Research Square

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Prevention Messaging Concerning Safe Storage of Firearms in Media Reports of Pediatric Unintentional Firearm Deaths.

Bart Hammig (bhammig@uark.edu)
University of Arkansas Fayetteville: University of Arkansas https://orcid.org/0000-0001-7352-0910
Abigail Bordelon
University of Arkansas Fayetteville: University of Arkansas
Corinne Chandler
University of Arkansas Fayetteville: University of Arkansas

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Abstract

Background: To examine the use of prevention messaging on the safe storage of firearms among media outlets when reporting on unintentional firearm deaths among children aged 0-11.

Methods: The Gun Violence Archive collects information from media sources regarding firearm injuries and deaths. We analyzed data from 2021-2022 to analyze prevention messaging incorporated into the media reports. We then examined if media reporting of events that occurred in States with CAP laws had a higher likelihood of including prevention messaging compared to those events occurring in States without CAP laws.

Results: There were 223 deaths reported that were attributed to unintentional firearm discharge among children aged 0-11. Prevention messages were delivered in 61 of the 223 incidents. Specific messages which included the word “lock” when referring to firearm storage were included in 21.9% of all incidents. An analysis examining State CAP laws and the presence of any prevention message per event did not yield any discernable relationship.

Conclusion: Inclusion of prevention messaging stating that firearms should be stored locked and unloaded when reporting on unintentional firearm deaths among children is lacking. When specific prevention messaging was included, the source was often law enforcement. Public health officials may play an important role in educating the journalistic and law enforcement communities about the inclusion of safe storage messages when reporting on firearm deaths.

Introduction

Firearm injury is a major public health problem in the United States, accounting for more than 45,000 deaths annually. In 2020 and 2021, firearms surpassed motor vehicle crashes as the leading cause of death for children, youth and young adults aged 0-24[1]. While the rise in firearm deaths among adolescents and young adults is largely due to suicide and homicide, deaths among younger age groups are most commonly due to unintentional discharge of a firearm.[2,3] The number of children killed by unintentional firearm discharges is difficult to quantify as vital statistics data largely misclassify these events as homicide, resulting in a pronounced undercount of cases. As such, trends in the number of pediatric unintentional deaths are difficult to quantify, but likely result in approximately 110 deaths per year.[2]

The number of guns sold in the U.S. has doubled over the past 20 years, with sharp increase in sales since 2019. During the COVID 19 pandemic, one fifth of U.S. households purchased guns, with nearly 60 million guns purchased between 2020 and 2022.[4] A rise in gun sales and the resultant increase in the number of guns in homes presents a public health concern, as most common antecedent event associated with unintentional childhood deaths caused by firearms is a child playing with a gun that was improperly stored in a home[1-3] To prevent unintentional firearm deaths among the young pediatric

population, gun owners are recommended to adhere to appropriate firearm storage practices and/or regulations. The Center's for Disease Control and Prevention has emphasized that "putting a firearm out of sight or out of reach is not safe storage and not enough to prevent use by children or unauthorized adults.[5]" The American Academy of Pediatrics (AAP)[6] and The National Shooting Sports Foundations ChildSafe project[7] both take similar harm reduction approaches to the storing of firearms. Specifically, the AAP recommends in households that contain firearms, the firearm should be stored locked and unloaded, with the ammunition also locked and stored separately from the firearm[6]. Some states have implemented laws to regulate firearm storage within homes in an effort to make firearms less accessible to children and adolescents. The extent of child access prevention (CAP) laws vary by state and may influence the extent of pediatric and adolescent firearm deaths and injuries in each state, though evidence is mixed.[8-10] Evidence does suggest that States with strong CAP laws (those that impose criminal liability charges for adults when a child obtains a firearm in their possession due to improper storage or negligence) may be an effective measure to reduce unintentional firearm injuries.[9] However, with regard to behavior, findings also suggest that CAP laws have not resulted in a change in storage practices among gun owners who live in States with CAP laws. Moreover, many gun owners were not aware of their States CAP laws.[10]

Parents often perceive that children will not handle a firearm if found, and therefore underestimate the risk.[11,12] The most recent data indicates that approximately 50% of all gun owners reported storing their guns in some sort of safe storage practice that included a lock, such as a gun safe or trigger lock.[13] In addition to CAP laws, other factors have been examined that may influence the utilization of safe storage practices. These include gun safety training courses that promote safe storage[13], and anticipatory guidance by Pediatricians,[1] both of which have been shown to improve safe storage practices. Furthermore, the source of the information about safe storage practices has been shown to be of pertinent concern to gun owners, with law enforcement, hunting organizations, military personnel and the National Rifle Association perceived to be the most credible sources concerning safe storage practices.[13] While safe storage recommendations may be delivered during gun safety training courses or anticipatory guidance from pediatricians, it remains that almost half of all gun owners do not safely store their firearms and 39% of gun owners do not undergo safety training.[14] Moreover, pediatricians provide firearms safety counseling in only 1-5% of all well child visits, and the majority do not inquire about firearm safety with their patients.[15] To compound the issue, States are increasingly eliminating permits and/or training to legally carry a firearm, and only 9 States require gun purchasers to have firearm safety training.[16]

