Burnett School of Medicine at TCU

The Relationship Between Alcohol Misuse and Fracture Outcome in the Elderly

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Abstract

Research Question: Do elderly patients (> 60 years old) admitted to the hospital with fractures and chronic alcohol misuse demonstrate differing healing outcomes, in comparison to those with fractures and no chronic alcohol misuse? Specifically, do these patients differ in 1) healing fractures, 2) length of hospital stay, 3) length of ICU stay, and/or 4) mortality?

Introduction and Significance: Alcohol is attributed to a variety of health issues and continues to prove to have adverse health effects. The causative relationship between alcohol and fracture is strong for both osteoporosis and fracture risk. However, there are few studies that have evaluated clinical outcomes of alcohol related injury or hospital-based outcome, such as length of stay. If different than non-alcohol related injuries, this alcohol-related injury pattern may allow healthcare workers better understanding for what to expect, how to intervene, and what outcomes may occur. Additionally, cessation intervention to address the treatment of osteoporosis and additional fractures may carry both personal and societal benefits.

Materials and Methods: A retrospective cohort study and chart review was performed. Patients admitted to Texas Health Harris Methodist Fort Worth with fractures of the axial skeleton and spine between January 2010 and December 2019 were identified for the study. Patients who presented with fractures and 1) laboratory test for ethanol level, and 2) those undergoing substance abuse screening using the SBIRT tool were then evaluated for outcomes including length of hospital stay, length of ICU stay, and mortality. The specific results of the Alc(+) group were then compared to the Alc(-) group.

Results: The results showed that there was no statistically significant difference in mean hospital length of stay (LOS), no statistically significant difference in mortality, and a statistically significant longer mean ICU LOS days Alc(+) compared to Alc(-). The mean ICU LOS was estimated to be 0.95 days longer (95% CI [0.20, 1.71 days]) for the Alc(+) group than the Alc(-) group.

Conclusions: Geriatric patients screening positive for alcohol misuse had a longer ICU stay, increased risk for nosocomial infections, and other complications. This would be expected to increase individual and hospital costs, and use of resources. Ultimately, identifying these “at risk” patients could lead to early mitigating interventions on hospital admission and another good reason for physicians to address alcohol misuse and bone health. This program could be a model for other centers to also improve individual outcomes as well as have an impact in overall healthcare spending and resources.

Research Question

Do elderly patients (> 60 years old) admitted to the hospital with fractures and chronic alcohol misuse demonstrate differing healing outcomes, in comparison to those with fractures and no chronic alcohol misuse? Specifically, do these patients differ in 1) healing fractures, 2) length of hospital stay, 3) length of ICU stay, and/or 4) mortality?

Hypothesis: We hypothesize that elderly with fractures and chronic alcohol use or intoxication will demonstrate differing healing outcomes when compared to elderly patients with fractures and no chronic alcohol use or intoxication. We expect this to be supported with an increase in length of hospital stay, increase in length of ICU stay, and increased mortality.

Introduction, Significance, and Rationale

Many risk factors, including alcohol, are associated with an increased incident of fractures in the elderly, many of which have extensive research to support them. These risk factors include increased age, osteoporosis, cortisone use, tobacco use, soft drink consumption, and decreased exposure to sunlight.[1]

There are also many factors that affect the recovery length, outcome, and complications associated with fractures, however, currently there is limited research and data that indicates what those factors are. For example, it has been concluded that decreased degree of dependence in basic activities of daily living such as eating, bathing, dressing, and bladder and bowel management have a strong relationship with better fracture outcome.[2] There is little research on the impact of alcohol use on recovery length, outcome, and complications associated with fractures.

It is known that fractures greatly reduce quality of life in the elderly and are a main cause of mortality and morbidity in this population. From osteoporosis alone, there were 9 million osteoporotic fractures in the world in 2000.[3] For this reason, bone health is extremely important to maintain a good quality of life.[4] Alcohol plays an important role in bone health and determining various aspects of patient outcome after sustaining a fracture.[5]

Acute alcohol intoxication causes hypocalcemia and hypercalciuria due to a transitory hypoparathyroidism. Moderate prolonged alcohol use increases serum parathyroid hormone (PTH). Excessive alcohol causes a decrease in bone mineral density that causes drastic structural change within bone itself and low serum vitamin D metabolites. This causes a hypocalcemia, hypocalciuria, and malabsorption of calcium.[6] Regardless of length of use, alcohol in general causes suppressed function of osteoblasts, a key cell in the formation of new bone.[7] Weakened bone is more prone to fractures and damage.[8]

This research investigates and builds upon scant previous research. This could be a time for intervention to prevent further fractures through rehab and/or alcohol education as well as treatment of osteoporosis to decrease healthcare cost and improve individual health status.[9] This research could also lead to a comprehensive program being put together to address the findings that could ultimately be a model for other centers as well. If risk factors are identified beforehand, treatment may be tailored to improving individual health care, reducing the probability that complications will occur, and decreasing cost.

Research Materials and Methods

General Study Details and Resources

This is a chart review in which subjects selected were admitted to Texas Health Harris Methodist Fort Worth with fractures AND presented with chronic alcohol use or intoxication.

Study data was emailed using encryption and any computer with patient health information was password protected. All data was deidentified with permanent intent. Human Subjects research approval was obtained by UT Southwestern Medical Center IRB.

Subject Identification

Study participants were identified by running a catch query within the THR Harris Methodist Hospital Fort Worth trauma database from January 1, 2010 to December 31, 2019. Patient's qualified are patients who are age 60 and older that have sustained a fracture and meet requirements to be in the trauma database.

