

Trends in admissions to hospital involving an assault using a knife or other sharp instrument, England, 1997–2005

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ABSTRACT

Objectives To investigate recent trends in in-patient admissions in England for assaults that involve a stabbing.

Design and data source Time-series analysis of the NHS Health and Social Care Information Centre's Hospital Episode Statistics (HES) database.

Setting England, April 1997 to March 2005.

Main outcome measure All completed hospital admissions with a mention of assault by sharp object (International Classification of Diseases, Tenth Revision, code X99) in the relevant diagnosis fields in HES.

Results In the eight years between 1st April 1997 and 31st March 2005 the number of people admitted to hospital reportedly following an assault involving a sharp object rose by 30%, from 3770 patients in 1997/8 to 4891 in 2004/5. One hundred and fifty-four of these people died (0.5%). Forty-two percent (14 220) of admissions were on a Saturday or Sunday. Males accounted for 90% (males 30 464 and females 3406) of admissions. Forty-nine percent (14 786) of the men, and 41% (1383) of the women, had injuries to the head, neck or thorax.

Conclusions The number of recorded hospital admissions from stabbing assaults increased between 1997 and 2005. Approximately 13 people a day are currently admitted to hospital for treatment after being stabbed. Further research is required to identify effective interventions to reduce the number of stabbings.

Keywords assault, hospital admissions, hospital episode statistics, knives

Introduction

There is a popular perception within Britain that levels of violent crime are increasing, yet Government statistics appear reassuring. Home Office data report that violent crime overall fell by 43% between 1995 and 2004/5, principally due to large falls in domestic and acquaintance violence.¹ These findings are consistent with a recent study by Sivarajasingam *et al.* of violence-related attendances at 58 major Accident and Emergency departments in England and Wales between 1995 and 2000.² This study found no evidence of an increase in violence-related attendances with the exception of a steady increase among 11–17-year-old females.

Knife crime is a small but important part of violent crime, and concerns about the growing problem of 'stabbing' have been raised in both the popular media and in a leading medical journal.^{3,4} The perception of increasing

knife crime is consistent with a study in Scotland, which showed that while there was an 83% increase in homicides between 1981 and 2003, there was a far greater rise (164%) in homicides using knives.⁵ However, mortality from stabbing shows only part of the picture, and reliable data on the incidence of stabbing are difficult to obtain. In England and Wales, Home Office crime statistics do not specifically report knife injuries, which are encompassed in the definition of 'more serious wounding or other act endangering life', which nevertheless increased each year between 1995 and 2003/4.⁶ In addition, recent evidence suggests that

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more than 50% of assaults presenting to hospital are not reported to the police,^{7,8} and will consequently not appear in crime statistics. Data from health providers may therefore contribute to a more accurate assessment of the magnitude of, and trends in, stabbings. We have used Hospital Episode Statistics (HES) data for England to assess recent trends in assaults using knives and other sharp objects.

Methods

HES contain information on patients admitted to hospital in England who receive care provided by the National Health Service (NHS).⁹ Each patient's record contains information on their age, sex, area of residence, date of admission and discharge, together with their main diagnosis and up to 14 other diagnoses, coded using the International Classification of Diseases, Tenth Revision (ICD10).¹⁰ Patients who die in hospital are identifiable from the discharge codes.

Data on hospital admissions between 1st April 1997 and 31st March 2005 with a mention in any of the diagnosis fields (seven prior to April 2002 and 14 thereafter) of 'assault by a sharp object'—coded as X99 using ICD10—on the admission record, were extracted on the 21st February 2006 and analysed using Stata Version 9.1 for Windows. Due to the dynamic nature of the HES database, data for 2004/5 and possibly 2003/4 may be subject to minor change. Further information on the quality of HES data may be found on the HES website.¹¹ For the purposes of this study, a year begins on the 1st April and ends on the following 31st March. All patient records that additionally listed an ICD10 code indicating that the injury may have been accidental (ICD10 W25 or W26), self-inflicted (ICD10 X78) or of undetermined intent (ICD10 Y28) were excluded from the analyses ($n = 98$). Data for all stabbing deaths (ICD9 coded E966/ICD10 coded X99) in England i.e. hospital and community deaths between 1997 and 2004 were obtained from the Office for National Statistics (ONS).¹²

Each patient record in HES has an anonymized unique identifier. This was used in conjunction with the patient's date of admission, to identify patients who were admitted more than once during the study period ($n = 806$). As we could not reliably detect whether these multiple admissions were related to one incident, or were for different incidents, we included only the first admission for each subject in the study period ($n = 33\,903$).

Direct standardization using the European Standard Population was used to calculate the age-standardized admission rates (ASARs) and confidence intervals (CIs).

