

# SUICIDE ATTEMPTS BY JUMPING FROM HEIGHT

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## ABSTRACT

**Background:** The issue of suicide attempts by jumping from height is a serious problem in Hong Kong. This study explores the characteristics of survived suicidal jumpers and the suicide attempts.

**Methods:** This is a retrospective data collection study, reviewing the psychiatric consultation notes of 79 jumpers who survived their attempts at suicide.

**Results:** The jumpers attempting suicide were mostly Chinese men aged 21 to 50 years who were sober and drug-free at the time of the incident. More than three quarters of them were living with relatives or friends. Approximately half were employed full time or were housewives, but more than one quarter were unemployed. Three quarters of attempts occurred at their residences or familiar places. The jumpers did not usually leave suicide hints or notes, and nearly 50% of suicidal acts were done under impulse. One quarter of them were suffering from functional psychoses and one quarter from major depressive illness. Half of the attempts were triggered by psychosocial life events.

**Conclusion:** Although half of the jumpers attempting suicide were suffering from either psychotic illness or major depressive disorder, mental illness itself could not account for all suicide attempts by jumping from height. A cognitive-behavioural model is postulated to account for the suicidal behaviour.

**Key words:** *Jumping From Height; Impulsiveness; Suicide Attempts*

## INTRODUCTION

Hong Kong has had a slight increase in suicide rates from 1981 to 1994, with jumping from height taking over from hanging as the commonest suicide method since 1985.<sup>1</sup> The years of potential life lost, which measures the extent of premature mortality, was estimated to be 322 years per 100,000 population in 1994 — higher than that in Taiwan and Beijing during the same year. In 1994, jumping from height accounted for 59% of suicides in Hong Kong, while hanging accounted for 28%. Singapore had the similar phenomenon that 60% of suicides were accounted for by jumping.<sup>2</sup> However, this method is rarely used in Taiwan, which is also a cosmopolitan Chinese community.

Jumping from height is usually considered to be a violent method of suicide. The persons who choose the method are usually regarded as having strong self-destructive motivation, and survivors are considered to have failed suicide. People using violent suicide methods should be distinguished from those using methods carrying minimal risk to life or those with multiple self harm behaviour.<sup>3-5</sup>

Copeland studied 82 cases of successful suicide by jumping from buildings in Metropolitan Dade County in Miami, USA.<sup>6</sup> These accounted for 96.5% of cases of suicidal jumpers and 5.1% of all suicide cases in the county during 1982 to 1986. The suicidal jumpers were mostly white men, older than 60

years and sober and drug-free at the time of the incident. Two-thirds of the incidents occurred at the victim's residence, which was frequently an apartment or condominium-type of dwelling, seven floors or higher from the ground. The victims had often experienced depression prior to the incidents and did not usually leave a suicide note. However, the author commented that the study only included fatal jumpers and not survivors. He suggested that interviews with survived jumpers might give further information into the reasons behind the act, and might help to design preventive intervention. The study presented here attempts to supplement this information by reviewing psychiatric consultation case notes of survived jumpers.

## METHODS

The Consultation-Liaison (C-L) Team at Kwai Chung Hospital (KCH) provides a C-L psychiatric service to three general hospitals in Hong Kong with more than 2500 beds. A database has been established for the C-L service since July 1994, and this was used for the present study to identify patients who had been admitted to a general hospital for suicidal behaviour of jumping from height and had been attended by the liaison psychiatrists between 1 July 1994 and 31 December 1996. The consultation case notes were then examined. Only patients who had really intended to jump and were older

than 19 years were included in the study. Patients who only verbally threatened to jump or who chose not to jump before others intervened were excluded.

