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Research Paper

Significantly reduced rates of interpersonal violence in an urban Danish population 2003–2021

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ABSTRACT

This study aimed to describe changes in annual incidence rates and the severity of deliberate interpersonal violence based on hospital and forensic data in a Danish urban population 2003–2021. Included in the study were local victims of violence admitted to Odense University Hospital and/or subjected to medico-legal autopsy at the Institute of Forensic Medicine, University of Southern Denmark from 2003 to 2021. Based on population counts, we estimated overall and gender specific annual incidence rates in different age groups. For the 14,788 victims included in the study, the gender-specific incidence rates were 5.7 for males and 2.4 for females per 1000 population/year. The incidence rates decreased almost fourfold for both genders in all age groups. In both gender, the incidence rate of violence involving mild injuries decreased significantly, whereas incidence rate of violence involving severe injuries remained unchanged over the study period. The proportion of superficial lesions decreased and the proportion of wounds, bone fractures, and deep lesions increased. The proportion of victims with injuries from knifes increased from 3.0 to 5.4% in the study period. Overall, 0.3% died from their injuries. The present study showed a significant decreased in the incidence rate of violence based on hospital and forensic data. The decrease involved solely victims with less severe injuries. We recommend studies combining hospital, forensic, and police data.

1. Introduction

Deliberate interpersonal violence is a worldwide leading cause of injury.[1] According to the World Health Organisation, approximately 30,000 die each year in the European region due to interpersonal violence.[1] Interpersonal violence is often subject to debate in the media. Often the public perception of interpersonal violence is that violence has become more frequent and more severe. Compared with many other Western countries, Denmark is considered as a safe country. The overall Danish homicide rate is 1.05 per 100,000 population/year showing a decreasing rate.[2]

In 1993, the Danish government launched a national plan, which aimed to reduce interpersonal violence by focussing on more research and better statistics.[3] Regularly, violence statistics are based on data from the police authorities. Several papers have documented the limitations of these data sources due to high level of non-reporting.[4–7] Therefore, the use of hospital-based data in violence research has been recommended.[6–9]

Previous papers have described the frequency and severity of interpersonal violence in Denmark based on data from the health care system. A previous study from the Odense Municipality based on accident and emergency department (A&E department) data found a significant decrease in the overall annual incidence rate (IR) of violence 1988–1996.[10] Another study from the Odense Municipality based on A&E department and forensic data found a decrease in the IR for males 1991–2002, whereas the IR for females remained unchanged.[11] Furthermore, the study did not support that interpersonal violence has become more severe.[11] The latest study from the Odense Municipality based on A&E department data 1991–2009, found no changes in the IR of weapon-related violence or in the severity.[12] Another Danish study from the city of Aarhus based on A&E department and forensic data comparing 1981-82, 1987-88, and 1993-94 showed a decrease in the overall IR with no change in the severity.[5]

Previous Danish studies are decades old or are limited in timeframe.

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Therefore, newer long-term studies describing the development in the frequency and severity of deliberate interpersonal violence in a Danish population are needed.

The aim of this study is to describe changes in the annual incidence rates and the severity of interpersonal violence based on hospital and forensic data in a Danish urban population 2003–2021.

2. Method

We defined interpersonal violence according to the definition by the World Health Organisation.[1] A victim of interpersonal violence was defined as person with injuries intentionally inflicted by another person or other persons. The population base of this study was the Odense Municipality in Denmark 2003–2021. The municipality is a well-defined area with a single hospital and A&E department, from which a complete registry of data is available. The municipality had a population of 184,308 in 2003 and 207,494 in 2021.[13] Included in the study were all victims of interpersonal violence admitted to the A&E department at Odense University Hospital (OUH) for examination or victims subjected to a medico-legal autopsy at the Institute of Forensic Medicine (IFM), University of Southern Denmark (SDU) 2003–2021. Solely residents of the municipality, at the time of the incident of violence, were included.

From the patient registration system at OUH, data of all treated victims of interpersonal violence were extracted retrospectively. In case of more than one contact for the same incident, only the first contact was included. The patient registration system included self-report information coded according to the NOMESCO classification for external causes of injuries.[14] The registration of patients with injuries from violence requires that patients disclosed the information as being due to assault. The trained staff at the A&E department completed all registrations, with physicians determining the ICD-10 diagnoses, with up to eight diagnoses per patient.

