

Significant Predictors of Nonalcoholic Fatty Liver Disease in Texas Firefighters.

SEAN T. STANELLE, JASON R. LYTLE, JOHN S. GREEN, JAMES D. FLUCKEY, STEPHEN F. CROUSE, FACSM, & STEVEN E. MARTIN.

Health and Kinesiology Department; Texas A&M University; College Station, TX

Category: Doctoral

Advisor / Mentor: Fluckey, James (jfluckey@tamu.edu)

ABSTRACT

Risk factors for Nonalcoholic Fatty Liver Disease (NAFLD) include obesity, hypertension, dyslipidemia, and diabetes mellitus. Not only are these prevalent in the general US population, but they are also present at high rates in a specific subset responsible for public safety - firefighters. **PURPOSE:** The aim of the present study is to use logistic regression to predict the likelihood of occurrence of NAFLD in firefighters using a subset of health-related factors associated with common cardiometabolic risk factors. **METHODS:** Data were collected on 136 firefighters (128 males, 8 females; 36.3 ± 9.0 yrs; 95.7 ± 17.0 kg; 178.9 ± 7.4 cm; 29.8 ± 4.2 kg/m²) participating in FITLIFE, a university-based fitness program at Texas A&M University. Nominal logistic regression with stepwise removal was used to estimate the best model to predict fatty liver disease. Stepwise removal identified resting systolic blood pressure (RSBP, mm HG), Body Mass Index (BMI, kg/m²), visceral adipose tissue (VAT, cm²), whether or not has hypertension or is on medication (HTNMED; 0=No,1=Yes), and plasma triglyceride concentrations (TG, mg/dL) as independent predictors ($p < 0.05$). Odds ratios (OR) were calculated to determine the change in the odds of NAFLD per unit increase in each predictor. **RESULTS:** Logistic regression yielded the following equation to predict the probability of developing NAFLD: $\text{Logit} = -22.5176 + 0.0918(\text{RSBP}) + 0.2154(\text{BMI}) + 0.0065(\text{TG}) + 0.0161(\text{VAT}) + 1.830(\text{HTNMED})$ ($R^2 = 0.4655$, $p < 0.001$). Of the predictors, the ORs from largest to smallest were 6.235, 1.240, 1.096, 1.016, and 1.002 for HTNMED, BMI, RSBP, VAT, and TG, respectively. **CONCLUSION:** Using RSBP, BMI, VAT, TG, and HTNMED as predictors, this study demonstrates that the probability of developing NAFLD in Texas firefighters can be reasonably predicted. This regression model and individual predictors may be used by health practitioners as a cost-effective screening tool to identify those at higher risk for NAFLD.