

NHS Leicester City
Directorate of Public Health and Health Improvement
Investigation of use of UHL Emergency Department by people who have
self-harmed

Executive Summary

- Paracetamol is the most common drug used in self-poisoning in the UK, with high rates of morbidity and mortality.
- NICE guideline CG016 concluded that improving staff knowledge and attitudes is the key to better services and the reduction in the substantial morbidity and mortality associated with self-harm.
- Over the period 1998-2008 there were 328 deaths from suicide and undetermined injury in Leicester. Overdose was the second most frequent cause of death in this category accounting for 85 deaths, a proportion 26% of the cases.
- On average about 200 people per month attended the Emergency Department at UHL with a reported act of self harm which may or may not have been deliberate. The total number of patients attending ED during this period was 36,937. The rate of people attending ED with self-harm was 16.16 per 1000 patients.
- There were 433 cases of non-accidental overdose, of which 93 (15.6%) were recoded as being from Paracetamol. The rate of attendance at ED with Paracetamol overdose, in the period, was 2.5 per 1000 patient attendances.
- Of the 597 individuals 245 were male, and 352 were female. The relative frequency of this variable shows that 41% (95% CI 37.2, 45) of the individuals were male and 59% (95% CI 55, 62.8) were female. Thus given these confidence intervals it is possible to assert that most people attending ED with self-harm are female.
- The ages of all 597 people were recorded, the minimum age was under 1 year and the maximum was 89 years. The mean age was 32.1 years (95% CI 30.9, 33.3). 85.4% of the cases were between the ages of 10 and 49.
- 595 cases in the dataset had their ethnicity recorded. 351 were female and 244 male. Of these 85% were from a White British ethnic background. The next most frequent ethnic group were people from an Asian/Asian British background.

- Higher proportions of people who attended with accidental overdose were found in those aged below 10 years and over 60 years.
- 30% of the 93 cases of non-accidental overdose of Paracetamol were aged between 10 and 19.
- Most people were seen on the Emergency Decisions Unit, following a visit to ED having self-harmed.
- 31 out of 37 cases admitted to the Children's Unit were female.
- 186 people were admitted to an acute medical ward.
- 81 people were discharged home, not all of whom were referred to another service.

1. Introduction

This paper is a short analysis of three months data concerning the use of Emergency Department (ED) at University Hospitals Leicester (UHL) by people who have harmed themselves. It was initiated following discussions about the numbers of acts of self harm which arise following Paracetamol overdose. Paracetamol is used as a mild to moderate analgesic and antipyretic. It is the most common drug used in self-poisoning¹ in the UK, with high rates of morbidity and mortality.

The importance of tackling the issue of non fatal self-harm is emphasised by the *National Suicide Prevention Strategy for England*². Self-harm is one of the top five causes of acute medical admission in the UK. The quality of care for those people who self-harm depends on the quality of joint working between emergency departments and mental health services. Many people who attend an emergency department as a result of self-harm find the experience unpleasant. The NICE guideline CG016³ concluded that improving staff knowledge and attitudes is the key to better services and the reduction in the substantial morbidity and mortality associated with self-harm.

One of the characteristics of self-poisoning with Paracetamol is that there is often a delay of several days between ingesting the medication and the onset of serious symptoms. Studies suggest that if people knew of this delay then they would not have taken the overdose⁴. Studies also show that people most often use Paracetamol for this purpose because it was available and inexpensive⁵.

The importance of the issue for Leicester is shown by the number of people who die as a result of overdose. Over the period 1998-2008 there were 328 deaths from suicide and undetermined injury in Leicester. Overdose was the second most frequent cause of death in this category accounting for 85 deaths, a proportion 26% of the cases.

The purpose of carrying out this study is to analyse the data currently collected to check its utility as an aid to investigation. In addition, the review will consider if any particular group is more at risk of self-harm, and to see if the patient outcomes within ED met expectations.