Review of the case notes gave the following patient information: demographic data (including age, sex, marital status, and employment status), previous psychiatric history (including history of attending a psychiatrist, psychiatric admission, and attempted suicide), trigger factors of the suicide attempt, circumstances of the attempted suicide (including evidence of suicide note, plans, or hints, impulsiveness, measures against discovery, site and height of the attempt, and influence of alcohol or psychoactive substance), presence of psychotic and depressive symptoms, psychiatric diagnosis, and further management after ward consultation. Comparisons were performed between two subgroups, the actual jumpers who had jumped and were injured, as well as failed jumpers who were saved by other people's intervention before jumping.

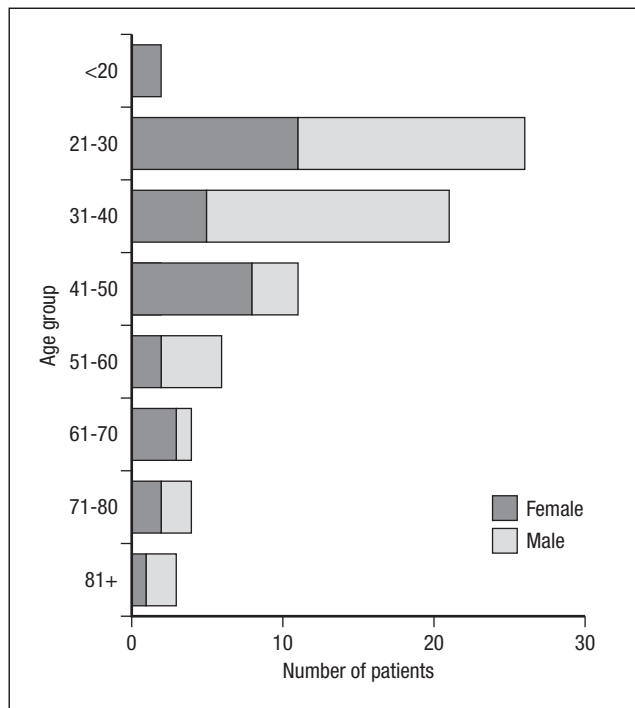
## RESULTS

A total of 4543 patients were referred to the KCH C-L team for psychiatric consultation between 1 July 1994 and 31 December 1996. Of these patients, 1505 presented following a suicide attempt, and 112 were recorded as having attempted suicide by jumping from height. After reviewing the case notes, only 79 patients fulfilled the inclusion criteria of this study. The sample was divided into two groups of 28 'actual jumpers' and 51 'failed jumpers'.

### DEMOGRAPHIC DATA

Among the 79 patients, the mean age of the suicidal jumpers was  $39.8 \pm 17.3$  years (Figure 1), with a male to female ratio of 1.3 to 1. Thirty two (40.5%) patients were employed

**Graph 1: Age distribution of suicidal jumpers**



full-time, eight (10.1%) were housewives, 22 (27.8%) were unemployed, seven (8.9%) were retired, two (2.5%) were studying, one (1.3%) worked irregularly, and seven (8.9%) occupations were unknown. The distribution ratio of marital status was as follows: married or cohabited, 37 (46.9%); single, 32 (40.5%); separated, 5 (6.3%); and widowed, 5 (6.3%). Sixty two (78.5%) patients lived with relatives or lovers, while 15 (19.0%) were living alone, one (1.3%) in a half-way house, and one (1.3%) was unknown.

### PREVIOUS PSYCHIATRIC AND SUICIDAL HISTORY

Of the 79 patients, 11 (13.9%) had a past history of psychiatric admission, 21 (26.6%) had past psychiatric history, and 57 (72.2%) had none. Regarding past history of attempted suicide, 26 (32.9%) had attempted suicide, 48 (60.8%) had not, and 5 (6.3%) were unknown.

### CIRCUMSTANCES OF SUICIDE ATTEMPTS

Seventeen (21.5%) subjects had told or hinted to someone about their intention to die before acting out, but 57 (72.2%) had not done so. Eight (10.1%) patients had planned the act beforehand, while 60 (75.9%) had not. Only four (5.1%) patients were confirmed to have left suicide notes, and 71 (89.9%) left none. Only five (6.3%) patients took precautions to prevent discovery while 58 patients (73.4%) took no precautions.