Inclusion and exclusion criteria were applied to potential study participants during the initial identification processes within the trauma database. Inclusion criteria include: not younger than 60 years old, admitted to Texas Health Harris Methodist Fort Worth with a fracture from January 1, 2010 to December 31, 2019, and not treated definitively elsewhere and transferred in for complications or care. Exclusion criteria include: younger than 60 years old, not admitted to Texas Health Harris Methodist Fort Worth with a fracture from January 1, 2010 to December 31, 2019, and treated definitively elsewhere and transferred in for complications or care.

Additional Subject Stratification

Study patients were divided into one of two groups: 1) Alc(+): meets inclusion criteria and has a positive blood alcohol level or screens SBIRT positive or 2) Alc(-): meets inclusion criteria and has a negative blood alcohol level or screens SBIRT negative.

SBIRT (screening, brief intervention, and referral to treatment) is a screening tool that assesses severity of substance use. SBIRT positive means that on admission, when asked how many drinks a week they have, if female, they answered 8 or greater drinks per week and if male, they answered 15 or greater drinks per week. Presenting to the hospital intoxicated has been previously correlated with chronic alcohol abuse and risk for poor clinical outcomes.

Retrospective Secondary Endpoint Data Collection and Basic Recording

Patients meeting study inclusion criteria were included in this portion of the study. Upon identification, each subject was evaluated based upon their hospital stay in order to obtain the following data markers: Patient ID number, age at admission ('age_years_admission'), gender ('gender'), race ('race'), smoking status ('smoker'), diabetes status ('diabetes'), steroid use ('steroid_use'), renal disease ('renal_disease'), obesity status ('obesity') and injury severity score ('ISS').

Note: ISS (injury severity score) is a tool that is used to assess the severity of traumatic injury. It is rated based upon the worst injury from six body systems.

Propensity Score Matching Analysis:

A preliminary evaluation of patient data revealed a disparity of variables between the patient groups. The Alc(-) group contained 4143 patients, as such, propensity score matching was employed to balance covariates across the Alc(+) and Alc(-) groups, resulting in 238 matched pairs. The covariates utilized for matching were age at admission ('age_years_admission'), gender ('gender'), race ('race'), smoking status ('smoker'), diabetes status ('diabetes'), steroid use ('steroid_use'), renal disease ('renal_disease'), obesity status ('obesity') and injury severity score ('ISS'). To control for confounding variables and to better estimate the causal effects of alcohol use on health outcomes among patients aged 60 and older, we employed a 1:1 Nearest Neighbor Propensity Score Matching without replacement technique. The propensity scores were calculated using logistic regression based on a set of covariates, including age at admission, gender, race, smoking status, diabetes status, steroid use, renal disease or dialysis

status, obesity status, and Injury Severity Score (ISS). The Matchit function in R was utilized for this analysis, and examination diagnostics of the match dataset were conducted.

Hospital LOS Among Matched Patients:

Hospital Length of Stay (LOS) is an important metric for assessing the utilization of hospital resources and patient outcomes. In our dataset, the LOS information was partially missing, necessitating a calculation of LOS by subtracting the arrival date ('ARRIVAL_DATE') from the hospital discharge time ('HOSP_DISCH_TIME'). A preliminary examination of the LOS data revealed a non-normal distribution, which informed the decision to use non-parametric statistical methods for subsequent analyses. Given the non-normal distribution of LOS, a Wilcoxon Rank-Sum test was employed to compare the LOS between Alc(+) and Alc(-).

ICU LOS Among Matched Patients:

The LOS in the ICU is a critical measure indicative of the severity of illness and resource utilization. This section explores the ICU LOS among the two cohorts distinguished by their alcohol consumption status (Alc(+) vs Alc(-)). The distribution of ICU LOS was examined using histograms for each cohort. Due to the non-normal distribution of the ICU LOS data, non-parametric methods (Wilcoxon Rank-Sum test) were deemed appropriate for further analysis to compare ICU LOS between the two alcohol groups.

Mortality Among Matched Patients:

In the mortality analysis, the discharge status was determined based on the recorded date of death and the date of discharge. Given the small number of observations, a Chi-square test was deemed inappropriate. The data was then further filtered to focus on patients with a discharged status of alive, and summary statistics were generated for the exposure groups concerning mortality on discharge information. A survival curve was then generated for both groups for the first year after admission using the Kaplan-Meier estimator, and a log-rank test was used to compare the survival distributions between the Alc(+) and Alc(-) groups.

Results

In examining the relationship between alcohol use and hospital length of stay (LOS), Intensive Care Unit (ICU) LOS, mortality on discharge, and probability of survival for the first year after admission among patients aged 60 and older, the following results were yielded. Table 1 breaks down and compares the characteristics of both groups including age, gender, race, smoking status, diabetic, steroid use, renal disease, obesity, and injury severity score. Table 2 shows the matched data for the characteristics of both groups as well as their hospital and ICU length of stay. Table 3 shows the risk of mortality among the groups using the matched data in Table 2.

Length of Stay

The mean hospital length of stay for ALC(-) and ALC(+) were 1.99 and 2.46, respectively (P = 0.148). The mean ICU length of stay for ALC(-) and ALC(+) were 1.29 and 2.24, respectively (P = 0.013).

