Firearm Injury in the United States: An Overview of an Evolving Public Health Problem

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Firearm injury is a serious public health problem in the United States. The prevalence varies among different states and age groups. Firearm injuries represent a serious economic burden for the US health care system, costing more than $70 billion annually. The motives for gun purchase and the medical and socioeconomic background of gun owners vary among the US population, depicting the complexity of the problem. The increasing number of firearm-related incidents, including mass shootings in schools, justifies the urge for taking preventive measures in order to decrease the number of gun-related injuries and deaths. These measures entail the contribution of many disciplines within health care, including physicians, medical organizations, and immediate action from social and political parties.

EPIDEMIOLOGY

Firearm injury has long been among the leading causes of preventable death in the US, accounting for up to 6.6% of premature deaths. Recent data show that 67% of homicides, 50% of suicides, 43% of robberies, and 21% of aggravated assaults involve the use of firearms. In general, gunshots account for 30,000 deaths every year and 160 nonfatal injuries every day. In 2011, 88 deaths and 202 nonfatal injuries due to gunshot were noted daily. Firearms are the second leading cause of injury death behind motor vehicle crashes. Over the past 30 years, an average of 32,300 deaths were caused by firearms annually, with the highest rate observed in 1993 (40,000 deaths) and the lowest in 1999 (30,000 deaths). In 2008, firearms resulted in 12,179 homicides and 56,626 nonfatal injuries; in 2011, there were 32,000 firearm deaths and 74,000 nonfatal injuries. In spite of this increase in the crude numbers of firearm-related deaths, homicide by discharge of firearms dropped out of the top 15 causes of death in the US in 2010, ending a 45-year period in which homicides had been among the top causes. Finally, overall mortality (ie, all gun-related deaths) was stable and ranged from 31,224 to 31,672 deaths between 2007 and 2010.

Two national public opinion surveys, conducted by the Department of Health Policy and Management and the Center for Gun Policy and Research at the Johns Hopkins Bloomberg School of Public Health in Baltimore, showed that 33% of respondents have a gun in their home or garage; of these, 22% are gun owners themselves and 11% live in an environment with a gun present. Among gun owners, the type of gun also varies: 71% own a handgun, 62% a shotgun, and 61% a rifle.

Gun injuries do not leave children and youth unaffected. According to the Centers for Disease Control (CDC), in 2005, there were more than 3,000 firearm-related deaths in individuals under 15 years of age, of which 822 were suicides, 1,972 were homicides, and 212 were accidental deaths. Since 1985, firearm death rates have increased in those under the age of 25 and in 2007, a noteworthy 17% of firearm homicide victims were identified as being less than 20 years old. In 2010, guns resulted in 6,750 deaths in individuals ages 1 to 24, with the remarkable rate of 7 deaths per 100,000 in those less than 19 years old. On average, 20 children and adolescents sustain firearm injuries requiring hospitalization every day. According to a study out of Yale and Boston University School of Medicine, 7,391 hospital admissions were due to firearm injuries in children and adolescents younger than 20 years old in 2009. However, there was a decrease in the firearm death rate (from 8/100,000 in 1993 to 3.5/100,000 in 2003) among those under 20 years of age. These numbers are understandable when one considers that guns are present in one-third of households with children and many times, the guns are left unlocked (32% to 43%) and loaded (14% to 30%).

Rural vs urban areas

There is a prevailing misconception that firearm injury is only a problem in urban environments, but this is not
supported by the literature. Rural areas exhibit greater rates of firearm suicide and unintentional injury compared with urban areas, while homicide and assault are more common in urban areas. Specifically, urban counties have double the homicide rates of rural counties. Accounting for these differences in epidemiology, rural and urban counties have similar rates of firearm deaths overall.