Thirty seven (46.8%) patients' acts were described as impulsive by their psychiatrists and 18 (22.8%) were not. Thirty five (44.3%) patients attempted suicide at home, and another 23 (29.1%) chose familiar places, such as relatives' homes, nearby rooftops or foot-bridges. Six (7.6%) subjects attempted suicide inside a hospital complex, and four (5.1%) in unfamiliar places. The site of the attempts was not recorded for 11 (13.9%) patients. The height of the jumps were recorded for 65 of 79 subjects, and the mean height was  $95.8 \pm 73.9$  feet, when one storey was estimated as 10 feet high.

Only 13 (16.5%) patients had a positive history of a psychoactive substance taken shortly before their attempts; seven (8.9%) had taken alcohol prior to the act, five (6.3%) had taken other psychoactive substance and one (1.3%) had consumed both.

### REASON BEHIND SUICIDE ATTEMPT

The trigger factors for the suicide attempts were categorised into six groups. Relationship problems with first degree relatives or a lover accounted for 29 (36.7%) subjects' suicide attempts. These problems mainly related to an extra-marital affair, break-up of a romance, or other marital discord. Other psychosocial life events such as financial crisis or unemployment accounted for 12 attempts (15.2%).

In the third category, 21 subjects (26.6%) attempted suicide under the influence of florid psychotic symptoms, including 14 patients with schizophrenia or other functional psychoses, one with psychotic depression, two with dementia, one with alcoholic psychosis, two with psychoactive substance-induced psychosis, and one otherwise healthy person undergoing vivid hypnagogic hallucination.

Seven subjects (8.9%) had distressing physical symptoms at the time of the attempt. Four were diagnosed as having depressive illness and three had adjustment disorder.

Persistent depression of syndromal level accounted for seven attempts (8.9%). These patients did not have significant triggering life events prior to the attempt. However, one depressed patient with florid psychotic symptoms was grouped into the third category.

Finally, three patients (3.8%) remained unclassified. One was intoxicated with alcohol at the time of jumping, leading to fractures of both ankles. Another had serious benzodiazepine withdrawal symptoms, and one was a psychopathic heroin addict who manipulated his relatives with the suicidal act. Interestingly, they all had problems related to psychoactive substances.

### PSYCHOTIC AND DEPRESSIVE SYMPTOMS

Twenty one (26.6%) patients had psychotic symptoms at the time of the suicide attempt. Sixteen (20.3%) had hallucinations, mainly auditory in nature and 15 (19.0%) had delusions, mainly of prominent persecutory content. Ten (12.7%) subjects had symptoms of both hallucination and delusion. Depressive symptoms at syndromal level occurred in 29 (36.7%) subjects, including eight with a primary diagnosis other than mood disorder. Altogether, 10 (12.7%) subjects had both psychotic and depressive symptoms.

### PSYCHIATRIC DIAGNOSIS

Regarding the principal psychiatric diagnosis, 21 (26.6%) patients were suffering from schizophrenia or other functional psychoses, 21 (26.6%) had depressive illness, two (2.5%) had dementia, one (1.3%) had generalised anxiety disorder, six (7.6%) had alcohol or other psychoactive substance-related psychiatric disorders, 10 (12.7%) had adjustment disorder, and 18 (22.8%) did not have any formal psychiatric diagnosis (17 attempts were due to a situational reaction and one to a hypnagogic hallucination).

### FURTHER MANAGEMENT

Twenty two (27.8%) subjects were transferred to psychiatric wards after psychiatric consultation, and four (5.1%) discharged themselves against medical advice although further psychiatric inpatient management was desirable. Thirty (38.0%) were referred to psychiatric outpatient care, a

proportion of whom had stayed in general wards for a prolonged period because of physical problems. Nine (11.4%) patients were referred to social services, two (2.5%) received hospice care, and two (2.5%) died during hospitalization. Eight (10.1%) patients were discharged without any form of follow up. Two patients' information was incomplete.