Media outlets that report on firearm injuries and deaths may provide an important role in emphasizing safe storage practices, particularly when unintentional firearm injuries and deaths occur among young children. A tragic event such as the unintentional death of a child from a firearm can serve as a cue to action for others in the community, and it may provide an opportunity for the media to inform the public about specific prevention measures that may reduce the risk of a future fatality. There has been a

scarcity of research on aspects of media reports on injuries during the past 2 decades, particularly concerning the framing of prevention messages. The research that has been conducted has indicated that media outlets are deficient in communicating injury prevention information.[17-20] The most recent study found that the majority of media reports on childhood injury did not contain prevention messaging, and only 20% included clear prevention messages to the public.[18] However, the limited amount of research has shown that prevention messaging through media outlets has led to changes in injury prevention behavior. For example, Bergman et.al.,[21] utilized the media to advocate for, and subsequently increase, bicycle helmet use in Seattle. An increase in suicides through suicide contagion, for example, has been shown to be influenced by the how the story was framed in media reports about the death.[22-24] This has lead to the development of journalistic reporting guidelines as an effective way to prevent suicide contagion by incorporating reporting methods that avoid sensationalism and details on the method of suicide, while at the same time including prevention messaging such as access to help line.[22,23]

Successful prevention of firearm injuries and deaths will likely need to employ multifaceted intervention approaches, akin to tobacco prevention in the U.S.[25] Research has indicated that the media can influence public health behaviors, and media outlets who report on firearm related morbidity and mortality have a platform from which they can educate and encourage safe storage practices. Using the Gun Violence Archive (GVA), we sought to examine the use of prevention messaging among media outlets when reporting on unintentional firearm deaths among children aged 0-11. Moreover, we sought to discern whether media reporting incorporated guidelines set forth by the CDC and AAP when reporting on safe storage of firearms. Lastly, we assessed CAPS laws by State and their association with prevention messaging from media outlets.

Methods

The Gun Violence Archive is a web based research and data collection repository that collects information from over 7,500 media sources regarding firearm incidents, including, but not limited to “accidental” deaths, homicide, suicide, and non fatal injuries. While the GVA data is constantly updated per event, we used data from the most recent full calendar years 2021-2022. We examined reports for “accidental deaths (Children Ages 0-11)” to investigate whether or not a prevention message was included in at least one media report associated with each event. Because many events included several media reports, as the story evolved we anecdotally noticed that the first reports typically mentioned a death with little context, and the latter media accounts focused on criminal prosecution. In general, prevention messages, if mentioned, occurred in early media reports and after specifics of the event were known. Therefore, we coded prevention messages using the denominator of each event as opposed to total number of media stories. We developed two definitions of a “prevention message.” First, a broad definition was employed in which we coded “yes” for a prevention message if the media report mentioned keeping guns stored away from children. Examples included “Put it up in a secure area, if you think it’s a secure area, if the child sees it they’re going to try and get it because they’re curious about a handgun”

and "So make sure when you're securing it, don't put it anywhere the child can see it, don't even let the child see you putting wherever you store at it" and "The Milwaukee Police Department would like to remind the public to secure and keep firearms out of the reach of children." We also developed a more specific prevention message definition which coincides with recommendations from the American Academy of Pediatrics[26] and prior research[27] in which the media report included the word "locked" with respect to firearms. Examples of media reports that were coded as meeting this more specific definition included "Children should never have access to a gun and that's why it is imperative to secure your firearm in your home with a gunlock or inside a gun safe," and "When we have weapons in our homes we need to make sure that we have a gun lock and keep these those things out of the sight of our children." While the recommendation from AAP is to keep firearms locked and unloaded, with ammunition locked separately, and this coincides with Everytown for Gun Safety motto of "unload, unlock, and separate[16]", we noted only 1 media report that was this inclusive. Therefore, our more specific definition included the word "lock" in the context of the firearm being secured.

