

The Scar on the Face of Scotland: Deprivation and Alcohol-Related Facial Injuries in Scotland

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Background: Recent media and political attention have focused on a “rising tide” of youth violence and alcohol-related problems in Scotland. Facial injuries in Scotland are most commonly sustained as a result of interpersonal violence, and young men are a high risk group for facial injuries. Facial injuries are known to be associated with alcohol consumption but the sociodemographic determinants are not fully known.

Methods: Influences on the incidence of alcohol-related facial injuries were investigated using data on 22,417 patients between 2001 and 2006 from the Scottish Morbidity Records.

Results: Since 2001, the incidence of alcohol-related facial injuries in Scotland has declined, but the nature and scale of the problem remain considerable, with the major burden for such injuries disproportionately affecting young men from socioeconomically deprived areas.

Conclusions: The role of poverty as the major determinant of alcohol-related facial injuries has thus far not been explicitly acknowledged. Interventions to change behavior alone are unlikely to succeed unless they are supported by measures designed to improve socioeconomic circumstances and to reduce socioeconomic inequalities.

Key Words: Alcohol, Facial injuries, Incidence, Scotland, Socioeconomic factors.

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The annual cost of alcohol misuse to Scottish society (2006/7 prices) is an estimated £2.25 billion, with the cost to the National Health Service in Scotland estimated at £405 million.¹ The total costs include those borne by social services, criminal justice, emergency services, and the wider eco-

nomie costs including lost working days. Facial injury is a serious consequence of alcohol misuse, and these costs borne by individuals are also considerable and include both long- and short-term physical,^{2–4} psychologic,^{5,6} and social problems.⁷

It was the human cost of the adverse health effects of passive smoking on innocent third parties, e.g., bar workers, which was one of the main drivers for delivering the ban on smoking in public places in Scotland—leading the way for the rest of the United Kingdom to follow.⁸ The effect of alcohol on society and individuals, far from being “passive,” often results in aggression and violence with severe consequences (Fig. 1). These adverse outcomes are increasingly being recognized in terms of alcohol policy and legislation in Scotland.⁹

The majority of cases of facial injuries in the United Kingdom—ranging from minor lacerations to complex hard and soft tissue injuries—occur as a result of interpersonal violence or accidents.^{10,11} Facial injuries, particularly, are a recurrent phenomenon affecting many individuals on more than one occasion.¹² Alcohol is often a common denominator being consumed by victims and assailant, as well as those suffering accidents.¹¹

The aims of this study were to describe the pattern, magnitude, and time-trends of alcohol-related facial injuries in Scotland and to assess the key sociodemographic determinants of these injuries.

PATIENTS AND METHODS

The Information Services Division (ISD) of the National Health Service (NHS) National Services Scotland (NSS) collects, collates, and publishes data on all hospital discharges using the Scottish Morbidity Record (SMR01) scheme for general acute specialties. An SMR01 is recorded for every new episode of inpatient care and they allow for the recording of both a main diagnosis and several supplementary diagnoses—based on the Tenth Revision of the World Health Organization International Classification of Diseases (ICD-10) coding system. Supplementary codes can provide a means of identifying cases where alcohol misuse is a relevant underlying issue to the patient’s main diagnosis. SMR01 returns also provide valuable demographic data on age, gender, and postcode of residence.

SMR01 records with a diagnosis of facial injuries (Appendix Table A1) were retrieved. Each record was then searched and flagged for a selected relevant concomitant (supplementary

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Ethical approval: Coldicott Guardian, Information Services Division, NHS National Services Scotland approved release of anonymized aggregate data.

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alcohol-related diagnosis (Appendix Table A2). Complete and validated SMR01 data were only available up to the end of 2006 at the time of analysis (Spring 2008).

