Alcohol-related mortality following self-harm: a multicentre cohort study

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Abstract

Objectives: To assess alcohol-related premature death in people who self-harm compared to the general population, including variation by socioeconomic deprivation.
Design: A retrospective longitudinal cohort analysis from the Multicentre Study of self-harm in England, 1 January 2000 to 31 December 2010, with cause-specific mortality follow-up through to 31 December 2012.
Setting: Six emergency departments in Oxford, Manchester and Derby.
Participants: All individuals aged 15 years or more who presented with self-harm ($n = 39,014$) to general hospital emergency departments, together with follow-up mortality information from the Data Linkage Service of the Health and Social Care Information Centre.
Main outcome measures: Standardised mortality ratios (observed/expected number of deaths: SMRs) and mean number of years of life lost (YLL) were estimated for alcohol-related mortality. Patients' characteristics and clinical management following self-harm were also examined.
Results: After 7.5 years' (median) follow-up, 2695 individuals (6.9%) had died, significantly more males (9.5%) than females (5.0%), including 307 (11.4%) from alcohol-related causes. Alcohol-related death was more frequent than expected in both males (SMR 8.5, 95% CI 7.3 to 9.8) and females (11.6, 9.8 to 13.7), equating to 33.7 YLL (95% CI 32.4 to 35.0) in males and 38.1 YLL (36.6 to 39.6) in females. It was not associated with area-level socioeconomic deprivation. Alcohol-related death was associated with unemployed/sick/disabled status, alcohol use during self-harm, referral to drug/alcohol services and lack of psychosocial assessment following self-harm.
Conclusions: Hospital-presenting self-harm patients should receive assessment following self-ham according to national guidance to enable early identification and treatment of alcohol problems.

Keywords

self-harm, alcohol, alcohol misuse, socio-economic deprivation, mortality follow-up

Introduction

Alcohol misuse is the third leading contributor to the global burden of disease.[1] Elevated morbidity and mortality from excessive alcohol consumption is a major public health problem in the UK,[2] and elsewhere.[1] In England, it is a particular focus of new government initiatives[3] and public health strategies to reduce avoidable deaths.[4] Alcohol-related deaths in the UK doubled between 1991 and 2004,[5] then stabilised during 2002 to 2011, though with persistent geographical differences[6] and variation by socioeconomic deprivation.[5]

Self-harm (SH; intentional self-injury and self-poisoning with or without suicidal intent) is also a major public health problem,[7] accounting for approximately 220,000 emergency department (ED) presentations in England annually.[8] Alcohol problems occur frequently,[9] with half of all SH presentations to EDs involving alcohol,[10,11] and a quarter of patients diagnosed with harmful alcohol use.[12]

Alcohol misuse increases suicide risk in the SH population,[13] and contributes to premature mortality from physical causes.[14] The exact extent of excess mortality from specific alcohol-related disease[5] has not previously been examined in the SH population. Knowledge of patients' characteristics and aspects of clinical management following SH may inform clinical practice.

We have investigated alcohol-related mortality in relation to:

(i) risks in the SH population relative to the general population using standardised mortality ratios (SMRs) and years of life lost (YLL);
(ii) variation in SMRs by area-level socioeconomic deprivation; and

(iii) patient characteristics and clinical management following SH.

Method

Setting and sample

The study was undertaken in three centres in the Multicentre Study of SH in England. The study population,[15] risks of suicide and accidental death following SH[16] and methods used for SH and suicide[17] have been described previously. Data were collected on all individuals who presented with non-fatal SH to general hospital EDs in Oxford (one), Manchester (three) and Derby (two) during the 11-year period, 1 January 2000 to 31 December 2010. Non-fatal SH was defined as intentional self-poisoning or self-injury, irrespective of motivation or degree of suicidal intent.[18] Following SH, most patients received a psychosocial assessment by specialist psychiatric clinicians (and some by ED staff). Demographic, clinical and hospital management data on each episode (including referral for aftercare) were collected by clinicians using standardised forms or electronic data entry. Patients not receiving an assessment were identified through scrutiny of ED and medical records, from which more limited data were extracted by research clerks, or in one centre by clinicians (including sociodemographic information and methods of SH). Alcohol involvement in SH (ingestion at the time of, or within 6 h prior to SH) was determined during specialist psychosocial or ED assessment, or from medical records.