Mortality

In hospital mortality was 0.8% (ALC(-)) and 1.3% (ALC(+)) (P = 0.653). Mortality at 1-day post-discharge was 1.69% (ALC(-)) and 0.42% (ALC(+)). Mortality at 7 days post-discharge was 0.86% (ALC(-)) and 0.85% (ALC(+)) (P = 0.313). Mortality at 30 days post-discharge was 2.65% (ALC(-)) and 2.17% (ALC(+)) (P = 0.360). Mortality at 90 days post-discharge was 2.26% (ALC(-)) and 1.32% (ALC(+)) (P = 0.242). Mortality at 365 days post-discharge was 5.24% (ALC(-)) and 5.09% (ALC(+)) (P = 0.450).

Table 1: Unmatched Subjects and Group Comparisons.

Patients aged 60 and older, Alcohol Negative and Alcohol Positive Group				
	ALC-	ALC+	**OVERALL**	**P-VALUE**
	(N = 4143)	**(N = 238)**	**(N = 4381)**	
Age				
Mean (SD)	78.1 (10.1)	69.6 (7.62)	77.6 (10.1)	0.000
Median [Min, Max] (SD)	78.4 [60.0, 104] (11.0)	67.6 [60.0, 92.1] (8.03)	77.7 [60.0, 104]	
Gender				0.000
Female	2790 (67.3%)	100 (42.0%)	2890 (66.0%)	
Male	1353 (32.7%)	138 (58.0%)	1491 (34.0%)	
Race				0.881
Asian	39 (0.9%)	1 (0.4%)	40 (0.9%)	
Black	200 (4.8%)	12 (5.0%)	212 (4.8%)	
Hispanic	7 (0.2%)	0 (0%)	7 (0.2%)	
Other	23 (0.6%)	1 (0.4%)	24 (0.5%)	
White	3874 (93.5%)	224 (94.1%)	4098 (93.5%)	
Smoker				0.000
No	3740 (90.3%)	161 (67.6%)	3901 (89.0%)	
Yes	403 (9.7%)	77 (32.4%)	480 (11.0%)	
Diabetes				0.000
No	3214 (77.6%)	212 (89.1%)	3426 (78.2%)	
Yes	929 (22.4%)	26 (10.9%)	955 (21.8%)	
Steroid use				0.323
No	4114 (99.3%)	235 (98.7%)	4349 (99.3%)	
Yes	29 (0.7%)	3 (1.3%)	32 (0.7%)	
Renal disease or Dialysis				0.048
No	3676 (88.7%)	221 (92.9%)	3897 (89.0%)	
Yes	467 (11.3%)	17 (7.1%)	484 (11.0%)	
Obesity				0.557
No	3821 (92.2%)	217 (91.2%)	4038 (92.2%)	
Yes	322 (7.8%)	21 (8.8%)	343 (7.8%)	
Injury Severity Score (ISS)				
Mean (SD)	9.02 (4.46)	10.1 (6.31)	9.08 (4.59)	0.010
Median [Min, Max]	9.00 [1.00, 59.0]	9.00 [1.00, 43.0]	9.00 [1.00, 59.0]	

Table 2: Results of Matched Data for Alcohol Positive and Negative Groups.

Matched Data Summary for ALC- and ALC+				
	ALC-	ALC+	**Overall**	**P-VALUE**
	(N=238)	**(N=238)**	**(N=476)**	
Age				
Mean (SD)	69.7 (8.42)	69.6 (7.62)	69.6 (8.02)	0.892
Median [Min, Max]	67.6 [60.0, 97.9]	67.6 [60.0, 92.1]	67.6 [60.0, 97.9]	
Gender				0.852
Female	98 (41.2%)	100 (42.0%)	198 (41.6%)	
Male	140 (58.8%)	138 (58.0%)	278 (58.4%)	
Race				0.902
Asian	1 (0.4%)	1 (0.4%)	2 (0.4%)	
Black	10 (4.2%)	12 (5.0%)	22 (4.6%)	
Hispanic	0 (0%)	0 (0%)	0 (0%)	
Other	0 (0%)	1 (0.4%)	1 (0.2%)	
White	227 (95.4%)	224 (94.1%)	451 (94.7%)	
Smoker				0.922
No	162 (68.1%)	161 (67.6%)	323 (67.9%)	
Yes	76 (31.9%)	77 (32.4%)	153 (32.1%)	
Diabetes				0.884
No	211 (88.7%)	212 (89.1%)	423 (88.9%)	
Yes	27 (11.3%)	26 (10.9%)	53 (11.1%)	
Steroid use				0.653
No	236 (99.2%)	235 (98.7%)	471 (98.9%)	
Yes	2 (0.8%)	3 (1.3%)	5 (1.1%)	
Renal disease or Dialysis				1.000
No	221 (92.9%)	221 (92.9%)	442 (92.9%)	
Yes	17 (7.1%)	17 (7.1%)	34 (7.1%)	
Obesity				0.442
No	212 (89.1%)	217 (91.2%)	429 (90.1%)	
Yes	26 (10.9%)	21 (8.8%)	47 (9.9%)	
Injury Severity Score (ISS)				
Mean (SD)	9.58 (6.35)	10.1 (6.31)	9.85 (6.33)	0.353
Median [Min, Max]	9.00 [1.00, 54.0]	9.00 [1.00, 43.0]	9.00 [1.00, 54.0]	
Hospital Length of Stay (LOS)				
Mean (SD)	1.99 (2.79)	2.46 (4.15)	2.22 (3.54)	0.148
Median [Min, Max]	0.831 [0.0243, 17.8]	0.951 [0.0681, 32.6]	0.886 [0.0243, 32.6]	
ICU Length of Stay (LOS)				
Mean (SD)	1.29 (3.36)	2.24 (4.85)	1.77 (4.20)	0.013
Median [Min, Max]	0 [0, 31.0]	0 [0, 28.0]	0 [0, 31.0]	
Mortality on Discharge				0.653
Alive	236 (99.2%)	235 (98.7%)	471 (98.9%)	
Dead	2 (0.8%)	3 (1.3%)	5 (1.1%)	

Table 3: Risk of Mortality for Alcohol Positive and Negative Groups.

