Suicide survey in a London borough: primary care and public health perspectives

Dennis Ougrin¹, Reetoo Banarsee², Valentine Dunn-Toroosian³, Azeem Majeed⁴

¹King’s College London, Department of Child and Adolescent Psychiatry, Institute of Psychiatry, PO 85, De Crespigny Park, London SE5 8AF, UK
²West London Primary Care Consortium/Applied Research Unit, Wembley Centre for Health and Care, 116 Chaplin Road, Wembley, London HA0 4UZ, UK
³Faculty of Health and Health Sciences, Thames Valley University, Paragon House, Boston Manor Road, Brentford, Middlesex TW8 9GA, UK
⁴Department of Primary Care and Public Health, Imperial College, London W6 8RP, UK
Address correspondence to Dennis Ougrin, E-mail: dennis.ougrin@kcl.ac.uk

ABSTRACT

Background In order to achieve the national target of 20% reduction in suicide in the UK, many primary care trusts have developed local suicide prevention action plans. However, there is concern about a lack of a whole-system approach in some localities. Suicide surveys are a necessary component of any suicide reduction strategy.

Methods All deaths by suicides and open verdicts of a multi-ethnic, socio-economically diverse London Borough’s residents between February 2005 and February 2008 were identified (n = 54). Health records of the identified subjects were analysed by two researchers.

Results The annual rate of suicide in the study period was 6.8 per 100 000 inhabitants. Of the 54 cases of suicide in the study period, 45% had a psychiatric diagnosis and 18% were in current contact with mental health services. Hanging was the most frequent mode of suicide. Twenty-four per cent were not registered with a GP, most of whom were immigrants. Twenty-five per cent had seen their GP within a month of suicide. The rate of suicide in those born in Ireland was 17.7 per 100 000.

Conclusions Suicide survey is a feasible method of monitoring suicide, sharing data between key stakeholders and learning from the trends uncovered.

Keywords primary health care, public health, suicide

Introduction

Approximately 1 million people die from suicide currently per year: a ‘global’ mortality rate of 16 per 100 000, or one death every 40 s.¹ In the last 45 years, suicide rates have increased by 60% worldwide, although there was a trend towards a reduction of suicide rates in the last few years.¹ Suicide rates are particularly high in the Russian Federation and other former Soviet states (e.g. 30.8 per 100 000 inhabitants in Lithuania, 2007 estimate) and relatively low in Mediterranean countries (e.g. 3.5 per 100 000 inhabitants in Greece, 2006 estimate).² Latest available figures indicate that the UK suicide rate is 6.4 per 100 000 inhabitants per year.²

There are two main methods for suicide prevention: population-based strategies and intervention-based strategies in high-risk groups. To date, the population-based strategies that have shown promise in reducing suicide can be summarized as follows:³

(i) Restriction of access to means to suicide. For example, alcohol,⁴ firearms,⁵ toxic over-the-counter medicines,⁶ – ¹⁰ carbon monoxide⁸,¹¹,¹² and access to suicide hot spots.¹³ – ¹⁶
(ii) Issuing media guidelines on reporting suicides.¹⁷
(iii) Psychological education.¹⁸,¹⁹
(iv) Training primary care workers in the screening and detection of patients with a high risk of suicide.²⁰,²¹

Secondary prevention, namely intervening after someone has self-harmed to prevent repetition and subsequent death...
by suicide, is also possible. Psychological interventions such as problem-solving cognitive behaviour therapy (CBT)\textsuperscript{22} and other community-based psychotherapy\textsuperscript{23,24} can have a small impact. The roll-out of wider access to CBT through the government’s flagship Improving Access to Psychological Therapies only began in autumn 2009.

