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CRIMINAL VIOLENCE AND MAXILLO-FACIAL INJURIES IN SWEDEN

A Retrospective Epidemiological Study on Criminal Violence and Ensuing Injuries

by

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ABSTRACT

The study analyses police reported violence in a semirural and suburban region of Sweden during 1979, 1982 and 1985. Also analysed are data on patients seeking medical care for injuries due to assault in the same regions in 1988. A study on jaw fractures treated in 1979, 1982, 1985 and 1988 in the regions is also included.

Most criminal violence took place during week-ends, in the evenings. The circumstances differed between the regions. In the rural County of Kopparberg assaults tended to be associated with public entertainment but in the suburban Huddinge Police District violence in streets was more common. The number of police reported violent crimes increased during the period. The participants were mainly in their late teens or twenties. The offenders were predominantly men, between 1/4 to 1/2 of the victims were women. Foreign citizens were overrepresented. Many victims and offenders were involved in more than one case and many were under the influence of alcohol when the assault took place.

Punching and kicking were the most common means of inflicting the injuries. Two-thirds of the victims notifying the police had no or minor injuries. Five per cent had fractures and the rest wounds. The injuries were mainly located in the head and neck. Women victims related to the offender had, however, a higher proportion of injuries to the body.

Of the patients seeking medical attention for assault injuries a full half had fractures, mostly of the nose. Between 1/4 and 1/3 of the patients was hospitalized. One-third to 40% were sick-listed. About 40% of the patients seeking medical care in the rural region and 27% in the urban region reported the crime to the police.

The number of jaw fractures was relatively stable during the period. Many cases were documented so inadequately that conclusions on the forensic aspects of the injuries could not be drawn.

Key-words: Facial injuries, violence, alcohol abuse.

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This thesis is based on the following papers, which will be referred to by their Roman numeral:

I Ström C. Injuries Due to Violent Crimes. A study of police reported assaults 1979, 1982 and 1985 in the County of Kopparberg. Accepted for publication in Med Sei Law.


III Ström C, Johanson G, Nordenram A. Facial Injuries Due to Criminal Violence. A retrospective study of hospital attenders. Accepted for publication in Med Sei Law.

IV Ström C, Nordenram Å, Fischer K. Jaw Fractures in the County of Kopparberg and Stockholm 1979-1988, A retrospective comparative study of frequency and cause with special reference to assault. Accepted for publication in Swed Dent J.

All references are cited in the Introduction, major references are cited in the General Discussion.
INTRODUCTION

Definition

The violence studied in this thesis comprised crimes according to the 3rd and 17th chapters of the Swedish Penal Code, i.e. murder, manslaughter and assault on private citizens and public servants. Crimes classified as accidental bodily injury, illness or death and cases where no direct or indirect physical contact between victim and offender had occurred were excluded.

Background

The National Council for Crime Prevention compiles and analyses the official crime statistics (1). From 1950, when the registration of crimes began, until 1988, police-reported interpersonal violence in Sweden increased from 7 500 to about 38 000 cases annually. The majority of these crimes was assaults. Murder, manslaughter and aggravated assaults comprised about 6%. In the 2 regions studied in this thesis, the County of Kopparberg and the Police District of Huddinge, 1301 and 1119 violent crimes were reported in 1988.

Statistical analysis, however, was complicated by uncertain factors (1,2). The routines for reporting cases were altered and computerized during the period, first in 1965 when responsibility for Police Departments was transferred to state government authorities, and again in 1968.

Alterations to the law during the period also influenced the statistics. In 1965 a new Penal Code was introduced and in 1982 assaults which took place on private property became liable to public instead of private prosecution. Due to the reorganizations in 1965 and 1968 and legislative changes in 1965 and 1982, comparisons between the periods before and after these years must be interpreted with caution.

Apart from the reorganization of the Police Force and changes in the law, criminologists attributed the increase of registered interpersonal violence to such factors as increased alcohol consumption, the development of subcultures in the community and a higher degree of public entertainment (3,4).

The incidence of criminal violence was found to be higher in urban than rural areas (1,3,4). The crimes took place mostly in the evenings, especially during week-ends, and often in association with some kind of entertainment, either private or public. Homes, streets and squares were other common scenes of assault.
Half the assaults took place outdoors. The offenders were predominantly men, but women comprised 1/4 of the victims. Most of the participants were in their late teens or twenties and it was not unusual for them to be known to the police. Half the participants were strangers to each other, and victims and offenders were often influenced by alcohol.

The most common intra-family relationship between offender and victim was that of a husband or boyfriend abusing his wife or girlfriend.

About 70% of assaults reported to the police were notified by the victim, 25% by a third party and 5% by the police themselves.

Many assaults were never reported to the police and thus the official statistics do not reflect the true incidence of violence in the community. In a compilation of Swedish violence (3) it was suggested that only 1/10 of all violent crimes were reported to the police. The willingness to notify the police was influenced by the seriousness of the assault and the relationship between victim and offender. Thus, assaults with no or minor injuries, or cases in which victim and offender were closely related, were less likely to be reported to the police. Another reason for not notifying the crime could be threats of further violence. On the other hand, increasing publicity surrounding criminal violence during the 1980's might have helped to reduce reluctance to report these crimes (1,3,4).

Other estimations of the unreported criminal violence, based on studies of victims of assault seeking medical attention, have shown that between 29% (5) and 58% (6) notified the crime to the police. In a material of women seeking care at the casualty department of a Gothenburg hospital (7), the medical officer issued a certificate to the police of the assault injuries in 1/4 of all cases of battering.

Victims and maxillo-facial injuries in Sweden.

Most assault victims seeking medical care have injuries to the face, head and neck, in most cases bruises (7,8). Thus, studies of patients with facial injuries could provide good documentation of interpersonal violence. Studies from the 1950's to the 1980's have shown an increasing number of fractures (9-13). Towards the end of this period, however, some authors have found a levelling off in the number of fractures (12,14-16). Most victims of assault were men (9,13-15,17-20) aged between 15-35 years (9,13-15,17,20,21).
Studies of injuries due to violence have shown that most victims had minor injuries (5, 7, 8, 22). Kühlhorn et al. 1984 (3) reported that 1/4 of the victims were uninjured and 1/5 had an injury that forced the victim to seek care from a dentist or a doctor. In a material of police reported assaults on women in Linköping (8) the victims were divided into 2 sub-groups according to whether they were battered wives or not. Ninety-one per cent of the women abused by their partner or former partner had skin injuries and 4% had fractures. The corresponding figures for the other group were 83% and 6.5% respectively. In another study of battered women (7) it was found that 3/4 of the victims had haematomas and contusions, 1/5 had wounds and 5% had some kind of fracture. In selected materials (6) the injuries were more serious.

Depending on the kind of material investigated, between 18% (14) and 63% (19) of all facial injuries were due to assault. Zygomatico-maxillary fractures (14) or nasal fractures (12, 20, 23) were the most common. Some authors claimed that fractures of the zygoma and orbital floor had also become more common during the period (24). Jaw fractures due to assault were located mainly in the mandible (9, 11, 13-15, 17, 19, 20, 25) and fractures of the body and the column predominated (14, 17, 25).

About 1/10 to 1/3 of the victims were hospitalized, mostly for a few days (6, 7, 8); 12-36% were sick-listed (3, 8).

**Corresponding results from other countries.**

Studies of facial injuries due to assault are uncommon, but from studies of facial injuries in general it has been found, as in Sweden, that victims of assault tend to be men aged between 15 to 35 years (26-38).

The studies show a similar pattern of incidence as in Sweden during the last decades (26, 27, 30, 37-47). The levelling off and in a few cases the decrease in the number of injuries found in some Swedish studies during the latter part of the period is confirmed (30-32, 36, 39, 45, 46, 48, 49).

From 8% (43) to 90% (35) of all facial injuries in adults were due to assault. Studies of injuries in children have shown that although it existed, assault was an uncommon cause (50-56). The most common facial injuries were haematomas and wounds (57). Depending on the kind of material investigated, fractures of the zygomatic complex, the nose or mandibular fractures were the most common facial fractures in assault cases (36, 40-42, 47-49, 59-65).
The mandible was mostly fractured in the body (37,45) or the angle (28,31). Lamberg 1978 (30) observed no left- or right-sided dominance of jaw fractures due to assault but a left-sided predominance of facial fractures has been found by some authors (26, 30,42,49). Between 10%-48% of other facial fractures were due to assault (29,66-70). Eye injuries due to assault were not common, 14% according to Karlson & Klein 1986 (71). Injuries of the maxillo-facial region caused by hand-guns have been studied i.a. by Cohen et al. 1986 (72).

**Injuries to other parts of the body.**

In the literature on facial injuries, injuries to other parts of the body in assault cases are often vaguely described. Regardless of cause, the incidence of such injuries ranged from 0%-75% (7,8,21, 57,60,62,73-76). The most common injury to other parts of the body was a soft tissue injury (57). Haug et al. 1990 showed that lacerations, followed by neurologic and orthopedic injuries, were the most common associated injuries, often in motor vehicle accidents (77). According to Beck a Blakeslee 1989 associated injuries decreased from 61% 1983 to 45% 1987 (36).

In a material of battered women bruises on other parts of the body were found in about 37%, lacerations in 20% and fractures in 10% (78). The associated injuries due to assault were, as well as the maxillo-facial, most commonly inflicted by punching and kicking (5, 7,8,23,25,26,30,33,49,78).

**Specific circumstances related to violence in the family.**

Violence in families has attracted increasing attention, especially because of indications that it may be more common than has previously been supposed (7,8,78-83). In a study of women seeking medical care, Angerås et al. 1989 found that 2.5% of all women who attended the casualty department were victims of assault (7).

Family violence differed from other interpersonal violence as the victims were often subjected to violence over longer periods, and the pattern of injuries was therefore also different. Twice as many injuries were found on other parts of the body than the face in victims of wife battering than in other assaults (8). In another study of battered women (7), 55% of the victims had injuries of different kinds on other parts of the body. It has also been noted (7,81,83) that victims of family violence tend to have a higher than average attendance rate for medical care for non-assault related health problems. Although the proportion of injured women, independent of cause, increased (30,47) Starkhammar and Olofsson
1982 found no support in their study for the commonly held opinion that abuse of women has increased (12).

**Circumstances associated with criminal violence.**

Factors associated with the violence have been studied. Many of the victims were under the influence of alcohol when the crime took place and were also alcohol abusers (8,14,19,20,23,27,30,32,33,35,40,46,66,84-89).

Other important circumstances were the victim's earlier contacts with the police (3,6), changes in the industrial structure of the region (42), unemployment (84,88), marriage breakdowns (39), the victim's social status in the community (30,46), football hooliganism, racism and abuse of drugs other than alcohol (88).

Foreigners were overrepresented as victims by comparison with their proportion of the population (15). Among others, Lindegård 1971 (90), investigated the special situation of immigrants in Sweden.

During the 1980's violence in the community has attracted much publicity in Sweden and on the basis of some very tragic and sensational cases, sweeping conclusions have been drawn about the increasing incidence and seriousness of contemporary violence in the country. As it has been found that the incidence of violence was higher during the 19th and the beginning of the 20th centuries (91), the present study was undertaken to analyse various aspects of criminal violence in Sweden during the 1980's, with special reference to facial injuries.
AIMS

The FIRST AIM of the present series of investigations was to compare data on police reported violent crimes in the County of Kopparberg and the Police District of Huddinge during 1979, 1982 and 1985 with special reference to possible changes in criminological and odontological variables and differences between the rural and suburban regions.

The SECOND AIM was to compare data on assault victims seeking medical attention during 1988 at the Central Hospital in Falun and at the Department of Oral Surgery, Karolinska Institutet, Stockholm or at the University Hospital, Huddinge, with special reference to composition and ensuing injuries and any possible differences between the two districts.

The THIRD AIM was to study jaw fractures in the County of Kopparberg and the Huddinge Medical Care Region in 1979, 1982, 1985 and 1988, with special reference to fractures caused by assault to estimate any possible trends towards aggravated violence during the period, and to evaluate possible differences between the two districts.

The FOURTH AIM was to investigate a possible correlation between different kinds of violence and the ensuing injuries.

The FIFTH AIM was to estimate the proportion of assault cases which were not reported to the police.
MATERIAL AND METHODS

Studies of police reported assaults (111).

The material comprised 2119 cases of criminal violence: in the County of Kopparberg all cases (1870) and in the Police District of Huddinge every fifth case (249) of police reported violence according to the 3rd and 17th chapters of the Penal Code during 1979, 1982 and 1985. The following cases were excluded:

- cases classified under the wrong criminal code,
- accidental bodily injury, illness or death,
- cases where no direct or indirect physical contact between victim and offender had occurred.

The data were collected from records filed as "Criminal matters-prosecutor cases" and "Criminal matters-no result of investigation" in the archives of the police districts. The following variables were registered:

- police district, area code and type of assault,
- date, day of week, time of day and scene of assault,
- who reported the crime to the police,
- sex, relation to the offender, age, occupation, domicile, citizenship and any influence of drugs on the victim and, if known, the offender,
- type of violence, anatomical site and severity of the injuries.

In Paper I the number of times a victim or an offender was found in the material was registered.

Study of injured patients seeking hospital attention (111).

The material comprised 222 patients attending the following institutions during 1988: the Departments of Oral Surgery or Ear-Nose and Throat Diseases of the Central Hospital in Falun (88) and the Departments of Oral Surgery, Karolinska Institutet, or Ear-Nose and Throat Diseases at the University Hospital in Huddinge (134). The information was obtained from patient registers and police archives. The following variables were registered:

- if the assault was reported to the police authorities or not,
- sex and age of the patient,
- which department the patient first consulted,
- any influence of drugs,
- month, day of week, time of day and place of the assault,
- offender and any relationship between victim and offender,
- type of violence, anatomical site and severity of the injuries,
- number of days the patient was hospitalized,
- sick-leave due to the assault (information obtained from the Social Insurance Office).

Study of jaw fractures (IV).

The material comprised 367 patients with jaw fractures treated at the Department of Oral Surgery, the Central Hospital in Falun (151) and the Department of Oral Surgery, Karolinska Institutet (216) during 1988. The information was obtained from patient registers at the clinics. The following variables were registered from the case records:

- sex and age of the patient,
- year of the fracture,
- cause,
- location of fracture.

Statistical Methods.

Many of the variables in the material were based on the victims' and the offenders' accounts in police reports or hospital records. In such sensitive cases as assaults, these records could not be considered objective. Other variables were based on notes in case reports or records by many different police officers or physicians. The material was therefore not suitable for advanced statistical analysis. However, whenever applicable Student's t-test, chi-square or binominal tests have been done. If p < 0.05 statistically significant differences were established.
RESULTS

Studies of police reported crimes in the County of Kopparberg and the Police District of Huddinge 1979, 1982 and 1985 (1,11).

During the period investigated, the number of police reported crimes in Kopparberg increased from 446 in 1979 to 661 in 1982 and 763 in 1985. The corresponding figures for Huddinge, where every fifth case reported to the police was registered in this study, were 37, 114 and 98 respectively. The average distribution per 100 000 inhabitants was 156 cases in 1979, 232 in 1982 and 268 in 1985 in Kopparberg. In Huddinge there were 111, 380 and 326 cases respectively.

The proportion of aggravated crimes was higher in Huddinge than in the County of Kopparberg.