The measure of neighborhood deprivation used was the Scottish Index of Multiple Deprivation (SIMD), created by the Scottish Government for monitoring and planning purposes.¹³ The SIMD is calculated using Census data including six domains—income, employment, housing, health, education, and geographical access to services/telecommunications—derived from 31 individual indicators of deprivation at the level of “data zones.” Deprivation scores were calculated by linking subjects’

postcodes to 2001 Census output areas and data zones using the National Statistics Postcode Directory¹⁴ The use of SIMD also limited the time-frame for the data in this study, with population SIMD data only available from 2001.¹³

Midyear population estimates were derived from the Annual Reports of the Registrar General for Scotland for corresponding years.¹⁵ Annual incidence rates by age, sex, and SIMD were calculated for the period 2001 to 2006. A Poisson regression analysis model was used to incorporate the variables age, sex, time (year), concomitant alcohol diagnosis, and deprivation quintile. The univariate effects of sex, age, time, alcohol diagnosis, and deprivation were examined as categorical variables. The independent effects were analyzed in a fully adjusted model. Statistical analyses were performed using the SAS statistical software package version 9.1 (SAS Institute Inc., Cary, NC).

RESULTS

Between 2001 and 2006, there were 82,461 patients with a facial injury diagnosis at the time of discharge. Of those, 22,417 (27.2%) had a concomitant alcohol-related diagnosis. During the study period, the overall incidence of facial injuries was 3.27 per 1,000 population; 4.68 per 1,000 for males; 2.00 per 1,000 for females. The incidence of alcohol-related facial injuries for the same period was 0.89 per 1,000 population; 1.54 per 1,000 for males; and 0.30 per 1,000 for females.

The major determinants for alcohol-related facial injury were young age (15–19 years), male sex, and residence in a socioeconomically deprived area (Table 1). Deprivation remained the major determinant of such injuries: those from the most deprived areas were almost seven times more likely to have such an injury as their affluent counterparts (Fig. 2). The



Figure 1. Clinical photograph of a 28-year-old male with a combination of sharp and blunt facial injuries.

TABLE 1. Summary of Adjusted Model of Facial Injuries With Concomitant Alcohol Diagnosis by Study Variables: Age-Group, Sex, Year, and Scottish Index of Multiple Deprivation (SIMD) Quintile, 2001–2006

Variable	Level (yr)	Events	Rate (per 1,000)	Rate Ratio (95% CI)*	p Value
Age-group	15–19	2,161	1.11	1 (Ref)	
	20–24	1,965	1.01	0.92 (0.86–0.97)	0.005
	25–34	3,028	0.78	0.71 (0.68–0.76)	<0.001
	35–44	3,972	0.84	0.83 (0.79–0.88)	<0.001
	45–54	3,832	0.92	0.92 (0.87–0.97)	0.002
	55–64	3,482	0.98	0.97 (0.92–1.02)	0.208
	65–74	2,682	0.99	0.97 (0.97–1.03)	<0.001
	75	1,295	0.58	0.68 (0.64–0.73)	<0.001
Sex	Females	3,978	0.30	1 (Ref)	
	Males	18,439	1.54	5.16 (4.99–5.34)	<0.001
Yr	2001	4,495	1.08	1 (Ref)	
	2002	4,404	1.06	0.98 (0.94–1.02)	0.711
	2003	3,777	0.90	0.84 (0.80–0.88)	0.375
	2004	3,390	0.81	0.75 (0.72–0.78)	0.048
	2005	3,125	0.74	0.69 (0.66–0.72)	<0.001
	2006	3,226	0.76	0.70 (0.67–0.74)	<0.001
SIMD	1 (Least deprived)	1,435	0.29	1 (Ref)	
	2	2,355	0.47	1.61 (1.50–1.72)	<0.001
	3	3,571	0.70	2.30 (2.17–2.45)	<0.001
	4	5,654	1.12	3.90 (3.68–4.13)	<0.001
	5 (Most deprived)	9,402	1.89	6.69 (6.33–7.08)	<0.001

* Rate ratios are fully adjusted by each variable.

