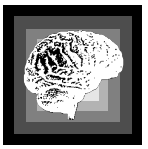

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History of Psychiatry
24(1) 3–14

DOI: 10.1177/0957154X12450131
hpy.sagepub.com
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# The morbidity and mortality linked to melancholia: two cohorts compared, 1875–1924 and 1995–2005

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## Abstract

For over a century, melancholia has been linked to increased rates of morbidity and mortality. Data from two epidemiologically complete cohorts of patients presenting to mental health services in North Wales (1874–1924 and 1995–2005) have been used to look at links between diagnoses of melancholia in the first period and severe hospitalized depressive disorders today and other illnesses, and to calculate mortality rates. This is a study of the hospitalized illness rather than the natural illness, and the relationship between illness and hospitalization remains poorly understood. These data confirm that melancholia is associated with a substantial increase in the standardized mortality rate both formerly and today, stemming from a higher rate of deaths from tuberculosis in the historical sample and from suicide in the contemporary sample. The data do not link melancholia to cancer or cardiac disease. The comparison between outcomes for melancholia historically and severe mood disorder today argue favourably for the effectiveness of asylum care.

## Keywords

Depressive psychosis, melancholia, morbidity, mortality, hospitalization

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## Introduction

Melancholia is one of psychiatry's signature illnesses. Although included as a specifier for depression in DSM-III, melancholia effectively vanished as a distinct diagnosis in 1980, as its operational criteria overlapped so heavily with those for major depressive disorder. There have been proposals since to have it reinstated as a separate disorder, given its distinct phenotype, its linkage to biological markers such as raised cortisol levels and its response to treatments such as ECT and tricyclic antidepressants that distinguish it from major depressive disorder (Parker et al., 2010; Schotte et al., 1997).

At the end of the nineteenth century, melancholia was changing from a disorder invariably characterized by psychotic features (psychotic depression) to one that presented equally commonly with distinctive vegetative features in the absence of psychosis (endogenous or vital depression). In an accompanying study of the incidence and natural history of melancholia in North Wales between 1875 and 1924, we found 69% of the patients were psychotic and that, in line with perceptions, melancholia was a disorder with sudden onset, not perceived as being precipitated by external events, and having an average duration of 6 months (Harris et al., 2011).

Assembling a suitable comparator cohort from admissions for depressive disorders today is difficult. Using current coding systems, the closest approximation to melancholia is severe depressive disorder with or without psychotic features. In such a cohort of admissions between 1995 and 2005 a number of features suggested that melancholia might be vanishing or changing. First, there was a lower proportion of depressive psychoses (38%) in the sample. Second, there was a drop in the incidence of depressive psychosis suggesting a decline in the incidence of melancholia or else its transmutation into vital depression. Third, there was an older age of onset for severe depressions consistent with the disappearance of a melancholic cohort. In addition to these differences, there was also a greater rate of readmission today than a century ago; if the conditions being admitted today are melancholia, this syndrome does not have as clear a clinical course as it once had (Harris et al., 2011).

However, if the features of our historical cohort establish the contours of a clinical syndrome consistent with classic descriptions of melancholia, what is this condition? Does the prominence of vegetative features, such as sleep and appetite disturbance, indicate a linkage to other physical illnesses, either as a prodrome or a consequence? For a century, many clinicians thought involutional melancholia was a disorder with a malignant prognosis; if our contemporary cohort is older than the historical cohort, are outcomes for this group of older patients worse? Melancholia had a fearsome reputation as leading to suicide; has modern care lifted this burden?

An historical sample helps to reveal the natural history of this illness unshaped by the effect of interventions. But data on the outcomes for melancholia also open for historians the issue of how patients fared in asylums then compared with district general hospital units today. If mental health services were as effective a century ago as now, this will challenge historical interpretations that regard nineteenth- and early twentieth-century medical practice as unenlightened.

## Method

Geographical and financial constraints ensured there was nowhere else for nineteenth-century patients to go other than the asylum at Denbigh, and no private facilities or alternative public facilities for patients in the 1990s other than the District General Hospital unit in Bangor. This has enabled us to construct historical and contemporary datasets to look at outcomes for melancholia (severe unipolar depression) in North Wales during the periods 1875–1924 and 1995–2005.