The data from the IFM were extracted through a review of all autopsy reports in the study period. In Denmark, all fatalities due to interpersonal violence undergo a medico-legal autopsy. Data on age, gender, date of violence, time of violence, use of weapon, diagnoses, and mortality were obtained from both the patient registry and the autopsy reports.

Based on mid-year population counts, we estimated annual incidence rates (IRs) stratified by gender. We also estimated gender-specific IRs for three time periods (2003-07, 2010-14, and 2017-21) stratified by age group (0–14, 15–24, 25–39, 40–59, and 60+ years). All IRs were estimated using the Clopper-Pearson method.[15] The IRs were calculated as densities in a dynamic cohort allowing subjects to enter and leave the cohort by migration. Victims were not excluded from the population at risk. All IRs were estimated with 95% confidence intervals (CI). Population counts were extracted from Statistics Denmark.

Changes in the severity of injuries were assessed using an ICD-10 diagnosis-based tool that transforms ICD-10 diagnoses into main types of injuries and body parts.[16] 'Severe injuries' include amputations, bone fractures, joint sprains and strains, all types of soft tissue damage, eye corrosion and burns, and electrical shock. 'Mild injuries' include superficial lacerations, wounds, and being struck by a foreign body (mainly in eyes).[16] Based on mid-year population counts, we estimated annual IRs of severe and mild injuries stratified by gender.

We further analysed changes in time of violence, weekday of violence, referral after initial treatment in the A&E department, weapon use, type of lesions, and body region injured in the three different time periods (2003-07, 2010-14, and 2017-21). The types of lesions were divided into the following categories: superficial lesions, wounds, bone fractures, dislocations/sprains, deep lesions, and other lesions. Deep lesions included lesions in nerves, tendons, blood vessels, and internal organs. Other lesions included burns, poisonings, foreign bodies, and unspecified lesions.

STATA 15 and EpiData Analysis were used for the statistical analyses. P-value <0.05 was considered statistically significant in all statistical calculations.

3. Results

In the study period, 14,788 victims of deliberate interpersonal violence were treated at OUH and/or subjected to a medico-legal autopsy at the IFM. Of these, 30 victims were solely included from the IFM, 14,749 were solely included from the A&E department, and nine were included from both. Overall, 70% (n = 10,357) of victims were males (male/female-ratio 2.3). Median age was 24 years (range 0–93) for males and 27 years (range 0–95) for females (Mann-Whitney, p = 0.000).

The overall annual IR was 4.0 (CI: 3.9–4.1) per 1000 population/year. The gender-specific IR per 1000 population/year was 5.7 (CI: 5.6–5.8) for males and 2.4 (CI: 2.3–2.5) for females. The IR decreased significantly in the study period for both males and females. In males, it decreased three-fold from 9.2 (CI: 8.6–9.8) in 2003 to 2.4 (CI: 2.1–2.7) per 1000 population/year in 2021 (Fig. 1). In females, the IR decreased four-fold from 3.7 (CI: 3.3–4.1) in 2003 to 0.9 (CI: 0.7–1.1) per 1000 population/year in 2021.

In males, the highest IR was 23.4 per 1000 population/year for age group 15–24 years, compared with IRs of 3.9, 3.6, 1.8, and 0.8 for age groups 40–49, 25–39, 60+, and 0–14 years, respectively. In females, the highest IR was 8.6 per 1000 population/year for age group 15–24 years, compared with IRs of 2.2, 1.5, 0.8, and 0.5 for age groups 40–49, 25–39, 60+, and 0–14 years, respectively. The annual gender-specific IR stratified by age group decreased significantly in all age groups over the study period (Table 1). Comparing 2003-07 with 2017–21, the IR decreased almost fourfold for males in all age groups, with the largest decrease for males aged 15–24 years, i.e., from 42.2 (CI: 40.6–43.8) in 2003-07 to 8.3 (CI: 7.7–8.9) in 2017–21. In females, the IR decreased three-fold or more in all age groups, with the largest decrease for females aged 0–14 years, i.e., from 1.6 (CI: 1.4–1.9) in 2003-07 to 0.3 (CI: 0.1–0.5) in 2017–21 (Table 1).