Similar to a prior study using the Gun Violence Archive[28], we first read a sample of 15 gun-related fatalities with a corresponding media report count of 44 news reports in order to develop a classification system for potential variables of interest. We then created a spreadsheet with noted variables and coded all fatal incidents and respective news reports for 2021-2022. Each incident ranged from 1-7 news reports. Variables included in our data set were date of incident, State, number killed, number injured, age of victim, gender of victim, number of children involved in the shooting, whether or not a caregiver was present, inclusion of a prevention message in the media report, whether or not the message was specific or general, the messenger who deliver the message (police, journalist, other), age of shooter if not self inflicted, antecedent to shooting incident (playing with gun or other) and type of firearm. We also coded each State based on Child Access Prevention (CAP) Laws, coded as either no law or having a CAP law. We then examined if media reporting of events that occurred in States with CAP laws had a higher likelihood of prevention messaging compared to those events occurring in States without CAP laws.

Inter-rater reliability for prevention message coding was conducted for those cases originally identified as containing a prevention message. Cases were divided into three portions, with one researcher then re-coding 1/3 of the cases already coded by another researcher. A total of 6 cases originally coded as containing a prevention message were either reversed and subsequently coded as not containing a prevention message or changed from specific to a more general category, for a percent agreement of 90%. This study used publicly available data and was deemed exempt by the Institutional Review Board.

Results

The Gun Violence Archive reported on 265 unintentional deaths due to firearms among children aged 0-11 between 2021 and 2022. An average of 3 news stories were reported per incident, with a range of 1-7 news stories. We excluded 42 incidents from our analyses if the incident characteristics did not relate to safe storage practices [17 cases (e.g. victim killed by a stray bullet from an unknown shooter)], if sufficient information about the incident was lacking (12 cases), or if the victim was older than 11 years

of age (13 cases). The final case count resulted in 223 cases of unintentional deaths in which storage of a firearm could have been a contributing factor to the incident.

The majority of decedents were male (75%) and aged 2-6 years. Most of the incidents occurred in a home or residence, with 4% occurring elsewhere (e.g. child found gun in automobile). Antecedent events included 'playing' with a firearm, representing 74.9% of the events, with 53.4% having been unintentional self-inflicted gunshots. Among the events in which the injury was not self inflicted, the age of the shooter ranged from 2 to 16+, with the majority being 16 years of age or older. Sixty-three percent of the decedents were aged 2 to 6 years. See Table 1. Among children who died by a self-inflicted gunshot (n = 119), 79.8% were between the ages of 2 and 6 years.

An analysis examining State CAP laws and the presence of any prevention message per event did not yield any discernable relationship. Among those States without CAP laws (N = 33), 25.9% of media stories included a prevention message, and in those States with CAP laws (N = 17), 29.6% of media stories included a prevention message (PChisq = .35, p = .55). See Table 2.

Prevention messages were delivered in 61 of the 223 incidents. Specific messages which included the word "lock" when referring to firearm storage were included in 21.9% of all incidents. Among the events in which a media report included a prevention message, 80.3% included a specific prevention message, while 19.7% included a general prevention message. When prevention messaging was delivered, 82% of the time it was communicated by law enforcement. Lastly, while 56.5% of the firearms used in the event were not reported or unknown by type, 38.1% of the events were caused by a handgun. A caregiver was deemed present in 61.9% of the events, with 26.0% either unknown or not reported.

Discussion

Our core areas of focus for this study were to examine the media coverage of unintentional deaths resulting from firearms among children 0-11 for the years 2021 and 2022 and to examine what, if any, association between a state's CAP laws and rate of unintentional shootings existed. We used the GVA which provides news articles about firearms incidents across the United States..

Coinciding with prior research on injuries,[17-20] we found a lack of prevention messaging attached to the media reports surrounding unintentional firearm deaths among children. Only 49 of the 223 events reported on by the media included a specific prevention message. Given that the majority of deaths had follow-up media coverage, an opportunity to frame prevention messages on safe storage was lost. Many of the articles we examined included a quote from a police officer/ law enforcement agent or referenced a media release from a law enforcement agency, therefore, a logical step that could be taken to provide more comprehensive reporting of unintentional shootings would be to train both journalists and law enforcement officials on how to consistently deliver safe storage messaging when reporting on firearm injuries and deaths. It is routine for police departments to release a statement when a person dies as a result of firearm violence, and incorporating a prevention message could become standard protocol.

Additionally, police officers could be trained to communicate resources that are available in the community to help prevent firearm violence. For example some municipal police departments offer trigger locks and other safety devices that community members can get free of cost.[7] Moreover, more police officers should be made aware that there are programs such as Project Childsafe (https://projectchildsafe.org/) that will provide police departments with free gun locks which they can in turn provide to members of their community.