The growing concerns over the upward trend in suicide rates in the British community in the mid-1990s led the Department of Health to set a working party to report on this phenomenon. In its White Paper ‘Saving lives: Our Healthier Nation’,\textsuperscript{25} the government set out a target for the reduction of suicides in the UK by at least a fifth by 2010—saving up to 4000 lives in total. A National Suicide Prevention Strategy\textsuperscript{2} was put in place for achieving this target. The target suicide rate for London was estimated to be 7.2 per 100 000 inhabitants down from 9.0 per 100 000 in 1995–97.\textsuperscript{26}

The Healthcare Commission set out 32 performance indicators for primary care trusts (PCTs) to monitor the quality of their services in 2007/08.\textsuperscript{27} The performance indicators include establishing a suicide audit and prevention group to coordinate local suicide surveys and audits and develop local action plans or suicide prevention strategies. This group is expected to include representatives of the PCTs, Mental Health Trusts (MHTs) and public health specialists. Some PCTs also introduced a system to support family doctors to conduct suicide reviews following suicides in their practice population. However, these developments were not universal and many PCTs fall short of these standards.\textsuperscript{27} It may be that the lack of a whole-system approach to suicide underpins these deficits.

Whereas suicide by people with mental illness is comprehensively monitored by National Confidential Inquiry into Suicide and Homicide, the primary care and public health aspects of suicide have been relatively under-researched.\textsuperscript{28} Bearing in mind the increasing knowledge on suicide prevention strategies,\textsuperscript{3} the requirements of the government policy\textsuperscript{27} and the importance of identifying local factors in suicide reduction,\textsuperscript{13} this survey was designed to achieve the following goals:

- To collate relevant data from local and national sources, which will demonstrate the incidence of death from suicide and undetermined injury in a London Borough.
- To determine the characteristics of the subjects dying of suicide and undetermined injury in the locality.
- To identify what structures and processes are in place for recognizing, monitoring and sharing information about suicide between primary care, secondary care and public health.
- To improve monitoring of progress towards the Saving Lives: Our Healthier Nation target to reduce suicides, by developing a countywide population-based survey system.

## Methods

### Data sources and data collection

All death by suicides and open verdicts (undetermined injuries) of the London Borough of Brent’s residents between February 2005 and February 2008 were identified retrospectively via International Classification of Diseases 10th revision (ICD-10) codes in Public Health Mortality Files (Table 1). Public Mortality Files were used to obtain the relevant information about the circumstances of death and the sociodemographic characteristics of the subjects. Brent was chosen for the purpose of this survey due to its social and ethnic diversity, high proportion of itinerant population and a significant increase in the number of immigrants from Eastern European countries (which have high suicide rates) in recent years. The London Borough of Brent has a population of 263 464. Fifty-four per cent of the Borough’s population is non-White making Brent the most ethnically diverse area in the UK. Fewer than 40% of the Borough’s residents are in full-time employment (below London average) and the Borough is home to some of the most economically deprived wards in the UK.

For the purpose of this suicide survey, all deaths which fall into the second definition in Table 1 were included in the analysis. These deaths will be referred to as ‘suicides’ since the majority of deaths by undetermined injuries (open verdicts) are likely to be suicides.\textsuperscript{29}

Health records of the identified subjects were obtained upon application to the local Health Records Archive. The health records were examined by two members of the suicide survey steering group. Data were recorded using a specific tool for audits and surveys in primary care.\textsuperscript{30} A full

### Table 1 ICD-10 codes for suicides and open verdicts

<table>
<thead>
<tr>
<th>Definition</th>
<th>ICD-10 codes</th>
<th>Cases identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Deaths with a definite suicide verdict</td>
<td>X60–X84</td>
<td>18</td>
</tr>
<tr>
<td>2. Deaths with a definite suicide verdict plus deaths where an open verdict was returned excluding adjourned verdicts</td>
<td>Y34 excluding Y33.9\textsuperscript{a}</td>
<td>54</td>
</tr>
</tbody>
</table>

\textsuperscript{a}Y33.9 refer to adjourned inquests.
data sheet was then produced, discussed and endorsed by Suicide Audit Group (SAG). SAG was made up of representatives of PCT, MHT and Public Health of a London Borough.

**Statistical analysis**

We used SPSS for windows version 15.0 for all statistical analyses. We used differences in proportions test to evaluate the differences between the expected and the actual proportions for each country/area of birth of the subjects in the sample. Confidence intervals for the rates were calculated using the Poisson distribution.

