BACKGROUND AND OBJECTIVES

Acoustic gunshot detection (AGD) was developed to better localize firearm discharges, with accuracy to within 40 feet. Underreporting of shots fired is a well-documented issue in areas of high crime. Use of AGD reportedly leads to quicker police response times, increased arrests, and reductions in violent crime after deployment; however, the literature fails to support these claims.

The ShotSpotter system for AGD was installed in Greenville, NC in February 2018 in the area local police identified as having the highest violent crime rate. The purpose of this study was to determine the impact of the AGD system following deployment.

METHODS

A 2-year lead and lag period surrounding the February 2018 installation was selected as the study period. An additional data set from March 2020 to September 2021 was selected to evaluate the impact of the SARS-CoV2 pandemic. Data analysis included police calls for shots fired, calls for violent crime, aggravated assaults, and weapons violations occurring within the city of Greenville; and firearm injuries evaluated at Vidant Medical Center. Data points were gathered from the National Trauma Database, Greenville Police dispatch, and Greenville Fire & Rescue dispatch. Incidents were identified by address and coded to be within the deployment perimeter or a control area.

RESULTS

Greenville Police saw a 54% increase in shots fired dispatches following deployment (OR=1.879, 95% CI: 1.557, 2.269). The AGD system resulted in a 50% reduction of gunshot victims located within the deployment area and an absolute risk reduction of 25% (CI: -1.00, 51.54). There was no significant change in aggravated assaults or weapons charges. There was no significant change in any variable within the control area.

CONCLUSIONS

Deployment of the AGD system was associated with a trend towards reduction but did not reach significance. An increase in dispatches for shots fired suggests a high rate of under-reporting prior to deployment. Firearm injuries were not displaced to areas outside the deployment zone, and may support a “hot spot” policing policy. Nationwide increases in gun violence may be a confounder, and missing location data is a significant limitation. Future studies will focus on patient outcomes following firearm injury with AGD in place that may be associated with faster police and EMS response times.

REFERENCES

4. Mares, D, Blackburn, E. Evaluating the effectiveness of an acoustic gunshot location system in St. Louis, MO. Policing (2012)

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