The cases were mainly evenly distributed throughout the year in both districts, though there was a peak during the mid-summer celebrations in Kopparberg. These festivities have a long tradition and attract many visitors from all over Sweden. The use of alcohol is frequent during the period. A majority of the cases took place in the evenings, during weekends, but at an earlier hour in Huddinge than in Kopparberg.

Most of the crimes in Kopparberg (60.5%) occurred in densely populated areas. Huddinge was considered to be a densely populated area on Iy.

In both districts about 80% of a I I cases were reported to the police by the victim, 10% by a third party and the remainder by the police themselves.

Places of public entertainment and homes were the most common scenes of the assaults in Kopparberg. In Huddinge violence took place mainly in homes and streets.

The sex distribution of victims and offenders varied both between the investigated areas and over time (Table 1). In Kopparberg 472 men and 92 women were registered as victims or offenders in more than one case.

There were more relatives, often women, as victims in Huddinge than in Kopparberg in 1979 and 1982. In 1985 the proportion was equal. A marked increase of the proportion of relatives was found in Kopparberg between 1979 and 1982.

The age distribution was similar between the 2 areas, with a mean
age of about 30 years for both victims and offenders. Most of the participants were in their late teens or twenties.

<table>
<thead>
<tr>
<th></th>
<th>1979</th>
<th>1982</th>
<th>1985</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
<td>Men</td>
</tr>
<tr>
<td></td>
<td>78.9/54.1</td>
<td>21.1/45.9</td>
<td>64.5/44.7</td>
</tr>
<tr>
<td>Total</td>
<td>100/100</td>
<td>100/100</td>
<td>100/100</td>
</tr>
<tr>
<td></td>
<td>95.8/94.6</td>
<td>4.2/5.4</td>
<td>92.2/92.2</td>
</tr>
<tr>
<td>Total</td>
<td>100/100</td>
<td>100/100</td>
<td>100/100</td>
</tr>
</tbody>
</table>

Table 1. Distribution of victims and offenders according to sex, year and Kopparberg/Huddinge.

In many cases the occupations of the participants were not noted, but where noted, victims and offenders in both areas were predominantly blue collar workers.

Huddinge has a higher proportion of foreign residents than Kopparberg. Compared to their proportion in the population foreigners were overrepresented in assault cases in Huddinge, especially as offenders. They comprised about 1/5 of the victims and 2/5 of the offenders. The corresponding figures for Kopparberg were 1/50 and 1/20 respectively.

According to the police reports about 50% of the victims and 75% of the offenders in Kopparberg were under the influence of alcohol. In Huddinge the figures were lower, about 30% and 50% respectively. The number of cases in which the participants were registered as under the influence of narcotics was low, 0% in Kopparberg and 1% of the victims and 4% of the offenders in Huddinge.

The most common method of inflicting injuries was punching followed by kicking and different kinds of weapons. In Kopparberg the proportion of these methods was constant during the period but in Huddinge the use of weapons increased and punching and kicking decreased. The proportion of cases in which prone persons were assaulted remained fairly constant during the period in Kopparberg...
but decreased in Huddinge.

As shown in Table 2, many of the victims were physically uninjured or had minor injuries. There were more soft tissue injuries on the left side of the face than on the right. The most commonly fractured region was the nose, followed by the orbito-zygomaticaI complex. Dental injuries were described, often vaguely, in 4.9% of the police records in Kopparberg and in 4.4%, of the records in Huddinge.

Apart from a few cases in which wounds were caused by guns or sharp objects it was not possible to correlate the injuries to certain kinds of violence, as the descriptions of the methods of inflicting injuries were often vague.

<table>
<thead>
<tr>
<th>Region</th>
<th>Kind of Injury</th>
<th>1979</th>
<th>1982</th>
<th>1985</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Swellings/hematomas</td>
<td>25.6/21.6</td>
<td>24.5/22.8</td>
<td>21.2/18.4</td>
</tr>
<tr>
<td>Head and neck only</td>
<td>Wounds</td>
<td>20.2/29.7</td>
<td>18.2/18.4</td>
<td>22.2/17.3</td>
</tr>
<tr>
<td></td>
<td>Swellings/hematomas</td>
<td>2.7/0</td>
<td>4.7/6.1</td>
<td>3.3/2.0</td>
</tr>
<tr>
<td>Head, neck and body</td>
<td>Wounds</td>
<td>2.8/8.1</td>
<td>5.7/7.9</td>
<td>8.3/6.1</td>
</tr>
<tr>
<td>Body only</td>
<td>Swellings/hematomas</td>
<td>4.3/8.1</td>
<td>5.0/14.0</td>
<td>6.5/10.2</td>
</tr>
<tr>
<td></td>
<td>Wounds</td>
<td>4.0/5.4</td>
<td>4.1/6.1</td>
<td>4.6/9.2</td>
</tr>
<tr>
<td>Fractures all sites</td>
<td></td>
<td>10.8/0</td>
<td>5.7/5.3</td>
<td>4.7/4.1</td>
</tr>
<tr>
<td>No injury</td>
<td></td>
<td>29.6/27.1</td>
<td>32.1/19.4</td>
<td>29.2/32.7</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100/100</td>
<td>100/100</td>
<td>100/100</td>
</tr>
</tbody>
</table>

Table 2. Distribution of injuries according to anatomical region, kind of injury, year and Kopparberg/Huddinge.

Study of patients seeking medical attention at the Central Hospital, Falun of the Departments of Oral Surgery, Karolinska Institutet and Ear-Nose and Throat Diseases, University Hospital, Huddinge during 1988 (III).

The material comprised 88 assault victims treated in Falun and 134 treated in Huddinge. The material was divided into 2 subgroups.
according to whether the police had been notified or not (group I and II). The distribution of sex and police-reported/not reported assaults is seen in Table 3.

<table>
<thead>
<tr>
<th></th>
<th>Falun</th>
<th>Huddinge</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td>Police-reported</td>
<td>26(36.1)</td>
<td>10(62.5)</td>
</tr>
<tr>
<td>Unreported assaults</td>
<td>46(63.9)</td>
<td>6(37.5)</td>
</tr>
<tr>
<td>Total</td>
<td>72(100)</td>
<td>16(100)</td>
</tr>
</tbody>
</table>

Table 3. Distribution of police-reported/unreported assaults according to sex and region.

In Falun the patients tended to be younger than in Huddinge. The mean age was 24.3 years in group I and 23.5 years in group II in Falun and 32.1 years and 27.3 years respectively in Huddinge. In Falun offender and victim tended to be individuals of the same sex, but not in Huddinge. Most of the patients sought medical attention via the ENT-departments.

According to the case records many of the patients in Falun were under the influence of alcohol. In group I, 61% of the men and 70% of the women were drunk. In group I, 54.3% of the men and 83.3% of the women were drunk. In Huddinge the corresponding figures were 32% and 8.3% in group I and 11.8% and 9.5% in group II. According to the case records there were no cases in which the patients were under the influence of narcotics.

There was an even distribution of the cases throughout the year but with a concentration to evenings during week-ends. The most common places of assaults in Falun were places of public entertainment and homes, and in Huddinge streets and homes. The tendency to report the crime was higher for the victims battered at places of public entertainment in Falun than in Huddinge.

Punching and kicking were the most common methods of inflicting injuries. In cases of punching the tendency to report the assault was lower in Huddinge than in Falun.

There were more soft tissue injuries on the left than the right side. The distribution of injuries according to severity is seen in Table
Table 4. Distribution of injuries with respect to the most serious injury.

<table>
<thead>
<tr>
<th>Injury</th>
<th>Falun</th>
<th>Huddinge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swellings/hematomas</td>
<td>20.7</td>
<td>7.5</td>
</tr>
<tr>
<td>Wounds</td>
<td>15.0</td>
<td>9.0</td>
</tr>
<tr>
<td>Ruptures of the tympanic membrane</td>
<td>5.9</td>
<td>11.2</td>
</tr>
<tr>
<td>Fractures</td>
<td>52.5</td>
<td>68.7</td>
</tr>
<tr>
<td>No injury or left before examination</td>
<td>5.9</td>
<td>3.6</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

In Falun 22.7% of the patients required hospitalization with a mean of 4 days. Thirty-three per cent were sick-listed with a mean of 15 days. In Huddinge 36.6% required hospitalization, mean 3.7 days, and 39.6% were sick-listed with an average of 19.2 days (one patient, still sick-listed at the time of the study, was excluded).

In Falun, the group notifying the crime comprised a significantly higher proportion of women than the group which did not notify the police. In Huddinge there were no significant differences between the 2 groups.

Study of jaw fractures in the County of Kopparberg and Huddinge Medical Care Region (IV).


There was no marked alteration in the incidence of jaw fractures throughout the period investigated. This applied to the total material and to fractures caused by violence. In both districts the patients were predominantly men aged between 20 and 35. In Kopparberg the number of women with jaw fractures caused by assault decreased during the period.

The most common cause of fractures in Stockholm was assault followed by traffic accidents. In Falun traffic accidents were most common followed by assault.
GENERAL DISCUSSION

The validity of the material.

The study involved some uncertain factors. How many of the actual cases were eventually included in the material? For various reasons some cases were never registered. In the police district studies (I, II), where the material was obtained directly from the archives, some cases could have been overlooked due to misplaced records, records out on loan or discarded in error or for other reasons. In Kopparberg (I) an estimation of the loss compared to the centrally registered cases at the National Police Board was done and found to be 11%. Excluding the 5% wrongly coded assault cases found by SCB (2), the real loss was 6%, which is the same as described by Kuhlhorn et al. (3). The loss was random.

In the material from Huddinge (II) the files for 1979 of cases where there were no suspects were missing. This was probably due to a relocation of the archive. A hypothetical estimation based on the number of these cases during 1982 and 1985 in the same police district gave an additional loss of cases in Huddinge of 10%.

In Paper I I all case records according to the patient registers were found in Falun and all but 8 case records (6%) in Huddinge. In the study of jaw fractures (IV) 7 case records out of 345 registered (2%) were not available. This means that the majority of all actual cases were found and the loss was small. This must be considered as a representative material.

Another uncertain factor was the degree of reliability of the variables registered in police reports and medical records. The case notes were compiled by many individuals, not all of whom had the same standards or training in case assessment.

In many cases the victims or patients were under the influence of alcohol and their accounts of the events were not always reliable. Other reasons could be that some victims protected the offender for fear of recrimination or other reasons, or that the victim was ashamed and therefore gave a false account of events.

During the police investigation many different versions of how the assault took place could have been noted. The victim, the accused and the witnesses all gave their own versions. The most probable course of events based on these accounts was eventually accepted as the "truth". Details of number, impact angle, force and direction of blows could not always be evaluated.
The injuries were, in many cases, described by police officers and not by odontology or medically trained personnel. Minor injuries could have been overlooked in favour of more serious injuries.

In the hospital records, notes were seldom made of whether the patient was under the influence of alcohol or not, who the offender was or where the assault had taken place. The kind of violence was often described in general terms such as "has been assaulted", "has been kicked" or "punches".

Thus the information obtained in this material (especially concerning subjective variables like the place of the crime, if the victim had been subjected to punches, kicks or some other form of maltreatment, who the offender was etc.) must be regarded with some caution and does not allow detailed analysis and conclusions. In general, however, the findings gave a comprehensive overview of the violence and ensuing injuries in Sweden.

The number and type of crimes during the period. The undisclosed figures.

Compilation of crimes (1) showed that the reported number of cases of interpersonal violence had risen during the 1980's. Assaults predominated, with a minor number of cases of murder, manslaughter and aggravated assaults. This increase in police reported crimes was found in Paper I and, to a certain extent, in Paper II. About 6% of the crimes in Kopparberg were classified as aggravated. This was in good correlation with other studies (3,4,5). In Huddinge the proportion was higher and increased during the period, probably as a result of a different violence compared to Kopparberg.

This increase in incidence and aggravation is, however, not in accordance with the findings of injuries in Papers I, II and IV. Apart from the high number of fractures in Kopparberg in 1979 the number of different injuries due to assault was generally constant or decreased during the period. Nor - as will be discussed later - were there any significant changes in the nature of the assaults. The crime is classified by a police officer and it is evident that the gravity of the crime from a judicial standpoint is not directly correlated to the physical injury. Whether the classification was accepted by the court or not was not known as the final sentences were not included in this material.

The higher number of reported crimes is probably a combination of a real increase and a greater tendency to notify the police following the intense publicity surrounding criminal assault cases during the 1980's.
In Paper III, a selected material of patients with more serious injuries to the head and neck caused by assault, an estimation of the undisclosed figures was done. The willingness to file a police complaint was higher in the rural than the urban region. In 1988 41% of the patients in Falun and 28% in Huddinge notified the police, which is in good agreement with other studies (5,6). Compared to all police reported assaults in the regions during the same year, 1301 in Kopparberg and 1119 in Huddinge, only 2.8% and 3.3% of these victims were included in the study and the findings must be interpreted with caution. This low percentage of serious injuries is, however, a further indication that the proportion of cases of aggravated assault had probably not increased as much as is commonly believed. It was interesting to note that in Falun the proportion of women victims reporting the crime to the police was higher than the proportion of men.

Time and scene of the assaults.

The time at which the assaults occurred was in general agreement with findings from earlier studies (3,4,5). The crimes were evenly distributed throughout the year, apart from a peak at midsummer in the County of Kopparberg, when the traditional celebrations attract many tourists. In both districts, the crimes were concentrated to evenings during week-ends but occurred about 2 hours earlier in the suburb of Stockholm than in the County of Kopparberg. This was probably attributable to regional differences in the circumstances in which the assaults took place, as will be discussed later.

The reported violence was higher in the densely populated areas than in the rural areas in Kopparberg (I). However, as has been found in previous studies the highest incidence was in the suburb of a big city (II) (1,3,4). About 50% of the violence took place outdoors. Many crimes in Kopparberg took place inside or outside restaurants, pubs and other places of public entertainment. There are few such places in Huddinge and the assaults instead took place when people began an evening of "relaxation" at home or as family violence or in the street on the way to the adjacent City of Stockholm. These circumstances could explain the earlier time of the assaults.

During the period investigated interpersonal violence in homes became more common in Kopparberg, probably following the change in legislation in 1982, making all assaults subject to public prosecution. In Huddinge about half of the crimes took place in homes in 1979 and 1982 but the proportion was lower in 1985 with an increase in assaults in streets. This could indicate that the pattern of violence is changing in the suburban region, especially as it was

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expected that the above-mentioned law from 1982 would disclose hidden violence in families etc. In the material almost any imaginable scene of assault was represented but much less frequently than those discussed above.

Sex and age of victims and offenders and any relationship between them.

As in previous studies, victims and offenders were predominantly men (1,3,4,9,13-15,17-20). During the first two years studied the proportion of women victims in Huddinge was higher than in Kopparberg (I, II). The proportion was even in 1985. The percentage had increased in Kopparberg and decreased in Huddinge. The finding in Kopparberg was a predictable consequence of the above-mentioned law from 1982 but the opposite finding in Huddinge was unexpected. The result was, however, influenced by the loss of cases during 1979. If data from these cases had been available the trend might have been different, but the results are still a further indication of a changing pattern of violence in the urban area. In the hospital material (III) the proportion of women victims was lower than in Papers I and II. As will be discussed later this could be because women related to the offender were often hit on other parts of the body than the face.

