including the type of delirium, duration, drugs, and duration of the drugs used was recorded.

At the time of discharge from ICU duration of mechanical ventilation, length of stay in the ICU, and mortality in the ICU were recorded.

The conventional formula for calculation of sample size was not used. Instead, all the patients admitted in the Intensive Care Unit of National medical college hospital for 1 year were our sample size. The whole sampling method was used in our study. Bias was reduced by collecting data from all groups of patients.

Data collection was done in a preformed sheet. The preformed sheet included all physiologic variables and demographic variables. All data was transferred to the excel sheet and transferred to SPSS-16. The descriptive data are presented as the number and percentage for categorical data and mean ± standard deviation for continuous data according to their distribution.

RESULTS

542 Patients were admitted to the ICU during study period.
246 patients were included in this study

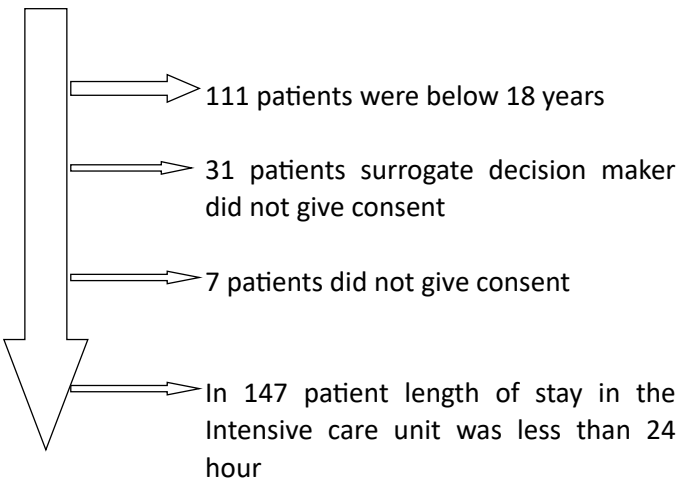

Figure 1: Flow diagram of patient included in this study

Figure 1 shows that 246 patients were included in this study. 246 (45.38%) of the total admission in the intensive care unit were alcoholic.

Table 1. Demographic characteristics of the study population

Parameters	n (%)
Age (Years)	
18-35	72(29.3)
36-60	104(42.3)
>60	70(28.4)
Sex	
Male	194(78.9)
Female	52(21.1)
Ethnicity	
Hindu	206(83.8)
Kirat	30(12.2)
Buddhist	9(3.6)
Muslim	1(0.4)

Parameters	n (%)
Occupation	
Unemployed	87(35.4)
Farmer	68(27.6)
Housewife	26(10.6)
Workers	21(8.5)
Technical	16(6.5)
Businessman	12(4.9)
Student	12(4.9)
Army	4(1.6)

Table 1 shows the demographic characteristics of the study population.

Middle-age patients were admitted more than younger and older age patients. 194(78.9%) were males and 52(21.1%) were females. Most of the patients in this study were Hindus and unemployed.

Table 2: Clinical characteristics of the study population

Parameters	n (%)
Trauma	108(43.9)
Injury severity score	
<15	81(75.0)
>15	27(25.0)
APACHE II Score at time of admission	
3-10	163(66.3)
11-20	64(26.0)
21-30	18(7.3)
31-40	1(0.4)
SOFA Score at time of admission	
0-6	213(86.5)
7-12	31(12.6)
13-18	1(0.4)
19-24	1(0.4)
Mechanical Ventilation	
No	172(70.0)
Yes	74(30.0)

APACHE II: Acute physiology and chronic health evaluation, ICU: Intensive care unit, SOFA: Sequential organ failure assessment.

Table 2 shows the clinical characteristics of the study population. Trauma patients were 108(43.9%) of the study population, 81% of trauma patients had injury severity score less than 15. The majority of the patient at the time of admission had APACHE II of 3-10 and SOFA score of 0-6 and did not require mechanical ventilation.

Table 3: Pattern, frequency, context and type of alcohol consumed by the study population

Characteristics	n(%)
Drinking Pattern	
Current	153(62.1)
Former	93(37.8)
Frequency of alcohol	
Daily	90(36.5)
1-2 times/week	69(28.0)
3-4 times/week	39(15.8)
1-3 times/month	38(15.4)
4-7 times/month	10(4.0)
Context of alcohol	
Companion	128(52.0)
Occasion	72(29.2)
Place	46(18.6)
Type of Alcohol	
Combination	69(28.0)
Distillary product	9(3.6)
Foreign made liquor	3(1.2)
Home made rakshi	20(8.1)
Jaad	48(19.5)
Local beer	48(19.5)
Local rakshi	65(26.4)

Table 3 shows the frequency, context, type, and pattern of alcohol consumed by the study population.

The current 153(62.1%) and daily 90(36.5%) drinkers were more common in our study. The combination 69(28%) of the alcoholic products was the most common type of alcohol consumed in our study.

Out of 246 patients, 211(85.7%) and 35(14.2%) were chronic and acute alcoholic respectively.