## The datasets

The historical cohort consists of all admissions from North West Wales to the asylum at Denbigh between 1875 and 1924. The asylum records for every patient offered five sets of information relevant to diagnosis: medical and legal certificates outlining the circumstances of detention; standard demographic data including age, sex, education, employment and marital status, family history of mental illness, prior mental or physical illness and possible social triggers; standard assessments of dangerousness, suicidality, seizure-proneness, along with food refusal and a range of clinical features; descriptions of patients' mental and physical states on admission; case notes covering patients stays in hospital until discharge or death (Healy et al., 2001). For the historical cohort we could retrieve all possible records of patients back to 1865 to ensure that duration of illness is not being underestimated, and all subsequent admissions through to 1965 in order to establish cause of death for later admissions.

The contemporary cohort is drawn from a database of all first admissions to the sole district general hospital (DGH) unit in North West Wales between 1 Jan. 1995 and 31 Dec. 2005. The catchment area for the DGH unit is the same as that for the historical cohort. Patients were included in this study if they were native to or resident in North West Wales prior to and following their initial episode. We have not included in either the contemporary or historical cohorts patients who became ill after coming from elsewhere, such as university students or others who came from out of the area and returned to their place of origin but who had a first episode of mental illness while in North Wales. For the contemporary cohort, using their NHS numbers, we could track and get outcome data for any patients who left the area.

## Case definitions

The term melancholia had a wider reference in asylum records up to 1924. Accordingly, a panel of clinicians, covering the catchment areas from which these patients would now come, reviewed records from all admissions for each patient and made retrospective diagnoses according to ICD-10 criteria. All diagnoses were made before this study began. In the case of melancholic patients adjudged to have a severe depressive disorder, four diagnoses were given: severe depressive disorder without psychosis (F32.2), severe depressive disorder with psychosis (F32.3), recurrent severe depressive disorder without psychoses (F33.2) or recurrent severe depressive disorder with psychosis (F33.3).

One co-author (SCL) reviewed all affective and non-affective diagnoses covering 8 randomly picked years from the whole sample (including 20% of all F32/33 cases; n = 114). The agreement concerning the depression diagnoses (F32.2/3 and F33.2/3) between the initial rater and SCL was 96.5%. To take into account the number of agreements expected by chance, we used Cohen's k coefficient (Cohen, 1960), a statistical measure of inter-rater agreement for categorical items. The k coefficient (781 cases, two raters, melancholia versus all other diagnoses) was 86%.

The second dataset is drawn from an ongoing study of the incidence of service utilization and outcomes for non-affective and affective psychoses from North West Wales. From this we have assembled all first admissions for severe depressive disorders to the sole district general hospital (DGH) unit in the area.

We recruited all patients with a severe depressive disorder with or without psychosis and with or without recurrences (F32.2, 32.3, 33.2 or 33.3). All admissions were reviewed at regular monthly and subsequent 6-monthly intervals with both medical and nursing staff on the treating team to establish diagnoses. The diagnoses were reviewed following all subsequent admissions. These diagnoses therefore are not codes applied administratively. In this study we have not included data

on a large number of patients (N = 572) admitted between 1995 and 2005 with diagnoses of mild or moderate depressive disorders with or without recurrences (F32.0, 33.0, 32.1, F33.1). We have also not included data for patients with a diagnosis of bipolar affective disorder.

### *Morbidity and mortality*

All deaths in the asylum were recorded in the patients' medical records. Of these, 55% had recorded post-mortems. Following discharge the records contain details of the deaths of 9 patients within the year of discharge.

All contemporary patients could be tracked using their NHS numbers, even when they had moved out of the area. All deaths were established through coroner's records, along with contacts with the patient's general practitioner and treating team. The contemporary database was updated at regular three-monthly intervals, and accordingly all deaths were investigated and confirmed the year they happened.

In the historical sample, the medical records for all patients recorded details of concomitant physical conditions at the time of admission. In the case of the contemporary sample, pre-existing medical conditions were established through the records from the admissions of patients to the local general hospital supplemented by the patient's primary care records. For patients in the contemporary sample, data on medical admissions to the general hospital following their admission for depression were also included.