Risk of Mortality Among Matched Patients (ALC-)						**Risk of Mortality Among Matched Patients (ALC+)**					
Days	**Patient at Risk**	**Deaths** (%)	**Standard Error**	**95 % CI**		**Patient at Risk**	**Deaths** (%)	**Standard Error**	**95 % CI**		**P-Value**
1	237	4 (1.69)	0.008	0.967	1.000	238	1 (0.42)	0.004	0.988	1.000	-
7	232	2 (0.86)	0.102	0.955	0.995	235	2 (0.85)	0.007	0.973	1.000	0.313
30	226	6 (2.65)	0.142	0.922	0.978	230	5 (2.17)	0.012	0.944	0.990	0.360
90	221	5 (2.26)	0.017	0.896	0.962	227	3 (1.32)	0.014	0.927	0.981	0.242
365	210	11 (5.24)	0.021	0.842	0.924	216	11 (5.09)	0.019	0.872	0.945	0.450

Figure 1: Love Plot of Absolute Standardized Mean Differences

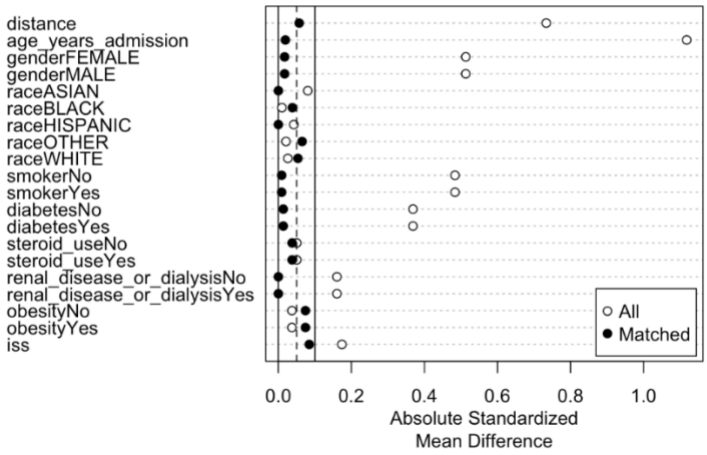

Figure 1 shows a love plot for the absolute standardized mean differences (ASMD) for our listed covariate (y-axis). The open circles represent the ASMD before matching, and the bolded circles represent the ASMD after matching. The vertical dashed line represents the commonly accepted threshold for balance (ASMD < 0.1), beyond 0.1 the covariates are considered imbalanced. Figure 1 shows that propensity score matching successfully reduced the imbalance in covariates between the alcohol negative and positive group with the bolded circles (matched) clustering closer to the line of no difference (ASMD = 0).

Figure 2: Jitter Plot of Propensity Scores

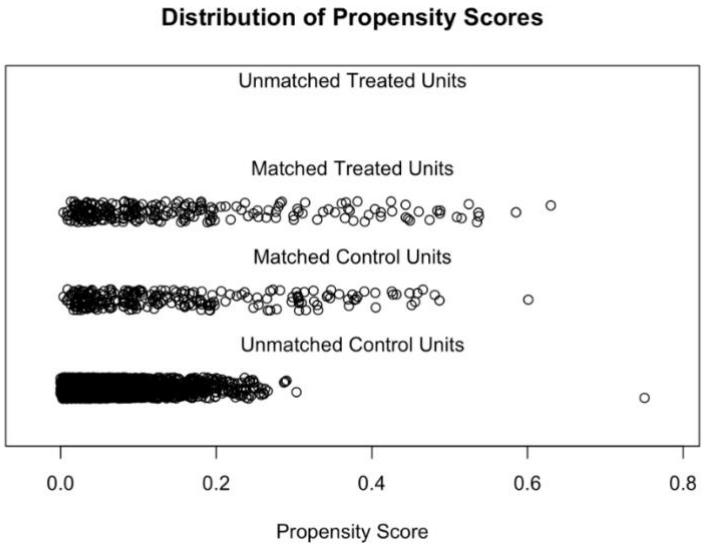

Figure 2 shows a Jitter plot of our Propensity Score distribution before and after matching. In the plot, our control group (Alcohol negative) closely resembles the treated group (Alcohol positive) in terms of the distribution of propensity scores. This close correspondence suggests that matching was successful between the alcohol negative and positive group.