Law enforcement education is crucial, but ultimately it is largely journalists who are proliferating information about unintentional shootings to the public. A restructuring of how the media reports on unintentional shootings in the pediatric population will not be a panacea, but may have a modest impact and is arguably a quicker step to be taken than reforming legislation. In an effort to increase prevention messaging, journalist could be provided guidance by public health entities on the types of questions that should be asked, and of whom, when reporting on firearm injuries and deaths. Similar to the approach taken for reporting on suicides and mass shootings in an effort to prevent a contagion effect,[29] guidelines for effective prevention messaging could be developed for inclusion of more specific messaging concerning the safe storage of firearms. Providing guidance and reasoning to journalists, media providers, and law enforcement agencies to not refer to unintentional shootings as “accidental” is another step public health officials could embark upon. An overarching theme in the media reports taken from the GVA was that the vast majority of shootings were deemed “accidental.” In fact the GVA itself categorizes these unintentional shootings as “accidental shootings.” While terminology surrounding the use of the term “accident” has a complicated history in the injury field[30,31] we found that the context in which the term was often used connoted an injury that was not preventable (e.g. “ this was just a tragic accident”). Future research on use of the term “accident” versus “unintentional” may consider the source, type of injury, and context in which the term “accident” is used.

We did not find a relationship between the use of prevention messaging in media reports of events that occurred in States with CAP laws compared to States without CAP laws. While reasons for our findings are unclear, it may be that journalists are unware of CAP laws in their respective States, akin to findings that gun owners are often unaware of CAP laws. [10] In States that have strong CAP laws, reminding the public through media reports that CAP laws are in place may serve as additional motivation for gun owners to store firearms appropriately, or may provide an avenue to educate the public about CAP laws.

The juxtaposition of journalism and public health is complex. Public health has often appealed to the media to convey important health information and to broadcast public health messages, especially during public health crises.[32] While a great deal of research has been produced to examine the media’s role during outbreaks, such as the COVID 19 pandemic and Ebola epidemics;[33,34] with the exception suicide reporting guidelines[24], there is a paucity of research or recommendations concerning individual-level events, such as firearm deaths or motor vehicle crashes[35], that may have a broader societal reach. Journalists who specialize in health and medical matters are likely better trained to report on these issues, especially if they affect large populations; however, public health events that affect few

individuals may be more likely to be reported locally and by generalists in the field.[35] This may in turn make the uptake of safe storage recommendations more difficult to invoke.

There are strengths and limitations to the study. The GVA proved to be a relatively rich source of data on child deaths due to firearms. News articles provided greater context that other forms of surveillance data with regard to antecedent events, location of the incident, whether or not the shooting was self-inflicted, (and if not, the age of the shooter), and location of the shooting. All of these provided more depth to the circumstances surrounding the incident which can lend itself to future prevention efforts. Several limitations were also present. There was little to no data provided on the race or ethnicity of the victim or the background of the caregiver. Also, there was little information on the broader environmental context (e.g. crime level of the neighborhood) which may have provided more insight into the circumstances surrounding the shooting and safe storage practices. Also, the type of firearm used was missing in many cases, though based on sales data and the age of the victims, it is likely most were handguns. Since the GVA is not 100% complete in the reporting of unintentional firearm deaths, we could not establish a true mortality rate; however, the GVA likely has a better capture rate and fewer misclassified cases than vital statistics data[2]. Lastly, circumstances for how the child or shooter retrieved the gun were not included in all cases. Those media reports that did include from where the child retrieved the gun indicated that it was accessible and the child found and “played” with the gun. None of the media reports indicated that a child had retrieved a firearm from a locked safe or trigger lock prior to the incident.

Conclusions

In conclusion, the inclusion of prevention messaging stating that firearms should be stored locked and unloaded when reporting on unintentional firearm deaths among children is lacking. When specific prevention messaging was included, it usually came from a law enforcement officer. While it is unclear whether or not inclusion of such messaging by news media would result in an impactful change in storage practices, it may be an important component of a broader campaign to prevent unintentional firearm deaths among children.

Declarations

- Ethics approval and consent to participate
    - This study used publicly available data and was deemed exempt by the Institutional Review Board.
- Consent for publication
    - Not applicable
- Availability of data and material
    - All data are publicly available at https://www.gunviolencearchive.org/
- Competing interests

- The authors declare that they have no competing interests

- Funding
  - none

- Authors' contributions
  - BH developed the idea, protocols, and analyzed the data, wrote the methods and results sections, and edited introduction and discussion sections; AB and CC aided in data analysis, protocol development, writing of introduction and discussion, and approval and editing of final manuscript.

- Acknowledgements
  - none

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Tables

Tables 1 and 2 are available in the Supplementary Files section.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- Table1GVA.docx
- Table2.docx