Comparison of firearm use and morbidity among states

Firearm usage rates and firearm morbidity and mortality rates vary among states in the US. This variation exists mainly due to the different firearm legislation prevailing in each state. According to a cross-sectional study conducted by Fleegler and colleagues, the stricter the firearm laws are in a state, the lower the rates of firearm deaths will be. Specifically, more intense background checks of gun owners lead not only to decreased firearm fatality rates, but also more infrequent household gun ownership. Massachusetts had the strictest laws, while Utah had minimal regulations, with the expected sequelae in firearm fatality rates. According to data from the WISQARS (Web-based Injury Statistics Query and Reporting System), Utah had an overall mean of 9.8 firearm fatalities (homicides and suicides both included) per 100,000 individuals per year; Massachusetts had an overall mean of 3.4 firearm fatalities per 100,000 individuals per year. According to CDC reports, firearm death rates were the highest in Louisiana, Alaska, Nevada, Mississippi, and Arizona, and the lowest in Hawaii, Massachusetts, Rhode Island, New York, and Connecticut. Firearm suicides were almost always more common than homicides. As far as school-related firearm accidents are concerned, the 5 states with the most frequent events, from the most to the least common, are California (n = 58), Texas (n = 31), Florida (n = 24), New York (n = 21), and Pennsylvania (n = 19).

In another study conducted by the Injury Research Center, the Department of Population Health and the Department of Family and Community Medicine from the Medical College of Wisconsin, in Milwaukee, it was observed that states having lower firearm fatality rates are the ones that used local-level (local police or sheriff’s department) background checks. The proposed explanation was that such checks are far more thorough than those at the federal and state level.

Comparison of the United States with the rest of the world

The US is first in overall firearm-related deaths when compared with the world’s other 22 high-income countries, with a death rate almost 8 times higher than in other countries, and almost twice as high as that in the second country in the list. The US has a mortality rate that is 70 times higher than that in high-income countries in Asia. The US, Colombia, South Africa, Brazil, and Mexico have the highest rates of firearm-related death. Only Brazil has gun homicide rates that dramatically exceed those in the US; In 2002, the firearm homicide rates were 21.7/100,000 in Brazil and 10.7/100,000 in the US.

The US has the second highest rate of private gun ownership (Switzerland is higher due to military requirements). Finally, the US leads the list of countries with the highest gun-related death rate in youths and children under 15, and this is true for homicides, suicides, and unintentional deaths. In the US, firearm-related death rates in children are 12 times higher compared with those in 25 industrialized countries combined.

PUBLIC HEALTH IMPACT OF FIREARM INJURY

Health care importance

Firearm injury typically requires immediate treatment at a trauma center. Intentional gunshots have a great tendency (>50%) to involve the region of the head and neck, often being fatal. On the contrary, unintentional gunshots are usually (>70%) in the extremities, where prompt treatment is potentially lifesaving. The length of hospitalization of firearm injury patients is approximately 3 days for trauma patients with ≤4 gunshot wounds and approximately 8 days for patients with ≥5 gunshot wounds or ≥3 affected anatomic regions.

Nonfatal injuries, unintentional injury, death, and costs

Unintentional firearm deaths predominate in those under the age of 20 (16%), and 14% of all firearm death in children below 15 years old are caused by unintentional gun injuries. Nonfatal firearm injuries exceed the number of firearm deaths. The most serious disabilities can range from amputations to spinal cord injuries, resulting in an impaired quality of life and independence, which subsequently lead to increased cost to society. According to the CDC, the US Department of the Treasury, and the National Institutes of Health Office of the Budget reported data, the societal cost of firearm injury ranks eighth in the US government expenditure list of 2010, with a cost of $174.1 billion. If work loss, emergency transport, police service, criminal justice, insurance claims processing, employment cost, lost quality of life, lost US government tax revenue, medical care, and mental health services are taken into consideration, the cost of caring for
firearm-related victims was 3 times higher than the expenditures for the US Department of Homeland Security.19

**Psychological impact**
A survey published after the mass shooting in 2007 at Virginia Tech demonstrated that all female victims had developed post-traumatic stress disorder (PTSD) within 2 months after the event.20 Symptoms persisted at 6 months in 25% of patients.20 Loss of resources after such mass shooting events plays a major role in predicting whether victims will develop post-traumatic stress disorder and if they will be able to adjust back to the same rhythms of life that they used to live.20,21 Resources may include tangible items (eg, clothing, vehicles) or conditions (eg, employment), and may be interpersonal (eg, affection, intimacy) or intrapersonal (eg, sense of hope).21 Littleton and colleagues21 stated that after the mass shooting at Northern Illinois University, most students witnessing the shooting suffered primarily from loss of motivation to get things done (52%), had trouble sleeping (50%), believed their life was no longer peaceful (47%), and lost their optimism (40%).

