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Suicide and severe mental illnesses. Cohort study within the UK general practice research database

David Osborn [a,*], Gus Levy [a], Irwin Nazareth [b], Michael King [a]

[a] *Department of Mental Health Sciences, (Hampstead Campus), Royal Free and University College Medical School, Rowland Hill Street, London, NW3 2PF, UK*

[b] *Department of Primary Care and Population Sciences, (Hampstead Campus), Royal Free and University College Medical School, UCL, Rowland Hill Street, London, NW3 2PF, UK*

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Abstract

We aimed to evaluate suicide risk across the life-course in severe mental illnesses (SMI) including schizophrenia. Using survival analysis, we compared suicide risk in cohorts of 46,136 people with SMI and 300,426 without. The overall unadjusted hazard ratio (HR) for suicide in SMI was 12.97 (95% CI: 9.75–17.25). The unadjusted HRs differed by age band: 18–30 years: 19.56 (9.76–39.17); 30–50 years: 13.14 (8.64–19.99); 50–70 years: 16.39 (9.15–29.37); 70+: 3.25 (1.33–7.94). In schizophrenia, risk was significantly higher when young but marked risk persisted until age 70. Greatest risk was associated with: increased consultation rates; antidepressant prescriptions and living in less deprived areas.

Keywords: Schizophrenia; Bipolar affective disorder; Suicide; Primary care; Risk factors

1. Introduction

Suicide is a public health priority in people with severe mental illnesses (SMI) including schizophrenia and bipolar affective disorder (Department of Health, 1999; Hawton et al., 2005). Although it is believed that people with schizophrenia are at greatest risk of suicide early in the illness (Palmer et al., 2005; Limosin et al., 2007) recent reviews have questioned this evidence and have highlighted the lack of data from community samples (Hawton et al., 2005; Palmer et al., 2005). Research on suicide in people with SMI has been limited by relatively small sample sizes; inadequate follow-up periods; few suicide events and sub-optimal statistical analyses. In the absence of an accurate estimation of the burden of suicide and the level of risk throughout the course of illness, we examined in a large community sample the risk of suicide in people with SMI and the demographic and family practice health service predictors of suicide.

2. Methods

We undertook a cohort analysis of the risk of suicide in people on the UK general practice research database (GPRD) between 1987 and 2002, aged 18 years and over,

* Corresponding author. Tel.: +44 20 77940500x33950; fax: +44 20 78302808.
E-mail addresses: d.osborn@medsch.ucl.ac.uk (D. Osborn), g.levy@medsch.ucl.ac.uk (G. Levy), i.nazareth@medsch.ucl.ac.uk (I. Nazareth), m.king@medsch.ucl.ac.uk (M. King).

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with and without SMI. We included every patient with a clinical diagnosis of schizophrenia, bipolar affective disorders and other psychotic illnesses including delusional disorders and depression with psychosis. People with drug induced or organic psychoses were excluded. The comparison cohort, without such diagnoses, was randomly selected to achieve a ratio of 1:6, to maximise the statistical power to detect real differences. There were no other exclusion criteria to ensure representativeness.

The GPRD contains routine clinical data from 755 general practices representative of those in the UK and has been used for pharmaco-epidemiological studies of suicide outcomes (Jick et al., 2004). In the UK, 95% of the population are registered with a general practice. If people with SMI are not registered with primary care practitioners this is usually organised by their community mental health team. The primary care practices also keep registers of those with SMI. The validity of a GPRD diagnosis of SMI has been confirmed (Nazareth et al., 1993a). Variables must be extracted a priori from the GPRD. We only chose variables which might be related to suicide and which are known to be valid and reliable in the GPRD, which is a working clinical database. For instance, whilst prescriptions and consultation episodes will be recorded accurately in the GPRD, the exact content of a consultation will be inconsistently entered by different practitioners. In deciding which variables to extract for this study we focused on socio-demographic predictors of suicide, consultation frequency prior to suicide and treatment of depression. We obtained data concerning age, sex, SMI diagnosis, General Practice (GP) consultation rate, antidepressant medication, smoking, and social deprivation using the Carstairs index for each general practice, categorised into quintiles. The GPRD did not include accurate data on deprivation or ethnicity at the level of the individual. The Carstairs index of the GP was the only available measure and is a standard index of deprivation that is calculated for each geographical area on four variables. These are: male unemployment; households with no car; overcrowding and head of households in unskilled manual occupation (Morris and Carstairs, 1991).

To assess change in consultation behaviour we compared number of GP visits in the final 3 months on the GPRD database with the number of visits made in the same 3 months of the previous year. This comprised the last year of life in the case of suicide, whereas it was the last year on the data base for the remainder.

We performed survival analysis using Cox regression techniques in STATA (version 8.2) (StataCorp, 2003). We estimated hazard ratios for suicide firstly comparing people with and without SMI and then restricting the analysis to people with SMI. In a multivariate analysis we adjusted for major available explanatory variables including age, calendar period and geographical social deprivation. We also used smoking as a "proxy covariate" for the multivariate analysis since it is associated with individual deprivation and with poor physical and mental health.

A test of proportional hazards was employed to determine whether hazard ratios were stable across ages. The cohort was stratified into age bands to estimate risk of suicide in different periods of life in the three main SMI diagnostic groups.

Population attributable risk (PAR) was calculated using the hazard ratio for suicide and choosing the prevalence of SMI in the GPRD at the midpoint of the cohort (1994).

3. Results

The cohorts comprised 46,136 people with SMI and 300,426 without SMI. The median follow-up time was 4.7 years in the SMI group, but 4.3 years in the comparison group. The majority of people attracted only one SMI diagnosis during their time in the GPRD (35,097/46,136 = 76.1%). The most common SMI diagnoses were schizophrenia (40.2%), bipolar affective disorder (23.3%), delusional disorder (19.2%), depressive psychosis (5.9%) and schizoaffective disorder (5.3%) (Osborn et al., 2007). This afforded statistical power to examine suicide rates separately in schizophrenia and bipolar affective disorder and the remaining SMI diagnosis was grouped together for further analyses. Where a person had attracted more than one diagnosis we applied two rules. Diagnoses of schizophrenia, schizoaffective disorder or bipolar disorder were given priority over delusional disorder, brief psychotic episodes, unipolar depressive psychoses or non-specified psychoses. Where a diagnosis had changed between schizophrenia, bipolar disorder or schizoaffective disorder over time we utilised the most recent diagnosis.

In SMI, the crude rate for GP recorded suicide was far greater than in the comparison group (0.58 vs. 0.047 per 1000 person years), yielding an overall unadjusted hazard ratio of 12.97 (Table 1). This increased risk was observed irrespective of SMI diagnosis, sex or age in the under 70s. In the oldest group, the three-fold excess risk was still significant. After adjustment in the multivariate analysis, hazard ratios for suicide in SMI were smaller in magnitude. The individual variable responsible for this difference in magnitude was GP prescription of antidepressants.