Overall, 9.5% of male victims and 7.4% of female victims had injuries defined as severe. The proportion of severe injuries increased in the study period from 7.0% to 12.0% in males and from 9.1% to 14.6% in females (non-parametric trend test: p = 0.000 and p = 0.024). The IRs of violence involving severe injuries were 0.55 (CI: 0.51–0.58) in males and 0.17 (CI: 0.15–0.19) in females per 1000 population/years. For both genders, the IR of violence involving severe injuries remained unchanged over the study period (Fig. 2). The IR of violence involving mild injuries decreased significantly in both genders, i.e., from 8.5 (CI: 8.0–9.2) in 2003 to 2.0 (CI: 1.7–2.3) in 2021 for males, and from 3.4 (CI: 3.0–3.8) in 2003 to 0.7 (CI: 0.5–0.9) in 2021 for females per 1000 population/years (Fig. 3).

The violence incidents occurred most frequently on Friday-Sunday (62.3%), and 43.5% occurred during the night (22:00–05:59) (Table 2). The proportion of violence in the weekend decreased in the study period (Table 2), as did the proportion of nighttime violence. Most patients (80.5%) were treated in the A&E department without further follow-up, but 6.8% were hospitalised, and 0.2% died due to their injuries. The proportion of victims requiring follow-up after initial treatment in the A&E department did not change during the study period. The proportion of violence involving knives increased while the use of drinking glass/bottles decreased.

A total of 24,481 lesions were registered for the 14,788 victims, corresponding to 1.7 lesions per victim. Overall, 9193 (62.2%) had one lesion, 3094 (20.9%) had two lesions, 1469 (9.9%) had three lesions, 632 (4.3%) had four lesions, 259 (1.8%) had five lesions, 117 (0.8%) had six lesions, and 24 (0.2%) had seven lesions. Most lesions were superficial lesions (67.2%) or wounds (20.3%). Bone fractures, dislocations, deep lesions, and other lesions accounted for 6.9%, 3.6%, 1.1%, and 1.6%. While the proportion of superficial lesions decreased in the study period, the proportion of wounds, bone fractures, and deep lesions increased (Table 3). Most lesions were in the head/neck region (61.1%),

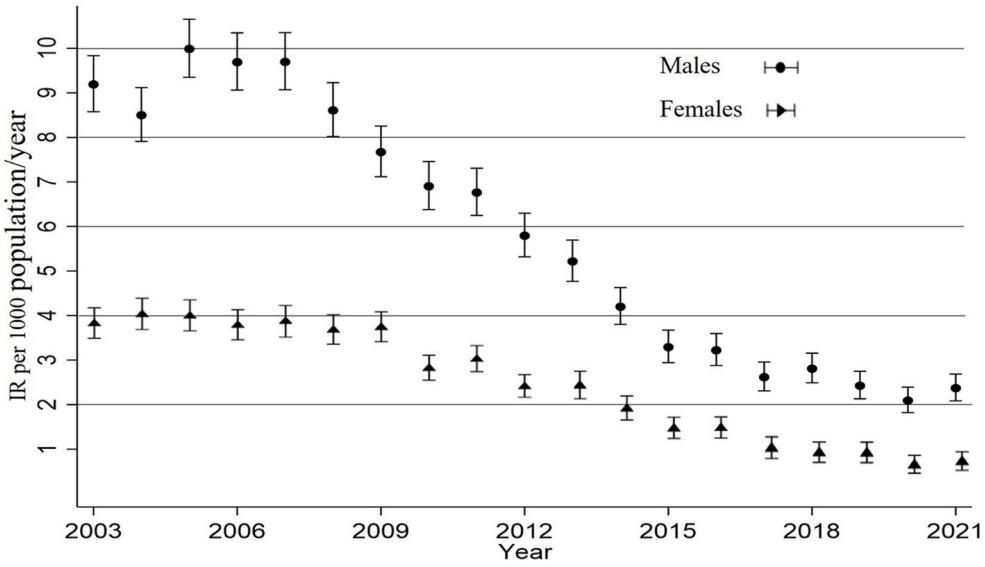

Fig. 1. Gender-specific annual incidence rate (IR) per 1000 population/year with 95% CI for victims of deliberate interpersonal violence 2003-2021in an urban Danish population.

Table 1
Gender-specific incidence rate (IR) with 95% CI per 1000 population/year of deliberate interpersonal violence stratified by age group in the three time periods 2003–2007, 2010–2014, and 2017–2021.