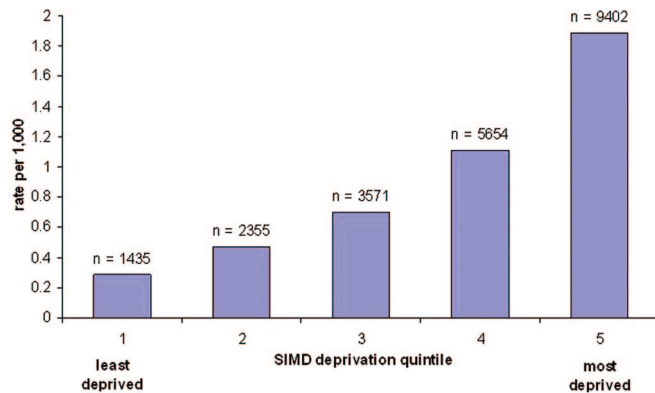


Figure 2. Incidence of alcohol-related facial injuries 2001 to 2006 in Scotland by Scottish Index of Multiple Deprivation (SIMD) quintile.

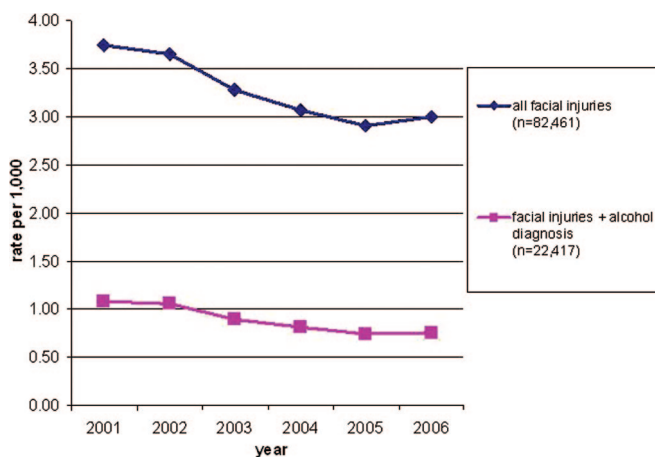


Figure 3. Incidence of facial injuries and alcohol-related facial injuries 2001 to 2006 in Scotland.

incidence of both facial injuries and alcohol-related facial injuries has declined in recent years (Fig. 3) (Appendix Table A3).

DISCUSSION

There were nearly seven times as many alcohol-related facial injuries in the most compared with the least deprived quintile. Men were over five times more likely to have such an injury, and those in the youngest age-group (15–19 years) were around one-tenth more likely. The number of alcohol-related facial injuries that required admission to hospital has declined in recent years although the burden remains high.

It is recognized that men are a high risk group for facial injuries and that young men pose the highest risk of facial injuries associated with both alcohol and assault.^{10,11} The association of all injuries with deprivation agrees with recently published data by Bellis et al.¹⁶; in a study focusing on assault-related injury, they found that patients in the poorest quintile were six times more likely to be admitted for this reason than more affluent patients. Bellis et al. points out importantly that fear of violence in deprived communities is likely to seriously hamper efforts to provide community-based interventions for violence, alcohol, and other health

behaviors thus potentially widening the inequalities gap. Socioeconomically deprived groups in Scotland have the highest level of fear about walking in the streets after dark and of being assaulted,¹⁷ and the face has been shown to be the site most commonly injured in an assault.^{18,19}

Our data agree with the Scottish Crime and Victimization Survey,²⁰ which observed a decline between 1992 and 2005 in “serious assaults” (defined as those leading to overnight stays in hospital or internal injuries, severe concussion, loss of consciousness, lacerations, or other injury that could lead to impairment or disfigurement), although there is a significant increase in “minor assaults” (defined as actual and attempted assaults which lead to no or negligible injuries).