**Medical costs**
Firearm injuries represent a serious economic burden for the US health care system, costing more than $70 billion annually, including both costs from medical expenditures and loss of productivity.4 Total costs from all firearm injuries are estimated to be $123 billion (direct costs from injury plus cost of pain, suffering, and lost quality of life).3 In 1994, the cost per injury was estimated to be $17,000, with lifetime costs for all injuries reaching $2.3 billion; acute care costs for living gunshot trauma patients range from $11,023 to $21,324 and lifetime costs per nonfatal injury are $35,367.2,3,22 Acute care costs are insignificant compared with the lifelong medical needs.23,22 Specifically, in 2005, firearm deaths and nonfatal injuries cost $122 million and $599 million from the health care funds, respectively.8 Loss of working hours resulted in an estimated $40.5 billion economic loss.8 Noticeably, government resources cover 40% to 50% of these costs, 18% are covered by private insurance, and 33% by other resources.8 According to a primary research study from Massachusetts General Hospital, approximately 75% of firearm injury-related patients presenting to the emergency department were not insured or covered by Medicare/Medicaid programs, resulting in an increased burden on society.19 Because many victims are unable to pay for their medical expenses and hospitals defer this unpaid debt, the costs burden other patients, resulting in increases in private insurers’ claims.9 Government programs pay for 44% of the cost of hospitalized firearm injury-related patients, private insurers pay for 18%, and the rest is paid by the patients.22

**PSYCHOSOCIAL IMPLICATIONS**

**Motives for gun purchase**
The most common motive for firearm purchase is personal protection.2 Data are lacking as to whether gun ownership decreases or increases the risk of being assaulted, with the odds favoring the latter.2,23 Some have proposed that owning a gun imbues the perception of excessive power, which can lead to potentially dangerous situations, such as over-reacting or entering dangerous environments, that otherwise might be avoided.23 This theory is known as “contagion.”23 Young people tend to exaggerate and overestimate the situation, believing that most of their peers actually carry a gun and are dangerous.24 A belief that may be true is that some of the young urban dwellers, especially those living in large cities, usually carry a gun in order to defend themselves when being threatened or insulted.3,15

Motives could also be completely different based on the type of gun. Short guns (handguns, not rifles or shotguns) are usually purchased for protection; long guns are bought mostly for sporting reasons.25 Other motives for gun ownership that are not commonly presented in the literature include: concomitant drug trafficking (mainly for protection in case “things go wrong”), alcohol abuse, fights over the opposite sex, cultural and religious beliefs, gun club memberships, and racism.11,26

**Medical and socioeconomic background of gun owners**
The average gun owner has been described as a middle-aged man, living in a rural area in the South or Midwest, coming in contact with guns from a young age, and being raised with a “gun mentality.”3,25 The leading cause of death among US black males and the second leading cause of death in US Hispanics is homicide.9 of 10 times being due to firearm injury.15 Previous conviction for crimes or misdemeanors increases the likelihood of involvement in gun violence by a factor of 9.27 Women in the US, although a minority in gun deaths, die at a higher rate when compared with rates in other countries worldwide.9

The question as to whether or not mental illness poses a significant risk for firearm injury has been addressed; mental illness, per se, does not lead to firearm injuries.4 Mentally ill people are not more predisposed to violent behavior compared with mentally healthy ones, but rather, they need to be emotionally provoked or challenged to precede to such actions. For example, usually a big shooting massacre is concluded to be a matter of
<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Deaths, n</th>
<th>Injuries, n</th>
<th>Status of killer</th>
<th>History of mental illness</th>
<th>Criminal background</th>
<th>Cause of death</th>
<th>Previous access to guns / history of using guns</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 17, 2015</td>
<td>Emanuel African Methodist Episcopal Church, Charleston, SC</td>
<td>9</td>
<td>1</td>
<td>Eastover citizen</td>
<td>No</td>
<td>History of arrests, narcotics, racial discrimination</td>
<td>—</td>
<td>No</td>
</tr>
<tr>
<td>October 16, 2013</td>
<td>Headquarters of the Naval Sea Systems Command (NAVSEA), Washington Navy Yard, Southeast Washington, DC</td>
<td>12</td>
<td>3</td>
<td>Former US Navy member</td>
<td>Paranoia and other minor mental illnesses, the Hum (persistent and invasive low-frequency humming, rumbling, or droning noise not audible to all people)</td>
<td>History of felonies and misconduct</td>
<td>Killed by police fire</td>
<td>Yes</td>
</tr>
<tr>
<td>July 20, 2012</td>
<td>Century Movie Theater, Aurora, CO</td>
<td>12</td>
<td>70</td>
<td>Audience member</td>
<td>n/a</td>
<td>No</td>
<td>—</td>
<td>n/a</td>
</tr>
<tr>
<td>April 3, 2009</td>
<td>American Civic Association immigration center, Binghampton, NY</td>
<td>13</td>
<td>4</td>
<td>Former English student</td>
<td>Forgery</td>
<td>Committed suicide</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>October 16, 1991</td>
<td>Restaurant, Killeen, TX</td>
<td>23</td>
<td>27</td>
<td>Killeen citizen</td>
<td>No</td>
<td>No</td>
<td>Committed suicide</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*Previous access to guns through family or friends or membership in gun clubs.