Indicator of socioeconomic status

SMRs were calculated by quartile of socioeconomic deprivation. Individuals' residential postcodes at their first episode of SH were linked to the Index of Multiple Deprivation in England (IMD) 2007,[19] in which higher scores indicate greater deprivation. Of the 354 local authority areas in England, Manchester was ranked fourth most deprived, Derby 69th and Oxford 155th. Average IMD scores for England ranged from 4.1 to 47.0, with quartiles: <11.8 (25%), 17.3 (50%), 24.5 (75%) and >24.5. Multicentre sample IMD score quartiles were: <14.3 (25%), 29.7 (50%), 49.5 (75%) and >49.5.

Mortality

Mortality information was supplied by the Data Linkage Service of the National Health Service (NHS).[20] Data used for tracing included name, sex, date of birth, NHS number and postcode of last address. Individuals were followed up from 1 January 2000 to 31 December 2012. Observation time for individuals ended when they died or emigrated from the UK.

We obtained alcohol-related death[5] rates in England from the Office for National Statistics.[2] Alcohol-related deaths included ICD-10 classifications: mental and behavioural disorder due to alcohol (F10), degeneration of the nervous system due to alcohol (G31.2), alcoholic polyneuropathy (G62.2), alcoholic cardiomyopathy (I42.6), alcoholic gastritis (K29.2), alcohol liver disease (K70), chronic hepatitis not elsewhere classified (K73), fibrosis and cirrhosis of the liver (K74) (excluding biliary cirrhosis [K74.3-K74.5]), alcohol-induced pancreatitis (K86.0), accidental and intentional poisoning by alcohol (X45, X65), and alcohol poisoning of undetermined intent (Y15). We report age SMR for alcohol-related death, by sex.

Statistical analyses

Standardised mortality ratios. Individuals traced for any length of time were included. SMRs with exact 95% Poisson confidence intervals (CIs) were calculated for individuals aged ≥ 15 years from observed (O)/expected (E) number of deaths (based on general population rates for England), by age groups (15–34, 35–54, 55–74, 75+) and sex, for years 2000 to 2012.

Years of life lost. YLL were calculated from interim life tables 1999–2001 to 2009–2011 for England.[21] Life expectancy was extracted for each individual at the age of death in the appropriate year, which corresponds to YLL. Mean values of YLL (total YLL divided by number of deaths) with 95% CIs are reported, and findings by sex and year are presented graphically.

Logistic regression models. A binary logistic regression was undertaken with dependent variable alcohol-related death (yes/no) and independent variables based on information collected at each individual's first episode of SH. Univariate models were determined initially, then multivariate models as follows: step (i) inclusion of patient characteristic and clinical management variables (age, sex, employment status, method of SH, alcohol involvement, admission, specialist assessment) that were significant in univariate analyses ($p < 0.2$); step (ii) forward conditional stepwise ($p < 0.05$) entry of clinical aftercare variables that were significant in univariate analyses ($p < 0.2$) (referral to GP, current contact or new referral to psychiatric outpatient care, current contact or new referral to drug/alcohol services).

The 'not known' category for alcohol involvement was included (as well as yes/no) because it has clinical significance – many of these patients were not assessed, often because they were intoxicated with alcohol.[22] Information on general hospital admission following SH presentation was not reliably collected in Centre B during 2000–2004. Data on referrals to drug/alcohol services were not available in Centre A, these referrals being included in other categories of aftercare. Thus two sensitivity analyses were carried out excluding data for these centres. We adjusted the multivariate model for centre differences. Analyses were conducted using SPSS v19.