**Results**

**Cases identified**

Fifty-four deaths of the Borough residents by suicide and undetermined death within the 3-year period were identified. A further 17 deaths by suicide or undetermined injuries by non-Borough residents registered with a Borough GP were also identified. They are not included in this report. Medical records of the Borough residents who died by suicide were requested. Of the 54 cases, 13 were not registered with either a GP or with a local mental health service. Three medical records could not be traced, hence 38 records were reviewed. Of those with traceable primary care records, 13 cases contained details of previous contact with mental health services.

**Overall suicide rate**

The average annual rate of suicide found was 6.8 per 100 000 (95% CI: 5.1–8.9 per 100 000), in line with the expected rate (6.5 per 100 000 for outer London Boroughs, 7.5 per 100 000 for all London Boroughs for the same period).

**Demographic characteristics**

Demographic characteristics of the sample are represented in Table 2. In line with other studies, we found a preponderance of male sex with two peaks of frequency in early adulthood and older age and an excess of death by suicide and open verdicts in spring and summer months (59% of the total sample). The most common method of suicide was hanging. The most common public place of suicide was railway lines. No clustering of suicides at a particular railway station or line was identified.

**Suicide rate by country/region of birth**

Forty-one per cent of the subjects identified were born in the UK. Suicide rate for each of the countries/regions of birth was in line with that expected from the estimates based on Borough-wide country of birth population data with the exception of the subjects born in Ireland (Table 3). Of

**Table 2** Selected characteristics of the subjects who died by suicide and undetermined injuries

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at death (years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0–9</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10–19</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>20–29</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>30–39</td>
<td>9</td>
<td>17</td>
</tr>
<tr>
<td>40–49</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>50–59</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>60–69</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>70–79</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>80–89</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Female</td>
<td>13</td>
<td>24</td>
</tr>
<tr>
<td>Country/region of birth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UK</td>
<td>22</td>
<td>41</td>
</tr>
<tr>
<td>Ireland</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>Africa</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>Caribbean</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>South East</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Asia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continental</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>Europe</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cause of death</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hanging</td>
<td>21</td>
<td>39</td>
</tr>
<tr>
<td>Multiple</td>
<td>9</td>
<td>17</td>
</tr>
<tr>
<td>Place of death</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private apartments</td>
<td>26</td>
<td>48</td>
</tr>
<tr>
<td>Hospitals</td>
<td>11</td>
<td>20</td>
</tr>
<tr>
<td>Railway</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>lines/stations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hotels</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
<td>19</td>
</tr>
<tr>
<td>public places</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Season of death</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spring</td>
<td>14</td>
<td>26</td>
</tr>
<tr>
<td>Summer</td>
<td>18</td>
<td>33</td>
</tr>
<tr>
<td>Autumn</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>Winter</td>
<td>16</td>
<td>30</td>
</tr>
</tbody>
</table>
263 464 Borough residents, 18 313 (7%) are of Irish ethnicity and 13 173 (5%) were born in Ireland. The crude suicide rate in this group was therefore 17.7 per 100 000 per year (95% CI: 7.1–36.4) compared with the expected 6.8 per 100 000 (95% CI: 5.1–8.9 per 100 000). The proportion of the subjects born in Ireland (0.13, 7 of 54) in our sample was compared with the proportion of the Borough population who were born in Ireland (0.05, 13 173 of 263 464). The difference of proportions was statistically significant (difference of proportions $= 0.08; 95\%$ CI: $-0.14$ to $-0.02$) indicating an excess of suicide-related mortality in this group. All the subjects born in Ireland who died by suicide were male. The average age was 68.1. Six of the seven subjects suffered from chronic ill health, three had a history of alcohol misuse and three had a history of psychiatric illness.

### Primary care involvement

Of the 13 (24%) of cases not registered with a GP nor known to mental health services, 12 (92%) were immigrants, 4 (48%) from South East Asia, 3 (25%) from Poland, and 2 (17%) from Japan. Of the 38 cases with traceable primary care records, 17 (45%) had a chronic somatic illness including 10 (26%) experiencing chronic pain, most commonly due to arthritis. Thirty-two case notes contained records of GP consultations beyond registration. Of those, eight patients (25%) saw their GP within 1 month of death and 19 (60%) within 6 months of death. The reason for the last consultation was clear in 30 cases. The last consultation was primarily for a somatic condition in 25 (83%) of the cases and primarily for a psychiatric condition in the remainder.