Age group	2003–2007	2010–2014	2017–2021
	IR (CI)	IR (CI)	IR (CI)
Males			
0–14 years	3.7 (3.3–4.1)	2.4 (2.1–2.7)	0.9 (0.7–1.1)
15–24 years	42.2 (40.6–43.8)	22.6 (21.6–23.7)	8.3 (7.7–8.9)
25–39 years	5.2 (5.0–6.1)	4.0 (3.6–4.4)	1.5 (1.3–1.8)
40–59 years	6.0 (5.6–6.5)	3.6 (3.3–4.0)	2.2 (1.9–2.5)
60- years	1.2 (0.9–1.4)	0.7 (0.5–0.9)	0.5 (0.4–0.7)
Females			
0–14 years	1.6 (1.4–1.9)	0.6 (0.5–0.9)	0.3 (0.2–0.5)
15–24 years	15.3 (14.4–16.3)	8.6 (8.0–9.3)	3.21 (2.8–3.6)
25–39 years	2.3 (2.0–2.6)	1.7 (1.5–2.0)	0.5 (0.4–0.7)
40–59 years	3.4 (3.1–3.8)	1.9 (1.7–2.2)	1.1 (0.9–1.3)
60- years	0.6 (0.5–0.7)	0.4 (0.3–0.5)	0.2 (0.1–0.3)

upper limbs (20.7%) and thorax/abdomen (9.2%). Lower limbs and other regions accounted for 7.7% and 2.2% of the lesions. While the proportion of lesions in the head/neck decreased in the study period, the proportion of lesions in the upper limbs increased (Table 3).

Thirty-nine victims died corresponding to an overall mortality rate of 1.1 per 100,000 population/year. The median age was 37 years (range 5–90), 20 were males and 19 were females. Overall, 25 of the incidents occurred in domestic areas. No weapons were involved in 22 incidents, whereas sex victims were gunshot, nine victims were injured by sharp force, and two victims were injured by blunt force. Nineteen victims had lesions in the head, 15 had lesions in the thorax, and four had internal lesions in the abdomen. In three victims, the injured body region was unspecified. Thirty-one victims had deep lesions and 11 victims died due to asphyxia. In three victims, the types of lesions were unspecified.

4. Discussion

Using data from an A&E department and a forensic institute, this study showed a significant decrease in the annual IR of deliberate interpersonal violence in an urban Danish population from 2003 to 2021. We found a significant decrease in IRs for both males and females in all age groups.

The gender-specific IR was 5.7 for males and 2.4 for females per 1000 population/year. This compares with IRs of 9.9 for males and 3.4 for females per 1000 population/years in a previous study from Odense Municipality from 1991 to 2002.[11] However, the gender-specific IRs for 2002 (9.8 and 3.4 per 1000 population/years) from that study correspond to the IRs for 2003 in our study (9.2 and 3.7 per 1000 population/years). In our study, the highest IRs for both males and females were in age groups 18–24 and 25–49 years. Other studies have shown the highest IRs in adolescents and young adults.[5,11,12]

The IR decreased for males threefold from 9.2 to 2.4 per 1000 population/year during the study period, and that for females decreased fourfold from 3.7 to 0.9 per 1000 population/year. A previous study from Odense Municipality 1991–2002 found no significant change in the gender specific IR in the study period.[11] In another Danish study based on A&E department data from Aarhus the overall IR decreased from 6.5 to 4.6 per 1000 population/year comparing 1981-82, 1987-88, 1993-94, and 1999–2000.[5] The decrease in IR was particular among the 15–24 years old males. The extent of violence against women remained unchanged in the study period.[5] Similarly, data from the Norwegian Injury Sample showed a significant decrease in overall IR of violence in four Norwegian cities from 1990 to 1999.[17] A prospective study from 58 A&E departments in England and Wales 1995–2000 showed no significant change in the IR of violence except for girls aged 11–17 years, where the IR increased.[18]

Most violence incidents occurred in the weekends and at night, in line with other studies using A&E department data.[5,18,19] Similarly, other studies using A&E department data have shown similar distributions of injured body regions and lesion types.[11,19–27] We found that 11% of violence incidents involved use of weapons, similar to previous Scandinavian studies.[9,11,19,26] In our study, the proportion of victims with lesions from glass bottles decreased significantly in the study period, possibly due to bars and pubs changing from glass to plastic bottles and drinking glasses.[28]

We registered only 1.7 lesions per victim. This is surprising as victims of interpersonal violence often have multiple lesions. I our study, we had a large proportion of victims with only one lesion, which may explain the low number of lesions per victim. All lesions were examined and diagnosed by trained physicians. We have no information about the completeness of the detection of the lesions in the A&E department. Previous A&E department studies have shown similar results.[11,21,27]