A recent case-series of 249 patients from a Scottish trauma unit found that around 80% of their facial injuries were alcohol-related and more than 70% of these injuries are related to interpersonal violence.¹⁰ In addition, the Scottish Emergency Department Audit²¹ estimated the number of assault-related facial injuries presenting to A&E departments around Scotland in 2006 at 11,986 per annum. Of these, 70% were estimated to be alcohol-related, although data were collected for both victim and/or assailant alcohol consumption. In comparison, our findings could be an underestimate of the true incidence of alcohol-related facial injuries. Only patients’ alcohol consumption was recorded and our data refer only to inpatients. Many patients with less severe facial injuries are not admitted to hospital but are either treated at the time in A&E and discharged; or are assessed, given advice and asked to return to a specialist department for further assessment up to 1 week later. Unfortunately, A&E records are not presently held in a national or standard format in Scotland. Patients subsequently seen in an outpatient clinic and booked for surgery may not necessarily have a supplementary alcohol diagnosis recorded when they return for surgery unless the problem is chronic.

Further, there are suggestions that not all injured patients attend health services.²² Nevertheless, we would have expected to capture all of the most serious injuries, and we would not expect that inclusion of additional data would materially change our main findings. The advantages of our approach are the scale, coverage, and quality of the data relative to smaller audits. A recent Information Services Division quality assessment of SMR01 supplementary alcohol diagnosis codes found that they were recorded with 89.2% accuracy and 85.9% completeness from across Scotland.²³

Recent media and political attention has focused on a “rising tide” of youth violence and alcohol-related problems in Scotland and across the United Kingdom gives the impression that these problems are on the increase. Although our data show that the number of alcohol-related facial injuries has declined, the incidence remains high and the consequences can be devastating and lifelong. However, it should be borne in mind that the injuries reported here are only those severe enough to warrant admission to hospital and the data do not take account of the many young men who sustain less severe but potentially life changing injuries. The relative risk and role of poverty in alcohol-related facial injuries in poor areas in Scotland and across the United Kingdom warrants more attention.

This high incidence of alcohol-related facial injuries potentially could be addressed by brief interventions on safer drinking in the hospital setting.^{10,24} However, on a wider level, there is a need to be more explicit about targeting interventions at young men, particularly those living in areas of deprivation, to confront the adverse acute health outcomes associated with excessive alcohol intake.

Health inequalities related to deprivation,²² alcohol,⁹ and interpersonal violence²⁵ are recognized as serious cultural and societal problems in Scotland. There is a need to coordinate

these agenda to address socioeconomically determined alcohol-related injuries informed by robust information. Alcohol and wider social, economic, and public health policies also need to continue to strengthen efforts to tackle the root causes of poverty and inequalities. Interventions to change behavior alone are unlikely to succeed unless they are supported by measures designed to improve socioeconomic circumstances and to reduce socioeconomic inequalities. Health professionals also have a role here and need to consider advocating for socioeconomic change in addition to behavior change.

APPENDIX

TABLE A1. Facial Injuries as per ICD-10 Codes

S00.0	Superficial injury of scalp
S00.1	Contusion of eyelid and periocular area Black eye <i>Excludes:</i> contusion of eyeball and orbital tissues (S05.1)
S00.2	Other superficial injuries of eyelid and periocular area <i>Excludes:</i> superficial injury of conjunctiva and cornea (S05.0)
S00.3	Superficial injury of nose
S00.4	Superficial injury of ear
S00.5	Superficial injury of lip and oral cavity
S00.7	Multiple superficial injuries of head
S00.8	Superficial injury of other parts of head
S00.9	Superficial injury of head, part unspecified
S01.0	Open wound of scalp <i>Excludes:</i> avulsion of scalp (S08.0)
S01.1	Open wound of eyelid and periocular area Open wound of eyelid and periocular area with or without involvement of lacrimal passages
S01.2	Open wound of nose
S01.3	Open wound of ear
S01.4	Open wound of cheek and temporomandibular area
S01.5	Open wound of lip and oral cavity <i>Excludes:</i> tooth: dislocation (S03.2) Fracture (S02.5)
S01.7	Multiple open wounds of head
S01.8	Open wound of other parts of head
S01.9	Open wound of head, part unspecified
S02.2	Fracture of nasal bones
S02.3	Fracture of orbital floor <i>Excludes:</i> orbit NOS (S02.8) Orbital roof (S02.1)
S02.4	Fracture of malar and maxillary bones: superior maxilla, upper jaw (bone), zygoma
S02.5	Fracture of tooth, broken tooth
S02.6	Fracture of mandible, lower jaw (bone)
S02.7	Multiple fractures involving skull and facial bones
S02.8	Fractures of other skull and facial bones, alveolus, Orbit NOS Palate <i>Excludes:</i> orbital: floor (S02.3) Roof (S02.1)
S02.9	Fracture of skull and facial bones, part unspecified
S03.0	Dislocation of jaw, jaw (cartilage)(meniscus), mandible, temporomandibular (joint)
S03.1	Dislocation of septal cartilage of nose
S03.2	Dislocation of tooth
S03.3	Dislocation of other and unspecified parts of head
S03.4	Sprain and strain of jaw, temporomandibular (joint)(ligament)
S03.5	Sprain and strain of joints and ligaments of other and unspecified parts of head
S04.0	Injury of optic nerve and pathways, optic chiasm, 2nd cranial nerve, visual cortex