Results

Sample

During 2000 to 2010, 41,286 individuals presented with SH and were followed up to the end of 2012. Individuals (940, 2.3%) not traced were excluded; 141 individuals were censored due to emigration during follow-up. Of the 40,346 traced individuals, 1285 (3.2%) aged under 15 years and 47 (0.1%) with unknown age were excluded from analyses. Thus the study sample was 39,014 individuals aged ≥ 15 years (including 15 with unknown gender). Characteristics of the individuals at their first episode of SH grouped according to alcohol involvement at the time or within 6 h of SH are given in Table 1.

Overall, the sample was predominantly female (16,508/39,014, 57.7%), aged between 15 and 34 years (24,169/39,014, 61.9%) and of White ethnicity (25,676/39,014, 89.9%). Most individuals at their first episode of SH in the study period used self-poisoning alone (31,557/39,014, 80.9%), 6088 used self-injury alone (15.6%) and 1369 (3.5%) used both methods (Table 1). The most common method of self-injury was cutting (5827/7457, 78.1%).

The majority of individuals (22,230/39,014, 57.0%) received a specialist psychosocial assessment following SH. The remaining 43.0% (16,784/39,014) received an ED assessment or advice from liaison psychiatry services or had no assessment following SH. Alcohol was involved in 43.0% of first episodes (16,775/39,014), was not involved in 33.2% (12,941/39,014) and in 23.8% (9298/30,914) alcohol involvement was unknown. Of the 16,784 individuals who did not receive a specialist psychosocial assessment, 31.7% had alcohol involved, 22.0% had no alcohol involvement and in 46.3% alcohol involvement was unknown.

Deaths

After a median follow-up of 7.5 years, 6.9% (2695/39,014) of individuals had died. Deaths were more frequent in males (1565/16,508, 9.5%) than females (1130/22,491, 5.0%; $\chi^2 = 293.9$, df $= 1$, $p < 0.001$). Alcohol-related deaths, 307/2695 (11.4%) occurred in a similar proportion of males (170/1565, 10.9%) and females (137/1130, 12.1%; $\chi^2 = 1.03$, df $= 1$, $p = 0.309$). Alcohol-related deaths were similar in the three centres (Manchester 173/19,237, 0.9% vs. Oxford 57/9043, 0.6% vs. Derby 77/10,734, 0.7%; $\chi^2 = 6.6$, df $= 2$, $p = 0.037$).

Of the 307 alcohol-related deaths, 243 (79.2%) were from digestive disease (ICD-10 K00-K93), 36 (11.7%) from mental and behavioural disorder (ICD-10 F00-F99), 20 (6.5%) from accidents (V01-X59), four (1.3%) from circulatory disease (ICD-10 I00-I99) and the remaining three (0.9%) from suicide (X60-X84), of undetermined intent (Y10-Y34) or assault (X85-Y09). Details of the underlying cause of alcohol-related cause of death and alcohol use at the most recent episode of SH are given in Table 2. Two-thirds of those who died had alcohol involvement at their most recent episode of SH, 7.5% had not used alcohol and in 26.1% this information was not known (Table 2).

Of all 2695 deaths, 354 (13.1%) were from digestive disease (ICD-10 K00-K93), and of these, 243 (68.6%) were also alcohol-related, and 111 (31.4%) were unrelated to alcohol.

Risk of alcohol-related death compared to the general population. Compared to the expected numbers of alcohol-related deaths based on general population rates, observed deaths were eight times greater in males, 11 times greater in females and nine times greater for the sexes combined (Table 3).

The mean YLL lost for males was 33.7 years (95% CI 32.4 to 35.0), for females was 38.1 (95% CI 36.6 to 39.6) and for the sexes combined was 35.7 (95% CI 35.0 to 36.7) (Table 3). Figure 1 shows YLL for males and females who died, by year.

Risk of alcohol-related death compared to the general population, by area-level socioeconomic deprivation at the first episode of SH. IMD scores were unknown for 6.4% of individuals (2505/39,014); however, the proportion with unknown data was similar in those who died from alcohol-related causes (12/307, 3.9%) and in other individuals (2493/38,707, 6.4%, $\chi^2 = 3.25$, df $= 1$, $p = 0.071$).