The data set from UHL includes 597 people for the three month period from September to November 2009. On average this means that about 200 people per

¹ Hawton, K. et al Paracetamol self-poisoning, prevention and harm reduction. Br J Psych 1996; 168 pp 43-8

² DH, 2002. National Suicide Prevention Strategy for England. London, Department of Health

³ www.nice.org.uk/CG016

⁴ Gazzard, B. et al Why do people use Paracetamol for suicide? BMJ 1976: 1 pp 212-3

⁵ Hawton, K. et al Why patients choose Paracetamol for self-poisoning and their knowledge of its dangers. BMJ 1995; 310 p164

month attended ED with a reported act of self harm which may or may not have been deliberate. The total number of patients attending ED during this period was 36,937. The rate of people attending ED with self-harm was therefore 16.16 per 1000 patients.

The data were collected throughout the patient journey from the arrival at ED, and include a record of age, sex, diagnosis, and the patient's 'destination'. The report investigates the association of the diagnosis of self-harm with sex, age and referral route. It looks especially at the issue of overdose of Paracetamol. All of the raw data which was associated with the variables of the dataset have been inputted onto STATA v10.

2. Description of the study population

2.1 Outcome variables in the dataset

Data on patients' primary diagnosis showed one of four outcomes were recorded as one of four variables; non-accidental overdose, self-harm, non-accidental overdose of Paracetamol and accidental overdose. In total there were 433 cases of non-accidental overdose, of which 93 (15.6%) were recoded as being from Paracetamol. The rate of attendance at ED with Paracetamol overdose, in the period, was 2.5 per 1000 patient attendances. The substances used for the majority of cases of overdose are not recorded in the dataset.

Table 1: Attendance at ED with an act of self-harm September to November 2009

Primary Diagnosis	Freq.	Percent	95% CI	
			Lower	Upper
Non-accidental overdose	340	57.0	52.9	60.9
Self Harm	95	15.9	13.2	19.1
Non-accidental overdose of Paracetamol	93	15.6	12.9	18.7
Accidental overdose	69	11.6	9.2	14.4
Total	597	100.0		

Key message:

The rate of attendance at ED with Paracetamol overdose was 2.5 per 1000 patient attendances.

2.2 Exposure Variables

The frequency of sex in the ED dataset shows that of the 597 individuals 245 were male, and 352 were female. The relative frequency of this variable shows that 41% (95% CI 37.2, 45) of the individuals were male and 59% (95% CI 55, 62.8) were female. Thus given these confidence intervals it is possible to assert that most people attending ED with self-harm are female.

The ages of all 597 people were recorded, the minimum age was under 1 year and the maximum was 89 years. The mean age was 32.1 years (95% CI 30.9, 33.3). Figure 1 below shows that the range of ages of people visiting ED, as a result of self-harm, was skewed to towards younger ages.

Figure 2 shows that the age groups where visits to ED were most frequent were between the ages of 10 and 49. In total people from these age groups accounted for 85.4% of the cases. Just over a quarter of all cases were in the 20 to 29 age group (25.3%), with 21.9% of all cases aged 40 to 49. The age groups

10 to 19 and 30 to 39 each accounted for about a fifth of the cases. The proportions of episodes amongst these age groups were significantly higher than the others.

Table 2: Episodes at Emergency Department resulting from self harm by sex and age group

	Frequency	Sample %	95% CI	
			Lower	Upper
Total	597	100		
Sex				
Male	245	41.0	37.2	45.0
Female	352	59.0	55.0	62.8
Age				
<10	22	3.7	2.4	5.5
10 to 19	114	19.1	16.1	22.4
20 to 29	151	25.3	22.0	28.9
30 to 39	114	19.1	16.1	22.4
40 to 49	131	21.9	18.9	25.4
50 to 59	40	6.7	5.0	9.0
60 to 69	16	2.7	1.7	4.3
70 to 79	6	1.0	0.5	2.2
80 +	3	0.5	0.2	1.5

