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Firearm deaths in Sweden

Epidemiology with emphasis on accidental deaths and prevention

Mensura Junuzovic

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Department of Community Medicine and Rehabilitation, Section of Forensic Medicine
Umeå University

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Author

Mensura Junuzovic

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Abstract

Prevention of firearm deaths and injuries is an important public health issue that may save human lives. The aim of this thesis was to investigate the epidemiology and attributes of accidental firearm fatalities in Sweden, and to provide a basis for further preventive measures. Data were obtained from the database of the National Board of Forensic Medicine, the National Patient Register, the Prescribed Drug Register, the Firearm Register, and from questionnaire responses.

All 48 accidental firearm fatalities that involved hunting in 1983-2008 were investigated (*Paper I*). The victims' mean age was 50 years, 96% were males. During moose hunting, most victims were mistaken for game (41%), whereas during small game hunting, fatalities were mostly related to falls (31%) and improper weapon handling (15%). Hunters' habits and attitudes towards preventive measures and their experience of firearm incidents were investigated through a questionnaire, which was sent to 1,000 hunters (*Paper II*). The response rate was approximately 50%. The mean age of the respondents was 54 years and females accounted for 5%. One quarter of the respondents stated that they had witnessed a firearm incident caused by another hunter, of which more than half suggested that improper handling of the weapon and inappropriate hunting strategies were the main causes of these events.

All 43 accidental non-hunting firearm deaths in Sweden 1983-2012 were investigated (*Paper III*). In 56% of cases, the fatality was caused by another person. Victims were mostly young males (mean age 25 years). The main cause of the incidents was human error. The majority of cases (63%) involved legal firearm. Most victims killed by illegal firearm (85%) were under the influence of alcohol and/or drugs at the time of death. Both the risk of being killed as a result of hunting (*Paper I*) and non-hunting accidental firearm injury (*Paper III*) decreased after the introduction of the mandatory hunter's exam in 1985 ($p < 0.001$).

Firearm deaths in Sweden including 52 accidental fatalities and 3 cases with undetermined manner of death in 1987-2013, as well as 213 suicides and 23 solved homicides in 2012-2013, were studied (*Paper IV*). The number of firearm suicides was positively correlated to the number of licensed firearm owners. Legal firearm use predominated in firearm suicides and accidental deaths, illegal in firearm homicides. The majority of the shooters in accidental deaths and suicides had no registered visits to inpatient care or specialized outpatient care. Less than half (42%) of all suicide victims had had a health care contact due to mental health problems. Physician's mandatory reporting to the police of patients deemed unsuitable for possessing a firearm license did not include any of the suicide victims and the shooters in accidental deaths.

This thesis confirmed that accidental firearm deaths are rare, and indicates that the firearm law changes in 1985 contributed to a decline of such fatalities. Human error was the main "cause" of the fatalities and future prevention measures should target improper weapon handling. Physician's mandatory reporting to the police was suboptimal and barely contributed to the decline of accidental firearm deaths. If streamlined it may, however, represent an important prevention strategy in firearm suicides, claiming most lives among firearm deaths. A significant fraction of non-hunting fatalities, firearm suicides and homicides was associated with illegal firearm use, a fact calling for prevention issues targeting such firearm use.

Keywords

Firearm, fatality, accidental, hunting, non-hunting, suicide, homicide.

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