*Incidents of illegal behavior using guns.
revenge, anger, and long-term planning, and access to guns.\textsuperscript{4,9} However, mental illness is strongly associated with increased risk of suicide, which accounts for more than half of US firearms-related deaths.\textsuperscript{28,29}

**Rehabilitation of gunshot victims—psychological impact**

Interestingly, social media appears to be playing a role in victim rehabilitation after school shootings. A study after the Virginia Tech incident demonstrated that victims turned to the internet, and specifically, social networks such as Facebook, to help facilitate their rehabilitation.\textsuperscript{30} Although there is no consensus in the literature that such activities improve the victims’ psychological status, they constitute a means of expressing their feelings.\textsuperscript{30} In this context, social media may meliorate the psychological aftermath through organized rehabilitation efforts and initiatives.

**IS THE URGE FOR TAKING PREVENTIVE MEASURES JUSTIFIED?**

Table 1 and Figure 1 summarize all the mass shootings with more than 9 victims occupying the mass media from 1990 until today. Table 2 and Figure 2 summarize the mass school shootings (occurring exclusively in the campus of each school) with more than 5 victims occupying the mass media from 1990 until today. The main source of the tables was the comprehensive databases listed in Wikipedia. Additional data were extracted from various sources for each shooting event, as indicated in Tables 1 and 2.

If we sum up all the school shootings that took place across the US in the past 5 years, we will note 8 school shootings in 2010, 10 in 2011, 14 in 2012, 32 in 2013, and 39 shootings in 2014 (up to October 31, 2014). This steady increase in numbers and the big difference between 2012 and 2013 are not enough to justify the urge for taking measures with the aim to prevent mass shootings, especially in the school environment. Contrary to common belief, however, mass shootings are uncommon. Their frequency is not increasing, and they account for only a small fraction of firearm-related deaths and injuries.\textsuperscript{4}

**PREVENTION**

According to the American College of Surgeons (ACS) Statement on Firearm Injuries, published on January...
Table 2. School Shootings from 1990 to 2015 in the United States

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Deaths, n</th>
<th>Injuries, n</th>
<th>Status of killer</th>
<th>History of mental illness</th>
<th>Criminal background</th>
<th>Cause of death</th>
<th>Previous access to guns*/ history of using guns</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 23, 2014</td>
<td>University of California, Santa Barbara, Isla Vista, CA</td>
<td>7</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>December 14, 2012</td>
<td>Sandy Hook Elementary School, Newtown, CT</td>
<td>28</td>
<td>2</td>
<td>Former student</td>
<td>Sensory-integration disorder, Asperger syndrome, obsessive-compulsive disorder</td>
<td>No</td>
<td>Committed suicide</td>
<td>Yes</td>
</tr>
<tr>
<td>April 2, 2012</td>
<td>Oikos University, Oakland, CA</td>
<td>7</td>
<td>3</td>
<td>Former student</td>
<td>Paranoid schizophrenia</td>
<td>Minor felonies</td>
<td>—</td>
<td>No</td>
</tr>
<tr>
<td>April 16, 2007</td>
<td>Virginia Polytechnic Institute and State University, Blacksburg, VA</td>
<td>32</td>
<td>17</td>
<td>Senior student</td>
<td>Severe depression, selective mutism, anxiety disorder</td>
<td>Incidents of aberrant behavior</td>
<td>Committed suicide</td>
<td>Yes</td>
</tr>
<tr>
<td>March 21, 2005</td>
<td>Red Lake Senior High School, Red Lake MN</td>
<td>10</td>
<td>7</td>
<td>Former student</td>
<td>Behavioral issues, depression</td>
<td>No</td>
<td>Committed suicide</td>
<td>Yes</td>
</tr>
<tr>
<td>April 20, 1999</td>
<td>Columbine High School, Columbine, CO</td>
<td>15</td>
<td>21</td>
<td>Senior students</td>
<td>Depression, anger, suicidal thoughts, bullying victims</td>
<td>No</td>
<td>Committed suicide</td>
<td>Yes</td>
</tr>
<tr>
<td>March 24, 1998</td>
<td>Westside Middle School, Craighead County, AR</td>
<td>5</td>
<td>10</td>
<td>Students</td>
<td>Sexual abuse</td>
<td>Incidents of aberrant behavior, sexual abuse</td>
<td>—</td>
<td>Yes</td>
</tr>
<tr>
<td>November 1, 1991</td>
<td>University of Iowa, Iowa City, IA</td>
<td>5</td>
<td>1</td>
<td>Former graduate student</td>
<td>No</td>
<td>No</td>
<td>Committed suicide</td>
<td>No</td>
</tr>
</tbody>
</table>