Figure 3: Empirical Quantile-Quantile (eQQ) Plot for Age at Admission and Injury Severity Score

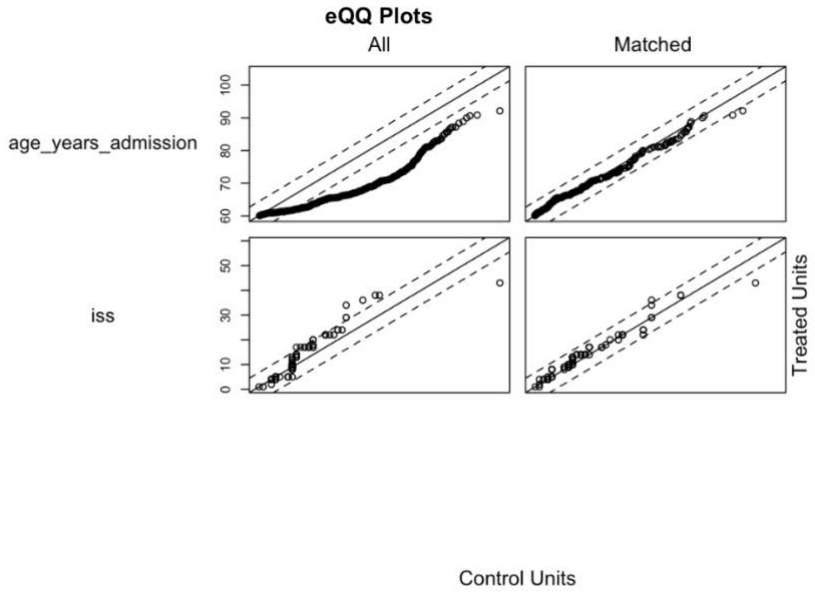

Figure 3 shows an empirical quantile-quantile (eQQ) plot for age at admission and Injury Severity Score (ISS) before and after propensity score matching. After matching, points lie closer to the diagonal line, indicating improved balance.

Figure 4: Density Plots for Continuous Variables

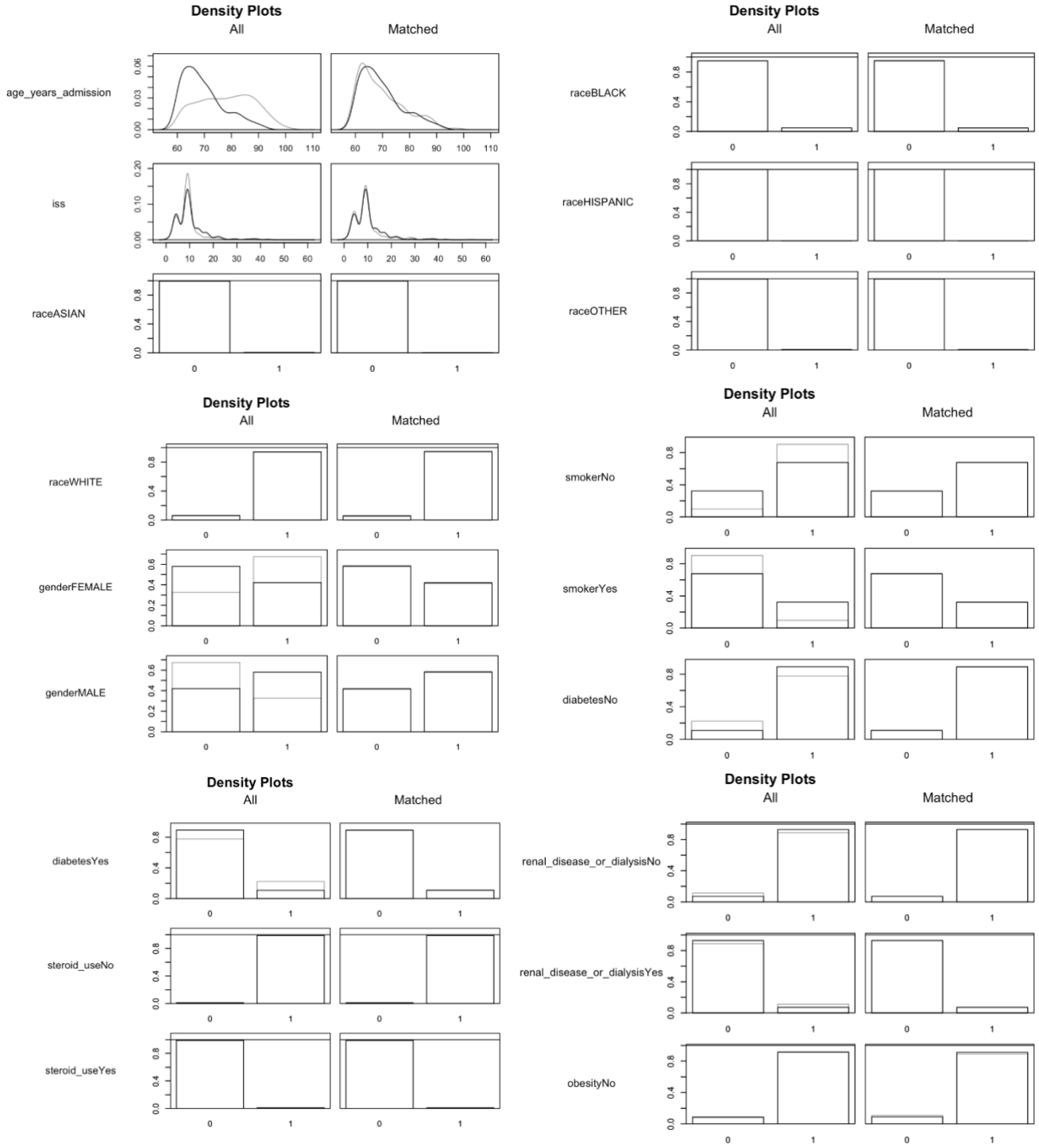

Figure 4 shows the density plots for the continuous variables (Age, ISS) and categorical variables (Gender, Race, Smoker, Steroid Use, Renal disease, Obesity) above illustrate pre and post matching. Alcohol positive group is denoted by “1”, Alcohol negative is denoted as “0”. In a balanced match, the plots would show identical shapes and proportions for “1” and “0” in the Matched column.