Further examination showed that 58% of the SH sample had IMD scores greater than 24.5, which was the cut-off for the 25% most deprived local authority areas in England.

Alcohol-related mortality showed no relationship with deprivation in males (Figure 2(a)) or females (Figure 2(b)).

Table 1. Characteristics of individuals at the first episode of self-harm (SH) in the study period, 2000 to 2010.

	Alcohol use at the time or within 6 h of the first episode of SH in the study period, n (%)			
	None	Alcohol involved	Not known	Total
Gender*				
Male	4614 (28.0)	7727 (46.8)	4167 (25.2)	16,508
Female	8320 (37.0)	9045 (40.2)	5126 (22.8)	22,491
Age group				
15–34 years	8584 (35.5)	9530 (39.4)	6055 (25.1)	24,169
35–54 years	3244 (26.6)	6311 (51.8)	2636 (21.6)	12,191
55–74 years	783 (37.6)	834 (40.0)	468 (22.4)	2085
75+ years	330 (58.0)	100 (17.6)	139 (24.4)	569
Ethnic group*				
White	9460 (36.8)	12,774 (49.8)	3442 (13.4)	25,676
Black	425 (52.5)	256 (31.6)	129 (15.9)	810
South Asian	861 (67.3)	174 (13.6)	245 (19.1)	1280
Other	370 (44.5)	210 (25.3)	251 (30.2)	831
Employment status*				
Employed	3703 (35.8)	5828 (56.3)	819 (7.9)	10,350
Unemployed	3136 (36.8)	4308 (50.6)	1069 (12.6)	8513
Sick/disabled	1113 (43.7)	1308 (51.3)	128 (5.0)	2549
Household duties/student/retired	3803 (50.0)	2490 (32.8)	1307 (17.2)	7600
Method of SH				
Self-poisoning only	10,783 (34.2)	14,097 (44.7)	6677 (21.2)	31,557
Self-injury only	1660 (27.3)	2022 (33.2)	2406 (39.5)	6088
Both self-poisoning and self-injury	498 (36.4)	656 (47.9)	215 (15.7)	1369

*There were some missing values for gender (n = 15), employment status (25.6%) and ethnic group (26.7%)

Clinical management and aftercare following SH. We examined associations between alcohol-related deaths (yes/no) and the characteristics and clinical management of patients following SH in person-based analyses (Table 4).

Univariate models (Table 4) show strong associations of alcohol-related death with unemployment and sick/disability status (vs. employed), alcohol involvement during SH, and unknown alcohol involvement (vs. none), and general hospital admission status unknown (vs. not admitted); and a weak association with self-poisoning (vs. self-injury).

The multivariate model (Table 4) shows that after controlling for age, sex, method of SH and centre differences, alcohol-related death was strongly associated with unemployment and sick/disability status, alcohol involvement at SH or unknown alcohol involvement, referral to drug/alcohol services and with lack of psychosocial assessment following SH (36% less likely).

Table 2. ICD-10 underlying cause of alcohol-related death and alcohol use at the most recent episode of SH.

Underlying cause of alcohol-related death	Alcohol use at the time or within 6 h of the most recent episode of SH prior to death, *n* (%)			
	None	Alcohol involved	Not known	Total
K00-K93 digestive system disease	17 (7.0)	156 (64.2)	70 (28.8)	243
F00-F99 mental and behavioural disorder	4 (11.1)	28 (77.8)	4 (11.1)	36
V01-X59 accidents	0 (0.0)	17 (85.0)	3 (15.0)	20
I00-I99 circulatory system disease	0 (0.0)	1 (25.0)	3 (75.0)	4
G00-G99 nervous system disease	0 (0.0)	1 (100.0)	0 (0.0)	1
X60-X84 intentional self-harm; Y10-Y34 undetermined intent; X85-Y09 assault	2 (66.6)	1 (33.3)	0 (0.0)	3
	23 (7.5)	204 (66.4)	80 (26.1)	304

Table 3. Relative risk of alcohol-related death in self-harm cohort vs. general population in England, 2000 to 2010: standardised mortality ratio (SMR), and the average number of years of life lost (YLL) in individuals who died from alcohol-related causes.