Table 3: Mean age of people visiting ED as a result of self-harm

	Mean	Std. Err.	95% CI	
			Lower	Upper
Age	32.1	0.6	30.9	33.3

Figure 1: Age in people attending ED as a result of self-harm in Leicester September to November 2009

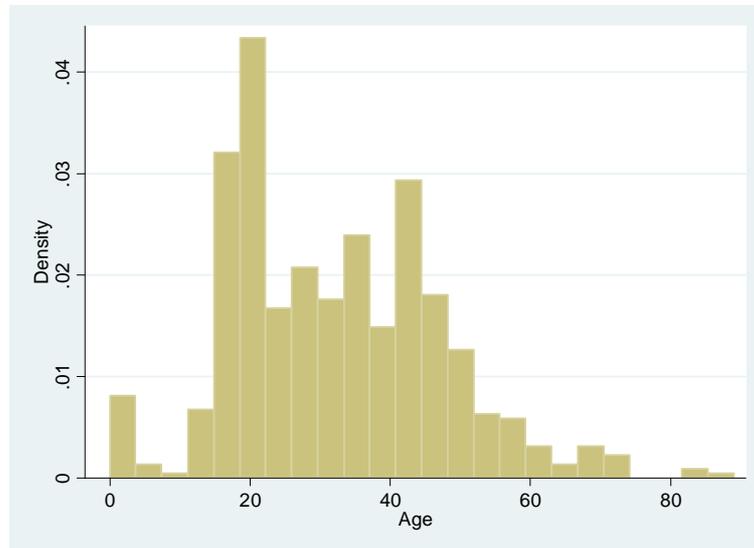
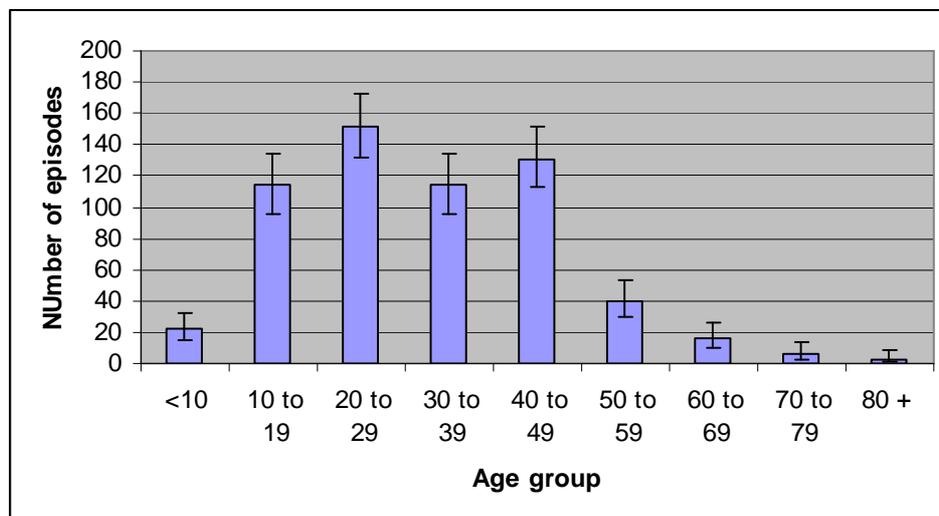


Figure 2: Age groups of people attending ED as a result of self-harm in Leicester September to November 2009



595 cases in the dataset had their ethnicity recorded. 351 were female and 244 male. Of these 85% were from a White British ethnic background. The next most frequent ethnic group were people from an Asian/Asian British background. For all but one ethnic group, that which was labelled 'Other', there were more females than males admitted following an episode of self harm. However, only in those from a White British background was this proportion statistically significant.