The number of women victims in Kopparberg with jaw fractures caused by assault decreased from 1979 to 1988 (IV). In Huddinge the number decreased from 1979 to 1985, but increased again in 1988.

The proportion of women offenders in Kopparberg increased (I) and it was found that their victims were more frequently other women than men, suggesting that violence among women is increasing (III). In Huddinge the proportion of women offenders remained fairly constant throughout the period (II).

The age distribution of victims and offenders in Papers I and II was the same. As found in other studies (1,3-5,9,13-15,17,20,21,26-38) the age groups most involved were the late teens and the twenties. In the hospital study (I II) the mean age of the patients in Falun was lower than in Huddinge and in Papers I and II, especially in the group notifying the police of the crime. It is probable that younger Huddinge residents were involved in assaults at places of public entertainment in Stockholm City and were treated at a City hospital. Older people stayed at home and were subject to violence in homes or in other places in the Huddinge Police District. Neither in Falun nor in Stockholm were elderly people represented in the hospital material (I II) although they have featured in the studies of police reported violence (I, II). This indicated that
injuries ensuing from assaults on the elderly were not as serious as in younger people, but it could also indicate a difference in attitude between the generations: the elderly regarded the act of assault as more offensive than younger people, even if the ensuing injuries were minor.

About half the assaults took place between strangers. The proportion of relatives as victims, mostly female spouses, was lower in 1979 than in 1982 and 1985 in Kopparberg. This was an effect of the law from 1982 that made assaults occurring on private property subject to public prosecution. In Huddinge, however, there was a decrease in the number of relatives as victims from 1979 and 1982 to 1985. The finding is a further indication that the pattern of violence in the urban region is changing.

The number of children as victims in this material was low and no evaluable changes were found. One reason for the small number could be that it was difficult to differentiate accidental injuries from injuries caused by assault. Other reasons could be that many children were too young or, as occurs with senile and mentally retarded persons, were unaware that a crime had taken place and had therefore not notified the police.

Many of the participants featured more than once in assault cases, sometimes as victims and sometimes as offenders (I), i.e. a great proportion of the assaults took place between members of certain social sub-groups in the community. This has also been shown by others (3,4).

Foreign citizens as victims and offenders.

During the 1980's criminality among immigrants has received much publicity via the mass media. In this material foreigners featured as offenders about twice as frequently as they were victims and were overrepresented in comparison to the number of foreign residents in the regions investigated (I, II). This finding is difficult to explain. Immigrants might be unfamiliar with Swedish law and unaware that their behaviour would be regarded as a criminal act. They could also have been in the region temporarily. It should also be noted that the group was heterogeneous, with members from all over the world and no general conclusions could therefore be drawn. Neither is it known how many of the Swedish victims and offenders were of foreign origin. Immigrants who have been granted Swedish citizenship are unlikely to have changed their attitudes and moral principles and this further complicates analysis. The higher proportion of foreigners among the offenders than among the victims can partially be explained by the fact that the offender's citizen-
ship was always registered in the police record but not the victim's. Other reasons could be greater reluctance of foreign victims than Swedish victims to notify the police: because of negative experiences of the police in their native countries, because they were in Sweden illegally or had another attitude to assault. The findings indicated, however, that this question warrants further investigation.

**Occupations of victims and offenders.**

Unfortunately in Sweden occupations are not registered unless it is absolutely necessary. Comprehensive data were therefore unavailable. In Paper III no occupations were registered at all. In Papers I and II the victims' occupations were noted in about 55% of the cases and the offenders' in most cases. Most of the participants were blue collar workers. The second most common group of offenders was unemployed in both districts, followed by students. Of the victims, the second most common occupation was students followed by public servants. Many of the students were adults undergoing retraining and they could also have been listed as unemployed. During the period 1979 to 1985 it was possible to follow the community's efforts to support the members of the sub-groups involved in many of the cases. During the first year many were unemployed, in 1982 they were students undergoing retraining and in 1985 they had been granted early retirement pensions.

**The influence of drugs on victims and offenders.**

As known earlier, many of the participants in the assaults were drunk (8,14,19,20,23,27,30,32,33,35,40,46,66,84-89). According to the police reports and case records the proportion influenced by alcohol was higher in Kopparberg than in Huddinge. This was especially marked in Paper I I I . This could be due in part to the higher proportion of foreigners in Huddinge where some belonged to religions which forbade the use of drugs. However it must mainly be attributable to underregistration in the records. It is difficult to estimate whether a person is drunk or has merely consumed a smaller quantity of alcohol. Assessment by various police officers and medical personnel probably varies greatly. The importance of alcohol consumption in assault cases is not clearly defined. Most adults can drink a glass or two of wine or whiskey etc. without committing a crime. The findings show, however, that assaults often occurred in places where alcohol was consumed and it is most likely that drinking habits influenced the way in which people associated. These places were often places of public entertainment where also other negative factors, like a girl's refusal to dance, crowding at the men's or ladies' room etc. could trigger an assault. Narcotics were noted in only a few
cases, indicating that individuals under the influence of narcotics are not inclined to commit violent crimes.

**Methods of inflicting injuries.**

In both districts punching and kicking, followed by the use of different weapons, were the most common means of inflicting injuries (I, II, III). This supports other studies (5, 7, 8, 23, 25, 26, 30, 33, 49, 78, 81). In Kopparberg the pattern remained relatively constant throughout the period, but in Huddinge it was found that the use of weapons like sticks, chains, knives etc. increased and punching and kicking decreased from 1979 to 1985, indicating a trend towards increasingly aggravated violence in this region. In 1988, however, the proportions were similar to those found in the early 1980's. The aggravation indicated could not be confirmed by the injuries caused: serious facial injuries remained at about the same level or decreased during the period, as will be discussed later. Nor did assaults on prone persons, considered to be an indicator of the degree of aggravation, increase.

**Injuries.**

The anatomy of the facial region is characterized by loose soft-tissue, many blood-vessels and thin bony structures which absorb impact forces and fracture, to protect the brain from injury. Especially to the inexperienced observer, even relatively minor trauma may thus have a dramatic appearance.

Most of the victims who notified the crime to the police were uninjured or had minor physical injuries (I, II). A third had wounds as the most serious injury. This proportion is in good agreement with other studies (3, 4, 5). The injuries were mainly located in the head and neck region and were more common on the left than the right side, correlating well with the finding that punching was the most common way of inflicting injury (I, II, 7, 8).

In Kopparberg 6.5% of the victims had fractures and the number of fractures decreased during the period (I). As found previously, nasal fractures were the most common, followed by mandibular and orbito-zygomatical complex fractures (12, 20, 23, 36, 40, 41, 47-49, 59-65). Apart from the orbito-zygomatical fractures which were mainly left-sided the fractures were evenly distributed on left and right sides. In the police studies the percentage of fractures in Huddinge was lower than in Kopparberg (I, II). This was surprising, as other results indicated more aggravated violence in this region. No mandibular fractures were found in the sample and fractures of the leg or foot followed by nasal and zygomatic fractures were the most common. The severity and localisation of the injuries to the head and neck
showed that most assaults were minor, often unexpected attacks. The victim was not prepared to defend himself.

Injuries to other parts of the body were common when the victim and offender had some social relationship. In these cases the victim was probably unable to leave the scene of the crime or had remained for other reasons and was therefore subjected to abuse over a longer period and/or repeated blows. In these cases, to avoid obvious evidence of the assault, the offender probably directed blows to the body instead of the face.

The higher proportion of fractures of the leg found in Huddinge might be attributable to the higher frequency of weapons in assaults in this region. The victims tried to avoid bodily injury by protecting themselves with the legs. Another explanation could be that an offender found it easier to hit at the legs with a chain, stick etc.

In Paper I I I the injuries were more serious. This was also expected as the material was selected. The patients had been referred from the casualty department or the dental surgery, where minor injuries and injuries to other parts of the body had been treated.

Haematomas/swellings and wounds as the most serious injuries comprised about 1/3 in Kopparberg and 16% in Huddinge. This difference was difficult to explain.

A full half of the patients in Paper III had fractures. As reported in earlier studies (30-32,36,45,46,48,49) the most common sites were the nasal bone, followed by the mandible and the maxilla. In Kopparberg there were too few fractures of the mandible to discern any pattern but in Huddinge, as expected from the literature (14,17,25,28,31,37,45), most fracture lines were located at the left angle and the right body. This was because in fracture cases punching was by far the most common method of inflicting injury.

In Paper IV it was possible to discern different fracture patterns according to cause. In traffic accidents, falls and accidents at work, maxillary fractures were more common than in violence and sporting accidents. Condylar fractures were also more commonly associated with traffic accidents and falls. As found in Paper I I I mandibular fractures due to assault were located mainly either in the angular region or the corpus.

Hospitalization and sick-listed patients.

About 1/4 of the patients in Falun and 1/3 in Huddinge required hospitalization. This is in good correlation with other studies (6,
The mean was 4 days but the range was wider in the urban than in the rural district. The proportion of patients who were sick-listed and the mean and range were also higher in Huddinge than in Falun. This could be a further indication of more aggravated violence in suburban Stockholm than in Kopparberg.

**Possible correlation between injuries and the method of inflicting them.**

An important aspect of forensic odontology and one of the aims of this study was to seek a possible correlation between different kinds of violence and the victim's injuries, as evidence for conviction or acquittal. Unfortunately, with the exception of the most serious crimes, the material in the records was often too vague to permit analysis and conclusions. The method of inflicting the injuries, the number and direction of punches, kicks etc. were not noted in detail. Thus it was not possible to draw any conclusions.

It was also found that the medical certificates of the injuries issued to the police were frequently inadequate. The patient records in many cases lacked important information of where, when and how the assault had taken place, whether there was any suspect, and detailed description of the injuries.

The findings in this study show that dentists and doctors need to be made more aware of the importance of documenting these cases. Although it may seem to be a minor detail for health professionals treating assault victims, proper records are of great importance, not only in court, where information obtained from a medical certificate may convict or acquit a suspect, but also in insurance claims and with respect to long-term effects.

There is also an ethical aspect. The victim has the right to be treated with all possible understanding, respect and support in a stressful and delicate situation. The question therefore arises as to where and from whom victims should receive odontological or medical treatment. The patients, the police, prosecutors and the courts have the right to require that the dentists or surgeons are experienced, competent and interested in the special circumstances surrounding criminal violence.

Finally this study complements earlier studies by correlating social, criminological and odontological aspects of violent crimes. As a basis for future research, the study provides a comprehensive assessment of violence and ensuing injuries in the Swedish community in the 1980's.
SUMMARY

This study analyses police reported violence in a suburban and a semi rural region of Sweden during 1979, 1982 and 1985. Also analysed are data on patients seeking medical care for injuries due to assault in the same two regions in 1988. Jaw fractures treated in 1979, 1982, 1985 and 1988 in the regions are also included.

Most criminal violence took place during week-ends, in the evenings. The circumstances differed, however, between the two investigated areas. In the rural County of Kopparberg assaults tended to be associated with public entertainment but in the suburban Huddinge Police District violence in streets was more common.

The number of violent crimes reported to the police increased during the period, but this was not reflected in the study of patients with jaw fractures caused by assault during the same period. Nor did this study confirm the general impression that cases of aggravated violence have increased. The increase in reported crimes may not represent a real increase in violence in the community, but may to some extent reflect an increased tendency to notify the police authorities because of public awareness generated by the great interest in violence by the mass media during the 1980's.

The participants were mainly in their late teens or twenties. Old age-pensioners were uncommon, both as victims and offenders. The majority of the offenders were men but depending on the year investigated, between a quarter to half the victims were women. Of these, half were related to the offender. The proportion of women offenders increased during the period in Kopparberg but not in Huddinge.

Among the offenders, foreign citizens were overrepresented, but as this group was heterogeneous no general conclusions could be drawn.

Many victims and offenders appeared more than once in the cases, indicating that many of the assaults took place between members of different sub-groups in the community.

Many of the participants, especially in the County of Kopparberg, were under the influence of alcohol when the assault took place. The differences between the regions could be attributable partly to the different composition of the populations: Huddinge has more foreign residents belonging to religions which prohibit alcohol. However, the difference is mainly explained by differences in assessment of alcohol consumed. The registered influence of narcotics was low, indicating that narcotic abusers did not tend to be involved in violent criminality.
The most common means of inflicting injuries were punching and kicking. During the period investigated this pattern was constant in Kopparberg, but in Huddinge the use of different weapons like sticks, knives etc. increased from 1979 to 1985, indicating an aggravation in violence. In the hospital study of 1988, the proportion of methods resembles conditions in the early 1980's. The indication that violence had become more aggravated was not confirmed by the ensuing injuries.

Two thirds of the victims notifying the police had no or minor injuries. Five per cent had fractures and the rest wounds, often minor. In most cases the injuries were located on the face. However in oases of women victims related to the offender, the pattern was different, with injuries often on other parts of the body than the face.

Of the patients seeking medical care at departments of oral surgery or ENT-diseases for injuries caused by assault, a full half had fractures, mostly of the nose. A quarter of the patients in Kopparberg and one-third in Huddinge was hospitalized for an average of 4 days. In Kopparberg one-third was sick-listed for an average of 15 days. For Huddinge, the corresponding figures were 40% and 19 days respectively.

The material was not suitable for studies of injury dynamics, because in both the police reports and medical records, the descriptions of the ways in which the injuries were inflicted frequently lacked important details.

About 40% of the victims seeking medical care in the rural region and 27% in the urban region reported the crime to the police. The difference was probably due mainly to different attitudes towards violence.

In summary, the frequently expressed opinion that aggravated violence is increasing in the community is not confirmed by this material. Although more assaults are now classified by police officers as aggravated assault in judicial terms, information from medical records on the severity of injuries sustained by assault victims does not confirm these data. On the contrary, compared to the increase in the 1950's and 1960's the findings indicated a levelling off of the incidence of facial injuries caused by assault. Violent crimes are, however, serious and the present situation must not be underestimated. In order to improve our understanding of criminal violence in the community and to develop preventive strategies, further research is necessary to correlate forensic, odontological and medical factors.
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INJUKISS DUE TU VIOLENT CRIMES

A study of police reported assaults during 1979, 1902 and 1905 in the County of Kopparberg.

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Strom C. Injuries due to violent crimes. A study of police reported assaults during 1979, 1982 and 1985 in the County of Kopparberg.

Criminological and odontological variables of 1870 cases of assaults reported to the police during 3 separate one-year periods, 1979, 1982 and 1985 were collected and analysed. Most of the cases were from densely populated areas. There was an increase of cases from 1979 to 1905, particularly violence in residences. No differences of the type or kind of assault could be found. The proportion of women victims increased markedly and to a lesser extent women offenders. One third of the victims were not injured by the assault, 1/3 suffered hematomas or swellings and 1/3 wounds. 6.5% had fractures. The left side of the face was the most common site of soft-tissue injuries and zygomaticoorbital fractures. No aggravation of the violence or the resultant injuries could be found during the period.

Key words: Facial injuries, violence, alcohol abuse.
Introduction

During the last decades violence in the Swedish society has been widely discussed. Violent crimes appear to have become more frequent and serious, an observation supported in part by the official statistics of police reported crimes presented by the Central Bureau of Statistics and, since 1976 compiled annually for longer periods by the National Council for Crime Prevention (Bra 1989).