### *Mortality rates*

We have used mortality data from 1901 for England and Wales on which to base our calculations of Standardized Mortality Ratios (SMR) for 1875–1924. These data came from Office of National Statistics; data before 1900 and for the period surrounding World War I are not available. Using this group is likely to lead to higher SMRs in the historical sample than is warranted, given a decline in mortality rates from 1875 to 1900 and greater mortality in the period from 1914 to 1920 linked to the war and the influenza epidemic of 1918–20. For the contemporary sample, we worked from available mortality data for 2001 (ONS, 2010).

When computing standardized mortality rates for years 2, 3, 4 and 5 in the contemporary sample, we removed all patients who died the previous year and all patients from any years for which there were no follow-up data. In the historical sample we have similarly removed all patients who died from the calculations of mortality for subsequent years. We have used this procedure rather than person years at risk, as the risks in particular for suicide do not appear evenly distributed. We have used person years at risk when estimating SMRs for tuberculosis in the historical sample.

## Results

There were 597 patients admitted for melancholia in the period 1875–1924 of whom 57% were female and 68% had a depressive psychosis. There were 203 patients admitted in the period 1995–2005 for severe depressive disorders of whom 57% were female and 38% had a depressive psychosis. For the historical sample the mean age at first admission was 46.5 (±12.5) years. For the contemporary sample the mean age was 56.8 (±18.6) years; 20% were 75 years or older at first admission. There were no differences in gender ratio or rates of psychotic to non-psychotic depression in this older cohort.

## Melancholia and morbidity

On admission to the asylum between 1875 and 1924, an assessment of the patient's physical condition was made. Of the 597 historical patients, 24% were rated in good physical health, 44% fair to moderate, 28% were deemed to be in a poor or feeble state, and for 4% no recording was made. Not all those patients classified as 'poor/feeble' on admission had a pre-existing medical condition, and not everyone with a pre-existing medical condition was automatically assigned as 'poor/feeble'.

In addition to the assessment of the physical condition of the patient, the medical records had a slot for existing physical medical conditions. The most common conditions noted are listed in Table 1. In total 171 (28.6%) patients were suffering from an additional medical condition on admission. The mean age of this group (48.3) did not differ from the that of the remaining patients, suggesting these illnesses are not a function of age.

Concurrent morbidity in an asylum population is of some interest in that there have been frequent observations from a range of sources that the mental states of some patients improve after a physical crisis. Of the 597 individuals in the historical sample, the records of 19 (3%) strongly suggest a rapid and complete improvement after physical illness. Of these, 15 are noted as improving after a fever, 3 after seizures and 1 after jaundice.

In the contemporary sample, 93 of the 203 patients had at least one hospitalization for a medical condition prior to their psychiatric admission. In total, 128 patients (63%) had one or more medical conditions (Table 1), with females (61%) having a higher percentage of pre-existing conditions. Of patients with pre-existing conditions, 115 patients had a chronic medical condition and 76 of these chronic patients had also had an acute medical condition. A further 11 patients had also had a prior acute medical condition, making 87 patients with prior acute medical conditions in total. In total, there were 314 pre-existing conditions, giving an average of 2.5 conditions per patient.

**Table 1.** Medical conditions on admission: historical (n = 597) and contemporary (n = 203) samples compared

| | Historical sample | | Contemporary sample | |
|---|---|---|---|---|
| | n | % | n | % |
| Cardiovascular disease | 42 | 7.0 | 51 | 25.1 |
| Respiratory disease (incl. TB) | 35 | 5.9 | 29 | 14.3 |
| Recent influenza (<12 months) | 18 | 3.0 | – | – |
| Musculo-skeletal (incl. trauma) | 17 | 2.8 | 38 | 18.7 |
| Upper gastro-intestinal system | 16 | 2.7 | 33 | 16.3 |
| Lower gastro-intestinal system | 2 | 0.3 | 27 | 13.3 |
| Dermatological | 5 | 0.8 | 23 | 11.3 |
| Opthalmological | 3 | 0.5 | 22 | 10.8 |
| Endocrine (incl. diabetes) | 4 | 0.7 | 22 | 10.8 |
| Cancer | 1 | 0.2 | 16 | 8.0 |
| Gynaecological | 3 | 0.5 | 26 | 12.8 |
| Other | 25 | 4.4 | – | – |
| **Total** | **171** | | **93** | |

