



SWSC 2020 On-Demand Meeting Abstracts

24. WHICH BMI IS PROTECTIVE IN BLUNT TRAUMA? THE ANSWER: NOT TOO SKINNY, NOT TOO OBESE

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Background: The protective role of body-mass index (BMI) in hollow-viscous injuries, solid-organ injuries, and penetrating abdominal injuries has been reported. However, there are limited epidemiological studies examining the role of BMI on mortality in the trauma population. The aim of this study was to analyze whether the “obesity paradox” exists in adult blunt trauma.

Methods: A retrospective cross-sectional study was performed on the American College of Surgeons – Trauma Quality Improvement Program (ACS-TQIP) database for 2016. All patients, age ≥ 18 , who have sustained blunt traumatic injuries were identified. Using R software, a generalized additive model (GAM) was built to assess the association of mortality and BMI adjusted for age, gender, race, and injury severity score (ISS). Effective degree of freedom (EDF) >1 in GAM denotes nonlinear association of predictor and outcome. Significance was set at $p < 0.05$.

Results: There were 55,765 patients (mean age = 56.68, SD = 20.8) with blunt traumatic injuries. 21,868 (39.2%) were female and 33,897 (60.8%) were male. 28.6% of males had Class I obesity or greater compared to 26.6% of females. Age ($p = 0.001$), gender ($p = 0.001$), and ISS ($p = 0.001$) had significant associations with mortality. After generalized additive regression, BMI showed a significant U-shaped/non-linear association with mortality (EDF=3.5, Figure 1). The lowest risk for mortality was observed when BMI = 30.

Conclusion: High BMI can be a protective factor in mortality within the adult blunt trauma population. However, underweight or morbid obesity suggest a higher risk of mortality.



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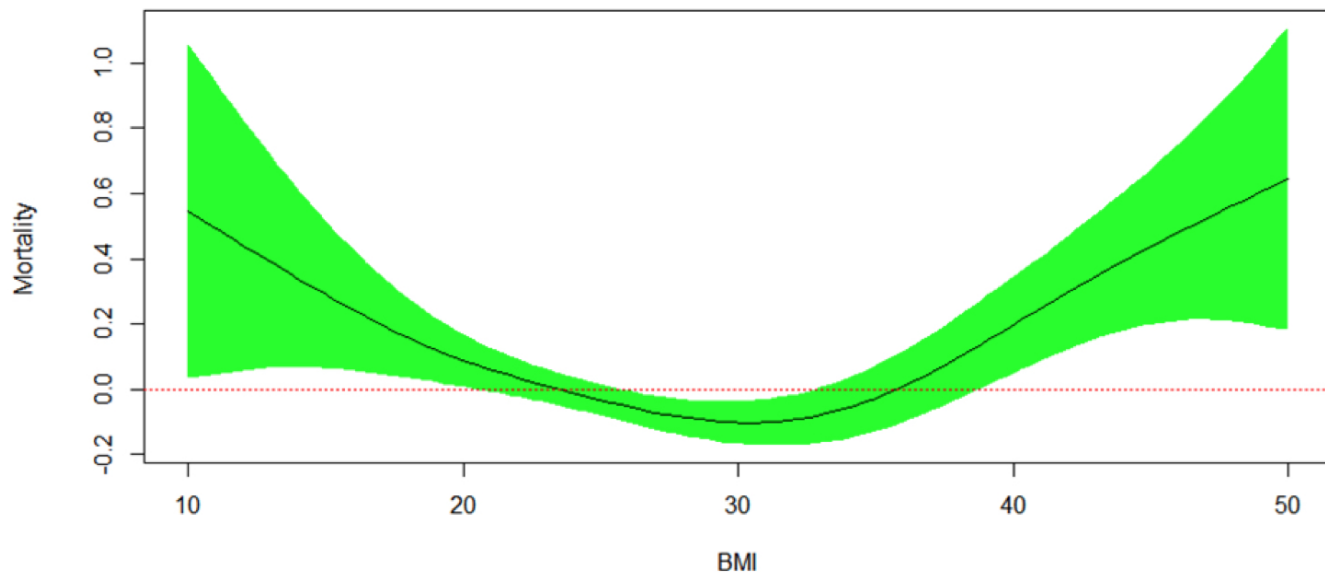


Figure 1. Association of Mortality and BMI in Blunt Trauma. EDF = 3.5 ($p = 0.001$) indicates a significant, non-linear association between BMI and mortality after adjusting for age, gender, race and ISS.