In 1950, when the central registration of police reported crimes started, 195,261 crimes were reported compared to 1,086,211 crimes in 1938. Of these about 7,500 in 1950 and 40,000 in 1980 were cases according to the 3rd and 17th chapters of the Penal Code, i.e. assaults, attempted murder, murder or manslaughter but also cases classified as "causing injury, illness or death with no intention to assault".

The reliability of these figures has been checked (CSCB 1978) and it was found that 5.27% of cases classified as crimes of violence were incorrectly classified.

Aggravated assaults, attempted murder, murder and manslaughter comprised about 77% of crimes reported. The remainder were assaults.

Since 1950, however, there have been many changes which could influence the statistics. Responsibility for the Police was transferred from the local authorities to a government ministry in 1965; at the same time the criminal code system and the reporting routines were standardised and computerised. Other factors that influenced the statistics were alterations and interpretations of laws. For example, corporal punishment of children was permitted in the 50's but later forbidden. In 1965 the Criminal Law from 1864 was replaced by a Penal Code and in 1982 all cases of assaults were submitted
for public prosecution.

The tendency to report crimes to the police probably also varied from time to time.

The criminological variables of violent crimes in Sweden have been described (Kuhlhorn et al 19b4, Vicströra lyö5). The conclusions were that violent crimes were concentrated in urban centres or certain residence areas. It was found that the incidence of violence was higher in the three major urban areas, Stockholm, Gothenburg and lalrad than in other regions of Sweden.

In about half the cases the victim and the offender knew each other. Most of the violent crimes occurred in places of public entertainment or in homes. Cases were more frequent during the summer than the winter, and often occurred during weekends and in the evenings or early at night. The age distribution of both victims and offenders was similar; the mean age was between the late teens to the early thirties, depending on the type of assault.

Punches were the most common way to batter the victim. Different kinds of weapons were used in 14% of the cases.

Alcohol played an important role in violence. About 54% of victims and 75% of offenders were intoxicated by alcohol at the time of the assault.

Most victims and offenders were Swedish citizens.

About 1/4 of the victims were not injured, half had minor injuries and the rest suffered more serious injuries from the assault.

These conclusions were based mainly on reported crimes. It is well known that many crimes are never reported to the police. In the above investigations unreported crime has been estimated; as many as 90% of some kinds of
violent crimes may never become reported.


Injuries caused by violence were mainly not as serious as traffic injuries. Sociological factors associated with facial injuries and jaw fractures have also been studied (Hitchin & Shuker 1973, Lindahl 1974, Khalil & Shaladi 1981, McDade et al 1982, Lissau & Aagaard 1983, Antti-Poika 1986); education, unemployment, alcohol-abuse and earlier crime were important factors.

The relationship between injuries and violence has not been extensively studied in Sweden and the investigations published have been based on relatively small materials (Lenke 1973, Blomquist et al 1980).

The aims of this investigation were twofold: firstly to study any possible changes in criminological and odontological variables in all cases of
police-reported violent crimes in the County of Kopparberg during 1979, 1982 and 1985 and secondly to investigate a possible correlation between different kinds of violence and the ensuing injuries.
Material and methods

The material comprised all cases of assaults, attempted murder, murder and manslaughter reported to the police in the County of Kopparberg during 1979, 1982 and 1985, with the following exceptions:
cases obviously classified under the wrong criminal code,
accidental bodily injury, illness or death,
cases where no direct or indirect physical contact between victim and offender had occurred.

The data were collected from records with headings "criminal matters-prosecutor cases" and "criminal matters-no result of investigation" in the archives of the police districts.

To estimate the loss of cases the collected data from 1985 were compared with the registration of reported violent crimes to the National Police Board.

The following variables were registered:
police district, area code and type of assault,
date, day of the week, time of day and scene of assault,
who reported the crime to the police,
how many times a victim or an offender appeared in the cases,
sex, relation to the offender, age, occupation, domicile, citizenship and any influence of drugs of the victim and, if known, the offender,
type of violence, anatomical site and severity of the injury.

The material was compiled by an computerized program. The anonymity of victims and offenders was protected.
Results

In all 1870 cases came within the limits of the investigation. A comparison between the statistics from the National Police Board during 1905 and the cases found showed that 96 cases (11.2%) according to the data from the National Police Board could not be found.

The population of the County of Kopparberg were about the same, 285 000, during the three investigated years.

Kost of the cases, 1131 (60.5%), occurred in densely populated areas, often in the centre of cities or in certain residential areas. Assaults between strangers took place in 37.9% of the cases, between acquainted individuals in 54.3% and towards people on duty in 7.8%.

The number of cases differed between the police districts even when the number was related to the population (table 1).

Kost of the cases were classified as assaults, about 6% as aggravated assaults and only a few as attempted murder, murder or manslaughter (table 2).

There was an increase of cases during the summer. Host of the cases occurred during weekends and in the evening or early at night.

Kost cases, 1543 (82.5%), were reported by the victim, 201 (10.7%) by a third party and 126 (6.8%) by the police.

472 men and 96 women were registered in more than one case either as victim or offender or both. One man appeared 9 times as offender and one woman 6 times as victim during the Investigated period.

The most common scenes of assaults were places of public entertainment and residences (table 3).

About 15% of the victims were related to the offender, mostly cohabiting.
In this group all except 4 of the victims were women (table 4).
The sex distribution of victims and offenders is shown in table 5.
The mean age of the victims was 31.3 years (sd 14.4 years, range 1-88 years),
Corresponding figures were for the offenders 30.3 years (sd 12.1 years, range
10-82 years).
The occupation of both victims and offenders is shown in table 6.
The offender was unknown in 212 cases. In 143 cases there were 2 offenders.
In 36 cases there were 3 offenders and in 2 cases 4 offenders.
Two per cent of the victims and 5.3% of the offenders were foreign
citizens.
Forty-eight per cent of the victims and 75% of the offenders were under
the influence of alcohol when the crime took place. There was no difference
between the investigated years.
Punching, i.e. a blow from a closed fist, was the most common mean of
violence used in assaults (table 7)
About 1/3 of the victims were not injured at all.
Swellings and hematomas were the most common injuries and the left side of
the face was most exposed. The incidence of fractures decreased slightly
from 1979 to 1985 (tables 8, 9, figures 1, 2).
Injuries to teeth were vaguely described in the police reports but
fractures were found in 51 cases, luxations in 24 cases and exarticulations
in 18 cases. In 3 cases, dentures were destroyed.
Discussion.

The present material was based on findings from records in archives of the police authorities. Bot all cases officially registered could be found. The material for 1985 was compared to the officially registered cases from the National Police Board (NPB). A loss of 96 cases (11.27%) was found. A test of the reliability of the criminal code system (CSCB 1978) showed that 5.2% of cases noted as violent crimes in the statistics from HPB were wrongly coded and were in fact other kinds of crimes.

Furthermore, in one investigation (Kühlhorn et al. 1984) based on material from a court archive, 6.8% of cases registered in the archive could not be found. If the officially reported material in this investigation for 1985 is reduced by the number of cases wrongly coded (5.2%), the real loss is 6% compared to 6.8% in another investigation (Kühlhorri et al. 1984) based on a similar material. Thus 94% of the actual cases were found, comprising an adequate material from which to draw conclusions.

With respect to the criminological data, the results generally were in accordance with previous investigations (Kühlhorn et al. 1984, Wikström 1985, Brå 1989). The number of police reported violent crimes increased between 1979 and 1985. The marked increase between 1979 and 1982 was probably partially due to changes in the law 1982 when all violent crimes were submitted for public prosecution. At the same time there also was intense debate over battering of women and children and this might have enhanced people's willingness to report violent crimes.

Only a minor part of assaults were reported to the police (Kühlhorn et al. 1984, Wikström 1985) and variations in this material cannot directly be extrapolated to the total situation. There was, however, no indication that
the actual violence has decreased

Compared to other Swedish counties Kopparberg shows an average incidence of violent crimes (Bra 1989). Differences were, however, found among the seven districts in the county; the district with most crimes, Borlänge, had almost twice as many crimes per 100,000 inhabitants than Avesta, with the proportionately lowest number. Both districts included industrial centres and rural areas, but Borlänge had about 50% more inhabitants than Avesta. Rättvik, Mora and Malung, 3 police districts most frequented by tourists, also showed a rather high incidence compared to Avesta, the only district with a decrease of incidence between 1982 and 1905.

The high incidence of violent crimes in the densely populated areas was anticipated from earlier studies (Kuhlhorn et al 1984, Wikström 1985, Brå 1989). That the rural districts also had a similar incidence was not expected. It was probably due to the fact that these districts were very popular tourist resorts both in winter and summer and thus offered an environment that predisposed to violent crimes.

It should also be borne in mind that the holiday populations of these districts far exceeded the number of permanent residents. The proportions between different types of violent crimes did not change during the investigated period. Aggravated assaults and attempted murder, murder or manslaughter comprised about 7% during the three years. This result was in agreement with other findings (Kühlhorn et al 1984, Wikström 1985, Brå 1989).

More cases took place during the summer than the winter often in the evening or early at night during weekends, as shown by others (Kühlhorn et al 1984, Wikström 1985, Brå 1989).
It was also found that some people appeared as victim or offender more than
once. Many of the reported crimes involved 1 or 2 such persons. During 1979 places of public entertainment were the most common scenes of
assault, followed by residences. In 1982 and 1985 assaults in residences
and especially the victim's residence increased markedly and exceeded those
in places of public entertainment. This was probably an effect of the new
law from 1982 requiring all violent crimes to be submitted for public prose-
cution and forbidding withdrawal of a report. Another contributing factor
was the increasing interest in spouse- and child abuse and a greater
willingness to report these crimes.
Of the total material about 15% of the victims were related to the
offender. There was a marked change from 1979 to 1982 and 1935 when the per-
centage more than doubled. The increase was mainly among women victims
cohabiting with the offender. The number of battered children, parents,
and other relatives also increased but the figures were too small to
allow any conclusions.
The sex distribution of the victims showed an increasing proportion of
women from 1979 to 1985. These findings were in accordance with earlier
studies (Kühnhorn et al. 1984, Wikström 1985, Brå 1989) and was probably due to
the public prosecution and a marked interest especially in assaults on
women.
The proportion of women offenders also increased from 1979 to 1985.
This might be a negative effect of the women's liberation.
The age distribution of both victims and offenders was similar. The mean
age, 31 years, was influenced by the inclusion of a few cases with elderly
participants. Most victims and offenders were in their late teens, which is
In accordance with other studies (Kühlhorn et al. 1984, Wikström 1985). The people involved in the crimes were mainly Swedish citizens. A minor part were foreign citizens who often had been living and working in Sweden for many years. Almost half the victims and 3/4 of the offenders were under the influence of alcohol at the time of crime. The association of alcohol with violent crimes in this study was similar to findings from earlier studies (Blomquist & Cassel 1964, Hitchin & Shuker 1973, Lindahl 1974, Tasanen et al. 1975, Heimdal & Sordenram 1977, Lamberg 1978, Afzelius & Rosen 1980, Prokop 1980, Balle et al. 1982, KcDade et al. 1902, Voss 1982, Brook & Wood 1983, Lissau & Aagaard 1983, Sheridan 1983, Andersson et al. 1984, Kühlhorn et al. 1984, Vikström 1985, Antti-Poika 1986, Thorn et al. 1986, Shepherd et al. 1988). There was no direct correlation between alcohol and violent crimes: most people can consume alcoholic drinks without committing any crime. Many violent crimes were, however, committed in environments where alcohol was consumed. The most common type of violence was punching followed by kicking. Various weapons were used in about 15% of the cases. The proportion of assaults on prone persons decreased slightly from 1979 to 1985. There were however, no significant changes and these findings did not support the widely held opinion that acts of violence has become more aggravated.

About 1/3 of the victims suffered no injury at all. Another third had swellings or hematomas, the rest wounds. Almost 3/4 of these injuries were located to the head and neck, mostly the left side. Fourteen per cent of the victims were hit on both the body and head and neck, these victims often co-habited with the offender and were therefore exposed to violence over longer periods. A minority of the victims had bodily injuries only and 6.5...
had some kind of fracture. The number of fractures decreased from 1979 to 1985, a fact that also contradicted the general impression of increasing cases of serious acts of violence.

Injuries to teeth were not detailed in the reports or in the medical certificates, and no conclusions can be drawn.

The higher incidence of soft tissue injuries and zygomaticoorbital fractures to the left side of the face was attributable to the fact that most of the assaults were by punching; most people were right handed and directed blows to the left side of the victim.

This material has given some general information on injuries caused by violent crimes. Unfortunately, however, the data on both injuries and other variables were in many cases too vague to provide the necessary information for detailed analysis. The material also described conditions in a rural district and gave no indication of the situation in urban regions where there was a concentration of violence. Further investigations are therefore necessary to provide a comprehensive picture of the violence in contemporary Sweden and the ensuing injuries.
References.


Acknowledgements.

Financial support to this investigation has been awarded from the national Council for Crime Prevention, Dalarna Research Council and the Swedish Dental Association.
Table 1. Number of assaults during 1979, 1982 and 1985 in the police districts of Kopparberg in absolute figures and per 100 000 inhabitants (rounded off to whole numbers).