### Psychotropic medication

Of the 38 cases with traceable records, 14 (37%) were prescribed psychotropic medication, most frequently an antidepressant (in 9 cases, 24%) and an antipsychotic in 5 cases (13%). Of the 14 patients prescribed antidepressants, 13 were prescribed newer drugs, mainly selective serotonin reuptake inhibitors. One patient was treated with amitriptyline. One of the suicides involved ingestion of citalopram amongst other substances.

Of the five patients prescribed antipsychotics, three were prescribed newer antipsychotics. One patient was treated with haloperidol and one with zuclopenthixol decanoate. None of the suicides involved ingestion of antipsychotics. Of the remainder of the psychotropic medications prescribed, zopiclone was ingested in one further suicide by overdose.

### Psychiatric diagnosis

Of the 38 cases with traceable records, 17 (45%) had a recorded psychiatric diagnosis. Of the total sample, 12 (32%) had a diagnosis of depression, 6 (16%) a diagnosis of psychosis, 2 (5%) a diagnosis of personality disorder, 2 (5%) a diagnosis of alcohol dependence and 2 (5%) a diagnosis of eating disorders. A diagnosis of more than one psychiatric condition was made in seven (18%) cases.

### Secondary care involvement

Of the 38 cases with traceable records, 13 (24%) had a history of contact with secondary mental health services. Seven (18%) of the patients were in contact with mental health services at the time of death (two with general adult psychiatry services, one with a private general adult psychiatrist and four with old age psychiatry service). One further patient was nominally open to a general adult psychiatry service but the correspondence between the psychiatrist and GP indicated an earlier decision to discharge the patient from psychiatric services.

Seven of the 13 patients (54%) had a history of previous in-patient treatment, two patients had a history of involuntary admissions and two patients had been discharged from an in-patient service within 6 months of suicide. None of the suicides occurred in an in-patient setting. Six of the 13 patients (46%) dropped out of treatment before dying of suicide.

### Previous self-harm

Nine (24%) patients had a history of previous self-harm, three had a single episode and six had self-harmed more than once. Two patients had self-harmed with self-poisoning only, one with self-injury only (by cutting wrists), the rest self-harmed by both overdose and self-injury. Eight (21%) and five (13%) of the patients had a history of alcohol

<table>
<thead>
<tr>
<th>Country/region</th>
<th>Actual proportion</th>
<th>95% CI</th>
<th>Expected proportion</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>0.41</td>
<td>0.24–0.61</td>
<td>0.535</td>
<td>0.533–0.537</td>
</tr>
<tr>
<td>Ireland</td>
<td>0.13</td>
<td>0.09–0.27</td>
<td>0.050</td>
<td>0.049–0.51</td>
</tr>
<tr>
<td>Africa</td>
<td>0.11</td>
<td>0.04–0.24</td>
<td>0.120</td>
<td>0.119–0.121</td>
</tr>
<tr>
<td>Caribbean</td>
<td>0.09</td>
<td>0.03–0.21</td>
<td>0.047</td>
<td>0.046–0.048</td>
</tr>
<tr>
<td>South East Asia</td>
<td>0.06</td>
<td>0.01–0.16</td>
<td>0.111</td>
<td>0.117–0.119</td>
</tr>
<tr>
<td>Continental Europe</td>
<td>11</td>
<td>0.04–0.24</td>
<td>0.055</td>
<td>0.054–0.056</td>
</tr>
<tr>
<td>Other</td>
<td>0.09</td>
<td>0.03–0.20</td>
<td>0.080</td>
<td>0.079–0.081</td>
</tr>
</tbody>
</table>
misuse and drug misuse, respectively. All but one patient with a history of drug misuse also had a history of alcohol abuse.

Communication between agencies
Overall, this survey uncovered no mechanisms of effective information sharing between the key stakeholders in the Borough. The PCT subscribed to Public Health Mortality Files but this information was not shared with the MHT. The results of the MHT investigations were not shared with the PCT. There were no structures or policy frameworks in place to monitor or survey suicide.