The IRs of victims with severe injuries did not change in the study period while IRs of victims with mild injuries decreased fourfold for both males and females, indicating that the significant decrease in overall IR

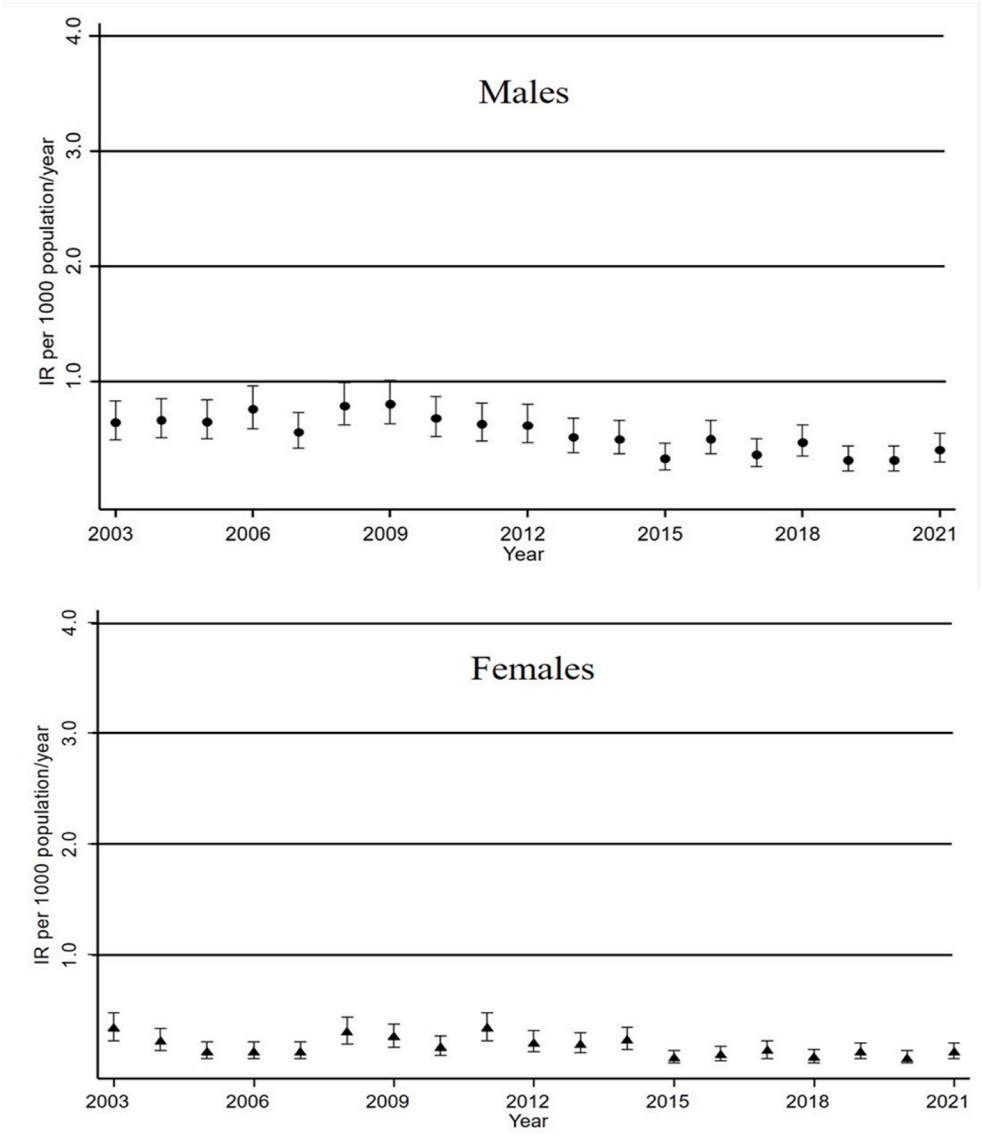

Fig. 2. Gender-specific annual incidence rate (IR) per 1000 population/year with 95% CI for victims of deliberate interpersonal violence with severe injuries 2003–2021 in an urban Danish population.