	Observed number of deaths	Expected number of deaths	SMR (95% CI)	Average YLL (95% CI)
Males	170	20.1	8.5 (7.3 to 9.8)	33.7 (32.4 to 35.1)
Females	137	11.8	11.6 (9.8 to 13.7)	38.1 (36.6 to 39.6)
Persons	307	31.9	9.6 (8.6 to 10.8)	35.7 (34.7 to 36.7)

CI: confidence interval.

Sensitivity analyses

Sensitivity analyses excluding data from 2000 to 2004 in one centre where admission data were unreliable, and from another centre where information on referrals to specific drug/alcohol services was not known, showed little change in findings.

Discussion

Individuals who presented to hospital with SH (intentional self-injury or self-poisoning) between 2000 and 2010 had greater risk of alcohol-related death than the general population, with a relative risk greater in females (O/E, 11.6) than males (O/E, 8.5). Females in our study who died from alcohol-related disease lost on average 38 years of life (YLL), and males 34 YLL. This risk approaches the 40 YLL found for external causes in a UK SH population,[14] and exceeds 11–17 YLL found in British[23] and 20 YLL in Australian[24] substance use disorder patients for all-cause death. In the SH population, mortality from specific alcohol-related causes in females is greater than from digestive disease or other physical illnesses, though in males, mortality from digestive disease and specific alcohol-related disease are comparable.[14] Our findings indicate a gender difference in the adverse consequences of alcohol use, in support of a German study where elevated death rates in alcohol-dependent women (4.6-fold) were greater than in men (1.9-fold).[25]

We found no relationship between alcohol-related mortality and area-level socioeconomic deprivation. This was unexpected, given marked differences in alcohol-related mortality by geographic region[6] and social inequality[26] in the general population. Our SH sample is disproportionately disadvantaged, with deprivation scores for more than half of our sample equivalent to those of the 25% most deprived areas in England. This may have reduced group differences based on IMD score, or indicates possibly that alcohol misuse is equally widespread amongst all individuals who SH, not necessarily concentrated in the most socioeconomically deprived areas.