Results

Overall, 33 903 patients were admitted to hospital in England with an assault-related stabbing injury between 1st April 1997 and 31st March 2005. Males accounted for 90% ($n = 30\,464$) of the admissions; females 10% ($n = 3406$); sex not recorded for 33 admissions.

The number of admissions increased by 30% over the study period, from 3770 in 1997/8, ASAR for males 13.5 per 100 000 (95% CI 13.0, 14.0) and 1.6 per 100 000 for females (95% CI 1.5, 1.8) to 4891 in 2004/5, ASAR for males 18.3 per 100 000 (95% CI 17.8, 18.9) and 1.9 per 100 000 for females (95% CI 1.7, 2.1). Forty-nine percent ($n = 14\,786$) of the admissions among men, and 41% ($n = 1383$) among women involved injuries to the head, neck or the thorax.

The median age of admission was 27 years, inter-quartile range (IQR) 21–35 years for males, and 29 years (IQR 21–38 years) for females. Stabbing injury assaults among children less than 15 years of age resulted in 70 hospital admissions in 2004/5. Eighty-nine percent ($n = 27\,128$) of the male admissions were aged between 15 and 44 years: the equivalent figure for females was 82% ($n = 2790$). Trends in age-specific admission rates are shown in Figs. 1 and 2 (please note the different scales used). There have been similar rises in admissions for 15–24, 25–34 and 35–44-year-old males. Admission rates have been relatively stable in females and males aged <15 and >44 years, respectively.

The median length of stay in hospital was 1 day (IQR 0–3 days), and 42% of admissions occurred on either Saturday or Sunday.

Twenty-four percent of admissions ($n = 8139$) were among residents of the London Government Office Region (GOR).

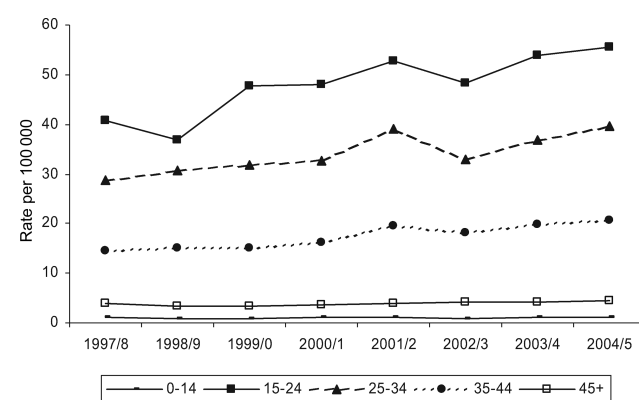


Fig. 1 Male age-specific hospital admission rates (per 100 000) for injuries associated with stabbing from an assault, England, 1997–2005. Source: Hospital Episode Statistics.

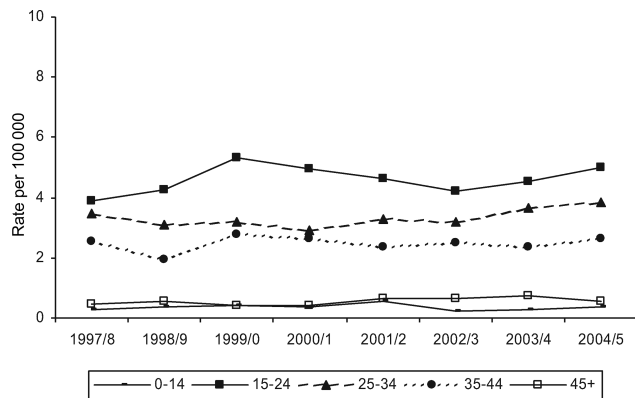


Fig. 2 Female age-specific hospital admission rates (per 100 000) for injuries associated with stabbing from an assault, England, 1997–2005. Source: Hospital Episode Statistics.

Using resident populations¹³ the ASAR over the entire study period for males aged 15–44 years was 49.1 per 100 000 (95% CI 47.9, 50.3) in the London GOR compared with 29.4 per 100 000 (95% CI 29.0, 29.8) in the other GORs combined. The equivalent rates for females were 4.3 (95% CI 4.0, 4.7) and 3.2 per 100 000 (95% CI 3.1, 3.3).

One hundred and fifty-four of the patients died (in-hospital case fatality was 0.45% 95% CI 0.38–0.53%). Injuries to the head, neck or thorax were mentioned as either a primary or secondary diagnosis on 97 (63%) of the deaths. The 154 deaths accounted for ~18% of the deaths due to assault by stabbing (ICD9 E966 and ICD10 X99) that were recorded by ONS for the broadly comparable period from 1st January 1997 to 31st December 2004 in England.¹² In keeping with the trends in hospital admissions for stabbing, deaths from stabbing in England increased by ~50% between 1997 ($n = 92$ deaths) and 2004 ($n = 139$ deaths):¹² please see Fig. 3.

