

# Suicide attempts by jumping

John Joyce and Simon Fleminger

Those who attempt suicide by jumping often have a history of major psychiatric disorder, are left with a high level of physical and psychological morbidity and have a poor outcome. Services are failing this group in that national statistics may underestimate its size, and even when patients are in contact and are symptomatic and expressing suicidal intent before the incident many go on to jump. Care in hospital and preparation for follow up is uncoordinated.

Jumping is a particularly lethal form of attempting suicide which results in high mortality and disfigurement, enormous psychological trauma to patients and relatives and significant psychological issues for those professionals involved in the care of survivors. Those who jump are pertinent to the current debate on the use of suicide as a measure of health outcome and the emphasis on prevention and management of suicide addressed in the 'Health of the Nation' targets.

In 1994, 4% ( $n=160$ ) of all suicides in England and Wales were as a result of jumping from a height or before a moving object (Office of Population Censuses and Surveys, 1990–1994). Older and more recent information suggests that suicides by jumping may simply be counted as accidents or, like those who die by drowning where intent is difficult to demonstrate, are underestimated in suicide statistics as they may frequently receive open coroners' verdicts (Walsh *et al.*, 1975; Cooper & Milroy, 1995; Lecomte *et al.*, 1995) contributed to by the legal treatment of suicide and certification historically based on the need to prove that the deceased intended to take his or her own life (Neeleman, 1996).

The Helicopter Emergency Medical Service (HEMS) based at the Royal London Hospital provides prompt medical attention for a large number of patients with severe and often multi-system injuries. Among these is a readily identifiable group who have fallen from a height or before a moving object. Thus an opportunity arose to study a significant sample of people who have attempted to kill themselves by jumping.

## The study

This is a retrospective case note study. Over a period of four years (from the inception of the

service in September 1990 to November 1994) there were 962 admissions in total to the Royal London Hospital via the HEMS. Seventy-seven of these were identified by the admitting surgical team as having deliberately self-harmed by various methods including cutting and piercing, hanging, shooting, crashing a motor vehicle and jumping. This indicates that deliberate self-harm accounts for 8% of all HEMS admissions to the Royal London Hospital and jumping accounts for 40% of all HEMS admissions for falls.

Of the 77 patients, 61 were recorded as having jumped to self-harm; of these 61 patients we were able to find the case notes of 51 (84% of the identified sample). Demographic information including age, gender, marital status, employment, mode of injury (fall from a height or in front of a moving object) and diagnosis was recorded as was information on preceding history including long-term (length of history and previous suicide attempts) and short-term (precipitants, expression of suicidal intent, prior symptoms and service contact). Record of morbidity in hospital including type and extent of injury (with details of head injury) and ongoing suicidality was made. Estimates of physical and mental disability at discharge were also made.

## Findings

### Demographics

Age, gender and marital status information was available in all 61 cases. The age range was 15 to 82. The mean was 33.4 (s.d. 13.85), the median 30 and the mode 25 (Figure 1). The gender breakdown was half and half (30 male; 31 female), which is in contrast to numbers suggested by national statistics on those who die after a jump which show a male preponderance of an order of two to three times. Table 1 shows breakdown by marital status, employment and category of injury. Sixty-seven per cent jumped from a height and 33% jumped in front of a moving object (railway train).

The rest of the demographic information was only obtainable in the 51 on direct case notes examination. Eighty-two per cent were classified in the case notes as suffering from major psychiatric disorder, 28% had a primary or secondary diagnosis of alcohol dependence syndrome or substance misuse. Comparison of the