Table 4: Ethic background of people visiting ED as a result of self-harm September to November 2009

Ethnic Background	Female	% of ethnic gp	95% CI		Male	% of ethnic gp	95% CI		Freq.	% ethnicity	95% CI	
			Lower	Upper			Lower	Upper			Lower	Upper
White British	303	59.8	55.4	63.9	204	40.2	36.1	44.6	507	85.2	82.1	87.8
Asian/Asian British	17	58.6	40.7	74.5	12	41.4	25.5	59.3	29	4.9	3.4	6.9
Black/Black British	4	66.7	30	90.3	2	33.3	9.7	70.0	6	1.0	0.5	2.2
Other White	12	63.2	41	80.9	7	36.8	19.1	59.0	19	3.2	2.1	4.9
Other	11	40.7	24.5	59.3	16	59.3	40.7	75.5	27	4.5	3.1	6.5
Mixed	4	57.1	25	84.2	3	42.9	15.8	75.0	7	1.2	0.6	2.4
Total	351				244				595	100.0		

Key messages:

It is possible to assert that most people attending ED with self-harm are female.

The mean age was 32.1 years (95% CI 30.9, 33.3).

Of these 85% were from a White British ethnic background. The next most frequent ethnic group were people from an Asian/Asian British background.

3. Results

3.1 Diagnosis and age group

The 4 different types of diagnosis, which were set out in Section 2.1, were tested against age group. The results for all diagnoses are shown in Table 4, below. With reference to the different diagnoses, there are some points of interest. 299 out of 340 cases of non-accidental overdose were aged between 10 and 49, 88% of the total. There were no statistically significant differences between these four decadal groups (see Table 5), although most were seen in the 40 to 49 and 20 to 29 age groups.

Table 4: Episodes at Emergency Department of 'types' of self harm and age

Diagnosis		Age Group									Total
		<10	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 79	80 +	
Non-accidental overdose	Freq	1	62	81	74	82	32	5	2	1	340
	%	0.29	18.24	23.82	21.76	24.12	9.41	1.47	0.59	0.29	100
Self-harm	Freq	0	18	33	19	20	4	1	0	0	95
	%	0	18.95	34.74	20	21.05	4.21	1.05	0	0	100
Non-accidental overdose of Paracetamol	Freq	1	28	22	15	20	4	2	0	1	93
	%	1.08	30.11	23.66	16.13	21.51	4.3	2.15	0	1.08	100
Accidental overdose	Freq	20	6	15	6	9	0	8	4	1	69
	%	29	8.7	21.74	8.7	13.04	0	11.59	5.8	1.45	100
Total	Freq	22	114	151	114	131	40	16	6	3	597
	%	3.69	19.1	25.29	19.1	21.94	6.7	2.68	1.01	0.5	100

Cases from the same 4 decadal groups were the most frequent of the 95 patients who were diagnosed under the category 'self-harm'; in this case 90 out of 95 individuals. However, in this case more than a third of the individuals were aged between 20 and 29, although Table 6 shows that this proportion was not statistically significantly higher than the other age groups.

Table 5: Episodes of non-accidental overdose in the dataset focusing on the 4 main decadal

	Frequency	Sample %	95% CI	
			Lower	Upper
10 to 19	62	18.2	14.5	22.7
20 to 29	81	23.8	19.6	28.9
30 to 39	74	21.8	17.7	22.4
40 to 49	82	24.1	19.9	25.4
Sub total	299	87.9	84.0	91.0
Total of all non accidental overdose	340	100.0		

Table 6: Episodes of 'self-harm' in the dataset focusing on the 4 main decadal

	Frequency	Sample %	95% CI	
			Lower	Upper
10 to 19	18	18.9	12.3	28.0
20 to 29	33	34.7	25.9	44.7
30 to 39	19	20.0	13.2	29.1
40 to 49	20	21.1	14.1	30.3
Sub total	90	94.7	88.3	97.7
Total of all 'self harm'	95	100.0		

The other categories of people who attended ED for an episode of self-harm have different patterns. 20 of the 22 people aged below 10 years attended ED because of accidental overdose. These 20 cases comprised 30% of the total of cases of accidental overdose. There were also higher proportions of older people who attended ED with accidental overdoses; almost 19% were amongst people who were aged 60 and over. The proportions seen in the 20 to 29 and 40 to 49 age groups accounted for 22% and 13% of this category.