Figure 1. Life expectancy of (a) male patients (there were no deaths in year 2000) and (b) female patients who self-harmed and died of alcohol-related disease compared with an age-matched sample of the general population in England.
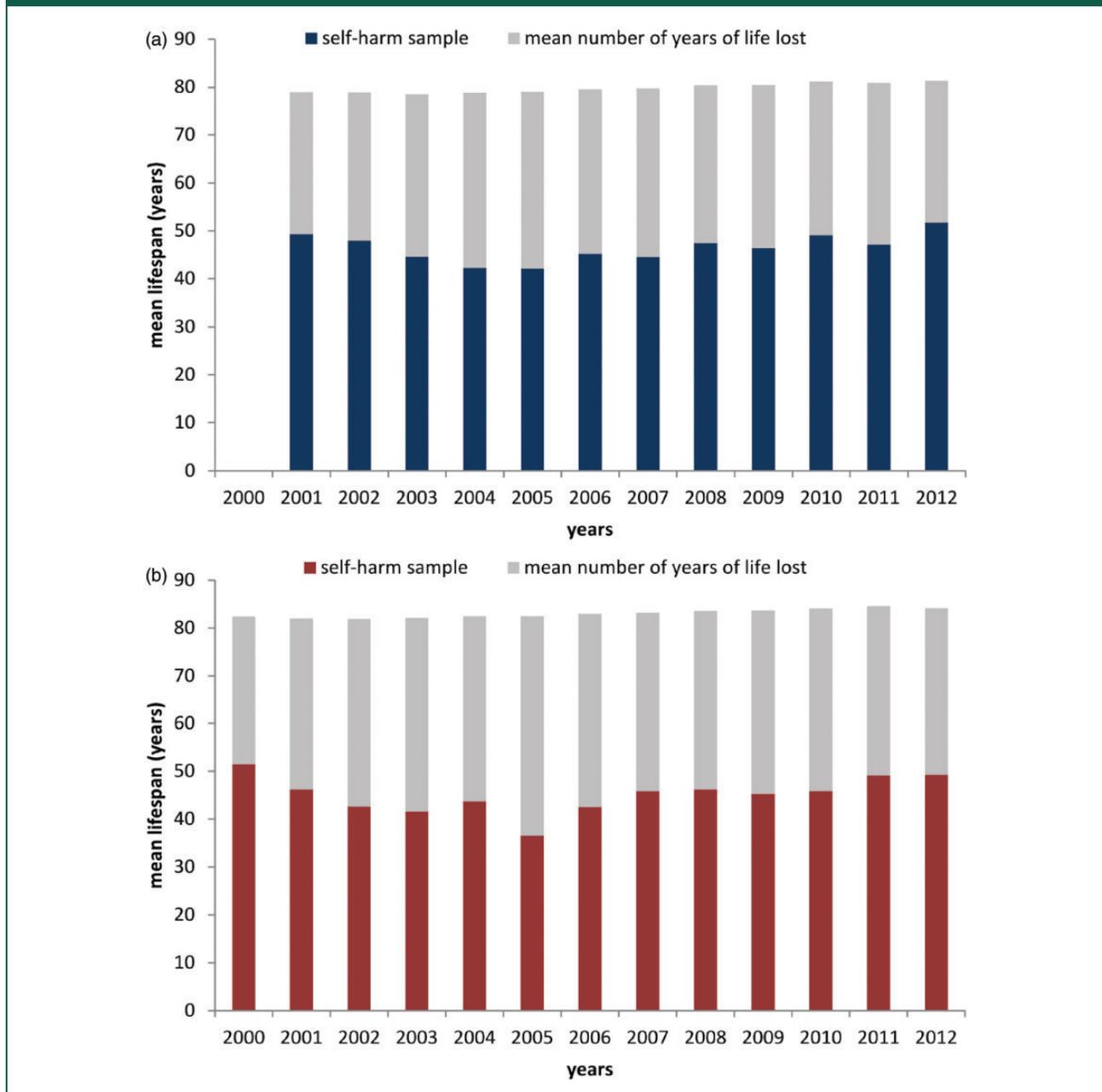

Further, unemployed and sick/disabled individuals had greater alcohol-related mortality than employed individuals, thus social inequality and exclusion are also probably involved.

Our finding that many individuals dying of alcohol-related disease were offered referral to drug/alcohol services indicates that the seriousness of their alcohol use was identified at assessment following SH. Participation in specialised alcohol dependence treatment compared to detoxification only or no treatment, however, did not extend survival time in alcohol-dependent individuals in Germany, suggesting that co-occurring health risk behaviour and treatment too late after disease progression may have masked treatment effects.[25] Thus early intervention is vital.

Following SH presentation, an opportunity exists to assess physical health and risk behaviour, as well as mental health needs and risks. UK studies have shown that tackling alcohol misuse was key to

Figure 2. Age-standardised mortality ratios (SMRs) for alcohol-related death by socioeconomic deprivation (Index of Multiple Deprivation, 2007) category in (a) male patients and (b) female patients (bars indicate 95% CIs; IMD 2007 quartiles: scores less than 14.3 (25%), 29.7 (50%), 49.5 (75%), and scores of 49.5 or more; higher scores indicate greater deprivation).
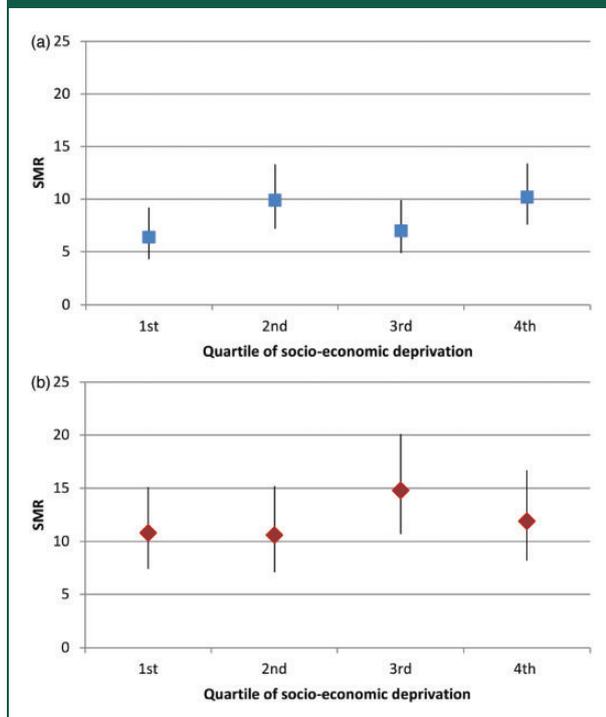
recovery from SH behaviour in some individuals,[27] and brief interventions in inpatient and ED settings may help reduce alcohol use,[28] especially where injury is attributed to alcohol use.[29]

