Suicidal behaviour and suicide from the Clifton Suspension Bridge, Bristol and surrounding area in the UK: 1994–2003

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Background: Little is known about the characteristics of people who die by jumping from different locations (e.g. bridges, buildings) and the factors that might influence the effectiveness of suicide prevention measures at such sites. Methods: We collected data on suicides by jumping (n = 134) between 1994 and 2003 in Bristol, UK, an area that includes the Clifton Suspension Bridge, a site renowned for suicide. We also carried out interviews with Bridge staff and obtained records of fatal and non-fatal incidents on the bridge (1996–2005) before and after preventive barriers were installed in 1998. Results: The main sites from which people jumped were bridges (n = 71); car parks (n = 12); cliffs (n = 20) and places of residence (n = 20). People jumping from the latter tended to be older than those jumping from other sites; people jumping from different sites did not differ in their levels of past self-harm or current psychiatric care. As previously reported, suicides from the bridge halved after the barriers were erected; people jumping from the Clifton Suspension Bridge following their construction were more likely to have previously self-harmed and to have received specialist psychiatric care. The number of incidents on the bridge did not decrease after barriers were installed but Bridge staff reported that the barriers ‘bought time’, making intervention possible. Conclusion: There is little difference in the characteristics of people jumping from different locations. Barriers may prevent suicides among people at lower risk of repeat self-harm. Staff at suicide hotspots can make an important contribution to the effectiveness of installations to prevent suicide by jumping.

Keywords: jumping, prevention, suicide

Introduction

A number of sites around the world, particularly bridges, have gained notoriety as places from which suicide by jumping is popular and there is debate concerning the value of preventive measures at such sites. In December 1998, barriers were installed on the main span of one such site—the Clifton Suspension Bridge, UK. The barriers consist of metal fencing to a height of 1.5 m above which is a 0.5 m high five-strand inward sloping wire fence consisting of five taut parallel wires, evenly spaced. This means that the overall height of the barriers is 2 m above the path level. For architectural reasons similar protective measures were not placed on the buttress walls at either end of the bridge (figure 1).

We recently reported that the barriers resulted in a halving of suicides from the bridge (from eight to four per year); this study added to the growing literature on the effects of placing barriers on bridges commonly used for suicide. Less is known about the differences in the characteristics of people who choose different sites from which to jump (e.g. bridges, multi-storey car parks, their place of residence). Furthermore, there has been little work on the behaviour of people on bridges prior to acts of suicide or on the number or patterns of incidents at ‘suicide hotspots’ which do not result in suicide. Such data are important for the development of local suicide prevention strategies.

The overall aim of this article is to investigate processes involved in suicides by jumping to inform the development of effective public health measures to prevent these deaths. Specifically, we use data collected as part of an evaluation of the effectiveness of barriers placed on the Clifton Suspension Bridge to (i) compare the characteristics of people jumping from different sites (bridges/car parks/places of residence/cliffs/other sites) in a largely urban location (Bristol, UK and its surrounding area), (ii) describe the characteristics of those who jumped from the bridge before and after the installation of the preventive barriers, (iii) describe non-fatal and fatal suicidal incidents on the bridge and (iv) report on Bridge staff’s views of the role the barriers have played in the prevention of suicides from the bridge and their observations on the risk factors and current safety issues.

Methods

Information on suicides by jumping in the area served by the Bristol coroner

As previously described, coroner’s records for the area including the Clifton Suspension Bridge (Bristol) were examined to obtain information on all suicides by jumping between 1994 and 2003 (see online supplementary data). Information was obtained on the deceased’s (i) date of death, (ii) age, (iii) sex, (iv) postcode of residence, (v) the location of their death and the distance of this site from their home and (vi) whether the victim had been in receipt of psychiatric services at the time of death, and details of their psychiatric diagnosis.
Information on fatal and non-fatal incidents on the Clifton Suspension Bridge and Bridge staff’s views on the role of the barriers in the prevention of suicide from the bridge

Two staff work on the Clifton Suspension Bridge at night and three during the day. Part of their role is to ensure the safety of people on the bridge and to deal with any incidents. They are based in the Bridge-master’s offices at either end of the bridge and their observation of incidents on the bridge is enhanced by CCTV cameras, installed at several points on the bridge, and by their regular patrols.