Of the 93 cases which were categorised as 'non-accidental overdose of Paracetamol' there was a shift towards the younger age group (see Table 7). 28 of these people were aged 10 to 19, accounting for 30.1%. Although the table below shows that this is not a statistically significant figure, this is the only one of the four categories in which this particular age group has the largest proportion. When the decadal groups 10 to 19 and 20 to 29 are taken together they account for almost 54% of this category.

Table 7: Episodes of ‘non-accidental overdose of Paracetamol’ in the dataset focusing on the 4 main decadal

	Frequency	Sample %	95% CI	
			Lower	Upper
10 to 19	28	30.1	20.7	40.1
20 to 29	22	23.7	16.2	33.2
30 to 39	15	16.1	10.0	24.9
40 to 49	20	21.5	14.4	30.9
Sub total	85	91.4	83.9	95.6
Total	93	100.0		

Key messages:

Although there were no statistically significant differences between the main four decadal groups most cases seen were in the 40 to 49 and 20 to 29 age groups.

20 of the 22 people aged below 10 years attended ED because of accidental overdose.

Of the 93 cases which were categorised as ‘non-accidental overdose of Paracetamol’ there was a shift towards younger age groups.

3.2 Diagnosis and sex

Table 8 shows that in 3 of the 4 categories more females attended ED than males. Only in accidental overdose were there more frequent male than female cases. The proportion of female cases which were recorded as self-harm and non-accidental overdose of Paracetamol was significantly higher than those of males.

Table 8: Proportions of males and females in the 4 diagnostic categories.

		Non-accidental overdose	Self Harm	Non-accidental overdose of Paracetamol	Accidental overdose	Total
Female	Total	200	61	59	32	352
	%	58.82	64.21	63.44	46.38	58.96
Male	Total	140	34	34	37	245
	%	41.18	35.79	36.56	53.62	41.04
Total		340	95	93	69	597
%		100	100	100	100	100

Key message:

In 3 of the 4 categories more females who had self harmed attended ED than males.

3.3 Age group and sex

Although females numbered more than males, in only two age groups were there a significantly greater proportion of females than males attending ED for an act of self harm. Table 9 shows that these age groups were from 10 to 19 and 20 to 29. In the age group 10 to 19, almost three quarters of cases were female, whilst in the age group 20 to 29 almost 64% were female.

Table 9: Proportions of males and females according to age group.

Age group	Total	Female				Male			
		Number	%	95% CI		Number	%	95% CI	
				Lower	Upper			Lower	Upper
<10	22	9	40.9	23.3	61.3	13	59.1	38.7	76.7
10 to 19	114	85	74.6	63.5	81.7	29	25.4	18.3	34.1
20 to 29	151	96	63.6	55.7	70.8	55	36.4	29.2	44.3
30 to 39	114	61	53.5	44.4	62.4	53	46.5	37.6	55.6
40 to 49	131	68	51.9	43.4	60.3	63	48.1	39.7	56.6
50 to 59	40	23	57.5	42.2	71.5	17	42.5	28.5	57.8
60 to 69	16	6	37.5	18.5	61.4	10	62.5	38.6	81.5
70 to 79	6	3	50	18.8	81.2	3	50	18.8	81.2
80 +	3	1	33.3	6.1	79.2	2	66.7	20.8	73.9
Total	597	352				245			

When the mean ages of males and females were analysed it showed that mean age for females who had self-harmed was 4 years younger than males ($p = 0.0011$).

Table 10: Difference in mean ages of females and males attending ED after an act of self harm.

Sex	Observed	Mean age	95% CI	
			Lower	Upper
Female	352	30.43	28.91	31.94
Male	245	34.52	32.55	36.50
Difference		-4.10		

Key message:

The mean age of female cases was lower than males.

Significantly more females attended aged between 10 and 19 and 20 and 29.