<table>
<thead>
<tr>
<th>Police district</th>
<th>1979 Number N/100 000</th>
<th>1982 Number N/100 000</th>
<th>1985 Number N/100 000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avesta</td>
<td>70</td>
<td>88</td>
<td>76</td>
</tr>
<tr>
<td>Borlänge</td>
<td>126</td>
<td>226</td>
<td>224</td>
</tr>
<tr>
<td>Falun</td>
<td>54</td>
<td>100</td>
<td>154</td>
</tr>
<tr>
<td>Ludvika</td>
<td>74</td>
<td>106</td>
<td>113</td>
</tr>
<tr>
<td>Malung</td>
<td>30</td>
<td>30</td>
<td>45</td>
</tr>
<tr>
<td>Mora</td>
<td>62</td>
<td>84</td>
<td>65</td>
</tr>
<tr>
<td>Rättvik</td>
<td>28</td>
<td>27</td>
<td>65</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>446</strong></td>
<td><strong>661</strong></td>
<td><strong>783</strong></td>
</tr>
<tr>
<td>Type of assault</td>
<td>1979</td>
<td>1982</td>
<td>1985</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td></td>
<td>Number</td>
<td>Number</td>
<td>Number</td>
</tr>
<tr>
<td>Attemp to or completed murder or manslaughter</td>
<td>0(0)</td>
<td>9(1.4)</td>
<td>7(0.9)</td>
</tr>
<tr>
<td>Aggravated assault</td>
<td>29(6.5)</td>
<td>36(5.4)</td>
<td>43(5.6)</td>
</tr>
<tr>
<td>Assault</td>
<td>417(93.5)</td>
<td>618(93.2)</td>
<td>713(93.5)</td>
</tr>
<tr>
<td>Total</td>
<td>446(100)</td>
<td>661(100)</td>
<td>763(100)</td>
</tr>
</tbody>
</table>

Table 2. Type of assault: distribution per year during 1979, 1982 and 1985.
<table>
<thead>
<tr>
<th>Scene of assault</th>
<th>1979</th>
<th>1982</th>
<th>1985</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number (%)</td>
<td>Number (%)</td>
<td>Number (%)</td>
</tr>
<tr>
<td>Places of public entertainment</td>
<td>179 (40.1)</td>
<td>171 (25.9)</td>
<td>196 (25.7)</td>
</tr>
<tr>
<td>The victim's residence</td>
<td>67 (15.0)</td>
<td>176 (26.6)</td>
<td>214 (28.0)</td>
</tr>
<tr>
<td>The offender's residence</td>
<td>16 (3.6)</td>
<td>35 (5.3)</td>
<td>27 (3.5)</td>
</tr>
<tr>
<td>Other accommodation</td>
<td>32 (7.2)</td>
<td>79 (12.0)</td>
<td>72 (9.4)</td>
</tr>
<tr>
<td>Street</td>
<td>68 (19.7)</td>
<td>108 (16.3)</td>
<td>137 (18.0)</td>
</tr>
<tr>
<td>Car park/other park</td>
<td>11 (2.6)</td>
<td>16 (2.4)</td>
<td>18 (2.4)</td>
</tr>
<tr>
<td>Car</td>
<td>9 (2.0)</td>
<td>16 (2.4)</td>
<td>16 (2.1)</td>
</tr>
<tr>
<td>Camping ground</td>
<td>8 (1.8)</td>
<td>5 (0.8)</td>
<td>23 (3.0)</td>
</tr>
<tr>
<td>Bus-/railway station</td>
<td>5 (1.1)</td>
<td>6 (0.9)</td>
<td>10 (1.3)</td>
</tr>
<tr>
<td>Police station</td>
<td>5 (1.1)</td>
<td>4 (0.6)</td>
<td>6 (0.8)</td>
</tr>
<tr>
<td>School</td>
<td>2 (0.4)</td>
<td>5 (1.2)</td>
<td>10 (1.3)</td>
</tr>
<tr>
<td>The victim's place of work</td>
<td>8 (1.8)</td>
<td>8 (1.2)</td>
<td>10 (1.3)</td>
</tr>
<tr>
<td>Other places</td>
<td>16 (3.6)</td>
<td>32 (4.8)</td>
<td>31 (4.1)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>446 (100)</strong></td>
<td><strong>661 (100)</strong></td>
<td><strong>763 (100)</strong></td>
</tr>
</tbody>
</table>

Table 3. The scene of assault per year 1979, 1982 and 1985. If the victim and offender were cohabiting and the assault took place in their residence the case is registered as "the victim's residence".
Table 4. The relationship between victim and offender (per cent of all cases per year) during 1979, 1982 and 1985.

<table>
<thead>
<tr>
<th>Relationship between victim and offender</th>
<th>1979</th>
<th>1982</th>
<th>1985</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spouse/cohabiting</td>
<td>31(7.0)</td>
<td>106(16.1)</td>
<td>105(13.8)</td>
</tr>
<tr>
<td>Child</td>
<td>3(0.7)</td>
<td>7(1.1)</td>
<td>8(1.0)</td>
</tr>
<tr>
<td>Parents</td>
<td>2(0.4)</td>
<td>7(1.1)</td>
<td>11(1.4)</td>
</tr>
<tr>
<td>Brothers or sisters</td>
<td>0(0)</td>
<td>4(0.6)</td>
<td>2(0.3)</td>
</tr>
<tr>
<td>Other relatives</td>
<td>1(0.2)</td>
<td>4(0.6)</td>
<td>2(0.3)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>37(8.3)</td>
<td>129(19.5)</td>
<td>130(17.0)</td>
</tr>
</tbody>
</table>
Table 5, The sex of victims and offenders in per cent per year during 1979, 1982 and 1985.

<table>
<thead>
<tr>
<th></th>
<th>1979</th>
<th>1982</th>
<th>1985</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victims</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>78.9</td>
<td>64.5</td>
<td>67.1</td>
</tr>
<tr>
<td>Women</td>
<td>21.1</td>
<td>35.5</td>
<td>32.9</td>
</tr>
<tr>
<td>Offenders</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>95.8</td>
<td>92.2</td>
<td>90.3</td>
</tr>
<tr>
<td>Women</td>
<td>4.2</td>
<td>7.8</td>
<td>9.7</td>
</tr>
<tr>
<td>Occupation</td>
<td>Victim Number(%)</td>
<td>Offender Number(%)</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>------------------</td>
<td>--------------------</td>
<td></td>
</tr>
<tr>
<td>Workmen belonging to blue collar unions</td>
<td>467 (25.0)</td>
<td>829 (44.3)</td>
<td></td>
</tr>
<tr>
<td>Employees organised by white collar/</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>academic unions</td>
<td>39 (2.1)</td>
<td>29 (1.6)</td>
<td></td>
</tr>
<tr>
<td>Selfemployed</td>
<td>34 (1.8)</td>
<td>45 (2.4)</td>
<td></td>
</tr>
<tr>
<td>Retired</td>
<td>60 (3.2)</td>
<td>31 (1.7)</td>
<td></td>
</tr>
<tr>
<td>Early retirement pensioners</td>
<td>37 (2.0)</td>
<td>67 (3.6)</td>
<td></td>
</tr>
<tr>
<td>Students</td>
<td>186 (10.1)</td>
<td>163 (8.7)</td>
<td></td>
</tr>
<tr>
<td>Police officers</td>
<td>45 (2.4)</td>
<td>1 (0)</td>
<td></td>
</tr>
<tr>
<td>Watchmen/doorkeepers</td>
<td>89 (4.8)</td>
<td>10 (0.5)</td>
<td></td>
</tr>
<tr>
<td>Sicklisted</td>
<td>1 (0)</td>
<td>3 (0.2)</td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>49 (2.6)</td>
<td>166 (8.9)</td>
<td></td>
</tr>
<tr>
<td>Other occupations</td>
<td>44 (2.4)</td>
<td>33 (1.8)</td>
<td></td>
</tr>
<tr>
<td>Occupation not noted</td>
<td>816 (43.6)</td>
<td>281 (15.0)</td>
<td></td>
</tr>
<tr>
<td>Person unknown</td>
<td></td>
<td>212 (11.3)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1870 (100)</td>
<td>1870 (100)</td>
<td></td>
</tr>
</tbody>
</table>

Table 6. The occupations of victims and offenders. In the 181 cases where there were more than 1 offender known all offenders had the same occupation and are registered as 1 case.
Table 7. Kind of violence in assaults in per cent per year during 1979, 1982 and 1985. A combination of 2 or more kinds of violence could be possible in the Individual case.

<table>
<thead>
<tr>
<th>Kind of violence</th>
<th>1979</th>
<th>1982</th>
<th>1985</th>
</tr>
</thead>
<tbody>
<tr>
<td>Punching</td>
<td>69.7</td>
<td>65.5</td>
<td>62.5</td>
</tr>
<tr>
<td>Kicking</td>
<td>25.3</td>
<td>24.5</td>
<td>23.7</td>
</tr>
<tr>
<td>Weapon</td>
<td>14.1</td>
<td>14.1</td>
<td>16.3</td>
</tr>
<tr>
<td>Slapping</td>
<td>6.5</td>
<td>8.3</td>
<td>7.7</td>
</tr>
<tr>
<td>Pushing</td>
<td>5.2</td>
<td>7.0</td>
<td>8.7</td>
</tr>
<tr>
<td>Grip</td>
<td>3.4</td>
<td>6.5</td>
<td>7.5</td>
</tr>
<tr>
<td>Scratching, biting</td>
<td>2.7</td>
<td>3.3</td>
<td>3.4</td>
</tr>
<tr>
<td>Skulling</td>
<td>2.0</td>
<td>0.3</td>
<td>0.1</td>
</tr>
<tr>
<td>Mauling</td>
<td>-</td>
<td>0.2</td>
<td>0.1</td>
</tr>
<tr>
<td>Assault of prone person</td>
<td>14.1</td>
<td>11.1</td>
<td>12.1</td>
</tr>
</tbody>
</table>
### Table 8. Number of injuries in relation to anatomical region and kind of injury during 1979, 1982 and 1985.

<table>
<thead>
<tr>
<th>Anatomical region</th>
<th>Kind of injury</th>
<th>1979</th>
<th>1982</th>
<th>1985</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head and neck</td>
<td>Swellings/hematomas</td>
<td>114</td>
<td>162</td>
<td>162</td>
</tr>
<tr>
<td></td>
<td>Wounds</td>
<td>90</td>
<td>120</td>
<td>169</td>
</tr>
<tr>
<td>Head and neck and body</td>
<td>Swellings/hematomas</td>
<td>12</td>
<td>31</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Wounds</td>
<td>13</td>
<td>36</td>
<td>64</td>
</tr>
<tr>
<td>Body only</td>
<td>Swellings/hematomas</td>
<td>19</td>
<td>33</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Wounds</td>
<td>18</td>
<td>27</td>
<td>35</td>
</tr>
<tr>
<td>Fractures all sites</td>
<td></td>
<td>48</td>
<td>38</td>
<td>36</td>
</tr>
<tr>
<td>No injury</td>
<td></td>
<td>132</td>
<td>212</td>
<td>222</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>446</td>
<td>661</td>
<td>763</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Anatomical location of fracture</th>
<th>Number of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandible</td>
<td>17</td>
</tr>
<tr>
<td>Mandible and nose</td>
<td>1</td>
</tr>
<tr>
<td>Maxilla</td>
<td>2</td>
</tr>
<tr>
<td>Nose</td>
<td>32</td>
</tr>
<tr>
<td>Nose and zygoma</td>
<td>1</td>
</tr>
<tr>
<td>Nose and skull</td>
<td>1</td>
</tr>
<tr>
<td>Nose and arm</td>
<td>2</td>
</tr>
<tr>
<td>Left orbitozygomatical complex</td>
<td>13</td>
</tr>
<tr>
<td>Right orbitozygomatical complex</td>
<td>4</td>
</tr>
<tr>
<td>Skull</td>
<td>7</td>
</tr>
<tr>
<td>Cevical vertebrae</td>
<td>2</td>
</tr>
<tr>
<td>Clavicula</td>
<td>1</td>
</tr>
<tr>
<td>Sternum</td>
<td>1</td>
</tr>
<tr>
<td>Ribs</td>
<td>14</td>
</tr>
<tr>
<td>Arm or hand</td>
<td>12</td>
</tr>
<tr>
<td>Leg or foot</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>122</strong></td>
</tr>
</tbody>
</table>

Table 9. Number of victims with fractures and the anatomical distribution of these fractures.
Figure 1. The anatomical distribution of hematomas and swellings in the total material (in per cent).
Figure 2. The anatomical distribution of wounds in the total material (in percent).
Injuries Due to Violent Crimes: A study of police reported assaults during 1979, 1982 and 1985 in a police district of a suburb of Stockholm, Sweden

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ABSTRACT
The study is based on a sample of 249 violent crimes reported to the police in Huddinge during 1979, 1982 and 1985. Throughout the period it was found that the violence increased not only in number but also in seriousness. Most of the cases took place during weekends and in the evenings. Different accommodations were the most common scene of the crime. The majority of victims and offenders were men. Many were foreign citizens.

Three-quarters of the victims had some kind of injury, mostly hemorrhatomata and swellings. The left side of the face was the anatomical region mostly hit.

INTRODUCTION
Injuries caused by violence and surrounding social and criminological factors meet an increasing interest not only in mass media but also in the literature (Brottsförebyggande Rådet, 1988; Angeräs et al., 1989; Shepherd, 1989). In an earlier study (Ström, 1989) the literature concerning injuries caused by violence was reviewed and a review of injuries caused by police reported assaults in the county of Kopparberg during 1979, 1982 and 1985 was presented. It was found that reported violent crimes increased between 1979 and 1985. The majority of cases were classified as assaults, there being only a few aggravated assaults and attempted murder or homicides. Most of the cases occurred in densely populated areas, often during weekends and in the evenings.

The incidence of female victims increased markedly also: to a lesser degree as offenders. Very few foreign citizens were involved. Lenke (1989) has recently shown the differences between the influence of public and private drinking habits on assaults. He showed that aggravated assault was associated to a greater extent with private consumption of alcohol whereas assault was combined with public drinking.

Table J. Type of assault: distribution per year during 1979, 1982 and 1985

<table>
<thead>
<tr>
<th>Type of assault</th>
<th>1979 Number (%)</th>
<th>1982 Number (%)</th>
<th>1985 Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attempted murder, murder or manslaughter</td>
<td>0 (0%)</td>
<td>1 (0.9%)</td>
<td>7 (7.1%)</td>
</tr>
<tr>
<td>Aggravated assault</td>
<td>5 (13.5%)</td>
<td>7 (6.1%)</td>
<td>10 (102%)</td>
</tr>
<tr>
<td>Assault</td>
<td>32 (86.5%)</td>
<td>106 (93%)</td>
<td>81 (82.7%)</td>
</tr>
<tr>
<td>Total</td>
<td>37 (100%)</td>
<td>114 (100%)</td>
<td>98 (100%)</td>
</tr>
</tbody>
</table>
During the investigated period no aggravation of violence or injuries could be found. A third of the victims suffered no injury in connection with the assault; the rest had haematomata, swellings and wounds, and 6.5% had fractures. The left side of the face and the nose were the most common anatomical regions hit. Other investigations (Brottsförebyggande Rådet, 1988; Wikström, 1985) have shown that more violence took place in urban than in rural areas in Sweden. The three big cities, Stockholm, Gothenburg and Malmoe, had the highest incidence of these crimes.

Table II. The scene of assault per year 1979, 1982 and 1985 If the victim and offender were cohabiting and the assault took place in their residence the case is registered as 'the victim's residence'.

<table>
<thead>
<tr>
<th>Scene of assault</th>
<th>1979 Number(%)</th>
<th>1982 Number(%)</th>
<th>1985 Number(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place of public entertainment</td>
<td>4 (10.8)</td>
<td>6 (5.3)</td>
<td>8 (8.2)</td>
</tr>
<tr>
<td>The victim's residence</td>
<td>15 (40.5)</td>
<td>49 (43.0)</td>
<td>31 (31.6)</td>
</tr>
<tr>
<td>The offender's residence</td>
<td>3 (8.1)</td>
<td>4 (3.5)</td>
<td>-</td>
</tr>
<tr>
<td>Other accomodation</td>
<td>2 (5.4)</td>
<td>12 (10.5)</td>
<td>9 (9.2)</td>
</tr>
<tr>
<td>Street</td>
<td>4 (10.8)</td>
<td>19 (16.7)</td>
<td>28 (28.6)</td>
</tr>
<tr>
<td>Car park/other park</td>
<td>-</td>
<td>4 (3.5)</td>
<td>9 (9.2)</td>
</tr>
<tr>
<td>Car</td>
<td>1 (2.7)</td>
<td>1 (0.9)</td>
<td>1 (1.0)</td>
</tr>
<tr>
<td>Bus/railway station</td>
<td>5 (13.5)</td>
<td>5 (4.4)</td>
<td>2 (2.0)</td>
</tr>
<tr>
<td>Police station</td>
<td>-</td>
<td>1 (0.9)</td>
<td>-</td>
</tr>
<tr>
<td>School</td>
<td>1 (2.7)</td>
<td>3 (2.6)</td>
<td>1 (1.0)</td>
</tr>
<tr>
<td>The victim's place of work</td>
<td>1 (2.7)</td>
<td>1 (0.9)</td>
<td>-</td>
</tr>
<tr>
<td>Other place</td>
<td>1 (2.7)</td>
<td>9 (7.9)</td>
<td>9 (9.2)</td>
</tr>
<tr>
<td>Total</td>
<td>37 (100)</td>
<td>114 (100)</td>
<td>98 (100)</td>
</tr>
</tbody>
</table>
The sex of victim and offender in percent per year during 1979, 1982 and 1985

<table>
<thead>
<tr>
<th></th>
<th>1979</th>
<th>1982</th>
<th>1985</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victim</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>54.1</td>
<td>44.7</td>
<td>66.0</td>
</tr>
<tr>
<td>Female</td>
<td>45.9</td>
<td>55.3</td>
<td>34.0</td>
</tr>
<tr>
<td>Offender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>94.6</td>
<td>92.2</td>
<td>94.7</td>
</tr>
<tr>
<td>Female</td>
<td>5.4</td>
<td>7.8</td>
<td>5.3</td>
</tr>
</tbody>
</table>

1. To study a sample of police reported violent crimes in the police district of Huddinge during 1979, 1982 and 1985 for any possible changes in criminological and odontological variables.