TABLE A1. Facial Injuries as per ICD-10 Codes (continued)

S04.1	Injury of oculomotor nerve, 3rd cranial nerve
S04.2	Injury of trochlear nerve, 4th cranial nerve
S04.3	Injury of trigeminal nerve, 5th cranial nerve
S04.4	Injury of abducent nerve, 6th cranial nerve
S04.5	Injury of facial nerve, 7th cranial nerve
S04.9	Injury of unspecified cranial nerve
S05.1	Contusion of eyeball and orbital tissues, traumatic hyphaema, <i>Excludes:</i> black eye (S00.1) Contusion of eyelid and periocular area (S00.1)
S05.4	Penetrating wound of orbit with or without foreign body <i>Excludes:</i> retained (old) foreign body following penetrating wound of orbit (H05.5)
S05.8	Other injuries of eye and orbit, lacrimal duct injury
S05.9	Injury of eye and orbit unspecified, injury of eye NOS
S07.0	Crushing injury of face
S08.0	Avulsion of scalp
S08.1	Traumatic amputation of ear
S08.8	Traumatic amputation of other parts of head
S08.9	Traumatic amputation of unspecified part of head <i>Excludes:</i> decapitation (S18)
S09.0	Injury of blood vessels of head, not elsewhere classified <i>Excludes:</i> injury of: cerebral blood vessels (S06.-) Precerebral blood vessels (S15.-)
S09.1	Injury of muscle and tendon of head
S09.2	Traumatic rupture of ear drum
S09.7	Multiple injuries of head, injuries classifiable to more than one of the categories S00–S09.2
S09.8	Other specified injuries of head
S09.9	Unspecified injury of head, injury of: face NOS, ear NOS, nose NOS
S10.7	Multiple superficial injuries of neck
S10.8	Superficial injury of other parts of neck
S10.9	Superficial injury of neck, part unspecified
S15.0	Injury of carotid artery, carotid artery (common) (external) (internal)
S15.2	Injury of external jugular vein
S15.3	Injury of internal jugular vein
S15.7	Injury of multiple blood vessels at neck level
S15.8	Injury of other blood vessels at neck level
S15.9	Injury of unspecified blood vessel at neck level
S17.8	Crushing injury of other parts of neck
S17.9	Crushing injury of neck, part unspecified
S19.7	Multiple injuries of neck, injuries classifiable to more than one of the categories S10–S18
S19.8	Other specified injuries of neck
S19.9	Unspecified injury of neck