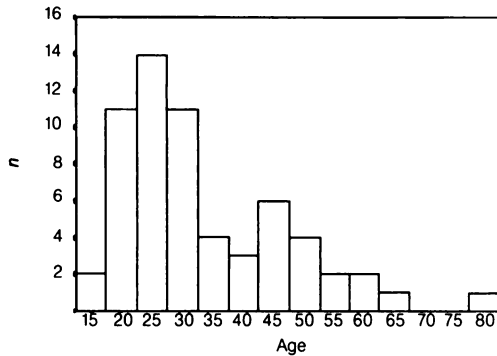


Fig. 1. Age distribution of sample

Table 1. Marital status, employment and diagnosis is by category of injury

	From a height n	Under a train n	Total
<b>Marital status</b>			
Never married/divorced	27	11	62%
Married	5	4	15%
Not recorded	9	5	23%
<b>Employment</b>			
Unemployed/student	9	6	29%
Employed	6	4	20%
Not recorded	19	7	51%
<b>Main diagnosis</b>			
Schizophrenia	9	3	24%
Schizoaffective disorder	2		4%
Affective disorder	9	8	33%
Mental illness (not otherwise specified)	8	3	21%
Alcohol dependence syndrome	2		4%
Substance misuse	2		4%
Not recorded	2	3	10%

two categories of jump did not reveal any striking differences with regard to age or gender. There was a larger number with schizophrenia or schizoaffective disorder in the category of jumping from a height but an almost equal number with affective disorder who carried out either type of behaviour (jumping from a height or under a train).

#### Preceding history

This was available for the 51 whose case notes were found. Table 2 shows 73% were sympto-

matic in the preceding days to weeks whereas 2% were without symptoms. Table 3 displays expression of suicidal intent over a similar period revealing 47% voicing plans or ideas and 16% reporting no prior intent. In 53% cases a specific precipitant was reported.

It was revealed that almost half of the whole group were in contact with services; seven were in-patients at the time of the incident and 18 were out-patients. This contact was recent in many as at least 44% of the whole group had had contact with services in the days and weeks prior to the incident. This figure is supported by the fact that 47% were noted to be on prescribed psychotropic treatment at the time of the incident. Forty-three per cent had had a history under five years in length while about a quarter had a history stretching over five years. About one-third were recorded as having had a previous attempt at suicide.

#### Morbidity in hospital

Information on all 61 was available on bodily area of injury, overall severity and mortality. The Injury Severity Score (ISS) is one of a number of scales used to give an estimate of the physiological derangement of the patient at admission (Yates, 1990). It is derived from the Abbreviated Injury Scale (AIS) where each individual injury is assessed as one (minor) to six (fatal). The maximum AIS score in the three worst-injured predetermined areas of the body is squared and then summed. It correlates closely with mortality and a score of greater or equal to 16 is deemed to represent major trauma. The maximum score is 75. The ISS in these patients ranged from two to 50 with a median of 27. The worst injury to predetermined areas of the body as recorded in the ISS for all 61 patients were: face, 18; head and neck, 33; limbs and pelvis, 53; chest/

Table 2. Symptoms reported present or absent prior to admission and at discharge

	Symptomatic	Nil	Information not recorded
Prior	37	1	13
At discharge	18	16	7

Table 3. Suicidality reported present or absent preceding or during admission

	Ideas or plans	Nil	Information not recorded
Preceding	24	8	19
During	13	16	22

Table 4. Glasgow Coma Scale (GCS) scores for cases at admission and number of these cases surviving

GCS score	Number of cases	Number survived
<3	4	1
3 to 4	32	26
15	15	14

thorax/abdomen, 56. Twenty patients (33%) died during the course of admission.

The remaining information from the 51 case notes was as follows: Table 4 shows the pattern in Glasgow Coma Scale (GCS) scores at the time of admission and numbers surviving. The proportion that survived and the time it took them to return to full consciousness was related to the initial GCS score. The only case with an initial GCS score of 15 who did not to survive refused blood transfusion. Length of time spent in hospital varied between less than 24 hours and 107 days with a mean of 27 days.

During admission 31% denied any ongoing suicidal intent, 26% expressed suicidal ideas or definite suicidal plans and the rest (43%) were not accessible to interview and include the group who died (cf. Table 3).

Nursing staff were far better at identifying psychiatric problems: examination of nursing notes revealed some comment on psychiatric state or needs during admission in 78% cases compared to medical staff who made reference to psychiatric state or needs in only 23%.