Discussion
Main findings of this study
The rate of suicide was in line with that expected for an outer London Borough. Twenty-five per cent of subjects who died of suicide had seen their GP within 1 month of death and 60% within 6 months of death. The last consultation was for a somatic condition in 83% of the cases. Thirteen per cent of the people who died of suicide were born in Ireland, all of those older men mostly with chronic physical health problems. Forty-six per cent of those in contact with psychiatric services had dropped out of treatment before dying of suicide.

What is already known on this topic
The results of this survey are consistent with previous epidemiological and psychological autopsy work on suicide in demographic characteristics, secular trends, methods of suicide and patterns of contact with primary and secondary care before suicide. Several important differences, however, need to be highlighted. A lower-than-expected proportion of patients had GP consultations in the months before suicide in this sample but the proportion of patients in touch with outpatient psychiatric services was in line with expectations. Previous studies put these proportions at up to 81% and up to 11%, respectively. This difference may reflect expectations from GP contact in the population studied. A lower-than-expected recorded prevalence of psychiatric diagnoses and substance misuse was also found in this sample. Previous studies estimate the prevalence of any mental illness at around 90% and substance misuse at up to 85%. However, these estimates are based on psychological autopsy studies that differ from this survey in their methodology.

Unlike previous studies, we found that most patients with diagnosed mental illness were offered treatment in the period before suicide. We could not examine on compliance with pharmacological treatment in this sample, but engagement with psychological treatment was poor. Research studies indicate that poor engagement is a significant problem in those at risk of suicide and the study highlights the need to improve engagement with treatment. We did not find self-poisoning by antidepressant medication to be a major cause of suicide in line with other studies. This may be linked to secular changes in antidepressant prescribing practice.

Many subjects were not registered with either a GP or a mental health service at the time of suicide. The majority of those subjects were immigrants and it may be that a lack of knowledge of the health system or perhaps a fear of discovery if an illegal immigrant contributed to not registering. All Irish immigrants in this sample were registered with a GP.

An excess of subjects born in Ireland in a sample from a London Borough has not been reported previously. The difference of proportions reported was uncovered as part of a post hoc analysis and therefore should be interpreted with caution. However, previous studies have consistently reported higher suicide rates in immigrants and in Irish immigrants in particular. The suicide rate in the Irish-born patients in this sample (17.7/100 000) was higher than the suicide rate in Ireland estimated to be 9.7–10.6 per 100 000 during the period covered by this survey. This group may be of particular importance when designing strategies to prevent suicide. Unlike other authors we found this survey a valuable exercise in identifying specific groups at risk despite the rarity of suicide. It remains to be seen if any interventions aimed at the groups identified would lead to a reduction of death by suicide in these groups. In addition it may be that a focus on high-risk groups may not be cost-effective and a focus on improving the overall quality of health and social care services is preferable.

What this study adds
This is the first detailed survey of suicides in an ethnically diverse multi-cultural London Borough, although higher rate of suicide and higher prevalence of depression in Irish immigrants has been reported before. The role for primary care in suicide prevention seems important but is limited by an unexpectedly large proportion of the subjects not being in contact with primary care. In addition, the majority of the last primary care consultations were not for mental health problems and no risk suicide risk assessments were documented. This emphasizes the importance of wider societal initiative to improve suicide rates in addition to NHS interventions (e.g. reducing access to methods of
suicide; and better employment, education and housing). Of the possible interventions to reduce access to means for suicide, railway lines may be an important target for introducing additional safety measures. The survey highlights the need for measures to be put in place to allow greater access to health services especially amongst immigrants. In addition, the survey should increase awareness of possibly higher risk of suicide in specific population groups. Suicide survey is instrumental in establishing a system of information sharing allowing regular data collection, and joint action between the key stakeholders. This survey demonstrated that a system of suicide monitoring, information sharing and analysis is feasible. It may be rolled out to other localities to facilitate mutual learning.

**Limitations of this study**

Limitations of this survey include a small sample size, which increases the possibility of a non-significant associations being due to inadequate power to detect differences. In addition, there were no a priori hypotheses tested, which increases the risk of a type I error in our findings. This applies to the finding of an elevated suicide rate in those born in Ireland. We were unable to trace primary care records of a large proportion of subjects and our results may have been usefully complemented by psychological autopsy methods.

**Funding**

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