We also identified individuals at increased risk of alcohol-related mortality who did not receive specialist assessment following SH, on whom information was lacking. SH patients taking early discharge[30] and those not assessed[22] are more likely to have consumed alcohol prior to SH or have been intoxicated on presentation. Temporary admission and delayed assessment to allow recovery have been suggested to alleviate this problem.[31]

Strengths and weaknesses

Our sample includes all ED presentations for SH over an 11-year period. The large size and high proportion (97.7%) of individuals traced during a two to 13-year follow-up add weight to our findings.

The definition of alcohol-related death[5] includes diseases most directly due to alcohol consumption, excluding those with only some causal relationship, such as oesophageal and liver cancer and ulcers. Therefore our findings may underestimate the true extent of alcohol-related mortality in this population.

Our data on alcohol involvement at the time of or prior to SH were based upon clinicians' assessment of individuals' self-reported alcohol use rather than use of an itemised scale. Some data required for

Table 4. Characteristics of individuals and clinical management at the first episode of self-harm and subsequent alcohol-related death*.

	Binary logistic regression analyses				
	Total *N* = 39,014, n/N (%)	Univariate, odds ratio (95% CI)	*p*	Multivariate,[†] odds ratio (95% CI)	*p*
Patient characteristics					
Sex[‡]					
Male	170/16,508 (1.0)	1.0 (reference)		1.0 (reference)	
Female	137/22,491 (0.6)	0.59 (0.47–0.74)	<0.001	0.80 (0.64–1.01)	0.143
Age in years	307/39,014 (0.8)	1.04 (1.03–1.05)	<0.001	1.05 (1.04–1.06)	<0.001
Employment status					
Employed	48/10,350 (0.5)	1.0 (reference)		1.0 (reference)	
Unemployed	97/8513 (1.1)	2.5 (1.7–3.5)	<0.001	2.1 (1.5–3.0)	<0.001

(continued)

Table 4. Continued.