Figure 5: Distribution of Hospital LOS for Positive and Negative Groups

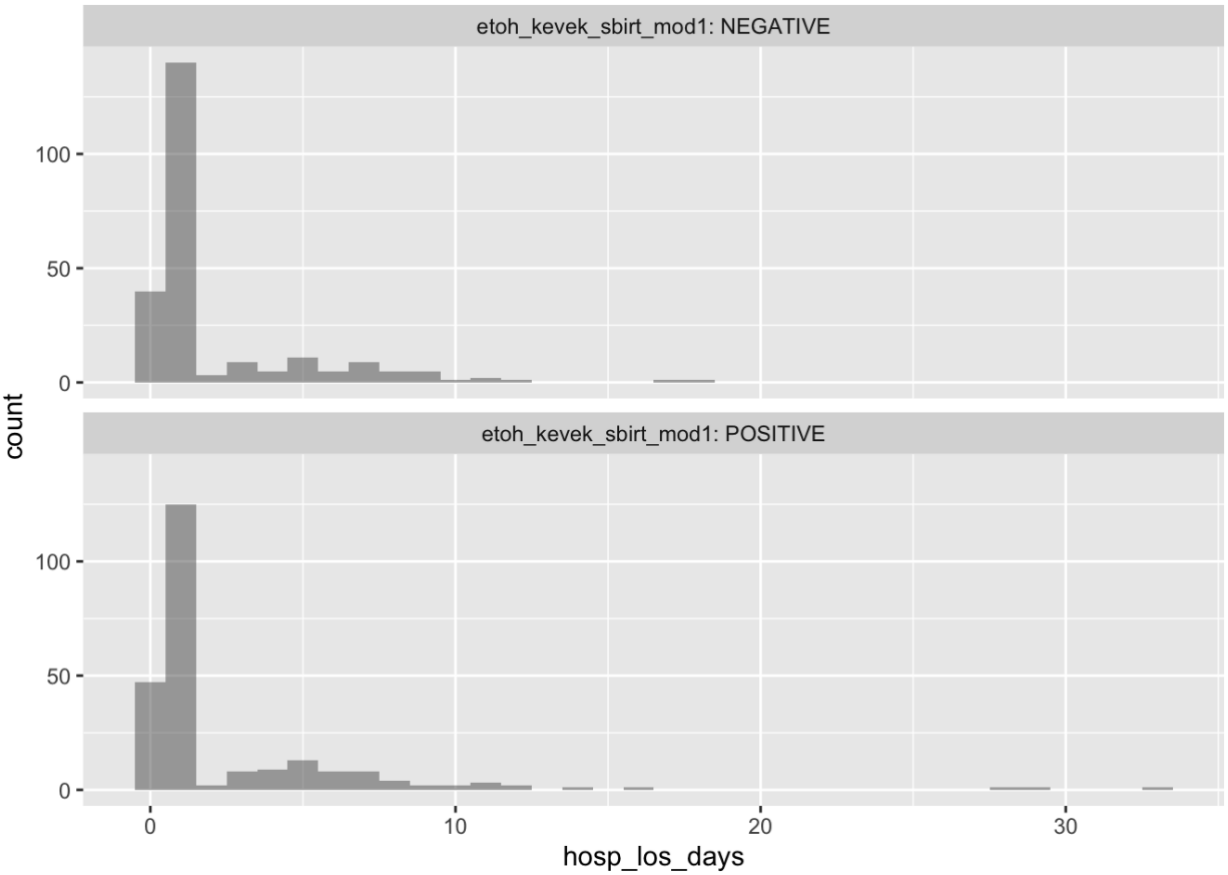

Figure 5 shows the distribution of Hospital LOS (Hosp_los_days), measured in days, for patients grouped by the Alcohol positive and negative group. The x-axis shows the Hospital LOS in days, and the y-axis shows the count of patients.