*Previous access to guns through family or friends or membership in gun clubs.
+Incidents of illegal behavior using guns.
16, 2013, any prevention measures are subject to 5 main directions: counseling and screening by health care professionals; evidence-based research and national firearm injury database creation; programs aimed at improving gun safety and forming a nonviolent culture; legislation banning civilian access to military and law enforcement associated weaponry; and mandatory background checks for firearm purchase. The ACS, along with other physician organizations (American College of Physicians, American Academy of Family Physicians, American Academy of Pediatrics, American College of Emergency Physicians, American Congress of Obstetricians, and Gynecologists, and American Psychiatric Association), and supported by the American Public Health Association and the American Bar Association, has already advocated a multifaceted public health approach to the problem and suggested that the Second Amendment does not preclude taking measures to reduce firearm violence.32,33

Counseling and screening by health care professionals
Prevention of firearm violence is pertinent to many disciplines within health care. Psychiatrists need to invest more time in research to better understand behavioral factors that potentially lead to firearm-related injuries.4 Pediatricians engage in counseling by advising parents owning firearms to take safety measures and encourage discussions with them regarding potential risks.11. Studies have shown that pediatricians support the efforts for restricting guns more than the general population, but they may need more training and expertise to fulfill this great responsibility.14 Social and political organizations usually look to emergency physicians and trauma surgeons to address firearm-related incidents and contribute to a solution by taking the appropriate measures each time, such as informing the public about gun violence, forewarning gun carriers about gun safety, and screening for mental illness.6 The American College of Physicians, which represents US internists and related subspecialists, in addition to advising patients about gun ownership, needs to encourage their members to advocate for legislative measures to reduce gun violence.54 Betz and Wintemute35 proposed that physicians who own guns (13% to 41% among doctors) need to develop “cultural competence” in firearm-related issues and, in a nonjudgmental, respectful, and
empathetic way, provide gun owners and other high risk groups (eg, suicidal patients, children) with proper and relevant counseling.

Evidence-based research and national firearm injury database creation

In 1995, gun rights advocates, having the support of the National Rifle Association (NRA), unsuccessfully required Congress to eliminate the already functioning National Center for Injury Prevention and Control (NCIPC). However, CDC and NIH funding was cut by $2.6 million, leading to decreased funding for gun control-related research. As a result, research regarding firearm injury has become more scarce, leading to the increased number of publications addressing this issue. Physicians were also restricted by federal laws from discussing gun safety issues with their patients.

The HELP network (Handgun Epidemic Lowering Plan) and the DAHI network (Doctors Against Handgun Injury) are 2 organizations that include large medical societies, including the American College of Surgeons, the American College of Physicians, and the American Medical Association. In addition to focusing on educating physicians and discussing new legislations on gun policy, respectively, they could urge their members into more research on this field.

The Children’s Hospital of Philadelphia launched the Violence Prevention Initiative, a program using research protocols to integrate evidence-based ways of firearm injury prevention into everyday practice.

Programs aimed at improving gun safety and forming a nonviolent culture

Exposure to violence in the community and development of a violent behavior are major factors that put individuals at great risk when using firearms. The Firearm and Injury Center at the University of Pennsylvania acknowledges that risks factors for firearm injury can be divided into 2 major categories: gun-related, shooter-related, and environment-related. Gun-related factors entail a gun’s sale, its safe storage, and whether its design makes it easy to use. Attitude and behavior, special incentives, political factors, and psychosocial factors are a few of the important risk factors related to the shooter and the environment.