### COMPARISON BETWEEN 'ACTUAL JUMPERS' AND 'FAILED JUMPERS'

The mean ages of the actual jumpers and failed jumpers were 37.9 and 40.8 years, respectively, and the male to female ratios were 1.5 to 1 and 1.1 to 1, respectively. The marital and employment status of the two groups were also comparable, although more housewives and students were present among the failed jumpers. There were no statistically significant differences between the two groups for the parameters mentioned.

As shown in Table 1, a greater proportion of actual jumpers had a past history of psychiatric admission, psychiatric illness and attempted suicide when compared with failed jumpers. However, only a past history of suicide attempt showed statistical significance by Chi-square test. Further, a greater proportion of actual jumpers had psychotic symptoms and depressive symptoms of syndromal level. In terms of principal psychiatric diagnosis and follow-up management, actual jumpers were more often given a diagnosis of functional psychosis or major depression, and offered further psychiatric in-patient or out-patient treatment. A greater proportion of failed jumpers were given a diagnosis of adjustment disorder or no formal psychiatric disorder. However, none of the above-mentioned differences were statistically significant.

The mean height of the jumps were  $44.2 \pm 29.6$  feet and  $130.3 \pm 74.7$  feet for actual jumpers and failed jumpers, respectively, and there was a statistically significant difference shown by unpaired t-test.

## DISCUSSION

### OVERVIEW

In the present study, only patients older than 19 years were included, since the psychiatric profile of child and adolescent jumpers may markedly differ from that of adult jumpers. Also, all paediatric patients and a large proportion of adolescent patients were referred to the Child and Adolescent Psychiatric

**Table 1. Past psychiatric and suicide history**

	Whole Sample	Actual Jumpers	Failed Jumpers
<i>Past psychiatric history</i>			
Positive psychiatric admission	11 (13.9 %)	5 (17.9%)	6 (11.8 %)
Positive psychiatric history	21 (26.6%)	11 (39.3%)	10 (19.6 %)
Negative psychiatric history	57 (72.2%)	17 (60.7%)	40 (78.4%)
Unknown	1 (1.3%)	0 (0.0%)	1 (2.0%)
<i>Past suicidal history</i>			
Positive	26 (32.9%)	14 (50.0%)*	12 (23.5%)*
Negative	48 (60.8%)	13 (46.4%)*	35 (68.6%)*
Unknown	5 (6.3%)	1 (3.6%)	4 (7.8%)

\*  $\chi^2 = 5.2$ ,  $df = 1$ ,  $p < 0.05$ .

Team instead of the C-L team when psychiatric consultations were required during hospitalisation. Since jumping from height is such an alarming life-threatening behaviour, most of the surviving jumpers would be referred for psychiatric assessment, if they were admitted to the general hospitals. Virtually all adult referrals from 1 July 1994 to 31 December 1996 were included in the present study.

Of the total 1505 suicide attempts during the study period, 79 (5.25%) subjects jumped from height. This is consistent with the findings of a previous study on suicide attempts in Hong Kong<sup>7</sup> and this method is more frequently used among suicide attempters in Hong Kong than in Western countries.

### **COMPARISON BETWEEN ACTUAL JUMPERS AND FAILED JUMPERS**

The present study involved both actual jumpers and failed jumpers. Although both sub-groups carried some common characteristics, actual jumpers seemed to have the more conventional risk factors for suicide such as male predominance, past psychiatric and attempted suicide histories, and presence of psychotic and depressive symptoms, as well as diagnoses of psychosis and major depression, despite the difference between the two groups only being statistically significant for past suicide history.