Since 1996, Bridge staff has completed incident forms when someone on the bridge has exhibited behaviour giving them cause for concern. Forms are also completed for suicides, irrespective of staff involvement. The following information, for the years 1996–2005 was abstracted from the incident forms: (i) approximate age (data based on Bridge staff’s subjective impression) and sex of the individual; (ii) any previous history of incidents on the bridge for that individual; (iii) how the incident was noticed; (iv) a brief description of the incident; (v) action taken; (vi) whether local health or police services were informed and (vii) outcome of the incident.

Structured interviews were also carried out with Bridge staff. These focused on their involvement in fatal and non-fatal suicidal acts on the bridge and their views on the effectiveness of the barriers in suicide prevention.

Data analyses

Statistical analyses were carried out using Stata software (version10.0). Descriptive analyses, comparison of proportions and linear regression analyses were used, as appropriate, to compare characteristics of (i) people who died by jumping from different sites in the Bristol area and (ii) people who died by jumping from the Suspension Bridge before and after the installation of the barriers. The Wilcoxon rank sum test was used to compare the distance between the place of residence and the Suspension Bridge for individuals who jumped from the bridge and those who jumped from other locations.

Results

Characteristics of suicides by jumping in the Bristol area

As previously reported, 61 (45.5%) of the 134 suicides by jumping in the Bristol area over the 10-year period, were from the Clifton Suspension Bridge. The other main sites were car parks (n = 12), other bridges (n = 10), cliffs (n = 20) and places of residence (n = 20) (table 1).

There was statistical evidence (P < 0.01) that age was associated with the choice of site from which to jump. Those who died by jumping from their place of residence were older (mean age of 59.2 years) than those jumping from other sites (table 1). Eighty percent (107/134, 79.9%) of all the jumping suicides were male. Though the proportion of males amongst those jumping from the Suspension Bridge (90.2%) was higher than for all other sites, there was only a weak statistical evidence for gender differences in the choice of site (P = 0.09). There was no statistical evidence of differences across sites according to the other factors examined (previous episode of self-harm, contact with psychiatric services at the time of death, diagnosis of schizophrenia, residence in the area served by the Bristol coroner) though there were quite striking variations in the proportion of people under the care of psychiatric services at the time of death ranging from 25% (for car parks) to 58.5% for the Suspension Bridge (table 1).

Characteristics of those who died by jumping from the Clifton Suspension Bridge before and after the installation of the barriers

The mean age of suicides from the bridge was similar before (1994–1998) compared with after (1999–2003) the installation of the barriers (30.3 years vs. 34.1 years, difference 3.8 years, 95% CI 1.10–8.57). Those who died by jumping when the barriers were in place (1999–2003) were more likely to have
a record of previous self-harm (88.9% vs. 50.0%, difference 38.9%, 95% CI 16.7–61.1%) and to have been in receipt of psychiatric services (81.3% vs. 44.0%, difference 37.3%, 95% CI 10.0–64.5%) at the time of death than those who had died by jumping from the bridge in the previous 5 years. The likelihood of a diagnosis of schizophrenia was similar among those who died by jumping from the bridge across the two time periods (31.3% vs. 38.5%, difference 7.2%, 95% CI 36.6–22.2%).

A similar proportion of people jumping from the Suspension Bridge before and after the installation of the barriers resided outside the area served by the Bristol coroner (34.2% before vs. 35.0% after). The median distance non-residents travelled from their place of residence to the Suspension Bridge was also similar across the two time periods (before: 81.5 miles, range 24–189 miles; after: 118.0 miles, range 49–214 miles, \( P = 0.46 \)).

**Incidents on the bridge**

Between 1996 and 2005 Suspension Bridge staff completed incident forms for 421 fatal and non-fatal incidents where someone jumped or appeared to be at risk of jumping from the bridge. One hundred and seventeen of these (39 per year) were recorded in the 3 years (1996–1998) before the installation of the barriers and 304 (43 per year) in the 7 years (1999–2005) afterwards.