2. To investigate a possible correlation between different kinds of violence and the ensuing injuries.

3. To compare the results from Huddinge police district with those found during the same period in the county of Kopparberg.

MATERIAL AND METHODS

The region investigated was the police district of Huddinge. It is situated just south of the city of Stockholm. The mean population was about 150,000 during the investigated period.

The material consisted of every 5th case of violent crimes according to the 3rd and 17th chapters of the Penal Code, reported to the police in Huddinge during 1979, 1982 and 1985, with the following exceptions:

1. Cases obviously classified under the wrong criminal code.
2. Accidental bodily injury, illness or death.

Table IV. The relationship between victim and offender (per cent of all cases per year during 1979, 1982 and 1985

<table>
<thead>
<tr>
<th>Relationship between victim and offender</th>
<th>1979 Number (%)</th>
<th>1982 Number (%)</th>
<th>1985 Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spouse/cohabiting</td>
<td>11 (29.7)</td>
<td>29 (25.4)</td>
<td>12 (12.2)</td>
</tr>
<tr>
<td>Child</td>
<td>2 (1.8)</td>
<td>2 (2.0)</td>
<td></td>
</tr>
<tr>
<td>Parents</td>
<td></td>
<td>2 (2.0)</td>
<td></td>
</tr>
<tr>
<td>Brothers or sisters</td>
<td></td>
<td>1 (1.0)</td>
<td></td>
</tr>
<tr>
<td>Other relatives</td>
<td>1 (0.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>11 (29.7)</td>
<td>32 (28.1)</td>
<td>17 (17.2)</td>
</tr>
</tbody>
</table>
The material was statistically analysed by a computer program (Quest). The anonymity of victims and offenders was protected.

RESULTS
A total of 249 cases of assault were found within the limits of the investigation: 37 cases in 1979, 114 cases in 1982 and 98 cases in 1985. No cases for the year 1979 were found in which there were no results of the investigation in the police archive.

Most of the cases in the sample took place between individuals known to one another, 42.7% were between strangers and 5% involved people on duty.

Most of the cases were classified as assaults, about 8.8% as aggravated assaults and 3.2% as attempted murder, murder or manslaughter (Table I). The distribution of cases per month is shown in Figure 1. Most of the assaults took place in the evenings during the weekends (Figures 2 and 3). The most common scenes of assaults were residences and streets (Table II).

Most of the cases (76.3%) were reported by the victim, 12.9% by the police and 10.8% by a third party.

Table V. The occupations of victims and offenders. In the 11 cases where there were two offenders they had the same occupation and are registered as 1 case

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Victim Number (%)</th>
<th>Offender Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workmen belonging to blue collar unions</td>
<td>57 (22.9)</td>
<td>81 (32.5)</td>
</tr>
<tr>
<td>Employees organized by white collar/academic unions</td>
<td>6 (2.4)</td>
<td>1 (0.4)</td>
</tr>
<tr>
<td>Self-employed</td>
<td>2 (0.8)</td>
<td>12 (4.8)</td>
</tr>
<tr>
<td>Retired</td>
<td>1 (0.4)</td>
<td>7 (2.8)</td>
</tr>
<tr>
<td>Early retirement pensioners</td>
<td>2 (0.8)</td>
<td>26 (10.4)</td>
</tr>
<tr>
<td>Students</td>
<td>26 (10.4)</td>
<td>26 (10.4)</td>
</tr>
<tr>
<td>Police officers</td>
<td>5 (2.0)</td>
<td>—</td>
</tr>
<tr>
<td>Watchmen/doorkeepers</td>
<td>8 (3.2)</td>
<td>1 (0.4)</td>
</tr>
<tr>
<td>Sicklisted</td>
<td>—</td>
<td>4 (1.6)</td>
</tr>
<tr>
<td>Unemployed</td>
<td>4 (1.6)</td>
<td>34 (13.7)</td>
</tr>
<tr>
<td>Other occupations</td>
<td>13 (5.2)</td>
<td>4 (1.6)</td>
</tr>
<tr>
<td>Occupation not noted</td>
<td>119 (47.9)</td>
<td>—</td>
</tr>
<tr>
<td>Person unknown</td>
<td>—</td>
<td>78 (31.4)</td>
</tr>
<tr>
<td>Total</td>
<td>249 (100)</td>
<td>249 (100)</td>
</tr>
</tbody>
</table>

About 24% of the victims were women (Table III).

The sex distribution of victims and offenders was similar with a maximum in the group 31-35 years for victims and 26-30 years for offenders and a mean age of victims of 31 and offenders of 29 (Figures 4 and 5).
Table VI. Citizenship and domicile of all victims and offenders in the material

<table>
<thead>
<tr>
<th>Citizenship and domicile</th>
<th>Victim</th>
<th>Offenders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swedish citizen living in Huddinge police district</td>
<td>72.3%</td>
<td>52.0%</td>
</tr>
<tr>
<td>Swedish citizen living in other parts of Sweden</td>
<td>9.6%</td>
<td>8.8%</td>
</tr>
<tr>
<td>Foreign citizen</td>
<td>18.1%</td>
<td>39.2%</td>
</tr>
<tr>
<td>Total</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

The occupation of both victims and offenders is shown in Table V. The offender was unknown in 78 cases; in 11 cases there were two offender.

Approximately one-fifth of the victims and two-fifths of the offenders were foreign citizens (Table VI).

The influence of alcohol and narcotics when the crime took place is shown in Table VII.

Punching, i.e. a blow from a closed fist, was the most common means of violence used in assault, but decreased during the investigated period. The use of different weapons almost doubled from 1979 to 1985 (Table VIII). About a quarter of the victims were not injured at all.

Swellings and haematoma were the most common injuries and the left side of the face was most exposed, 39.7% of the victims were injured in the head and neck, 18.8% on the body and 10.8% on both head and neck and body. Of the 27 victims with injuries on the whole body 18 were cohabiting with and 2 were children of the offender; 10 fractures were found in this sample (Tables IX and X; Figures 6 and 7).

Injuries to the teeth were vaguely described in the police reports but fractures were found in 4 cases, luxations in 2 cases and loss of the tooth in 5 cases.

DISCUSSION

All cases for 1982 and 1985 were available in the archives, but for 1979 no cases in which there was no result of the investigation could be found. The loss of similar cases has been reported as being between 6% and 6.8%, indicating that this is a reliable way of collecting material. If the figures for 1982 and 1985 are extrapolated, about 380 are found in 1982 and 326 in 1985 per 100,000 persons; it can be seen that there is a higher incidence of victims of assault than that recorded in Kopparberg.

Also there were differences in other variables. In Huddinge police district more cases were classified as aggravated assaults or attempted murder, murder or manslaughter than in the county of Kopparberg. Apart from a peak in March there was no greater change of reported violent crimes throughout the year as was found in Kopparberg. This was probably due partly to the fact that public entertainment in Huddinge does not undergo as great a seasonal change as in Kopparberg, and partly
Table VIII. Kind of violence in assaults presented in per cent per year during 1979, 1982 and 1985. A combination of two or more kinds of violence could be possible in individual cases.

<table>
<thead>
<tr>
<th>Kind of violence</th>
<th>1979</th>
<th>1982</th>
<th>1985</th>
</tr>
</thead>
<tbody>
<tr>
<td>Punching</td>
<td>64.9</td>
<td>57.3</td>
<td>48.0</td>
</tr>
<tr>
<td>Kicking</td>
<td>27.0</td>
<td>29.8</td>
<td>17.3</td>
</tr>
<tr>
<td>Weapon</td>
<td>16.2</td>
<td>20.2</td>
<td>36.7</td>
</tr>
<tr>
<td>Slapping</td>
<td>21.6</td>
<td>7.9</td>
<td>7.1</td>
</tr>
<tr>
<td>Pushing</td>
<td>—</td>
<td>11.4</td>
<td>18.4</td>
</tr>
<tr>
<td>Grip</td>
<td>13.5</td>
<td>6.1</td>
<td>11.4</td>
</tr>
<tr>
<td>Scratching, biting</td>
<td>10.8</td>
<td>6.1</td>
<td>4.1</td>
</tr>
<tr>
<td>Skulling</td>
<td>—</td>
<td>1.8</td>
<td>1.0</td>
</tr>
<tr>
<td>Assault of prone person</td>
<td>18.9</td>
<td>24.6</td>
<td>11.2</td>
</tr>
</tbody>
</table>

Table IX. Number of injuries in relation to anatomical region and kind of injury during 1979, 1982 and 1985.

<table>
<thead>
<tr>
<th>Anatomical region</th>
<th>Kind of injury</th>
<th>1979</th>
<th>1982</th>
<th>1985</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injury to head and neck</td>
<td>Swelling, haematomas</td>
<td>8</td>
<td>25</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Wounds</td>
<td>11</td>
<td>21</td>
<td>17</td>
</tr>
<tr>
<td>Injury to head and neck and body</td>
<td>Swelling, haematomas</td>
<td>0</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Wounds</td>
<td>3</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Bodily injury</td>
<td>Swelling, haematomas</td>
<td>3</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Wounds</td>
<td>2</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Fractures all sites</td>
<td></td>
<td>0</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>No injury</td>
<td></td>
<td>10</td>
<td>22</td>
<td>32</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>37</td>
<td>114</td>
<td>98</td>
</tr>
</tbody>
</table>

Table X. The distribution of all fractures registered.

<table>
<thead>
<tr>
<th>Region</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maxillary</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td>Nasal</td>
<td>2</td>
<td>0.8</td>
</tr>
<tr>
<td>Zygoma</td>
<td>2</td>
<td>0.8</td>
</tr>
<tr>
<td>Arm or hand</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td>Leg or foot</td>
<td>3</td>
<td>1.3</td>
</tr>
<tr>
<td>Rib</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>4.1</td>
</tr>
</tbody>
</table>

However, not so distinct as in Kopparberg. The reason is probably the low degree of public entertainment available in Huddinge. The times when most of the assaults took place were earlier in the evening, when people were on their way to the City and met at streets, railway stations, etc.

The home was the most common scene of violence in the two regions investigated, though the percentage was higher in Huddinge. In Kopparberg a quarter of all assaults took place in places of public entertainment but in Huddinge only about a tenth of the cases had some connection to public entertainment. Violence on streets, in parks, etc. increased markedly from 1979 to 1985. The reason is unclear.

Also assaults at bus or railway stations were more common in Huddinge, probably due to a more developed system of communications and more passengers on their way to or from Stockholm.

The police reported more violent crimes in Huddinge than in Kopparberg. This can be explained by the fact that Huddinge is a geographically small district compared to Kopparberg and therefore it was easier for the police officers to hear about violence.

In the sample from Huddinge there were more women victims than in Kopparberg, with a peak in 1982 and a lower number in 1985 than 1979. For the rural district the tendency was increasing, with only a slight drop between 1982 and 1985. The finding in Kopparberg that women offenders increased during the period was not repeated in Huddinge.
During 1979 and 1982 the proportion of victims related to the offender was higher in Huddinge than in Kopparberg, but in 1985 both districts had the same percentage. There was no peak in Huddinge in 1982 like that in Kopparberg, when all levels of violence were submitted to the public prosecutor.

The mean age of both victims and offenders was about the same as in Kopparberg, but the age groups most represented were older, both in the victims and the offenders. This was probably due to the fact that places of public entertainment, where younger individuals commit assaults, were not a common part of the violence in Huddinge.

The pattern of occupations was similar, but as the profession in many cases was not registered in the police report no final conclusions could be made.

There was a markedly higher number of foreign citizens taking part in the violence in Huddinge than in Kopparberg. In Huddinge police district about 16% of the population were foreigners (personal communication, Central Bureau of Statistics). Foreign offenders were represented twice as much in the material as their part of the population. The number of foreign victims, however, was in the same proportion as their number in the population. The high prevalence of offenders from other countries could be explained by factors such as different cultural background, difficulties in getting settled in Sweden and uncertainty with staying in Sweden, etc.
According to police reports more victims and offenders were sober in Huddinge than in Kopparberg. This is probably also an effect of the low degree of violence correlated with public entertainment, where drinking is common.

The type of violence became more serious in Huddinge during the investigated period. The use of different weapons increased.

About a third of the victims had no injuries. The proportions of haematomata, swellings and wounds were similar. The anatomical distribution of injuries was similar with a concentration to the left side of the head. Fractures were not common. Victims with injuries on both head and neck and body were often related to the offender. The wider spread of injuries was probably due to the fact that these victims could not escape for various reasons and therefore were subjected to violence for longer periods.

Dental injuries were, as in Kopparberg, vaguely described both in the police reports and the doctors’ certificates.

To sum up, the reported violence has increased both in the rural and in the urban areas. More cases per 100,000 persons were reported in the urban region and violence has also grown to a higher level in the urban area.

Injuries were often not so serious and between 25-30% of the victims had no injury at all. Detailed information on the injuries, especially dental, could not be found in the police reports, apart from relatively few cases. To illuminate the injuries in detail, further investigation, preferably on hospital records, has to be done.

ACKNOWLEDGEMENT
Financial support to this investigation has been awarded from the National Council for Crime Prevention, Dalarna Research Council and the Swedish Dental Association.

REFERENCES
Personal communication with the Central Bureau of Statistics.
Ström C. Injuries due to violent crimes. A study of police reported assaults during 1979, 1982 and 1985 in the county of Kopparberg. Accepted for publication, Med. Sei. Luw.
Facial injuries due to criminal violence: 
A retrospective study of hospital attenders.

Christer Strom t, Gunnar Johanson #, Ake Nordenram t#

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# The Department of Forensic Odontology and
## The Department of Oral Surgery, Karolinska Institutet, Stockholm
Abstract.

Strom C, Johanson G, Nordenram A. Facial injuries due to criminal violence, A retrospective study of hospital attenders.

The material comprised 222 assault victims whose injuries required attention at the Departments of Oral Surgery and Ear, Nose, and Throat diseases, the Central Hospital in Falun or corresponding departments at the Karolinska Institutet, Stockholm or the University Hospital in Huddinge. Information was obtained from patient records.

One-hundred and thirty-eight patients had fractures and the remainder had flesh-wounds, hematomas or swellings. The most frequent fracture site was the nasal bone followed by the Jaws.

Forty-one per-cent of the patients in Falun and 28% in Stockholm reported the assaults to the police: in Falun the proportion of women victims who reported the assault was significantly higher than those who did not. Thee willingness to notify the police of the violence was not influenced by the use of drugs or the seriousness of the injuries.