3.4 Recorded Patient Journey

This section looks at the destination of the patient following a visit to ED. Two tables below show that there were many different destinations for patients following discharge from ED. Most were seen on the Emergency Decisions Unit, with admission to wards at LRI the next most frequent destination. 15 people did not wait despite being recorded as having taken an overdose and 3 males were taken into police custody, and 2 cases were taken straight to a prison. 37 of the patients were referred to either Children’s Admissions or the Children’s Assessment unit. 81 people were discharged home straight from ED. These cases are shown in more detail in Table 12.

Table 11: Patient destination after leaving Emergency Department after an act of self harm.

Patient Destination after ED	Number	%	95% CI		Sex	
			Lower	Upper	Female	Male
Acute medicine	186	31.2	27.6	35	99	87
Other hospital	7	1.2	0.6	2.4	3	4
ITU	7	1.2	0.6	2.4	4	3
Children’s Unit	37	6.2	4.5	8.4	31	6
Did not wait	15	2.5	1.5	4.1	7	8
Police Custody	3	0.5	0.2	1.5	0	3
Emergency Decisions Unit	258	43.2	39.3	47.2	155	103
H M Prison	2	0.3	0.1	1.2	1	1
Refused treatment	1	0.2	0	0.9		1
Discharged Home	81	13.6	11.1	16.5	52	29
Total	597				352	245

Of the 37 cases admitted to the Children's Unit the mean age was 11.35 years. The youngest was 1 year and the eldest was 16 years. 13 of the 37 were aged 15 and 8 were aged 13 years. Of the 28 people, aged between 13 and 16, 26 were female. Of the people who had overdosed on Paracetamol in this group, 1 was a male aged 1 year, 14 were females aged between 13 and 16.

258 cases were taken to the Emergency Decisions Unit, the mean age of these cases was 32.4 years; the youngest was 16 years and the eldest 74. 155 of these cases were female and 103 male. The average age of females in this group was 30.96 years and that of males was 34.58 years. The spread of male cases was between 16 and 74 years; the spread of females was between 16 and 68 years.

186 cases were admitted to acute medical wards at LRI and 7 were admitted to ITU. Those admitted to ITU were older, than the mean age in the dataset, being aged between 40 and 83 years.

Of the 81 people who were discharged home 30 had no follow-up referral made. 2 people, who had attended with accidental overdoses, were referred to dentists. 30 people were referred to GPs. 8 cases were referred to health Visitors, 7 of whom were male children who had attended with accidental overdoses (aged between 1 and 4 years) and 1 woman who had attended with a non-accidental overdose.

Table 12: Referrals for patients discharged home from ED after an act of self harm.

Referral following discharge from ED	Number	%	95% CI		Sex	
			Lower	Upper	Female	Male
None	30	37	27.3	47.9	19	11
Dentist	2	2.5	0.7	8.6	2	
GP	30	37	27.3	47.9	21	9
Health Visitor	8	9.9	5.1	18.3	1	7
LRI	2	2.5	0.7	8.6	2	
Other Practitioner	1	1.2	0.2	6.7	1	
Mental Health	7	8.6	4.2	16.8	5	2
Social Services	1	1.2	0.2	6.7	1	
Total	81				52	29

Key Messages:

Most people were seen on the Emergency Decisions Unit, following a visit to ED having self-harmed.

31 out of 37 cases admitted to the Children's Unit were female.

186 people were admitted to an acute medical ward.

81 people were discharged home, not all of whom were referred to another service.

4. Conclusion

This investigation of a sample of individual overseas patients, collected from 3 months worth of data derived from ED at UHL Leicester shows that there are about 200 cases of self harm attending ED every month. Most of these cases are young females, but the age is spread from the very young to the old elderly. Most of these cases are of people who have taken an overdose, however the substance used is not recorded for every case. 93 cases resulted from a Paracetamol overdose. Whilst most people were cared for in hospital, 81 were discharged straight from ED.

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