	Binary logistic regression analyses				
	Total N = 39,014, n/N (%)	Univariate, odds ratio (95% CI)	*p*	Multivariate,[†] odds ratio (95% CI)	*p*
Sick or disabled	45/2549 (1.8)	3.9 (2.6–5.8)	<0.001	2.6 (1.7–4.0)	<0.001
Household/retired/student/other	23/7600 (0.3)	0.65 (0.40–1.07)	0.092	0.67 (0.39–1.12)	0.127
Not known	94/10,002 (0.9)	2.0 (1.4–2.9)	<0.001	1.6 (1.1–2.5)	0.024
Method of SH at first episode					
SP only	262/31,557 (0.8)	1.0 (reference)		1.0 (reference)	
SI only	36/6088 (0.6)	0.71 (0.5–1.01)	0.05	0.80(0.56–1.16)	0.238
SI and SP	9/1369 (0.7)	0.79 (0.41–1.54)	0.489	0.99 (0.50–1.93)	0.965
Alcohol involved in SH					
None	23/12,941 (0.2)	1.0 (reference)		1.0 (reference)	
Alcohol involved	212/16,775 (1.3)	7.2 (4.7–11.1)	<0.001	5.9 (3.8–9.1)	<0.001
Not known	72/9298 (0.8)	4.4 (2.7–7.0)	<0.001	3.5 (2.1–5.9)	<0.001
Clinical management					
Admission to general hospital					
None	66/11,601 (0.6)	1.0 (reference)		1.0 (reference)	
Admission	112/17,469 (0.6)	1.1 (0.8–1.5)	0.440	1.0 (0.7–1.1.5)	0.926
Not known/not collected	129/9944 (1.3)	2.3 (1.7–3.1)	<0.001	2.4 (1.6–3.6)	<0.001
Specialist psychosocial assessment					
None	144/1678 (0.9)	1.0 (reference)		1.0 (reference)	
Specialist assessment	163/22,230 (0.7)	0.85 (0.68–1.07)	0.168	0.64 (0.47–0.88)	0.005
Referral for aftercare					
Alcohol or drug service aftercare					
None	256/37,269 (0.7)	1.0 (reference)		1.0 (reference)	
Current or new referral	35/1124 (3.1)	4.6 (3.2–6.6)	<0.001	3.2 (2.1–4.7)	<0.001
Told to see	16/621 (2.6)	3.8 (2.3–6.4)	<0.001	2.5 (1.5–4.4)	0.001
Psychiatric outpatient aftercare					
None	242/29,412 (0.8)	1.0 (reference)		–	
Current or new referral	65/9602 (0.7)	0.82 (0.62–1.08)	0.161		
Psychiatric inpatient aftercare					
None	293/37,021 (0.8)	1.0 (reference)		–	
Current or new referral	14/1993 (0.7)	0.89 (0.52–1.52)	0.662		

(continued)

Table 4. Continued.

	Binary logistic regression analyses				
	Total $N = 39{,}014$, n/N (%)	Univariate, odds ratio (95% CI)	p	Multivariate,[†] odds ratio (95% CI)	p
Self-discharge after SH episode					
None	279/36,161 (0.8)	1.0 (reference)		–	
Took self-discharge	28/2853 (1.0)	1.30 (0.86–1.90)	0.223		
GP referral aftercare					
None	134/19,135 (0.7)	1.0 (reference)		–	
Referral by letter or phone contact	164/18,362 (0.9)	1.30 (1.02–1.61)	0.036		
Told to see	9/1517 (0.6)	0.85 (0.43–1.67)	0.629		
Other aftercare agency					
None	258/32,598 (0.8)	1.0 (reference)		–	
Formal contact	25/3388 (0.7)	0.93 (0.62–1.41)	0.737		
Told to see	24/3028 (0.8)	1.00 (0.66–1.52)	0.995		
Adjustment for centre differences					
Centre A	57/9043 (0.6)	1.0 (reference)		1.0 (reference)	
Centre B	173/19,237 (0.9)	1.43 (1.06–1.93)	0.019	0.58 (0.38–0.87)	0.010
Centre C	77/10,734 (0.7)	1.14 (0.81–1.61)	0.480	0.85 (0.58–1.25)	0.416

SH: self-harm; SP: self-poisoning; SI: self-injury; CI: confidence interval
*Logistic regression for outcome of alcohol-related death (yes, no).
[†]Multivariate analysis. Step 1: direct entry of patient characteristic and clinical management variables significant in univariate models at $p < 0.2$; Step 2: forward conditional entry ($p < 0.05$) of referral for aftercare variables that were significant at $p < 0.2$ in univariate models. Final model $\chi^2 = 405.2$, df = 17, $p < 0.001$; Nagelkerke R square = 0.118.
[‡]For 15 individuals sex was not known.

secondary analyses on clinical management following SH were missing, but in sensitivity analyses excluding these data, the main findings were essentially unchanged.

Clinical implications

The UK government's strategy[3] encourages use of effective interventions to tackle alcohol misuse such as brief interventions, specialised treatment for alcohol dependence and alcohol liaison nurses sited within the ED. Thus, all SH patients should receive assessment in line with guidance (e.g. National Institute for Clinical Excellence[32]), to enable early identification of alcohol problems and appropriate intervention. Our findings fully endorse those recommendations.

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