However, comparison between the two sub-groups is difficult. Due to an inevitable sampling bias, some suicide attempters who jumped from a very high place and successfully killed themselves could not be included in the study, while those who intended to jump but were stopped in time were included. In other words, some subjects luckily saved by unforeseen circumstances were included in the failed jumpers, and the actual jumpers were those who jumped from relatively low places. Nevertheless, the relatively low height of jump did not imply the actual jumpers' acts were not dangerous. Of the 28 actual jumpers, 26 sustained serious injury to various parts of the body.

### **CHARACTERISTICS OF SUICIDE JUMPERS**

Ku *et al.* studied 312 suicide attempts referred from Princess Margaret Hospital during 1994 to 1995.<sup>8</sup> Deliberate self-poisoning accounted for 56.1%, minor deliberate self-laceration accounted for 22.8%, and a combination of self-poisoning and self-laceration accounted for about 6%. Jumping from height was the commonest violent method and accounted for 5.4% (17 patients). Among the 312 subjects, the male to female ratio was 1 to 1.9, and the majority were teenagers or young adults. 27% had a past psychiatric history and 35.3% had a suicide history; 12.5% had a diagnosis of functional psychosis and 10.0% had a major depressive disorder.

In our study, the surviving jumpers were predominantly male, and a comparatively large proportion were aged 31 to 50 years, although the majority were still young adults. About 65% had a formal psychiatric diagnosis other than adjustment disorder. The results tend to support a general belief that people who deliberately harm themselves by jumping from

height are likely to be suffering from a mental disorder and have a genuine intent to die. Nevertheless, 35.5% of them were not given any formal psychiatric diagnosis or only given a diagnosis of adjustment disorder.

### **DEPRESSION AND SUICIDAL ACTS**

Depressive symptoms are expected to be present in most jumpers and are assumed to be the causative factor of suicide behaviour. In this study, depressive symptoms were commonly noted in the consultation notes, but usually for a brief period. Depression at syndromal level could only be identified in 36.7% of the patients. This finding suggests that persistence of depression may not be an essential or determining element of suicidal behaviour. Perhaps the intensity of depression or some specific depressive symptoms could be the mediating factor. This is consistent with the findings of previous studies on the relationship between depression, hopelessness, and suicidal intent, in which hopelessness is defined in terms of a system of negative expectancies concerning oneself and one's future life.<sup>9</sup> That the positive relationship between depression and suicidal intent disappears when hopelessness is controlled has been repeatedly confirmed, although both depression and hopelessness are positively correlated with suicide intent.<sup>10</sup>

### **IMPULSIVENESS, TRIGGER FACTORS, AND SUICIDAL ACTS**

Nearly half of the jumpers' suicide acts were described as impulsive by their psychiatrists. About three quarters did not plan their suicide acts, did not leave any hints to others, or did not take any measures against discovery. Only 5.1% left suicide notes prior to jumping. In contrast with the relative rarity of premeditation, the element of impulsiveness should attract more attention. In a study of paracetamol self-poisoning, it was found that deliberate self harm often happened impulsively and the most common motive was to escape from an intolerable situation or an unbearable state of mind.<sup>11</sup> Cantor and Baume suggested the element of impulsiveness may greatly increase the mortality of lethal suicide methods if the method is available and socio-culturally acceptable.<sup>12</sup>

In this study, several types of intolerable situations or unbearable states of mind were demonstrated to be trigger factors for jumping from height. Interpersonal relationship problems such as marital discord, conflict between lovers, and parent-child relationship problems were the commonest underlying stressors. Other life events included financial difficulty and unemployment. Seven jumps were triggered by physical suffering, with most occurring during extreme pain.

Florid psychotic symptoms accounted for one quarter of jumps, and the psychotic symptoms were mainly of persecutory content. Most patients were trying to escape or feeling desperate about an inability to escape from persecution. Indeed, one patient had no psychiatric illness but florid hypnagogic hallucination when asleep. This is consistent with previous findings that prominent suspiciousness in schizophrenia spectrum disorders defines a relatively high-risk group for suicide.<sup>13</sup>

Some studies suggest that psychotic patients prefer to commit suicide by jumping from height.<sup>14-16</sup> The present study may partly support this observation since 32.9% of the sample were psychotic at the time of the attempted suicide. Perhaps, florid psychotic symptoms may make people so distressed that they crave instant relief at the expense of their lives and may choose to jump from height.