Figure 6: Distribution of ICU LOS for Positive and Negative Groups

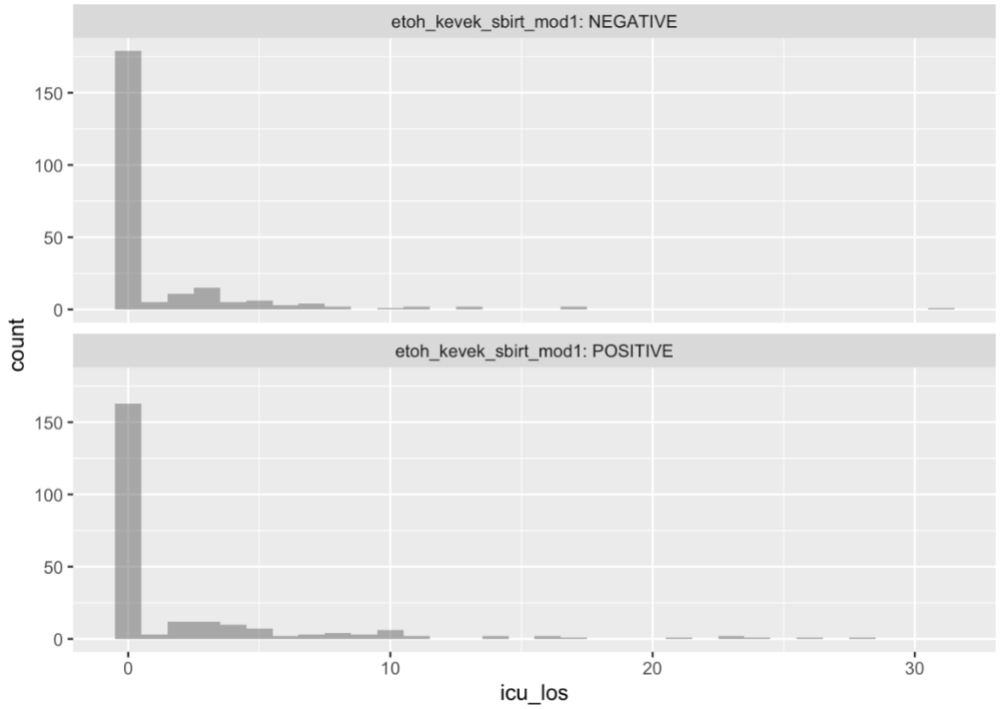

Figure 6 shows the distribution of ICU LOS (icu_los), measured in days, for patients grouped by the Alcohol positive and negative group. The x-axis shows the Hospital LOS in days, and the y-axis shows the count of patients.

Figure 7: Kaplan-Meier Plot for Alcohol Positive and Negative Groups

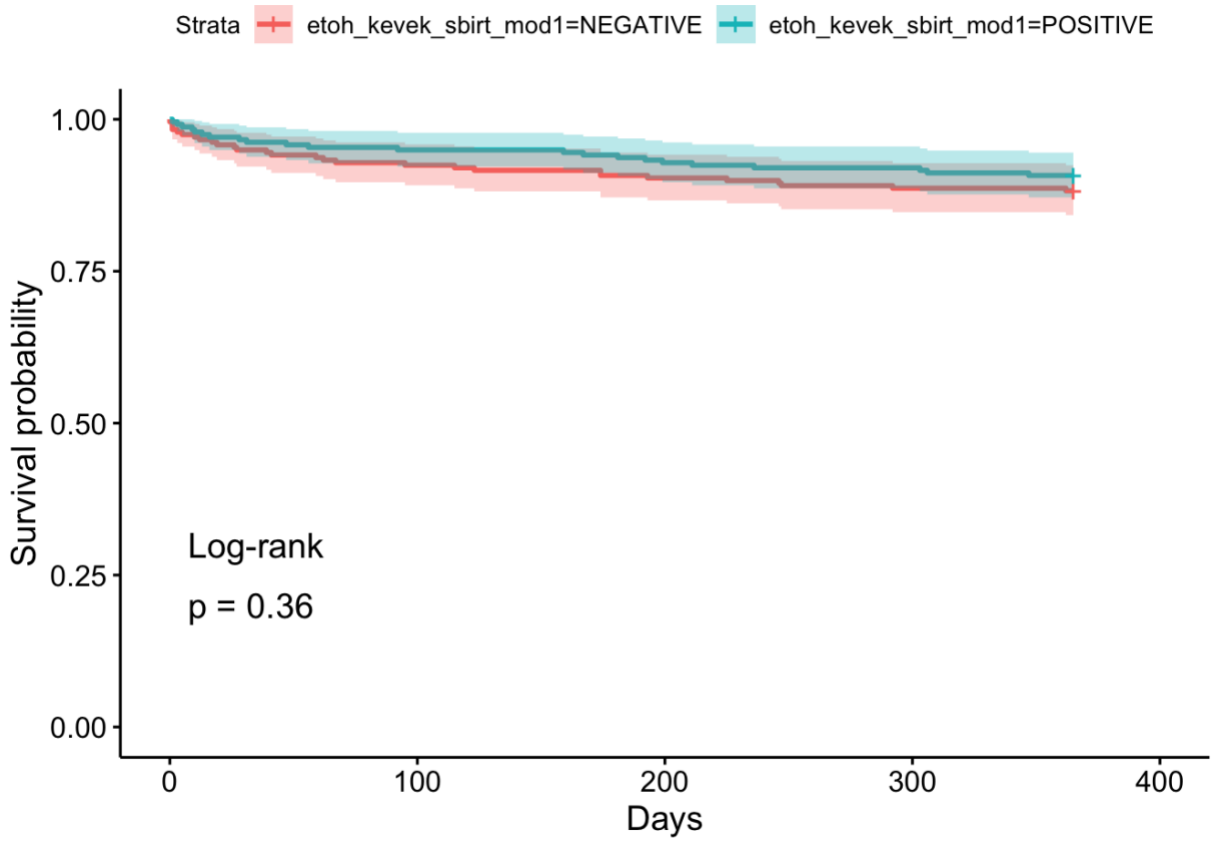

Figure 7 shows a Kaplan-Meier plot illustrating the survival probabilities over time for alcohol negative (red) and positive (blue) group. The x-axis indicates the time in days, and the y-axis represents the estimated survival probability.

Discussion and Innovation

Analysis of Outcomes:

Hospital LOS Among Matched Patients:

Since the assumption of normality was not satisfied, a linear model/t-test was not appropriate; we utilized the Wilcoxon Rank-Sum test to assess the difference in Hospital LOS between the Alc(-) and Alc(+) groups. It yielded a P-value of 0.208, suggesting no statistically significant difference in the hospital LOS between the two groups. Further investigations may be warranted to explore other factors that could impact LOS.

ICU LOS Among Matched Patients:

The Wilcoxon Rank-Sum test yielded a P-value of 0.049, indicating a statistically significant difference in ICU LOS between the Alc(+) and Alc(-) groups. There was a statistically significant longer mean ICU LOS days for the Alc(+) group compared to the Alc(-) group. The mean ICU LOS was estimated to be 0.95 days longer (95% CI [0.20, 1.71 days]) for the Alc(+) group than the Alc(-) group.

