Suicide by burning barbecue charcoal in England

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ABSTRACT

Background Suicide by carbon monoxide poisoning from burning barbecue charcoal has become a common method of suicide in several Asian countries over the last 15 years. The characteristics of people using this method in Western countries have received little attention.

Method We reviewed the inquest reports of 12 English Coroners (11% of all Coroners) to identify charcoal-burning suicides. We compared socio-demographic and clinical characteristics of suicide by charcoal burning occurring between 2005 and 2007 with suicides using other methods in 2005.

Results Eleven charcoal-burning suicides were identified; people using this method were younger (mean age 33.4 versus 44.8 years, \( P = 0.02 \)), and more likely to be unemployed (70.0 versus 30.1%, \( P = 0.01 \)) and unmarried (100 versus 70%, \( P = 0.04 \)) than those using other methods. Charcoal-burning suicides had higher levels of contact with psychiatric services (80.0 versus 59.1%) and previous self-harm (63.6 versus 53.0%) compared with suicides using other methods, but these differences did not reach conventional levels of statistical significance. Over one-third of people dying by charcoal burning obtained information on this method from the Internet.

Conclusions Working with media, including Internet Service Providers, and close monitoring of changes in the incidence of suicide using this method might help prevent an epidemic of charcoal-burning suicides such as that seen in some Asian countries.

Keywords charcoal burning, suicide, suicide method

Introduction

An epidemic rise in suicide by carbon monoxide poisoning from burning barbecue charcoal has occurred in several East Asian countries over the last 15 years. This method accounted for \( \sim 20\% \) of suicides in Hong Kong (in 2007–09), 30% in Taiwan (2008–10) and 8% in Japan (2007).1–4 Although the method is not commonly used in the West, it could potentially become so, as information about methods of suicide is easily accessible on the Internet.5

In East Asia, the epidemic of charcoal-burning suicides began in the context of the Asian Financial Crisis (1998) and the method was predominantly adopted by economically active middle-aged men with financial difficulties but no pre-existing history of psychiatric or physical illness.6–8 To the best of our knowledge, the characteristics of suicides using this method in Western countries have received little attention. Our aim was to investigate the socio-demographic characteristics of early adopters of charcoal-burning suicide in England identified through Coroners’ records. The results may help highlight potential targets for interventions to prevent future spread of this new suicide method.

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Methods

We systematically identified the records of all possible cases of charcoal-burning suicides in a sample of 12 (11%) of the 107 Coroners in England in 2005–07. These Coroners investigated 11% of all suicides in England in 2005. The Coroners jurisdictions included in our study comprised those where the three collaborating research centres are based (the cities of Bristol, Oxford and Manchester) and a random sample of nine further jurisdictions within 90 min travel time of each of these cities. For comparison, we identified the records of all suicides occurring in 2005 in the 12 jurisdictions.

A detailed account of the study methods which also included suicides occurring in 1990, and 1998 has been published. Data for all deaths given a verdict of suicide and, for those given open, accidental or narrative verdicts where the inquest record suggested that suicide was a possibility were abstracted by experienced researchers (O.B., S.S., J.C. and other colleagues) on to standard recording sheets. The information abstracted included basic demographic characteristics, employment status, history of psychiatric contact, history of affective disorders, history of previous self-harm and whether alcohol was involved in the suicide process. Possible Internet involvement in the death was also noted; if this was found, the researchers described the details of such involvement. Current contact with psychiatric services was coded as such where information in the coroner’s file (usually in GP letters and/or psychiatric reports) indicated that the deceased had been in receipt of services at the time of death, i.e. they had been in receipt of such care and had not been discharged. History of affective disorder was assessed from GP letters or/and psychiatric reports and from witness statements included in the coroners’ files. Both unipolar depression and bipolar affective disorder were included within the diagnosis of affective disorder.

For deaths given open, accident/misadventure or narrative verdicts, accounts of up to 800 words in length were written describing the circumstances of the death. These accounts, together with descriptive data relevant to each case, were independently reviewed by three experienced suicide researchers (D.G., K.H., N.K.) who rated the likelihood that the death was suicide. Where there was disagreement, the raters discussed the case and a consensus was reached. All deaths rated as high or moderate probability of being suicide were included in our sample. The coding procedures have been described in previous reports. We compared the socio-demographic and clinical characteristics and the psychiatric or self-harm histories of charcoal-burning cases with all suicides (excluding charcoal-burning cases). Logistic regression analysis was used to compare the differences between charcoal-burning cases with other suicides after adjusting for age. A similar comparison was carried out for car exhaust gas suicide as this is currently the most common method of gas suicide in the UK.

Results

We identified 11 cases of charcoal-burning suicide—four in 2005, six in 2006 and one in 2007. As the study coroners investigated ~11% of all suicides in England, this means there may have been about 100 charcoal-burning suicides in England over the 3-year study period. No cases were identified in 1990 or 1998.

The mean age of the charcoal-burning suicides was 33.4 years (range 18–47 years), about 10 years younger than suicides who used other methods (44.8 years, range 12–93, t-test 2.31, P = 0.02) (Table 1). The proportions of males and people of white ethnicity were similar among charcoal-burning suicides compared with those using other methods. None of the charcoal-burning cases were married at the time of death, compared with nearly one-third (30.0%) of those who had died by other methods of suicide. They were also more likely to be unemployed. Cases of charcoal-burning suicides were more likely to have a history of self-harm and to have had contact with psychiatric services, but statistical evidence for these differences was weak. No prominent difference was found in the prevalence of affective disorders and current psychiatric care in these two groups. Controlling for age using logistic regression models did not greatly alter the strength of the associations, although statistical evidence for an association with unemployment was weakened.