While the absolute frequency of pre-existing conditions differs between the two groups, the rank ordering of conditions is similar in both cohorts, except for musculo-skeletal disorders and cancers. Of the cancers, 16 patients in the contemporary sample had pre-existing cancers (8%). In addition, 22 patients subsequently developed cancer, of whom 6 had previous cancers and 16 developed cancer for the first time. There were therefore 38 cancers in 32 patients (16%). Of those who had a previous cancer and then developed cancer after diagnosis, all had a different cancer from their original diagnosis and one patient developed two different types of cancer (Table 2). Cancer was rare in the historical sample at any stage of the illness.

The mean age of patients with cancer at the time of admission for depression was 77 years. The mean age of those getting cancer after admission for depression was 66 years at the time of admission.

In addition to pre-existing medical conditions and subsequent causes of death, the contemporary cohort had data on medical admissions following their admission for depression. Within 3 years of their index admission, 104 out of the 203 (51%) patients had had at least one subsequent medical admission. At 5 years, 111 (55%) had had at least one medical admission to the general hospital. At 10 years, 68 out of the 102 patients with full 10 years follow-up data had a general hospital admission (67%).

The medical conditions that arose after a depressive diagnosis reflect those present before diagnosis, with 10% of patients having cardiovascular disorders, and similar numbers having musculoskeletal (trauma) disorders, respiratory or either upper or lower gastro-intestinal problems. A further 9% had cancer, and 9% ophthalmological problems.

## *Melancholia and mortality*

The number of deaths in the historical sample at 3, 5 and 10 years after admission are noted in Table 3. These data include data for 9 patients dying at home after discharge. We believe our figures represent most, possibly all, deaths from the historical sample for patients dying within 3 years of first admission, other than death by accident. After that it is unclear what proportion of deaths we have. Patients who were discharged recovered lost contact with the asylum eventually.

**Table 2.** Cancer diagnoses in the contemporary sample before and after admission for depression

| Cancer type | Pre-existing cancers (n = 16) | Post-diagnosis cancers (n = 22) | |
|---|---|---|---|
| | | New patients (n = 16) | Second cancers (n = 6) |
| Colon | – | 4 | 3 |
| Skin | 6 | 2 | 1 |
| Urinary system | 2 | 3 | – |
| Uterine/ovarian | 1 | 1 | – |
| Breast | 2 | 2 | – |
| Upper GI | 1 | 2 | – |
| Leukaemia | 1 | – | – |
| Penile | 1 | – | 1 |
| Lung | – | 1 | 1 |
| Parotid/mouth | 2 | 1 | – |

**Table 3.** Confirmed mortality at 3, 5 and 10 years in historical and contemporary samples

| | 3 years | 5 years | 10 years |
|---|---|---|---|
| Historical group (n = 597) | | | |
| Discharged or still in care | 79% (472) | 76% (455) | 70% (420) |
| Confirmed dead | 21% (125) | 24% (142) | 30% (177) |
| Contemporary group (n = 203) | | | |
| Alive | 87% (177) | 78% (158) | 68% (69) |
| Confirmed dead | 12% (26) | 22% (45) | 33% (33) |

**Table 4.** Cause of death: historical sample

| | 3 years (n = 125) | 5 years (n = 142) | 10 years (n = 177) |
|---|---|---|---|
| Tuberculosis | 24% (30) | 28% (40) | 27% (48) |
| Respiratory infection | 22% (28) | 20% (28) | 20% (35) |
| Exhaustion | 17% (21) | 16% (22) | 14% (24) |
| Heart disease | 10% (13) | 11% (16) | 14% (24) |
| Dysentery/colitis/enteritis | 12% (15) | 12% (17) | 10% (18) |
| Suicide | 5% (6) | 4% (6) | 3% (6) |
| Kidney disease | 3% (4) | 3% (4) | 5% (8) |
| Cancer | 2% (2) | 1% (2) | 2% (4) |
| Other | 3% | 3% | 2% |
| Not stated | 1% | 1% | 2% |

The crude death rates in the contemporary sample for year of admission for men are 91 per 1000, and for women 70 per 1000. The crude death rates in the historical sample for the year of admission for men are 111 per 1000, and 155 per 1000 women.

