Association of the SaFETy Score with Self-Reported Firearm Violence Among Young Adults Presenting to the Emergency Departments in Three Cities: A Cross-Sectional Study

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Firearm injuries are the leading cause of death among adolescents and young adults. Currently, the only clinical screening tool specific to firearm violence is the SaFETy score. The SaFETy score was developed in a single-site study as a ten-point scale based on four screening items: fighting frequency, friend weapon carrying, neighborhood gunfire and received firearm threats. The **S**creening to **P**redict Young **A**dults at **R**is**k** for Firearm Violence (SPARK) project is a longitudinal prospective study aimed at validating the SaFETy score in its ability to predict future firearm violence among young adults. This study is an analysis of the project's baseline data to estimate the association between the SaFETy score and past 6-month self-reported firearm violence.

The SPARK project surveyed English-speaking patients, aged 18-24, presenting to the ED at Level-1 trauma centers in Philadelphia, Seattle, and Flint. Patients were excluded if they required resuscitation, intensive psychosocial services (e.g., sexual assault, suicidal ideation) or were in police custody. Past 6-month self-reported firearm violence was assessed with a binary measure of any versus none. Participants were contrasted within derived risk strata (SaFETy = 0, 1-5, 6+) on demographics, ED utilization, self-reported firearm violence and recruitment site. An adjusted logistic regression was used to generate a ROC curve relating the SaFETy score to self-reported firearm violence.

Across sites,1,506 young adults completed the baseline survey. The firearm violence outcome was available among 1,483 participants, with 87 (5.9%) reporting positively. The AUROC relating the SaFETy score to firearm violence is 0.88 (95% CI: [0.84,0.92]. After adjustment, those with SaFETy = 1-5 and 6 showed 7.7% and 26.2%, respectively, higher risk of past 6-month firearm violence than those with SaFETy = 0. Participants from the Seattle site showed a 4% higher risk.

The SaFETy score demonstrated strong discriminatory power with a steep risk gradient across derived risk strata (0, 1-5, 6+), which remained after covariate adjustment. Though prospective validation – a primary aim of the ongoing study – is required, these preliminary results across multiple sites provide compelling evidence of its generalizability. Suggesting the SaFETy score may be useful in informing future interventions providing preventative resources.