Alcohol consumption was recorded in three cases. An additional method was reported in one case, in which charcoal burning was combined with citalopram poisoning.

There was evidence of Internet involvement in 4 of the 11 charcoal-burning cases (36.4%); better here three of these occurred in 2005, one in 2006. One individual printed a webpage related to charcoal-burning suicide, one conducted research into the ‘barbecue method’ on their home computer, one accessed a research publication describing charcoal-burning suicide three times in the week before death and one had looked online at how people in Japan had died by the use of charcoal burning. The inquest record indicated that the youngest person (18 years of age) to die by charcoal-burning suicide might have obtained knowledge about carbon monoxide poisoning at school. One case was a murder–suicide: a 30-year-old mother killed her 5-year-old son in the suicide incident.
We also compared individuals who died by charcoal burning with the 19 who died by car exhaust gas suicide in 2005. Those who used charcoal burning differed in terms of age (mean age 33.4 versus 56.3, \(P < 0.0004\)), marital status (married: 0 versus 57.9%, \(P = 0.0016\)) and employment status (unemployed: 70.0 versus 10.5%, \(P = 0.0021\)). These differences remained significant after controlling for age. A higher proportion of those who died by charcoal burning were under current psychiatric care at the time of death (50.0 versus 15.8%, \(P = 0.08\)), although the statistical evidence for this difference was marginal.

### Discussion

#### Main findings of this study

These early cases of charcoal-burning suicide in England were more likely to be young, unemployed and less likely to be married compared with those who used other methods of suicide. There is some evidence suggesting that the charcoal-burning case series was more likely to have had a history of contact with psychiatric services and higher rates of previous self-harm compared with the suicides using other methods, although statistical evidence for these differences was weak. Over one-third of these individuals had obtained information on suicide method from the Internet, a figure that was considerably higher than that for all people who died by suicide (1.5%), in our previous study of Internet-related suicides in 2005.\(^1\)\(^1\) As previously reported, the methods used by people who obtained information on suicide from the Internet are more likely to be uncommon and highly lethal.\(^5\)\(^,\)\(^1\)\(^1\)

#### What is already known on this topic

The finding that these early cases of charcoal-burning suicide are younger is in keeping with evidence that younger individuals are more likely to adopt new technologies.\(^13\) Similarly, people who died by suicide using charcoal burning in the early stage of the epidemic in Hong Kong and Taiwan were more likely to be young (<30 years), or middle-aged (30–49 years).\(^2\)

High rates of psychiatric contact (80.0%) and past history of self-harm (63.6%) among these charcoal-burning cases suggest that people using this method in England are different from charcoal-burning cases reported in East Asia where low levels of mental healthcare utilization were found.\(^6\)\(^–\)\(^8\) Suicide by charcoal burning received widespread media coverage when it first appeared in Hong Kong and Taiwan,\(^14\) whereas in the UK, the method has not been widely publicized. Hence, it is possible that in England, the method has only attracted a small number of individuals suffering from psychiatric illness and who have researched their suicide method on the Internet.

The differences in characteristics between people dying by charcoal burning and those using car exhaust gas for suicides suggest that these charcoal-burning cases were a distinct group, rather than a subgroup of people who use charcoal burning as an alternative to car exhaust gas suicide.
One of our case series involved maternal filicide–suicide. Although a recent review on murder–suicide suggests that its incidence is very low (0.2–0.3 per 100,000), charcoal-burning suicide has, however, been reported to be related to an increase in the prevalence of homicide–suicide in both Taiwan and Hong Kong. Such deaths are likely to attract media attention, creating a further risk of its potential uptake in the wider population of people at risk of suicide.

What this study adds
In England, these early cases of charcoal-burning suicide differed from suicides using other methods, appearing to occur among a group of people with high suicide intent, as indexed by their research of the method online and somewhat higher levels of psychiatric contact. The link between charcoal-burning suicide and Internet use indicates the potential role of the Internet in spreading novel and lethal suicide methods. Close monitoring of changes in the incidence of this method may help with timely intervention.

The incidence of charcoal-burning suicide in England and the West is considerably lower than that seen in Hong Kong and Taiwan, where it has been endemic for over a decade. It is unclear why the method has not become popular in the West. A possible explanation is the lack of media publicity given to this method in the west and the absence of high profile cases of suicide using this method. The use of this method in Hong Kong is thought to have followed the high profile reporting of a single case, whereas in Taiwan, greater reporting intensity of charcoal-burning suicide compared with other suicide methods has been documented.  

Limitations of this study
Through detailed scrutiny of Coroners’ inquest reports, our research provides useful information on early adopters of charcoal burning as a method of suicide in England. However, our study has several limitations. First, it is not possible to thoroughly pursue the reasons contributing to the choice of charcoal-burning suicide in Coroners’ investigations. Secondly, due to the low incidence of charcoal-burning suicide, our study lacked power to detect potentially important differences between the characteristics of people dying by charcoal burning and those using other suicide methods.

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