The causes of death in the historical sample are listed in Table 4. There was a peak in the number of deaths in the period between 1 and 6 months after admission. These deaths were from respiratory causes (33% of deaths) or exhaustion (24% of deaths). Death by exhaustion was commonest in patients admitted in the 55–65 year age group, and was linked to poor/feeble status on admission and inanition thereafter. After 6 months, mortality rates dropped dramatically with tuberculosis being the commonest cause of death subsequently. Death from tuberculosis primarily affected younger patients still in hospital during the 2–5 year period after their original admission.

In the historical sample, there were 2 deaths from suicide in patients in hospital and a further 4 suicides shortly after discharge; all 6 suicides occurred within a year of admission, a crude death rate of 10/1000 per annum. Of the 597 patients, 136 were considered suicidal on admission or at some point during their stay, with 17 attempted suicides recorded in patient notes in addition to the 6 complete suicides. This was a suicide rate (420/100,000 per patient years) greatly in excess of the rate we have reported for schizophrenic patients (16/100,000 patient years) admitted in the same time-frame (Healy et al., 2006).

The proportion of deaths at 3, 5 and 10 years in the contemporary sample is given in Table 3. The profile of causes of death is given in Table 5. The commonest cause of death in the year after first admission was suicide (5 of 16 deaths). The crude death rate for suicide based on this year was 24.5/1000 per annum. Of the 10 suicides at 5 years, 8 were in severe depressive disorders without psychoses.

**Table 5.** Cause of death: contemporary sample (102 patients with 10-year medical history)

| | 3 years (n = 26) | 5 years (n = 44) | 10 years (n = 34) |
|---|---|---|---|
| Respiratory | 35% (9) | 38% (17) | 39% (13) |
| Suicide | 27% (7) | 22% (10) | 21% (7) |
| Cancer | 19% (5) | 18% (8) | 6% (2) |
| Cardiovascular | 19% (5) | 13% (6) | 18% (6) |
| Intestinal bleeding | – | 4% (2) | 6% (2) |
| Pancreatitis | – | – | 3% (1) |
| Dementia | – | 2% (1) | 3% (1) |
| Stroke | – | 2% (1) | 6% (2) |

**Table 6.** Standardized mortality ratios for melancholia in historical and contemporary periods

| | 1-yr standardized mortality ratio | 5-yr standardized mortality ratio |
|---|---|---|
| Contemporary sample: | | |
| male and female | 3.20 (95% C.I., 1.75, 5.01) | 1.92 (95% C.I., 1.40, 2.56) |
| Historical sample: | | |
| male | 4.96 (95% C.I, 3.32, 7.13) | 2.17 (95% C.I., 1.63, 2.83) |
| female | 6.52 (95% C.I., 4.86, 8.58) | 2.64 (95% C.I. 2.12, 3.26) |

The figures in Table 5 offer a basis for calculating standardized mortality rates for both historical and contemporary samples (Table 6).

## Discussion

In this study, there are a number of aspects of importance to both historians and contemporary policy makers. First, no other studies offer a standardized mortality rate (SMR) for melancholia in an historical sample along with a rate for a possibly comparable contemporary sample drawn from the same area. Second, the data support an argument that asylum care bears comparison with modern care for severe mood disorders. Third, the historical sample sheds light on claims of linkages between depression and other disorders today, and allows an historical perspective to be brought to bear on the supposed risks linked to mood disorders. Finally, contemporary healthcare makes claims for benefits offered now in comparison with former times; historians have not challenged such claims hitherto.

When interpreting these data the results of two parallel studies need to be borne in mind. In one we have demonstrated that in the late nineteenth and early twentieth centuries melancholia had a clearly defined course with patients typically recovering within 6 months, after which they did not suffer recurrences; that is not true of severe depressive disorders today (Harris et al., 2011). In the second, we have looked at mortality in schizophrenia and related psychoses and found contemporary SMRs higher than historical SMRs, with patients in the historical period dying from tuberculosis and cancer and patients today dying from suicide and cardiovascular events (Healy et al., 2012). These findings combined with the current data make it clear that the results from this study cannot be explained away by suggestions of diagnostic leakage. The combined results also paint a picture in which asylum care is at least the equivalent of modern care. We will bring this out by considering three causes of death: tuberculosis, cancer and suicide.