The study showed that violence in suburban Stockholm was aggravated: one third of the patients in the study required hospitalization compared to a quarter in a rural area.

Key words: Facial injuries, violence.
Introduction


However, there are some reports that oppose this trend and instead claim that there have been a levelling off and in some studies also a declining incidence of facial injuries (Lamberg 1978, Afzelius S Rosén 1980, Starkhammar & Olofsson 1982, Andersson et al 1984, Beck 1989).


In Sweden, studies of the criminal violence and factors surrounding the assaults have shown that there has been an increase in reported crimes during the last three decades (Brå 1989).
Between 11% and 33% of assault victims required hospitalization, most often for less than a week (Blonquist et al 1980, Dahlberg et al 1987, Angeras 1989) and 36% were sick-listed, mostly for less than 2 weeks (Dahlberg et al 1987).

Of the victims attending emergency clinics 29% to 58% reported the crime to the police (Lenke 1973, Blonquist et al 1980).

As most studies either have discussed injuries without penetrating the surrounding factors or vice versa it was found valuable to study injuries caused by assault and the criminological variables connected.

The purpose of this study was to investigate head and neck injuries in two Swedish populations, one rural and one urban, the surrounding criminological variables and the tendency to report physical assaults to the police.
Material and method.

The basis for this study is all assault victims attending the following institutions during 1908: the Departments of Oral Surgery and Ear, Nose and Throat diseases, the Central Hospital, Falun or the Department of Oral Surgery, Karolinska Institutet, Stockholm, and the Department of Ear, Nose and Throat diseases, at Huddinge University Hospital.

The Central Hospital in Falun is situated in the County of Kopparberg, a rural county with approximately 285,000 inhabitants. Huddinge is a suburb to Stockholm and the surrounding area has about the same number of inhabitants as Kopparberg.

Information was obtained from the patient registers and records at the respective clinics.

The following variables were registered from the patient records and the police registers of injured persons:

* which department the patient first consulted
* if the assault was reported to the police authorities or not
* sex of patient and offender and any relationship between victim and offender.
* age of patient
* any influence of drug
* month, day of week, time of day and place of the assault
* type of violence
* kind of injury and anatomical location
* number of days the patient was hospitalized
* sick-leave due to the assault (information obtained from the Social Insurance Office).
Differences between the urban and rural groups and differences between the group that reported the assault to the police and the group which did not were statistically analysed with Student's t-tests, chi-square tests and binominal tests. A probability of less than 0.05 was considered statistically significant.
Results

In total 222 patients, 134 from Falun and 88 from Stockholm met the inclusion criteria set up. In Falun all patient records were found but in Stockholm 0 records of 134 could not be loaded, though the diagnoses were noted in the patient registers.

In some cases it had been noted in the records that patients were unwilling to offer more information on the assault than necessary for treatment. One patient in each region left before examination was completed.

Most of the patients, 62 in Falun and 108 in Stockholm, attended the care via the ENL'-departments.

The material was divided in two groups depending on if the assault was reported to the police (group 1) or not (group II). The distribution between the groups and the sex of victims and offenders is presented in Table 1. About half of the patients in group I did not recognize or would not disclose the offender. People in Falun preferentially battered individuals of the same sex, while this could not be seen in Stockholm. Neither in Falun nor in Stockholm there was a sex preference to notify the police of the assaults.

Eight women and 1 man in group I had been battered by their spouses. In group II 3 women had been abused by their husbands and one man and one woman by their sisters.

The proportion of patients recorded as intoxicated by alcohol is shown in Table 2. The degree of soberness did not influence the tendency to report the assault in any of the two regions or for any of the sexes. There was no difference in soberness of the sexes when battered, but the victims in Falun were significantly more influenced by alcohol than the victims in
Stockholm.

The mean age of the victims in Falun in group 1 was 24.3 years (sd 8.4, range 14-43 years; and in group II 23.5 years (sd 7.2, range 13-50 years). The corresponding figures in Stockholm were in group 1 32.1 years (sd 12.4, range 12-62 years; and in group II 31.3 years (sd 11.6, range 5-63 years).

The distribution over the year was even, five incidents during weekends were the most common time for the assaults.

Many of the subjects, especially in group II would not disclose the scene of assault but the known places are presented in Table 3. The tendency to report the crime was low in cases where the scene of the assault was unknown. There was a higher tendency in Falun than in Stockholm to report assaults that took place in places of public entertainment.

Punching followed by kicking was the most common type of violence inflicted (Table 4). In Stockholm significantly less victims than in Falun reported the assault to the police if they had been punched or slapped.

Two patients left before examination, 11 patients sustained no injury, 28 had hematomas/swellings and 24 had different kinds of soft tissue wounds as the most serious injury. Tympanic membrane ruptures were noted in 19 additional patients and further 138 patients had fractures (Figures 1, 2, and Tables 5, 6). Dental injuries were noted in 8 patients. In Falun there was no tendency due to the injuries to report or not report the assaults but in Stockholm there was a repugnance against notifying the police independant of the seriousness of the injury.

In Falun 8 patients also had injuries on other parts of the body but there was no notation in the case records from Stockholm of such injuries.
There was no tendency for the injuries to be mainly left or right sided.

Of the patients in Falun 20 (22.7%) required hospitalization for 2-7 days, (mean 4 days). In Stockholm 49 (36.6%) required hospitalization for 1-15 days (mean 3.7 days).

From the Social Insurance Office in Falun it was reported that 9 patients were sick-listed at the time of the assault. Twenty-nine patients (33%) were sick-listed because of the assault. The longest sick leave was 67 days and mean 15 days. Corresponding results in Stockholm were 3 patients sick-listed at the time of the assault and 53 patients sick-listed because of the assault (range 2-770 days, mean 33.1 days). In April 1990 when the check up was done one patient was still sick-listed due to psychiatric illness caused by the assault. Excluding the patient still sick-listed the range was 2-116 days (mean 19.7 days).

The cost for these sick-listed patients was for the Social Insurance Offices 571,123 Skr. The cost for the patient still sick-listed was at the time of the check up 146,000 Skr.
Discussion

Kost victims of assaults receive minor or no injuries and probably do not receive medical attention or are treated at the hospital casualty department or by their dentist (Lenke 1973, Wolf 1973, O'Donoghue 1979, Dahlberg et al 1987, Shepherd et al 1966, Armeras et al 1909, Ström 1991, Ström et al 1991). This material is therefore a selection of more severely injured subjects. However, as most injuries sustained in assaults were to the head and neck (Lenke 1973, Yoli 1973, Christlano et al 1986, Dahlberg et al 1967, Shepherd et al 1989, Angeras et al 1989, Ström 1991, Strom et al 1991) the material is representative for victims with more serious injuries due to criminal violence. Conclusions concerning assault victims in general are, however, not possible to do.

The material was based on registers of patients where all diagnoses were available. All but one patient records (3.5%) could be found in the archives. Thus there was no loss of data with respect to diagnoses, sex and age, but a loss for the other registered variables of 3.5%. The material is considered large enough for conclusions to be drawn.

However, especially in delicate cases like assaults, the victim's account in the case records could not be considered objective. For different reasons the patient might have exaggerated or understated aspects of the assault. Many patients were also intoxicated; the accounts could be illogical and incomplete. Many different physicians were involved and they probably did not all register injuries in the same way. Minor injuries may not have been registered in cases with more serious injuries. The findings should therefore be interpreted with caution, not only with respect to the offender, the scene of assault and the nature of violence but also with
respect to minor injuries. In this material 20% of the victims in Falun and 30% in Stockholm reported the crime to the police, the result from Falun is in good agreement with Lenke's (1973) and Blonqvist et al's (1980) findings. The lower figure in the urban region might be due in part to the fact that criminality was higher in Stockholm (Brottsförebyggande Rådet 1989); and that the inhabitants were more accustomed to violence and did not tend to report crimes they considered minor. Another explanation might be that the urban police force was under-manned and did not have the resources to do more than register the assault; the victims decided it was pointless to notify the police authorities. As will be seen later it was also probable that the social relationship between victim and offender was closer in Huddinge, implying a reluctance to involve the police (Brottsförebyggande Rådet 1989). Dissimilarities in the socio-economic composition of the two population groups could have been a further cause.

The proportion of women in Falun that reported the assault to the police was significantly higher than those who did not. This was somewhat surprising as there is a general opinion that most injured women do not notify the police of the assault.


The victims were, however, older in Stockholm than in Falun. This is pro-
bably due to the fact that interpersonal violence between younger individuals occurred more frequently in places of public entertainment; places that not were common in the suburb to Stockholm.

Fewer victims attended the primary care via the Department of Oral surgery in Stockholm than in Falun; this was probably due to differences in facilities for emergency care in the two regions.

Many of the victims in Falun were under the influence of alcohol. This has also been reported in other studies (Lundin et al 1973, Lamberg 1978, Bende et al 1979, Alzellus & Kosen 1980, McDade et al 1982, Hovesen & Jørgensen 1983, Dahlberg et al 1967, Shepherd 1989, Timmoney et al 1990, Ström 1991;). According to the notations in the patient records remarkable few victims in Stockholm were intoxicated by alcohol. This is to a certain degree confirmed by Strom et al <.1991>. Probably the attending oral surgeon or physician did not consider it necessary to record this information, another explanation could be the high proportion of foreign citizens both in the population and in criminal activities in Stockholm (Strom et al 1991) with people belonging to religions where the consignation of alcohol is forbidden. Women and men were in similar proportions drunk when they were afflicted to the assault which indicate that the women equality also includes the bad habits of the men. the decree of soberness did not influence the willingness to report the crime.

The distribution over the year (month, day of week, time of day) mainly followed the recognized pattern; the assaults were distributed over the year but concentrated to evenings or early nights of the week-ends (Lenke 1973, Wolf 1973, Lamberg 1970, Bende et al 1979, Breytenbach et al 1983, Dahlberg et al 1987, Brottsförebyggande rådet 1989, Shepherd 1989, Strom 1991, Ström
The most common scenes of the assaults were in Falun residences and places of entertainment and in Stockholm residences and streets as found earlier (Strom 1991, Strom et al 1991). This difference was probably due in part to the fact that entertainment was centred round the adjacent Stockholm City. The assaults in Stockholm took place either at the beginning of a pleasant evening, on the way to or from the City, as family violence or between socially randomized groups. The figures are, however, unreliable as many of the scenes, especially when the crime was unreported, not were known. It was possible that there were social connections that the victim tried to hide.

About half the victims in the group which did not notify the crime to the police did not recognize or would not disclose the offender. Most of the known offenders were men. In Falun 3.5% of the victims were related to the offender compared to 77% in Stockholm. This indicates together with the results of the victim's age and the scene of the assault that family violence could be more common in Stockholm. The figures are, however, very unreliable. Many of the unidentified offenders could have been family members or other relatives whom the victim was reluctant to implicate.

The way of inflicting injuries to the victims - was traditional with punches as the most common way, especially when the patient got fractures. This is in good correlation with the results from other studies (Strom 1991, Strom et al 1991) and seems to contradict the commonly held opinion that violence had become markedly aggravated during the 1900's. The frequency of kicking was, however, lower in Falun than in Stockholm which indicates that the violence in the urban region was more aggravated than in the rural. Victims
in Stockholm that had been punched or slapped reported to the police in a significantly lower degree than the victims in Falun the assault. The explanation was unclear but apart from that there could be social relations between victim and offender in a higher degree in Stockholm it might be an apprehension that this kind of violence was normal.

The injuries were more serious than in other studies of battered patients. This was attributable to the selection of material for the study. These patients had been referred by a dentist or casualty department for specialist attention! patients with minor injuries or injuries to some other region of the body were not referred to the actual departments in this study.

The registered incidence of hematomas and wounds as the most serious injury was higher in the material from Falun and the proportion of fractures in group II lower than in Stockholm. The frequencies of other registered injuries were similar. Nasal fractures were the most common fractures as found earlier (Schultz 1970, Lundin et al 1973, Lamberg 1978, Sende et al 1979, Starkhammar & Olofsson 1902, Shepherd et al 1980, Ström 1991, Ström et al 1991). In this material the registered number of maxillary fractures in Stockholm was higher than in other studies (Seal et al 1978, Breytenbach et al 1903, Strom 1991, Ström et al 1991) and compared to the material from Falun. This is partially due to different classification of fractures to the alveolar crest and that patients with the Central Hospital in Falun as the nearest hospital lived up to 250 km away and sometimes got minor fractures treated at the local dentist or physician. In Stockholm specialist attention was more accessible.

There were few fractures of the zygoma due to violence; this is similar to
what has been found in others studies (Iarsen & Thorasen 1978, Neal et al 1978, Strom 1901, Strom et al 1991;

The distribution of the injuries did not show any tendency to favour the right or the left side as might have been expected when punching was the most common type of violence. The assaults were probably not like boxing-matches with the participants face to face. The victim was unprepared for the assault or tried to evade a blow by turning other parts of the face towards the offender.

Injuries to the teeth were not common in this material. It is possible that dental injuries not were noted in the records in favour of more serious and that the actual number was higher.

The seriousness of the injuries did not influence the willingness to report the assault to the police.

One fourth of the patients in Falun and 1/3 in Stockholm required hospitalization. The number of days per patient, however, was similar. There were also more victims sick-listed in Stockholm due to violence than in Falun. This indicates that the injuries caused by violence in Stockholm were more serious than in Falun.

The cost for the community is difficult to evaluate. Apart from the direct cost for the hospital care and sick-pay there were also costs for the police investigations and insurance companies and loss of production. This study showed that violence and ensuing injuries in Falun differed in many ways from Stockholm. However, many uncertain variables were disclosed during this study, indicating the need for more detailed investigation.
References


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44 Strom C, Bordenram A, Johanson G. Injuries due to violent crimes. A study of police reported assaults during 1979, 1932 and 1985 in a police district of a suburb of Stockholm, Sweden. Accepted for publ in Med Sei Law


Acknowledgment

Financial support to this study has been released from the national Council for Crime Prevention and the Swedish Dental Association.
Table 1. The victim's sex correlated to the offender's sex and whether the assault was reported to the police or not in Falun and Huddinge.