No obvious trigger factors could be found for 7 subjects, except that they were found to have persistent depressive symptoms at syndromal level. Interestingly, 6 were failed jumpers and all were eventually admitted to psychiatric wards. The remaining one, who actually jumped and was injured, subsequently died in a general ward. It may signify the severity of the suicidal behaviour, if no significant trigger factors can be identified to account for the act.

### ACCESSIBILITY TO HIGH PLACES

Availability of high-rise buildings has been repeatedly proved to be a significant factor leading one to choose jumping from height as a suicide method.<sup>17,18</sup> Also, jumping is the most commonly reported means of suicide in general hospitals.<sup>19</sup> White *et al.* suggested that the proximity and ease of access to balconies and windows could be the relevant factors.

### COGNITIVE-BEHAVIOURAL MODEL

The authors of this study postulate that some people may have an inclination to think about suicide as a method to escape distress. In this locality, these vulnerable people may have a tendency to think of jumping from height instead of other methods. This can be conceptualised as a stereotypic dysfunctional thinking pattern which can be triggered by stressful events. With the presence of an intolerable situation or unbearable state of mind, they may readily assume death would be the best and only solution. They may automatically think of jumping from height and believe it would be rational and socially acceptable. As high places are so accessible to all people at any time in Hong Kong, they may eventually act out if the element of impulsiveness is present. Impulsiveness may be part of their own personality, the influence of psychoactive substance, or the influence of mental illness.

### PREVENTIVE MEASURES

Impulsiveness is shown to be a predominant element of suicidal behaviour for both failed jumpers and actual jumpers. The predominance leads us to assume that the choice of attempting suicide by a violent method, such as jumping from height, may not necessarily be related to the magnitude of determination to end one's life. Although the element of impulsiveness may on the one hand suggest uncertain predictability of a potentially lethal attempt, on the other hand it may imply the importance of a timely intervention in delinking a lethal suicide attempt and the hopeless feelings of a situationally desperate patient.

Mental health education for the public may arouse awareness of the problem in the community. Healthy problem-solving strategies for coping with crisis should be promoted. In preventing suicide among psychiatric patients, psychiatrists

have to be more patient-centred, and take into account patients' subjective feelings towards their mental symptoms and psychosocial life events.

### LIMITATION AND FURTHER STUDIES

Similar to other studies in this area, this study faces several technical pitfalls. This is a retrospective data collection study and the case records may not have included all the information required. Although impulsiveness was frequently described in the case-notes, the possible absence of an unanimous view on its definition has made the documentation of its role difficult. Furthermore, failure to include successful suicides that happened during the study period make the analysis incomplete. Future studies involving collaboration between the death registration unit and other clinical departments will be of tremendous value.

As the socio-cultural environment of Hong Kong is so distinct, further studies on the topic of jumping from height and other suicidal behaviours in this locality would be worthy. Besides, the extraordinarily high suicide rate among the elderly as well as child and adolescent populations in our community should alert us to the factor of age in suicide. Further, suicide in psychotic patients is another important topic.

### CONCLUSION

This study revealed the heterogeneity of survived suicidal jumpers. In terms of the psychiatric diagnosis and psychiatric morbidity, they range from schizophrenia with florid psychotic symptoms or severe depressive illness with persistent sense of hopelessness, to a transient emotional turmoil happening to an otherwise healthy person. Clearly, mental illness itself could not account for all suicide attempts by jumping from height.

A cognitive-behavioural model is postulated, in which unbearable state of mind and sense of hopelessness is regarded as the crucial mediating factor leading to the suicidal behaviour. The unbearable state of mind may be secondary to mental illness, physical suffering, or intense psychological distress.

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