Another risk factor worth mentioning is gang membership, which primarily concerns young members of society. Members of gangs have reported using a firearm 34% of the time (vs 3.5% of young people who are not gang members). The ability to easily access a gun is a notable risk factor for firearm-related injury, especially in children who familiarize themselves with guns at young ages within their homes. This correlation has a more significant effect than poverty and limited education. Other factors identified are night-time activities or limited guardianship for children; however, these have only a minor impact in increasing the risk of being a victim of a gun-related event. Miller and associates suggest that gun ownership increases the possibility of overall suicide and firearm suicide, but it does not affect the unrelated-with-firearm suicide rates.

Collective efforts to reduce gun carrying through adult mentorship and youth advocacy programs may reduce gang involvement. More research is needed to examine the potential association of media/video games violence with firearm injury.

Teachers, school nurses, parents, police officers, and military personnel could play an important role in decreasing firearm-related tragedy rates by informing children on matters related to firearm usage and subsequent injuries. On the other hand, some believe that it should be avoided because this information could unintentionally expose children to gun usage and lead them to purchasing and using guns.

An encouraging step toward reducing firearm carrying and subsequent injuries and death has been made in Baltimore, where a program has formed according to the standards of a similar program in Chicago known as “CeaseFire.” In summary, “SafeStreets,” as the Baltimore program has been called, sends social workers (sometimes ex-offenders) into action, particularly during evening hours, when most shootings take place, and they interact with young people who are at high risk of carrying a gun and being involved in associated violence. Such social workers build a relationship, discuss, exchange ideas with potential future gun carriers, and try to steer them away from violence. In the context of these programs, possible conflicts between gangs are also solved, and monthly educational events are organized. These programs have been able to demonstrate a post-implementation decrease in firearm-related events.

Finally, gun buyback programs could potentially decrease gun carrying in the population. The Injury Free Coalition for Kids-Worcester (IFCK-W) Goods for Guns buyback in Worcester, MA aims to empty houses of inappropriately stored guns, to educate the public on the relationship between unsafely stored guns in homes and increased gun accidents, and it offers alternatives and solutions. This relatively inexpensive measure resulted in 1,861 guns being collected. In addition, 7,010 people returned their guns (gun buyback) and 75 trigger locks have been distributed per year, resulting in safer storage. This resulted in a significant decrease in firearm injuries and mortality in Worcester County compared with other Massachusetts counties in the last 15 years.
Legislation banning civilian access to military weaponry and mandatory background checks for firearm purchase

Recently, after the Newtown mass shooting, the government published a list of measures that it was willing to take in order to control gun violence, one being extensive background checks for gun owners. Government could keep guns out of the hands of people with a history of violence, drug addicts, previous convicts, and underaged kids and fugitives through extensive background checks.17 Another exploratory study from the University of Wisconsin showed that local-level background checks resulted in a 27% lower firearm suicide rate and a 22% lower firearm homicide rate in adults over 21 years old.17 Another exploratory study from the University of Alabama, showed that background checks for restraining orders and fugitive state led to lower firearm homicide rates, and checks for mental illness, fugitive state, and misdemeanors led to lower firearm suicide rates.42

The government is also contemplating banning rifles and high capacity magazines because these pose a great threat for mass shootings.6,11 Wintemute and Braga35 stressed the control of illegal gun commerce and trafficking in the US, by background checks on retailers and each sale.49 An interesting survey conducted in Baltimore showed that there is little difference in the opinion between NRA and non-NRA members regarding stricter background checks for gun ownership.9

CONCLUSIONS

Firearm injuries are a serious, evolving, public health problem with devastating consequences, especially for young people. The psychosocial implications of firearm injuries and the importance of implementing specific methods of firearm injury prevention are highlighted in this overview. Medical organizations, physicians, social organizations, and politicians should act collectively with the aim to decrease the number of gun-related injuries and deaths.

Author Contributions

Study conception and design: Economopoulos Acquisition of data: Tasigiorgos, Economopoulos Analysis and interpretation of data: Tasigiorgos, Economopoulos, Winfield, Sakran Drafting of manuscript: Tasigiorgos, Economopoulos Critical revision: Tasigiorgos, Economopoulos, Winfield, Sakran

REFERENCES