#### *Disability at discharge*

Forty-one cases survived. Of the 34 whose case notes were examined 21% fell in to the category of no significant physical disability on discharge, 26% into mild or moderate disability and 53% into the severe category. In terms of significant mental state symptoms 47% were without, 41% had mild to moderate symptoms and 12% had severe symptoms (cf. Table 2).

#### **Comment**

The literature contains a number of studies of those who successfully killed themselves by jumping or who attempted suicide by jumping. Between 50 and 100% of cases were reported to have psychiatric illness; two studies (Sim & O'Brien, 1979; Cantor *et al.* 1989) found a preponderance of diagnoses of schizophrenia whereas three studies (Prasad & Lloyd, 1983; Copeland, 1989; Isbister & Roberts, 1992) found a greater number of cases with depressive illness. Small sample size and ascertainment bias introduced by relying on recruitment from psychiatric in-patients wards or specific referrals

to a psychiatric service may have led to inconsistent findings. Likewise the conclusions from other studies on age and gender are inconsistent, some supporting the view propounded in a study of violent suicide in south Yorkshire (Cooper & Milroy, 1994) that the most potentially painful/disfiguring methods of suicide: jumping from a height, self-immolation, and railway deaths are favoured by the young severely mentally ill male. But others, as in a recent description of a series of suicides by jumping with a comparison group (Nowers & Gunnell, 1996), find them similar in age and gender distribution to those using other suicide methods and no more likely to have psychiatric histories than controls.

What do we know of what happens to these cases? Three studies have assessed outcome months to years following the attempt. In Finland, in an acute accident unit, 73 patients were identified who sustained injuries from intentional fall from heights. In 21% there was a previous history of recorded psychiatric disorder and in a further 15% chronic alcoholism. Thirteen patients died, all except one within the first 24 hours. One year after the fall, only 32% of the survivors had returned to work and twelve still needed institutional care of whom eight had permanent complete paraplegia (Bostman, 1987). The latter two studies (Sims & O'Brien, 1979; Cantor *et al.* 1989) found about 40% attempted deliberate self-harm again within a period of about five years. In both studies (with  $n=16$  and 22) two patients subsequently killed themselves by jumping a second time. All this confirms the clinical impression that this is an extremely vulnerable group who are likely to do poorly.

Our results from a group of jumpers, secondarily referred for psychiatric assessment, show that most of the patients were suffering from a major psychiatric disorder and most were symptomatic and expressing suicidal intent in the days and weeks prior to the incident but jumped in spite of half being in contact with psychiatric services.

A diagnostic difference was evident between those with schizophrenia or schizoaffective disorder who more frequently jumped from a height and those with affective disorder who jumped in front of a moving object almost as often as jumping from a height. It was not possible to ascertain to what extent the jumping in front of a moving object category was actively jumping or passively lying but it may be that the type of jump favoured reflects presence or absence of predominantly depressive psychopathology.


There was a high degree of morbidity in hospital: one-third died, 40% were in a coma for at least a period reflecting the seriousness of injuries in those the HEMS are called out to and one-quarter were able to express some degree of

ongoing suicidality. Of those surviving more than two-thirds were physically disabled to some degree and one-half still had active psychiatric symptoms at transfer or discharge. As most patients were discharged to other hospitals for local orthopaedic or neurosurgical care it was not possible to ascertain what quality of care in follow up was delivered.

The job of noting the psychiatric aspects of the cases (surely a highly significant part of the picture) was left mostly to nursing staff if indeed any information was at all recorded by a non-psychiatrist. This may be understandable in the context of a highly pressed acute service but could lead to neglect of important management issues such as supporting relatives (who have often had a difficult time with an ill and disturbed patient) and appropriate anticipation of aftercare required and ensuring that further attempts do not take place in hospital. It indicates a pressing need for all major trauma centres to have a dedicated liaison psychiatry service to ensure that the chronically mentally ill who suffer major trauma receive appropriate psychiatric care during the course of their admission and, no less important, aftercare on discharge from the surgical wards.

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