<table>
<thead>
<tr>
<th></th>
<th>Falun Reported</th>
<th>Falun Not reported</th>
<th>Stockholm Reported</th>
<th>Stockholm Not reported</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td>Men</td>
<td>23</td>
<td>7</td>
<td>35</td>
<td>2</td>
</tr>
<tr>
<td>Women</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Unknown</td>
<td>1</td>
<td>0</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td>10</td>
<td>46</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Falun Reported</td>
<td>Falun Not reported</td>
<td>Stockholm Reported</td>
<td>Stockholm Not reported</td>
</tr>
<tr>
<td>----------------</td>
<td>---------------</td>
<td>-------------------</td>
<td>--------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td>Alcohol intoxicated</td>
<td>16</td>
<td>7</td>
<td>25</td>
<td>5</td>
</tr>
<tr>
<td>Sober</td>
<td>10</td>
<td>3</td>
<td>21</td>
<td>1</td>
</tr>
<tr>
<td>Unknown</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td>10</td>
<td>46</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 2. Alcohol Intoxication in victims at the time of assault. Distribution according to sex and whether the assault was reported to the police or not in Falun and Stockholm.
<table>
<thead>
<tr>
<th>Scene of assault</th>
<th>FALUN Reported/Not reported</th>
<th>STOCKHOLM Reported/Not reported</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Number</td>
</tr>
<tr>
<td>The victim's residence</td>
<td>4/2</td>
<td>9/10</td>
</tr>
<tr>
<td>The offender's residence</td>
<td>1/2</td>
<td>-</td>
</tr>
<tr>
<td>Other residence</td>
<td>2/0</td>
<td>4/6</td>
</tr>
<tr>
<td>Places of public entertainment</td>
<td>16/6</td>
<td>6/15</td>
</tr>
<tr>
<td>Street</td>
<td>6/5</td>
<td>13/17</td>
</tr>
<tr>
<td>Park/parking ground</td>
<td>1/0</td>
<td>-</td>
</tr>
<tr>
<td>Railway station</td>
<td>-</td>
<td>0/3</td>
</tr>
<tr>
<td>School</td>
<td>0/1</td>
<td>1/2</td>
</tr>
<tr>
<td>Prison</td>
<td>0/2</td>
<td>-</td>
</tr>
<tr>
<td>Car</td>
<td>2/0</td>
<td>-</td>
</tr>
<tr>
<td>Sporting ground</td>
<td>0/1</td>
<td>-</td>
</tr>
<tr>
<td>Hospital</td>
<td>0/1</td>
<td>-</td>
</tr>
<tr>
<td>Unknown</td>
<td>5/32</td>
<td>4/44</td>
</tr>
</tbody>
</table>

Table 3. The scene of the assault distribution according to region and whether the crime was reported to the police or not.
Table 4, Type of violence in assaults distributed per region and police reported/not police reported assault. The total number is not the same as the number of patients in the study as two or more types of violence may have been involved during the assault.

<table>
<thead>
<tr>
<th>Violence</th>
<th>FALUN Reported/not reported</th>
<th>STOCKHOLM Reported/not reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Puching</td>
<td>25/37</td>
<td>25/63</td>
</tr>
<tr>
<td>Kicking</td>
<td>8/9</td>
<td>11/22</td>
</tr>
<tr>
<td>Weapon</td>
<td>3/2</td>
<td>9/3</td>
</tr>
<tr>
<td>Slepping</td>
<td>3/3</td>
<td>4/16</td>
</tr>
<tr>
<td>Pushing</td>
<td>1/3</td>
<td>2/3</td>
</tr>
<tr>
<td>Grip</td>
<td>0/2</td>
<td>-</td>
</tr>
<tr>
<td>Skulling</td>
<td>1/3</td>
<td>3/3</td>
</tr>
<tr>
<td>Assault of prone person</td>
<td>3/6</td>
<td>-</td>
</tr>
<tr>
<td>Kind of injury</td>
<td>FALUN Reported/not reported</td>
<td>STOCKHOLM Reported/not reported</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>-----------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>Hematomas/swellings</td>
<td>7/11</td>
<td>3/7</td>
</tr>
<tr>
<td>Wounds</td>
<td>7/5</td>
<td>5/7</td>
</tr>
<tr>
<td>Sympathetic membrane injury</td>
<td>2/2</td>
<td>3/12</td>
</tr>
<tr>
<td>Fractures (no of patients)</td>
<td>19/27</td>
<td>21/71</td>
</tr>
<tr>
<td>No injury or left before examination</td>
<td>1/7</td>
<td>5/0</td>
</tr>
<tr>
<td>Total</td>
<td>36/52</td>
<td>37/97</td>
</tr>
</tbody>
</table>

Table 5. The most serious injury to the patients distributed per region and whether the assault was reported to the police or not.
Table 6. Distribution of fractured bones in the 19 patients in Falun and 21 patients in Stockholm who reported the crime to the police and the 27 in Falun and 71 in Stockholm who did not report the assault.

<table>
<thead>
<tr>
<th>Fractured bone</th>
<th>Falun Reported/not reported</th>
<th>Stockholm Reported/not reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nasal bone</td>
<td>10/17</td>
<td>7/30</td>
</tr>
<tr>
<td>Maxilla</td>
<td>5/3</td>
<td>3/17</td>
</tr>
<tr>
<td>Mandible</td>
<td>4/7</td>
<td>7/21</td>
</tr>
<tr>
<td>Left orbital floor</td>
<td>0/1</td>
<td>2/1</td>
</tr>
<tr>
<td>Right zygoma</td>
<td>1/0</td>
<td>3/3</td>
</tr>
<tr>
<td>Left zygoma</td>
<td>0/2</td>
<td>1/2</td>
</tr>
<tr>
<td>Cranium</td>
<td>0/0</td>
<td>0/2</td>
</tr>
<tr>
<td>Left hand</td>
<td>1/0</td>
<td>0/0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>21/30</strong></td>
<td><strong>23/76</strong></td>
</tr>
</tbody>
</table>
Figure 1. Haematomas/swellinga distributed whether the assault was reported/not reported and per region.
Figure 2. Wounds distributed whether the assault was reported/not reported and per region.
Jaw fractures in the County of Kopparberg and Stockholm 1979-1988

A retrospective comparative study of frequency and cause with special reference to assault

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The Departments of Oral Surgery, the Central Hospital, Falun.
#The Institution of Oral Surgery, Karolinska Institutet, Stockholm.

Kwrs.: Jaw fractures, violence.

ABSTRACT

The material comprised all 367 patients with fractures jaws treated at the Departments of Oral Surgery, Karolinska Institutet, Stockholm (216) and the Central Hospital in Falun (151) during 1979, 1982, 1985 and 1988. Mandibular fractures predominated. There was no increase of the number of fractures in Stockholm and a slight decrease in Falun. In both districts the patients were predominantly men aged between 20 and 35.

The most common cause of fractures in Stockholm was assault followed by traffic accidents. In Falun traffic accidents were most common, followed by assault. No increase in assaults was found.

The study refutes the widespread impression of a steadily increasing incidence of cases of assault and an increasing frequency of aggravated assault.

SAMMANFATTNING


Den vanligaste orsaken till frakturer i Stockholm var misshandel följt av trafikolyckor. I Falun var trafikolyckor den vanligaste orsaken följt av misshandel. Ingen ökning av antalet misshandelsfall sågs.

Studien motsäger den allmänna uppfattningen att antalet misshandelsfall ökat och blivit grövre.

INTRODUCTION

Long-term monitoring of statistics over injuries due to assault provides valuable data on trends in criminal violence which would otherwise be difficult to discern. It has been shown that jaw fractures have become more common during the last decades and are

In Sweden injuries due to criminal violence the 1980's have been studied in a rural and an urban area (Ström 1991, Ström et al 1991, Ström et al 1991b). In the rural area police reported violence increased during this period and in the urban area the incidence of aggravated violent crime increased.

Between 60-70% of assault victims attending hospital did not notify the police of the crime; thus data limited to police reported crimes are not truly representative of overall violent crime in the community. The general opinion is that not only is the incidence of criminal violence increasing, but also that the frequency of aggravated violence is increasing. In this study, therefore the incidence of jaw fractures over an extended period has been analysed for possible changes.

The hospital records for two groups of patients, one rural and one suburban, have been analysed an compared for four separate years 1979,1982,1985 and 1988, with special reference to composition, type of fracture and possible changes in the material.

MATERIAL AND METHOD
The material comprised 151 patients with jaw fractures treated at the Department of Oral Surgery, the Central Hospital Falun, in the County of Kopparberg and 216 patients with jaw fractures from the Department of Oral Surgery, Karolinska Institutet, Stockholm during 1979,1982,1985 and 1988. Seven patient records could not be found. The diagnoses in these cases were, however, registered in the archives, and the fractured jaw was known but not the exact location nor the cause.

The following variables were registered: - sex and age of patient - year of the fracture - etiology of the fracture - location of fracture

The material was divided in 2 geographic groups, a rural from Kopparberg and an urban group from Huddinge, a suburb of Stockholm.

RESULTS
Most of the patients were men both in the total material and in the group of assault victims (Tables 1,2). The mean age of patients treated in Kopparberg was 30.8 years (sd 15.9 range 1-76 years) and in Stockholm 30.5 years (sd 14 range 4-76 years).

Table 1. Distribution of fractures in Kopparberg and Stockholm according to sex and year.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kopparberg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>29(64.4)</td>
<td>27(77.1)</td>
<td>29(73.2)</td>
<td>19(61.3)</td>
</tr>
<tr>
<td>Woman</td>
<td>16(35.6)</td>
<td>8(22.9)</td>
<td>12(26.8)</td>
<td>11(36.7)</td>
</tr>
<tr>
<td>Total</td>
<td>45(100)</td>
<td>35(100)</td>
<td>41(100)</td>
<td>30(100)</td>
</tr>
<tr>
<td>Stockholm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>38(79.2)</td>
<td>45(81.8)</td>
<td>52(85.2)</td>
<td>38(73.1)</td>
</tr>
<tr>
<td>Woman</td>
<td>10(20.8)</td>
<td>10(18.2)</td>
<td>9(14.8)</td>
<td>14(26.9)</td>
</tr>
<tr>
<td>Total</td>
<td>48(100)</td>
<td>55(100)</td>
<td>61(100)</td>
<td>52(100)</td>
</tr>
</tbody>
</table>
JAW FRACTURES IN 1979-1988

[Table 2. Distribution of victims of violence in Kopparberg and Stockholm according to sex and year.]

<table>
<thead>
<tr>
<th>Number (%)</th>
<th>1979</th>
<th>1982</th>
<th>1985</th>
<th>1988</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Kopparberg</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>19(73.0)</td>
<td>8(30.0)</td>
<td>10(90.9)</td>
<td>9(100)</td>
</tr>
<tr>
<td>Woman</td>
<td>7(27.0)</td>
<td>2(20.0)</td>
<td>1(9.1)</td>
<td>0(0)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>26(100)</td>
<td>10(100)</td>
<td>11(100)</td>
<td>9(100)</td>
</tr>
<tr>
<td><strong>Stockholm</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>25(83.3)</td>
<td>26(89.7)</td>
<td>23(95.8)</td>
<td>23(78.1)</td>
</tr>
<tr>
<td>Woman</td>
<td>5(16.7)</td>
<td>3(10.3)</td>
<td>1(4.2)</td>
<td>7(21.9)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>30(100)</td>
<td>29(100)</td>
<td>24(100)</td>
<td>30(100)</td>
</tr>
</tbody>
</table>

As shown in Table 1 there was a slight decrease in the number of fractures throughout the period in the County of Kopparberg and a slight increase in Stockholm. In Kopparberg there was a marked decrease in the incidence of fractures due to assault but the incidence in Stockholm was unchanged (Table 2).

There were regional differences in the causes of the fractures. In Kopparberg the

Table 3. All fractures from Kopparberg/Stockholm distributed in per cent (rounded off in whole figures) according to cause and year.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Violence</td>
<td></td>
<td>50/62</td>
<td>29/53</td>
<td>32/18</td>
<td>33/62</td>
</tr>
<tr>
<td>Traffic</td>
<td></td>
<td>20/15</td>
<td>26/16</td>
<td>39/25</td>
<td>33/15</td>
</tr>
<tr>
<td>Sport</td>
<td></td>
<td>9/2</td>
<td>9/9</td>
<td>7/12</td>
<td>7/4</td>
</tr>
<tr>
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<td></td>
<td>11/13</td>
<td>14/18</td>
<td>17/17</td>
<td>13/17</td>
</tr>
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<td>Work</td>
<td></td>
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<td>11/2</td>
<td>6/5</td>
<td>4/0</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>5/4</td>
<td>11/2</td>
<td>5/5</td>
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</tr>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>100/100</td>
<td>100/100</td>
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<td>100/100</td>
</tr>
</tbody>
</table>

distribution between traffic accidents and assaults was just about even but in Stockholm fractured jaws were mainly caused by assaults. (Table 3). Among other causes were two suicide attempts, four accidents involving animals and one boating accident.

The anatomical distribution of the fractures is presented in Table 4. Two hundred and ninety-five (80.4%) of the patients had fractures of the mandible, 59 (16.1%) of the maxilla and 13 (3.5%) had bimaxillary fractures.

Assaults resulted mainly in mandibular fractures. No typical pattern with right sided condylar fractures could be seen in this material.

DISCUSSION

An analysis of data on patients treated for fractured jaws provided a parameter for criminal violence. To obtain a material large enough for statistically reliable conclusions, a prerequisite was that almost everyone with a
Fractured jaw sought medical attention. In Sweden medical care does not involve travelling long distances or incurring high costs. It may therefore be assumed that almost everyone sustaining a fractured jaw also sought medical attention.

The sex distribution in the material, showing a clear predominance of men, is in good correlation with other studies (Blomquist & Cassel 1964, Nordenram 1967, Oikarinen & Malmström 1969, Hedin et al 1971, Lindahl 1974, Larsen & Nielsen 1976, Heimdahl & Nordenram 1977, Olson et al 1982, Voss 1982, Andersson et al 1984, Busuito et al 1986, Eriksson & Willmar 1987, Adi et al 1990, Allan & Daly 1990, Cook & Rowe 1990). The proportion of women in the material from Kopparberg was higher than in Stockholm, both with respect to the total material and with respect to assault. The difference was, however, too small to allow definite conclusions.


During the years investigated the incidence of fractured jaws remained about the same in Stockholm but decreased slightly in Kopparberg. This confirmed conclusions by Andersson et al 1984, Kahnberg & Göthberg 1987 and Adi et al 1990 that the incidence of fractured jaws was levelling off. The same tendency was found with respect to assault as a cause. Traffic accidents, however, increased as a cause of fractured jaws in Kopparberg but were more uncommon in Stockholm as found by Heimdahl & Nordenram (1977). This probably reflected the increasing volume of road traffic at higher speeds, especially in rural districts in Sweden. Kopparberg is a very popular year-round tourist region with heavy road traffic. Fractures due to other causes were relatively few in number and fluctuations during the period could therefore not be evaluated.


Condylar fractures of the mandible were also more common in traffic accidents. This is supported by some earlier studies (Oikarinen & Malmström 1969, Larsen & Nielsen 1976, James et al 1981, Olson et al 1982). However, Andersson et al (1989) reported a higher proportion of condylar fractures associated with assaults. This discrepancy was probably attributable to the urban traffic pattern in the region investigated. Most of the accidents occurred at low speeds. Fractures of the mandibular angle and body were more common in assault cases.

No typical assault pattern with a left sided domination of body and angular fractures and right sided domination of condylar fractures was found. This was confirmed by Busuito et al (1986). The explanation was probably that the violence more often occurred as an ambush with a great variety of blows instead of a boxing-match with frontal blows.

The proportion of mandibular fractures was also high in the etiological groups "sport" and "other". Subjects who fell or sustained a fracture at work had a higher incidence of maxillary fractures. The results were, however, based on a relatively small number of fractures and should be interpreted with caution.
In summary this investigation showed that, compared with earlier studies, there had been a levelling off in the number of jaw fractures both in the urban and rural regions. It did not support the opinion that violence had increased markedly or become more aggravated during the period 1979-1988. The increase of police reported assaults found by Ström (1991) and the aggravation of the violence found by Ström et al. (1991) must be attributable mainly to other causes, such as changes in legislation, a lower tolerance in the community towards assaults and increasing tendency to notify the police of these crimes.

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