was mainly due to fewer incidents involving victims with mild injuries. This may have been caused by several factors. Firstly, mild and simple interpersonal violence resulting in superficial lesions (e.g. bruising) or no treatable lesions may have become less socially acceptable. Unfortunately, we have no reliable information about such a change in the perception or acceptance of violence. Secondly, the proportion of violence occurring in weekends and night-time has decreased in the study period. Night-time violence in the weekends is often related to alcohol intoxication. Alcohol intoxication is known to increase the risk of violence, with government statistics indicating that one-third of all victims of deliberate interpersonal violence are alcohol-intoxicated at the time of the assault.[29,30] The alcohol consumption among Danish adolescents and young adults decreased over the study period,[31] possibly contributing to the decline in mild violence. Thirdly, preventive actions may have contributed, e.g., in the form of additional streetlights and possible collaboration with surveillance cameras.[32] Odense City Council has improved the lightning for nightlife and in more isolated, darker parts of the city.[33] Fourthly, the Scandinavian volunteer organisation, the Night Ravens, was launched in 1999 in Denmark. This organisation consists of adults patrolling hotspots on weekend nights to maintain peace and order. However, an evaluation of the Danish Night Ravens showed no change in crime rates compared to areas without these patrols.[34] Fifthly, violence is associated with low income, unemployment, and social deprivation.[35,36] Denmark has experienced an economic boom over the last 10 years, with high welfare and very low rates of unemployment and this may have helped to reduce the incidence of violence.

The decrease in IR of mild violence may be due to bias as access to treatment may have changed during the study period. In 2017, the A&E department at OUH changed from open access to "semi-open" access, where all patients had to book an appointment. This may have led to fewer victims with mild injuries seeking medical treatment. However, the A&E department at OUH has not registered any difference in the annual number of injury patients seeking medical attention after the change to a "semi-open" department,[37] and the A&E staff do not reject victims who have not booked an appointment. Secondly, victims of violence in Denmark are recommended by the police to seek medical attention so that the injuries are described in their medical record, and we do not know whether this may have changed during the study period. Data from Statistics Denmark indicates that the incidence of police-reported violence was unchanged in Odense Municipality during the study period.[38] Thirdly, some victims may have sought medical