TABLE A2. Selected Alcohol Diagnoses ICD-10 Codes*

F10.0	Mental and behavioral disorders due to use of alcohol (acute intoxication)
F10.1*	Harmful use
R78.0	Finding of alcohol in blood
T51	Toxic effect of alcohol
X45	Accidental poisoning by and exposure to alcohol
X65	Intentional self-poisoning by and exposure to alcohol
Y15	Poisoning by and exposure to alcohol undetermined intent
Y90	Evidence of alcohol involuntary determined by blood alcohol level
Y91	Evidence of alcohol involvement determined by level intoxication
E52	Niacin deficiency [pellagra]
G312	Degeneration of nervous system due to alcohol
G621	Alcoholic polyneuropathy
G721	Alcoholic myopathy
I426	Alcoholic cardiomyopathy
K292	Alcoholic gastritis
K70	Alcoholic liver disease
K860	Alcohol-induced chronic pancreatitis
Y573	Alcohol deterrents
Z502	Alcohol rehabilitation
Z714	Alcohol abuse counseling and surveillance
Z721	Alcohol use

* Information Services Division (ISD). Alcohol Statistics Scotland 2005. NHS National Services Scotland, Edinburgh, 2005. Available at: http://www.alcoholinformation.isdscotland.org/alcohol_misuse/files/AlcoholStatisticsScotland2005.pdf. Accessed August, 2008.

TABLE A3. Incidence Rates of Facial Injuries With an Alcohol-Related Diagnosis by Age-Group, Sex, and SIMD Quintile in Scotland, 2001–2006

Facial Injury Cases + Alcohol Diagnosis	Incidence Rates per 1,000 Persons					
	2001	2002	2003	2004	2005	2006
Males (n = 18,439)	5.46	5.35	4.70	4.36	4.06	4.18
5 Most deprived (n = 7,886)	4.27	4.13	3.43	3.13	2.84	2.73
4 (n = 4,672)	2.49	2.27	2.25	1.67	1.48	1.58
3 (n = 2,919)	1.38	1.51	1.13	1.18	0.99	1.03
2 (n = 1,843)	0.93	0.88	0.73	0.68	0.62	0.74
1 Least deprived (n = 1,119)	0.48	0.57	0.45	0.41	0.42	0.44
15–19 yr (n = 1,791)	2.05	2.08	1.70	0.62	1.63	1.74
20–24 yr (n = 1,704)	2.21	2.14	1.71	1.34	1.42	1.60
25–34 yr (n = 2,507)	1.63	1.77	1.47	1.11	1.00	1.07
35–44 yr (n = 3,180)	1.72	1.68	1.45	1.22	1.09	1.17
45–54 yr (n = 2,981)	1.62	1.70	1.46	1.46	1.24	1.27
55–64 yr (n = 2,853)	2.35	1.88	1.70	1.57	1.25	1.26
65–74 yr (n = 2,287)	2.31	2.29	1.89	1.66	1.62	1.40
75+ yr (n = 1,073)	1.66	1.56	1.40	1.37	1.08	1.04
Females (n = 3,978)	2.20	2.11	1.99	1.90	1.87	1.92
5 Most deprived (n = 1,516)	0.66	0.64	0.53	0.54	0.52	0.51
4 (n = 982)	0.41	0.40	0.36	0.35	0.32	0.35
3 (n = 652)	0.23	0.32	0.27	0.22	0.22	0.22
2 (n = 512)	0.23	0.20	0.22	0.17	0.19	0.17
1 Least deprived (n = 316)	0.19	0.11	0.10	0.08	0.10	0.14
15–19 yr (n = 370)	0.42	0.42	0.29	0.29	0.46	0.44
20–24 yr (n = 261)	0.35	0.30	0.18	0.29	0.24	0.26
25–34 yr (n = 458)	0.24	0.27	0.24	0.20	0.23	0.18
35–44 yr (n = 792)	0.41	0.40	0.35	0.26	0.24	0.28
45–54 yr (n = 851)	0.48	0.45	0.43	0.34	0.35	0.37
55–64 yr (n = 629)	0.35	0.42	0.34	0.33	0.35	0.28
65–74 yr (n = 395)	0.33	0.20	0.27	0.27	0.23	0.30
75+ yr (n = 222)	0.16	0.19	0.12	0.21	0.10	0.14

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