Mortality Among Matched Patients:

It was observed that out of the entire unmatched dataset, only 51 patients died within the study period. In the matched dataset, only five patients died in both groups (Alc(+) n = 2, Alc(-) n = 3). In this dataset, most patients in both groups were alive at discharge, with a slightly higher percentage of deaths in the Alc(+) group (1.3%) compared to the Alc(-) group (0.8%, P = > 0.05). A log-rank test was used to compare the survival distributions between the Alc(+) and Alc(-) groups. The Kaplan-Meier revealed the survival of both groups, yielding a P-value of 0.36 (Figure 7), indicating no statistically significant evidence of a difference in survival between the Alc(+) group and the Alc(-) group for the first year after admission. A summary table was generated to outline mortality risk over several time points (1, 7, 30, 90, and 365 days) post-admission (Table 3) with no statistically significant evidence of a difference in any fixed time point. Both groups show a decline in survival probability over the course of a year, which is

expected as more events (deaths) occur. Further investigation is warranted to explore other factors that may affect survival probability.

Discussion

In summary, the study found that elderly patients with alcohol use and concomitant fractures ultimately had no difference in mortality or hospital length of stay but had an increased ICU stay.

Alc(+) elderly patients with fractures had an increased ICU stay compared to the Alc(-) group. This suggests that these patients were "sicker", requiring more critical care, and the cost and resources that go along with that. Interestingly, overall length of stay and mortality up to one year was not significantly affected in Alc(+) patients. Alcohol withdrawal significantly increases mortality in hospitalized patients, with evidence of a 5% mortality rate in uncomplicated cases and 25% in those with concomitant complications.[12, 13] Although it is unknown how many patients in our study had alcohol withdrawal symptoms, this did not appear to alter the mortality rate. Alcoholism is a proinflammatory condition that can damage virtually any organ including the CNS, liver, lung, pancreas, kidneys, bone, and heart.[14] Increased ICU LOS in the Alc(+) group helps affirm previous research that elderly patients with alcohol or substance abuse have a less favorable outcome. Elderly are already at a greater risk for more severe outcomes due to the high prevalence of osteoporosis, and this study provides concrete evidence that alcohol further increases their risk for worse outcomes after sustaining a fracture necessitating a higher level of care for an increased amount of time.[15] It has been found that alcohol abuse can even be a secondary cause of osteoporosis.[16] This could help stimulate better patient education on risks and consequences of chronic drinking and could create potential for intervention through rehab and more extensive alcohol education.

No studies could be found that have assessed the outcomes of alcohol intoxication trauma or fracture patients or linked fracture and alcohol intoxication or abuse as an opportunity to intervene after fracture. The study results can help identify at risk patients ahead of time and allow healthcare workers better understanding for what to expect, how to intervene, and what outcomes to expect. Additionally, cessation intervention to address the treatment of

osteoporosis and additional fractures may carry both personal and societal benefits, including decreasing drinking and increasing health and life expectancy.[17]

Strengths and Limitations

There are a number of weaknesses in this study. First, this is a retrospective study so there are limitations in the data available for study. For example, a complete assessment for alcohol withdrawal and other direct effects of alcohol abuse were likely under-reported.

Second, selection bias may have been present in Alc(+) patients presenting, perhaps especially for those presenting intoxicated where fracture treatment or other may have been delivered differently than usual based on this factor. Third, we chose SBIRT and alcohol intoxication on presentation as a positive screening for alcohol misuse (Alc(+), but there may be better screening tests that are available or may be developed in the future. Fourth, a quantitative evaluation of alcohol misuse was not performed, so the severity of duration of alcohol misuse was not studied. We used two screening methods for screening for alcohol-related problems (SBIRT and ED presentation under the effects of alcohol). There are strengths to this study as well. First, this is the first study evaluating the effects one hospital outcome of alcohol misuse in elderly with fractures. Second, the authors went to great length to compare treatment groups that were similar using propensity score matching after our preliminary assessment showed differences between the study groups, their treatment, and outcomes.

Future Directions

This research study could potentially lead to programs being amended to expect that Alc(+) patients may be at risk for longers ICU stays and more critical care than Alc(-) patients. If risk factors are identified beforehand, treatment may be tailored to reducing the probability that complications will occur and improving the individual's understanding, alcohol cessation, and overall health as well as potentially reducing overall costs to the healthcare system.

The potential improvements for both individual care and health care cost savings could then be replicated in other healthcare centers around the United States. In addition, perhaps findings of ETOH abuse in the elderly and healthcare outcomes could also be investigated for other conditions where it may be beneficial to know the specific repercussions of alcohol use to provide cessation intervention.

Conclusions

Alcohol is undoubtedly toxic to our bodies in many ways with potentially devastating effects. This study set out to determine how alcohol impacted various measures in elderly with fractures. It was determined that although alcoholism has shown to increase mortality and morbidity, Alc(+) status as defined in this study did not ultimately affect the mortality of this specific patient population, nor did it have an effect on the length of hospital stay. It did, however, show to increase ICU length of stay in these patients showing their need for a higher level of care for a longer period of time than those without alcohol use.

Compliance

This research study required UT Southwestern Medical Center IRB approval. The IRB reviewed and accepted the study on Thursday, April 09, 2020. It is a retrospective database analysis and did not require approval by patients.

References

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