Data on sex were recorded for 406 (406/421) incidents. Nearly three-quarters of these involved males (290/406, 71.4%). The number of incidents each year for males was similar before and after the installation of the barriers (29 vs. 29). Though there was an increase in the number of incidents involving females (8 vs. 13), statistical evidence for a sex-difference across the two time points was weak \( (\chi^2 = 2.74, \text{df} = 1, P = 0.10). \) Information on age group was available for 330 (78.4%) incidents. Nearly three-quarters of these (240/330, 72.7%) involved people aged 25–49 years, while 20.6% (68/330) were aged <25 years and only 6.7% were aged ≥50 years. The proportion of individuals in each age group was similar before and after the installation of the barriers \( (\chi^2 = 0.62, \text{df} = 2, P = 0.73). \)

**Staff involvement**

Whether Bridge staffs were involved in incidents or not was recorded for 379 episodes. Of these, they were involved in 71.3% (67/94) before the installation of the barriers and 83.5% (238/285) after \( (\chi^2 = 6.73, \text{df} = 1, P < 0.01). \)

**Incident outcome**

Information was available on outcome for 344 of the 368 incidents where the individual was alive when they left the Suspension Bridge area. In nearly 90% of the cases, they were removed from the bridge area so could not immediately make a further suicide attempt (though two taken to a general hospital subsequently died as a result of their injuries). Altogether 249 (249/344, 72.4%) of the individuals with outcome information were ‘taken away’ by the Police, 36 (36/344, 10.5%) taken by ambulance to a general hospital and 20 (20/344, 5.8%) returned to the psychiatric unit at which they had been inpatients at the time of the incident. Only 31 (9.0%) individuals returned directly to their home (mainly with relatives who had been contacted by Bridge staff) or were recorded as having left the bridge alone. Three individuals were taken away by a general practitioner and five by the Samaritans.

**Interviews with Bridge staff**

Interviews were conducted with 10 of the 13 staff employed as attendants on the Clifton Suspension Bridge. All were male and had worked on the bridge for a range of 6 months to 24 years. They had witnessed a range of 0 to ‘≥15’ cases of jumping from the bridge, dependant in part on their period of employment. One interviewee mentioned that in his 24 years working on the bridge he had ‘talked over 100 people off the Bridge.’ (Interviewee 4)

All 10 interviewees commented on suicidal behaviour on the bridge.

Barriers as preventive measure: eight of the interviewees believed that the barriers had been effective in preventing deaths by jumping from the bridge. Three interviewees stated that the presence of the barriers meant that there was more opportunity for staff to intercede, and members of the public had also been able to ‘get involved with the person or call for help.’ (Interviewee 6)

The latter interviewee mentioned that the distance from the toll house to the centre of the bridge had meant that previously it was more difficult for staff to get to people before they had the opportunity to jump. One interviewee (Interviewee 7) mentioned that ‘the cameras [on the Bridge] are very important in combination with the barrier.’ They mean that ‘you can see them…testing the wires and get onto the Bridge.’ (Interviewee 8)

Factors associated with jumping from the bridge: one interviewee (Interviewee 3), who had worked on the bridge for 21 years, stated that he had never had a dialogue with someone who then jumped if he had had the opportunity to ‘come face-to-face’ with them (only one such case was recorded on both an incident form and coroner’s records between 1999 and 2003). Some staff members described factors that alerted them to potential risk:-

- Any single young male who comes onto the Bridge alone.’ (Interviewee 2)
- ‘No eye contact young males [who] look around at other people not views,’ (Interviewee 3) similar to the comments of another interviewee who referred to ‘those who do not look at their surroundings.’ (Interviewee 1)
- ‘People ‘hanging around the buttress [walls/ platform at both ends of the bridge] or chains on the Bridge.’ (Interviewee 4)
- ‘Distressed or angry late at night’ (Interviewee 6)

Current safety problems/solutions: four interviewees referred to the dangerousness of the walls at both ends of the bridge, where there is no protective barrier. One stated that it would be ‘very hard to do anything about making the buttresses safe without endangering innocent members of the public [through the use of barbed wire]’ (Interviewee 9). Another member of Bridge staff (Interviewee 8) suggested a net could be placed beneath the walls.