Out of 246 patients, Hypertension 76(30.8%) was the common co-morbidity followed by chronic liver disease 34(13.8%), diabetes mellitus 32(13%), chronic obstructive airway disease 20(8.1%), depression 19(7.7), valvular heart disease 12(4.8%), neurological disorder 5(2%) and cancer 4(1.6%). 39(15.8%) patients did not have any co-morbidities.

Table 4: Outcome of patients according to specialty

Specialty	Discharged n(%)	Expired n(%)	Total n(%)
Otolaryngology	11(100)	0	8(100)
Internal Medicine	85(85)	15(15)	100(100)
Orthopaedics	15(75)	5(15)	20(100)
Psychiatry	3(75)	1(25)	4(100)
Surgery	85(85)	15(15)	100(100)
Surgery+Orthopaedics	10(71.4)	4(28.57)	14(100)

Table 4 shows the outcome of patients according to the specialty.

Out of 246 patients, forty (16.3%) patients expired. The mortality in the intubated patient was 22(29.7%). The minimum duration of mechanical ventilation (MV) was 1 day and the maximum was 10 days. The mean duration of MV was 3.1±1.9 days.

Out of 246 patients, hypoalbuminemia was present in 43(17.5%), raised AST/ALT and bilirubin in 143(58.1%), and 68(27.6%) patients, respectively.

Out of 246 patients, 134(54.4%) patients developed delirium. Out of 134 patients, hyperactive delirium was present in 51(20.7%) followed by mixed 47(19.1%) and

hypoactive 36(14.6%). The minimum duration of delirium use was 1 day and the maximum was 25 days. The mean duration of delirium was 3.94±3.07 days.

The minimum length of stay in ICU was 1 day and maximum was 45 days. The mean length of stay in the intensive care unit was 5.04±4.8 days.

Table 5: Dose and duration of drugs used in our study population

Drug	Min days	Max days	Mean±SD, days	Min mg	Max mg	Mean±SD, mg
Lorazepam	1	20	3.8±2.81	3	300	29.96±29.93
Midazolam	1	7	3.6±1.7	2	60	23.27±17.21
Quetiapine	1	10	3.27±1.92	100	1000	255.3±214.28
Haloperidol	2	5	2.8±1.03	12	100	27±25.8

SD: Standard deviation

Table 5 shows the dose and duration of the drugs used to delirium in the intensive care unit.

DISCUSSION

This study has shown that alcoholic patients that required ICU admission was 45.38% while in other studies [3-5] it varied from 7.3% to 34.4%. This difference may be because studies from Nepal have shown that the incidence of alcohol intake in the community is from 35.6% to 62.9%. Male, middle age, and Hindu patients are more common in our study which is similar to other studies. [1,6-9] Current drinker was more common in our study which is similar to other studies. [1,7,8]

Daily drinking habit was more common in our study which is similar to a study by Adhikari et al [7] while a study by Thapa et al [1] showed that once or twice a week was a more common habit. This difference may be due to different communities studied in both the studies. This study showed that most of the patients 69(28%) drank a combination of drink which is similar to study by Thapa et al [1] while the study by Manandhar et al [6] and Maharjan et al [8] Jaad and Beer was the most common drink. This difference may be because the type of drinking may vary between different communities. This study showed that 211(85.7%) were chronic alcoholic and chronic alcoholic generally develops more complication than acute alcoholic that requires ICU admission.

Hypertension was the most common co-morbidity in our study this may be because alcohol is a risk factor for hypertension. This study showed that trauma under the influence of alcohol was a reason for admission in the intensive care unit for 43.9% while in a study by Schneiders et al [10] and Wagner et al [11] it was 11% and 50% respectively. This difference may due to the increased prevalence of alcohol consumption in this region of the country.

The present study shows that mortality was 16.3% while in other studies [12,13] the percentage varied from 12% to 32.7%. The difference may be because of different patient populations, the presence of full-time intensivist, and semi-closed ICU.

This study showed that 54.4% of patients developed delirium while in a study by Stewart et al [14] it was 68.3%. The high incidence of delirium in alcoholic patients is because alcohol is an independent risk factor for delirium in the ICU but it was low in our study due to early sedation management, early mobilization, and other supportive care for delirium were given to our patient. The length of stay and mechanical ventilation is higher in the alcoholic patient which is similar to other studies.[12-14]

Non-Pharmacological and Pharmacological treatment is a choice for delirium Pharmacological treatment includes benzodiazepines, anti-psychotic, and propofol.[15,16] Benzodiazepines (BZD) increases the complication of delirium but it is a drug of choice for alcohol-related delirium in high dose .[17] BZD is combined with anti-psychotic, and propofol to decrease the complication of BZD. [18] In our study BZD and anti-psychotic was used to treat delirium.

CONCLUSIONS

Alcohol consumption causes increase in mortality, duration of delirium, mechanical ventilation and length of stay in the intensive care unit. Awareness programs about these effects should be done among general public.

LIMITATIONS

Our study has limitations like it was a single-centre, small sample size study. The blood alcohol level was not measured and long term follow up to for outcome of alcoholic patients was not done.

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CONFLICT OF INTEREST: None

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