Firearm Violence and Health in Policymaker Discourse: Mixed Methods Social Media Analysis

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Background

Since 2019, firearm violence has remained the leading cause of death for US children and adolescents aged 1-19 years. This crisis has spurred action from policymakers, health professionals, and advocates. However, political polarization has contributed to divergent views on the causes and appropriate responses to firearm violence. Communication by elected officials, especially on social media, plays a critical role in shaping public opinion and policy agendas. Understanding how state policymakers discuss firearm violence, including the use of causal blame, calls to action, and health-related narratives, can inform more effective public health strategies.

Objective

This study aimed to examine how Pennsylvania state legislators discuss firearms and firearm violence on social media and assess the extent to which their messaging aligns with public health perspectives.

Methods

We conducted a 2-phase mixed methods analysis of X (formerly known as Twitter; X Corp) posts by Pennsylvania state legislators from May 27, 2017, to July 26, 2022. Posts were grouped into 3 time periods surrounding the Tree of Life Synagogue mass shooting in Pittsburgh. Using a Boolean search strategy, we identified 4573 posts related to firearms and firearm violence. After removing reposts and non-English content, we randomly sampled 1491 (32.6%) original posts authored by 152 unique legislators. Posts were coded using a structured codebook based on the Multiple Streams Framework to capture rhetorical framing, causal blame, and policy content. Interrater reliability was high (Holsti coefficient >0.8). We used chi-square tests and multivariable logistic regression to assess associations between rhetorical elements and policy mentions, adjusting for time period.

Results

Mass shootings were the most frequently referenced category of firearm violence, peaking after the Tree of Life shooting (22/43, 51% vs 91/118, 77.1% vs 140/220, 63.6%; P=.004), while firearm suicide was rarely discussed. Posts using advocacy frames were nearly 5 times more likely to mention policy (adjusted odds ratio [aOR] 4.67, 95% CI 3.55-6.16), whereas those referencing mass shootings (aOR 0.54, 95% CI 0.37-0.77) or emotional appeals (aOR 0.53, 95% CI 0.40-0.69) were significantly less likely to do so. Most posts used general advocacy (aOR 2.97, 95% CI 2.13-4.13) and vague blame (aOR 8.26, 95% CI 6.02-11.35), resulting in nonspecific policy suggestions. Posts that attributed blame to firearm access were strongly associated with specific policy proposals (aOR 6.37, 95% CI 4.29-9.47) and inversely associated with general policy mentions (aOR 0.26, 95% CI 0.17-0.42). Only 9.4% (133/1422) of posts used health frames; when present, they more often referenced physical consequences (58/133, 43.6% vs 216/1358, 15.9%; P<.001).

Conclusions

Pennsylvania legislators primarily focused on mass shootings and relied on emotional or symbolic language without proposing specific policies. Health frames were rare and typically focused on consequences rather than prevention. Findings highlight an opportunity to support policymakers with health-informed messaging strategies to promote actionable firearm violence prevention policies, particularly those addressing prevention.

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Authors: Ashok VA, Vervilles WJK, Kellom KS, Chatterjee A, Ntigbu I, Boms O, Szabo A, Fein JA, Richmond TS, Purtle J, Kearney MD, Meisel ZF