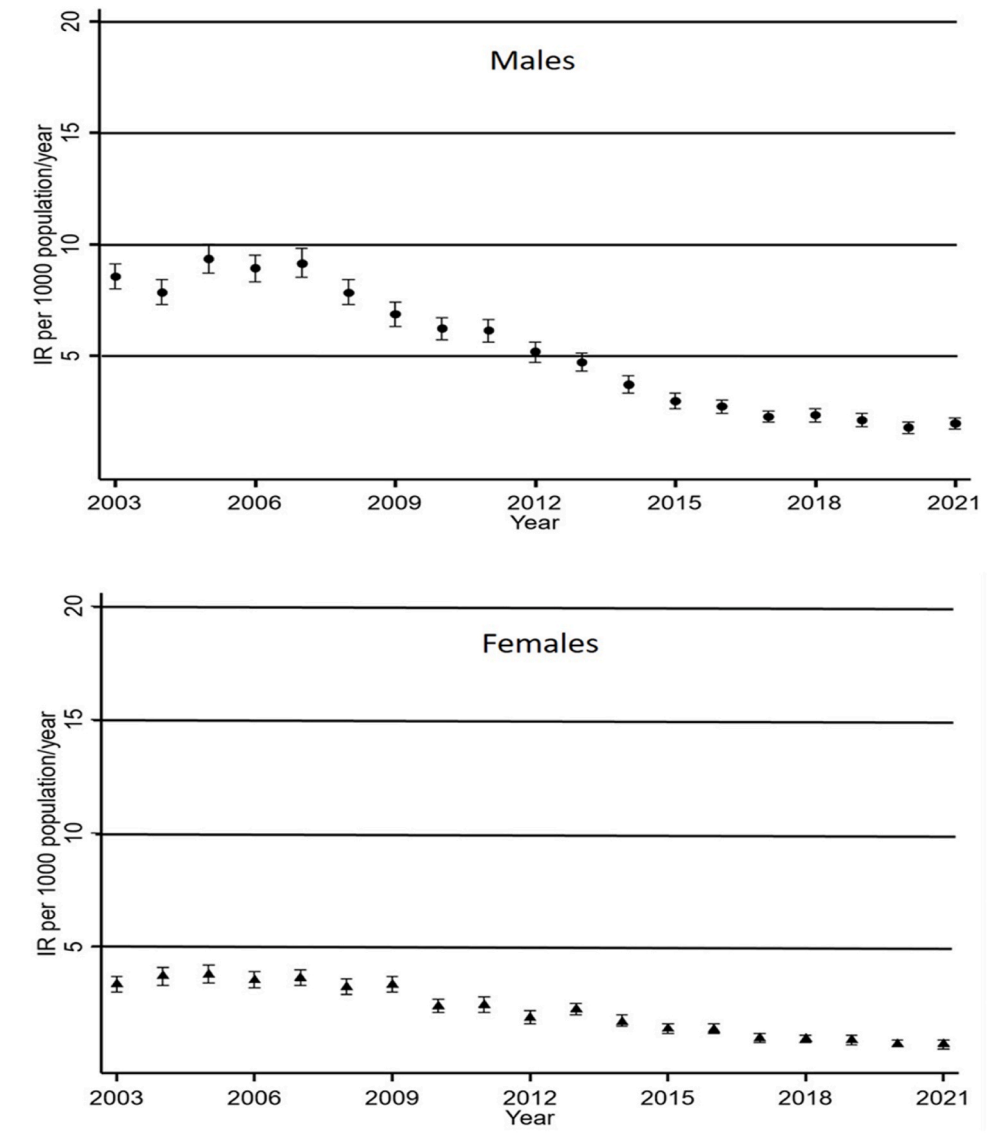

Fig. 3. Gender-specific annual incidence rate (IR) per 1000 population/year with 95% CI for victims of deliberate interpersonal violence with mild injuries 2003–2021 in an urban Danish population.

attention from the general practitioner or from neighbouring hospitals. General practitioners treat about 11% of all injuries in Odense Municipality, mostly of minor nature such as contusions, sprains, and simple fractures,[39] while about 2% of victims of interpersonal violence from Odense Municipality seek medical attention at the hospital 45 km away.[40] We have no reason to believe that these have changed in the study period.

The mortality in our study supports that Denmark has a relatively low homicide rate that is comparable to reported homicide rates in other Western European countries.[41–43] The lesion types and weapon use correspond to other European studies.[41,42]

The strength of this study is the systematic registration of A&E data by trained staff throughout the study period. The municipality is a well-defined area that has not changed in the study period, and we have access to exact population counts from Statistics Denmark. The IFM is the only forensic department in the Region of Southern Denmark, which makes it less likely that victims of violence in Odense Municipality undergo medico-legal autopsy at other forensic institutes in Denmark.

The study has some limitations primarily related to the registration of victims, which may contribute to the decrease in the IRs. We have no reliable information about interpersonal violence that is not registered in the health care or forensic systems. In particular, we may underestimate the incidence of events where the victim is a dependant to the perpetrator and does not seek medical treatment. Furthermore, our registrations depend on victims revealing that interpersonal violence led to the injuries, and an unknown number of victims may fail to reveal violence as the cause of injury. Especially, our sampling methods may underestimate the incidence rates where the victim is in a dependent relationship with the perpetrator and do not reveal that partner violence led to the injuries. Therefore, the incidence rates estimated in our study may be lower than the actual rates. However, we have no reason to believe that these biases have changed in the study period. Furthermore, our study does not include violence solely reported to the police. A Danish study showed that 15% of all deliberate violence incidents registered solely in police records without contact to the healthcare system, and police reporting can change over time.[6,8,44] We only included victims of violence from an urban population representing approximately 4% of the Danish population. We have no reliable information about our results generalizability to the entire Danish population. However, data from Statistic Denmark have shown that the

Table 2
The percentage distribution with 95% CI of week-day, time of day, referral after initial treatment, and weapon use in the three time periods 2003–2007, 2010–2014, and 2017–2021.

	2003–2007	2010–2014	2017–2021
	% (CI)	% (CI)	% (CI)
Week-day			
Monday-Thursday	37.2 (36.0–38.5)	36.6 (3.5–3.8)	44.0 (41.7–46.4)
Friday-Sunday	62.8 (61.6–64.1)	63.7 (62.3–65.3)	56.0 (53.7–58.4)
Time of day			
06:00–14:59	26.3 (25.3–27.5)	28.0 (26.5–29.4)	28.9 (26.8–31.1)
15:00–21:59	29.3 (28.2–30.5)	28.3 (26.9–29.8)	31.3 (29.1–33.5)
22:00–05:59	44.4 (43.3–45.8)	43.7 (42.2–45.3)	39.8 (37.6–42.3)
Referral			
General practitioner	79.7 (78.8–80.9)	79.0 (77.8–80.4)	86.4 (84.7–88.0)
Outpatient clinic	13.4 (12.6–14.4)	14.4 (13.3–15.5)	5.0 (4.0–6.1)
Hospitalization	6.6 (6.5.6.7)	6.4 (6.0–7.3)	8.5 (7.2–10.0)
Died	0.3 (0.2–0.4)	0.2 (0.1–0.3)	0.2 (0.03–5.0)
Weapon use			
No weapon	88.2 (87.3–90.0)	89.9 (89.0–90.9)	88.0 (86.4–89.5)
Firearm	0.3 (0.2–0.5)	0.3 (0.2–0.4)	0.3 (0.1–0.5)
Knife	3.0 (2.6–3.5)	3.0 (2.5–3.6)	5.4 (4.3–6.5)
Glass/bottle	6.3 (5.7–6.9)	4.7 (4.1–5.4)	3.3 (2.5–4.2)
Blunt object	2.2 (1.9–2.6)	2.1 (1.7–2.7)	3.1 (2.3–4.0)
All	100.0	100.0	100.0