Discussion

Main findings

The numbers of violent assaults involving stabbing that were serious enough to warrant admission to a hospital in England increased by 30% during the period 1997–2005. The latest figures for England indicate that such assaults accounted for approximately 13 admissions a day in 2004/5. The incidence of stabbing was highest in males in the London region.

Deaths by stabbing increased by a similar amount. A comparison of HES mortality data with ONS mortality statistics suggests that around 80% of deaths due to stabbing occurred before admission to hospital took place.

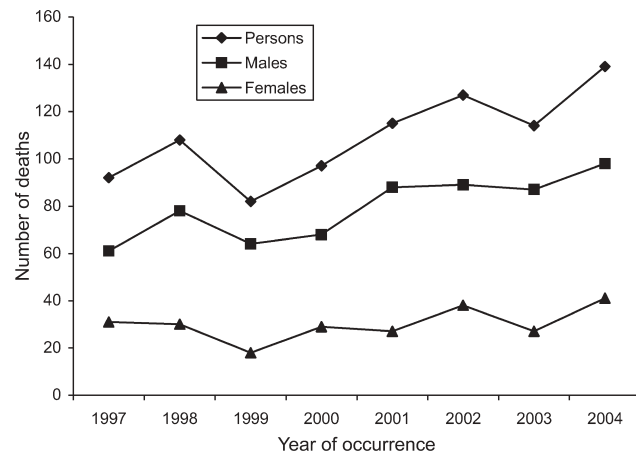


Fig. 3 Mortality from assault by a sharp object, England, 1997–2004. (Figures are for occurrences of underlying cause death in each calendar year, using ICD9 code E966 for the period 1997–2000, and ICD10 code X99 for 2001 onwards.) Source: Office for National Statistics.

What is already known on this topic

Our results, on a national level, are consistent with the reported increase in knife injury at the emergency department of the Royal London Hospital.⁴ Our findings are also in keeping with a recent analysis of trends in stabbing deaths in Scotland, which reported that between 1981 and 2003 the increase in homicides involving a knife (164%) was twice that of the overall increase in homicides (83%) for the same period.⁵

In contrast, the British Crime Survey data reports that violent crime as a whole fell by 43% between 1995 and 2004/5.¹ Furthermore, data from Accident and Emergency departments across England show no increase in the overall level of violence-related injuries.²

Other European countries have not reported the same trends in stabbing incidence and mortality; research in Scandinavia suggests that the incidence of stabbing is both relatively low and stable.^{14,15}

What this study adds

This is the first description of national trends in hospital admissions due to assault with a sharp object, and as such helps to quantify the scale of morbidity and mortality due to stabbing in England. The increasing trend in hospital admissions and deaths due to stabbing suggests that further research is necessary to quantify the burden on other health-care resources, such as Accident and Emergency departments; to identify the main weapons used in these assaults and assess their availability and prevalence; to develop appropriate public health responses to these trends; and to assess the impact these serious assaults have upon people's

lives. Assault should be seen as a public health issue, and not simply a criminal justice issue.¹⁶

Limitations of this study

There are a number of limitations to our study, partly arising because HES data in England are collected for administrative rather than research purposes. Firstly, it is possible that over the period covered by our analysis the quality of recording stabbing-related injuries improved thus exaggerating any increase in incidence. However, observed trends in hospital admissions were supported by the rise in deaths from stabbing injuries. Secondly, we could not determine whether multiple admissions represented separate events or the continuing treatment of the first event, for this reason only the first admission per patient was included in our analysis. This may result in underestimation of trends if individuals were injured on two or more occasions over the study period. Thirdly, ICD10 coding does not permit a detailed breakdown of the assault weapon, nor is it possible to ascertain whether the patient was the perpetrator or victim of the assault. Finally, our results do not include assault injuries to individuals that are dealt with solely in Accident and Emergency departments and do not require admission to a hospital bed, less serious assaults for which individuals do not seek treatment, or the most serious assaults in which individuals died from their wounds before reaching hospital.

This study highlights the need to bring together information from different sources, including HES, Accident and Emergency departments, ambulance crews and Home Office data, to quantify fully the scale of the problem, but such a study would be challenging.

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Competing interests

None.

Ethical approval

None required.

Contributions

R.M. had the idea for the study, extracted the data and performed the analyses. C.T., D.G., J.V. and P.B. helped refine the study methodology and analysis. R.M., C.T. and D.G. prepared the first draft of the manuscript. All authors have contributed to and approved the final draft.

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