

2019 SOLOMON SCHOLARS RESEARCH PROGRAM ABSTRACT FORM

TITLE OF PAPER: BMI as an Indicator of Outcome in ICU Patients with Acute Respiratory Failure.

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Bench /Translational Research____**Clinical Research/HSR**__**x**__**Case Study** ____ **QI/Med-Ed**_____

ABSTRACT

Rationale: Obesity is a growing general health problem with more than one third of the US adult population affected. While obesity is considered a major risk factor for the development of a number of respiratory diseases, however, its effect in the acute setting is not clear. Currently, there are few studies that have been published with conflicting results. Subsequently, the relationship between obesity and morbidity/mortality in patients with acute respiratory failure needs further clarification.

Methods: We conducted a retrospective study of patients admitted to the intensive care unit of our institution between September 2015 and September 2017 with acute respiratory failure requiring intubation. APACHE II score and BMI were collected at admission. Patients were considered obese if BMI \geq 30.

Univariate logistic regression was employed to identify relationships between variables of interest. ROC analysis was used to identify threshold values for continuous variables. Those thresholds were then used to generate indicator variables for logistic regression. Odds ratios were calculated to interpret results.

Results: The cohort of patients included a sample size of 166 patients, 59 were female and 107 were male. Of those 119 (71.68%) patients lived and 47 (28.31%) died. Univariate logistic regression showed a very strong relationship between APACHE score and mortality ($p=0.0056$, odds ratio: 1.0442, 95% confidence interval 1.0127 - 1.0766). We were able to predict that the probability of death increased by 51.08% for every increase in APACHE score compared to a previously calculated lower score. Gender was not found to be statistically significant as a predictor of mortality ($p=0.539$). ROC analysis showed a very weak (0.563) area under the curve with threshold of 21.5 as APACHE score. APACHE score itself was found to be statistically significant in logic regression ($p=0.0020$) with an odds ratio of 2.9919, 95% (CI of 1.4910, 6.0035). This indicates the probability of death is 74.95% greater for those patients with calculated APACHE scores \geq 21.5 as compared to those patients with APACHE Scores \leq 21.5. BMI was found to not be related to mortality ($p=0.983$) based on logistic regression analysis. In patients with BMI \geq 30, data failed to show any relationship between mortality and degree of obesity ($p=0.848$).

Conclusions: In summary, we found that there was not a statistically significant difference in mortality in patients classified as obese with concomitant acute respiratory failure requiring intubation. Given the small sample size in this study, further evaluation with a larger sample size is required to accurately report data. In conclusion, our study showed there was no proportional correlation between degree of obesity and mortality in obese patients with acute respiratory failure requiring intubation. Again, more randomized controlled studies are needed.