**Discussion**

Previous literature on suicide by jumping has focused on deaths from residential high-rise buildings or suicide hotspots, usually bridges with iconic status. Little has previously been reported on the comparative characteristics of those who die by jumping from different sites in an area or the mechanisms by which barriers on bridges (the most widely reported preventive measure for suicide by jumping) are effective.

We found that those who died by jumping from the Clifton Suspension Bridge were younger and more likely to be male than those who died by jumping from other sites in the Bristol area. The most likely explanation for this is the agility required to jump from this site, particularly since the
installation of the barriers. In keeping with this observation, those who died by jumping from sites that tended not to have protective barriers—i.e. places of residence and cliffs, were older (70% were aged >50 years) than those jumping from other sites. It has previously been reported that older people tend to jump from their place of residence or nearer to their home. In other respects there was no statistical evidence of any differences in the characteristics of people jumping from different sites—40% or more of the people jumping from each type of site had a history of self-harm. Whilst few people who jumped from car parks (25%) were under the care of psychiatric services at the time of their death, 59% of those jumping from the Suspension Bridge and two-thirds of those jumping from other sites were under such care. None of the sites used were easily accessible from a psychiatric unit.

Following the placement of barriers on the Clifton Suspension Bridge, though there was no clear decrease in the number of incidents recorded by Bridge staff, the number of deaths halved. Information on the incident forms and interviews with Bridge staff suggest that, since the installation of the barriers, potential suicides can more easily be reached by Bridge staff because of the time taken to scale the barrier and that cameras on the bridge assist by alerting them to such incidents. Only one incident had been recorded where Bridge staff had spoken to someone who then jumped from the bridge. In most (91%) of the cases suicide attempters on the bridge were subsequently removed from the area by the Police or other services, giving the opportunity for assessment and for individuals engaged in an impulsive act to reconsider.

People jumping from the Clifton Suspension Bridge after the installation of the preventive barriers were more likely to have had a history of self-harm and to have been in contact with psychiatric services than those who died by jumping from the bridge prior to the placement of the barriers. This suggests that the barriers may have prevented some suicides among those individuals who we know to be less at risk of repetition and later suicide.

**Strengths and limitations**

In our study a large number of cases were examined, utilizing careful screening of coroner’s records. Detailed incident reports written by bridge staff, and structured interviews with these staff, facilitated the analysis of the role of the barriers in prevention.

There are some limitations to our study. First, suicide by jumping in the Bristol area is dominated by deaths from a single site—the Suspension Bridge accounts for almost half (46%) of all suicides by jumping. Second, it is possible that some incidents on the bridge involving a potential suicide were not recorded on an incident form. Lastly, while complete data on age, sex, site of suicide and the place of residence of the deceased were available from the coroner’s records, other data were incomplete.

**Conclusion**

Though the number of suicides by jumping from bridges worldwide is relatively small compared with suicides using other methods, suicide prevention measures on suicide hotspots such as bridges are a potentially useful public health strategy to prevent loss of life. The public nature of suicide by jumping and the media coverage such deaths often attract can perpetuate the likelihood of suicides from particular sites through imitation. They also cause distress to those who witness these acts. Staff working on the Clifton Suspension Bridge are able to use their experience of fatal and near-fatal incidents to monitor people walking on the bridge for risk factors, assisted by live footage from security cameras. The barriers appear to prevent some suicides by delaying access to the bridge ledges and giving staff and members of the public the opportunity to intervene. These findings could contribute to public health measures and staff training at other bridges from which suicides are common.

**Supplementary data**

Supplementary data are available at EURPUB online.

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**Key points**

- There is little difference in the characteristics of people jumping from different locations.
- Barriers may be more likely to prevent suicides amongst people with no history of previous suicide attempts or contact with psychiatric services, implying that they may prevent some suicides among individuals known to be at less risk of repetition and later suicide.
- Barriers may ‘buy time’ allowing Bridge staff and members of the public to intervene.

**References**


