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**Contact: CARTER COYLE**  
843-412-8976 | [coylec@musc.edu](mailto:coylec@musc.edu)

## **Las Vegas mass shooting survivors continue to struggle with major depression, PTSD**

### **MUSC, Boston University study emphasizes critical need of continued mental health support after mass violence incidents**

**LAS VEGAS, NV (Tuesday, April 2, 2024)** - Years after the [October 1, 2017](#), Route 91 Harvest Music Festival in Las Vegas, when a gunman killed 60 people (58 died in the immediate aftermath and two later died from sustained injuries) and physically injured 867 more, witnesses and survivors of the tragic incident still struggle with their mental health. These challenges are emphasized in a new study led by Boston University School of Public Health (BUSPH) and the Medical University of South Carolina (MUSC).

[Published in JAMA Network Open](#), the study found that nearly half of the Las Vegas concertgoers surveyed in 2021 reported that they had experienced major depressive episodes within the past year. More than 63% said they had experienced post-traumatic stress disorder (PTSD) during the same time period.

Findings underscore the critical need for sustained mental health support for people who experience a mass violence incident. As the gun violence crisis continues to affect every corner of the United States—the number of mass shootings are still on the rise and total gun deaths have nearly quadrupled since 2014—the number of people who need these services will continue to grow.

“Our findings reveal the long-lasting impact of gun violence on witnesses and survivors, with many still grappling with severe mental health issues years after the Las Vegas shooting,” said [Mohammed Abba-Aji](#), DrPH, first author on the paper and research fellow in the Department of Epidemiology at BUSPH. “This underscores the unique and ongoing challenge America faces with mass violence and its aftermath. This crisis calls for a national response to not only address but to also prevent the enduring trauma inflicted on our communities.”

Abba-Aji and [Dean Kilpatrick](#), Ph.D., Distinguished University Professor at MUSC, worked with colleagues to gather survey data on mental health outcomes among witnesses and survivors of the shooting who were selected from a list of people eligible to receive services from the Vegas Strong Resiliency Center, funded by the U.S. Department of Justice Office for Victims of Crime (OVC). That resiliency center has since been renamed the [Resiliency & Justice Center](#) and designated as Nevada’s statewide victim assistance center to support all survivors of crime, emergency responders and those impacted by mass violence incidents such as Route 91 and the recent shooting at the University of Nevada, Las Vegas on December 6, 2023. For the study,

witnesses were defined as those who were present at the scene and/or sustained physical injuries, and survivors included family members or friends of people who were physically injured or killed.

Among the 177 witnesses and survivors who responded to the survey, 32.7% said they were physically injured during the shooting and 49.7% said they had received little social support from family and friends during the six months prior to the survey. Those who were physically injured had a 30% higher risk of experiencing a major depressive episode or PTSD compared with concertgoers who were not injured. Similarly, those who received inadequate social support had roughly a 50% higher risk of experiencing a major depressive episode or PTSD compared with those who received adequate social support.

“The fact that such a high percentage of these mass violence victims still had PTSD and depression four years later is disturbing and demonstrates a continuing need for effective, trauma-informed mental health services,” said Kilpatrick, principal investigator on the project. “There is also a need for larger studies with longer follow-up of these survivors to see if these problems persist.”

Other studies have documented these mental health conditions following mass violence incidents, but the prevalence of both major depression and PTSD prevalence appeared substantially higher among the Vegas shooting witnesses and survivors than among victims of other mass shootings.

“Our study adds to the evidence around the devastating societal impact of mass shootings and the need to advocate for policies to prevent them,” said [Salma Abdalla](#), DrPH, study co-author and assistant professor of global health at BUSPH. “Moreover, the findings underline the necessity for ongoing mental health care, especially among people who experience physical injuries and lack of social support. The results highlight the urgent need for our health systems to prioritize long-term care strategies for trauma survivors, ensuring they receive the necessary support to effectively navigate their recovery journeys.”

Study co-author [Angie Moreland](#), Ph.D., is also the co-director of the National Mass Violence Center (NMVC) at MUSC, funded by the OVC. She said there are a variety of long-term support strategies that communities affected by mass violence events can implement to identify and treat mental health concerns as they arise. “The results of this study highlight the importance of work we are doing at NMVC to help communities prepare for mass violence incidents and make sure victims and survivors have access to first-rate information and services when mass violence happens.”

The [NMVC offers a variety of resources for victims and survivors](#), community leaders and clinicians to guide mass violence incident preparedness, response and resilience efforts.

The Resiliency & Justice Center remains dedicated to supporting everyone who has been affected by the Las Vegas shooting, even if they do not live in Nevada. Managed by Legal Aid Center of Southern Nevada, their advocates and community partners connect individuals to behavioral health services, support groups, legal assistance, integrative services, peer support and other resources to foster healing and support.

“We’re thankful that our community’s perspectives were included in this important study highlighting the ongoing needs of mass violence survivors and others impacted,” said Tennille Pereira, Director of the Resiliency & Justice Center and Chairwoman of the 1 October Memorial Committee. “We know firsthand the devastation of mass violence, and we’ve worked diligently over the past six and a half years to ensure our survivors have a permanent resource at the Resiliency & Justice Center. The center is committed to continuing the work that grew out Vegas Strong, and this study will help us foster community-wide healing.”

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## **About MUSC**

Founded in 1824 in Charleston, MUSC is the state's only comprehensive academic health system, with a unique mission to preserve and optimize human life in South Carolina through education, research and patient care. Each year, MUSC educates more than 3,200 students in six colleges – Dental Medicine, Graduate Studies, Health Professions, Medicine, Nursing and Pharmacy – and trains more than 900 residents and fellows in its health system. MUSC brought in more than \$300 million in research funds in fiscal year 2023, leading the state overall in research funding. MUSC also leads the state in federal and National Institutes of Health funding. For information on academic programs, visit [musc.edu](https://www.musc.edu).

As the health care system of the Medical University of South Carolina, MUSC Health is dedicated to delivering the highest-quality and safest patient care while educating and training generations of outstanding health care providers and leaders to serve the people of South Carolina and beyond. Patient care is provided at 16 hospitals (includes owned or governing interest), with approximately 2,700 beds and four additional hospital locations in development, more than 350 telehealth sites and nearly 750 care locations situated in all regions of South Carolina. In 2023, for the ninth consecutive year, U.S. News & World Report named MUSC Health University Medical Center in Charleston the No. 1 hospital in South Carolina. To learn more about clinical patient services, visit [muschealth.org](https://www.muschealth.org).

MUSC has a total enterprise annual operating budget of \$5.9 billion. The 31,000 MUSC family members include world-class faculty, physicians, specialty providers, scientists, students, contract employees, affiliates and care team members who deliver groundbreaking education, research, and patient care.

## **About Boston University School of Public Health**

Founded in 1976, Boston University School of Public Health is one of the top ten ranked schools of public health in the world. It offers master's- and doctoral-level education in public health. The faculty in six departments conduct policy-changing public health research around the world, with the mission of improving the health of populations—especially the disadvantaged, underserved, and vulnerable—locally and globally.