Table 3
The percentage distribution with 95% CI of types of lesions and injured body region in the three time periods 2003–2007, 2010–2014, and 2017–2021.

	2003–2007	2010–2014	2017–2021
	% (CI)	% (CI)	% (CI)
Type of lesion			
Superficial	69.0 (68.1–69.9)	65.2 (64.0–66.4)	61.1 (59.3–62.9)
Wounds	19.1 (18.3–19.8)	20.5 (19.5–21.5)	22.5 (21.0–24.1)
Bone fractures	6.3 (5.9–6.8)	7.4 (6.8–8.1)	8.7 (7.7–9.8)
Dislocations	3.6 (3.2–3.9)	3.6 (3.2–4.1)	4.0 (3.3–4.8)
Deep lesions[a]	0.8 (0.6–1.0)	1.2 (0.9–1.5)	1.8 (1.3–2.5)
Other lesions[b]	1.2 (1.0–1.4)	2.1 (1.7–2.5)	1.9 (1.4–2.4)
Sum	100.0	100.0	100.0
Body region			
Head or neck	61.4 (60.5–62.4)	60.9 (59.6–62.1)	54.7 (52.9–56.6)
Thorax/abdomen	9.2 (8.6–9.7)	8.5 (7.9–9.3)	10.0 (8.9–11.1)
Upper limb	20.2 (19.4–20.9)	20.6 (19.6–21.6)	24.0 (22.4–25.6)
Lower limb	7.6 (7.1–8.1)	7.5 (6.8–8.2)	8.5 (7.5–9.6)
Other regions[c]	1.6 (1.4–1.9)	2.5 (2.2–3.0)	2.8 (2.2–3.5)
Sum	100.0	100.0	100.0

[a] Includes lesions in nerves, blood vessels, tendons, and internal organs.
[b] Includes poisonings, foreign bodies, burns, and unspecified lesions.
[c] Includes poisonings, spine lesions, and unspecified regions.

overall number of victims of violence admitted to the A&E departments in Denmark has decreased by 50% from 2006 to 2022.[38]

The data for the present study had no reliable information about the counterpart in the violence incident, so we could not determine incidence rates for community violence (between unrelated individuals) or domestic violence (between intimate partners). Such registration has now been introduced in the A&E department at OUH, but no validated data on the counterpart is yet available. We have used the diagnosis-based tool for measuring severity of injuries in a previous paper.[16] This categorisation reflects the necessity of seeking diagnosis and treatment at the hospital. A formal evaluation of the categorisation in comparison with e.g. Abbreviated injury Scale has not been performed and is not relevant, since the main purpose is to secure a time independent measure of severity. No validated tool for measuring severity of violence exists.

Our finding of a significant decrease in interpersonal violence in Odense Municipality should be analysed more thoroughly. Future studies should include data from the health system, the forensic system, and the police authorities. We are planning a long-term study based on data from all three sources. Future studies should also include information about the counterpart to allow analysis of different types of violence such as community violence and domestic violence.

5. Conclusion

Using A&E department data and forensic data, this study showed a significant decrease in the incidence rate of deliberate interpersonal violence in an urban Danish population from 2003 to 2021. This significant decrease was seen for both males and females and in all analysed age groups. The decrease was primarily due to fewer victims with mild injuries.

Ethical approval

The study received approval from the Region of Southern Denmark. Due to the substantial number of participants, informed consent was obtained from the Danish Patient Safety Authority.

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Declaration of competing interest

Authors disclose no financial and personal relationship with other people or organization that could inappropriately influence their work.

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