## Mortality

Our data confirm the increased mortality rate linked to melancholia in both historical and contemporary periods. The SMR for both historical and contemporary samples are in excess of those reported in a recent study (Harris and Barraclough, 1998). This study, however, has recruited a more severely ill patient group than other studies, and these mortality rates support clinical perceptions of the severity of melancholia in historical and contemporary periods.

In line with our data, older studies reporting SMRs in the mid-twentieth century such as Malzberg (1937) reported a relative death rate for affective psychosis 6 times that of the general population; Odegaard (1952) reported a relative death rate in manic-depressive psychosis for women 6 times and for men 4 times the general population rate, with higher rates in the first year from admission. Dalgard (1966) and Bratfos and Haug (1968) reported mortality rates in affective psychosis of the order of 2.5 times the general population. Among admissions for depression in London just before the introduction of the antidepressants, Norris (1959) reported a crude death rate at the end of year from first admission for men of 121 per 1000 and for women of 77 per 1000, noting this was respectively 9 and 6 times the rate for the general population.

Tuberculosis accounted for a substantial part of the mortality in the historical sample. It was a particular hazard for younger patients admitted to the asylum, who show a spike in deaths from this cause in the 2–5 year period after admission. Based on years of exposure and deaths within the first 10 years of admission, an SMR of 9.11 is calculated for melancholic patients and 9.37 for schizophrenic patients, compared with the population in general, with women twice as badly affected as men. As late as 1959 in London, Norris noted that tuberculosis contributed substantially to the total number of deaths in her sample.

One of the mysteries in the historical data is the category of death by exhaustion, a category no longer found. Some of these patients may have simply given up – a form of death found in literature and other accounts up to the twentieth century. But most of the patients were admitted in a feeble state and died from inanition. The asylum accounts are consistent with death from malignant catatonic complications of melancholia; these would be eminently treatable today. These deaths comprised 14% of the total of melancholic deaths but only 3% of deaths among schizophrenic patients, suggesting some specificity to melancholia. Removing deaths from tuberculosis or exhaustion reduces the 5-year SMR in the historical sample to 1.43 (95% C.I.,1.13, 1.76).

As regards cancer, there are few cancers in the historical sample, even in those patients who die after decades in hospital. Second, the contemporary sample shows a high co-incident cancer rate at the time of diagnosis, with a comparable rate of cancers before and after diagnosis. Third, the majority of cancers diagnosed after admission for depression arise shortly thereafter, which is consistent with the prior presence of undiagnosed cancer. Fourth, the emergence of cancers in the contemporary sample is closely correlated with age, and this cohort is significantly older than the historical cohort, with cancer patients older again.

The modern literature emphasizes depression as a risk factor for cancer (Simon, Palmer and Coyne, 2007). There is nothing about these data to support that claim. An older literature points to a role of cancer in giving rise to depressive syndromes (e.g. Avery and Winokur, 1976). But before positing cancer as a cause of melancholia, it is worth noting its absence in the historical sample. Furthermore, older studies (e.g. Norris, 1959) covering the morbidity and mortality linked to depression do not mention cancer.

Is the lack of cancers in the historical sample simply a failure of diagnosis? This seems unlikely in that in a parallel study of schizophrenic psychoses 32 of 700 recorded deaths were noted as cases of cancer (Healy et al., 2012), with deaths from cancer significantly in excess of population norms for the time.

The absence of evidence that melancholia might trigger cancers points to a possible role of antidepressants or other treatments in cancer growth (Steingart and Cotterchio, 1995). Linkages between antidepressants and cancer have been outlined for ovarian and breast cancer, although there is evidence that antidepressants may be anti-neoplastic, for brain tumours in particular (Pilkington, Parker and Murray, 2008; Walker, Card, Bates and Muir, 2011).

These data do not signal a link between treatment and cancer, as the rates for ovarian and breast cancers in this study do not exceed expected population rates. The one condition with a possible signal is colon cancer. There were no colon cancers pre-morbidly, and the 7 cancers later diagnosed – detected on average 6.7 years after the depressive admission – strengthen the possibility that some medication these patients were exposed to may have played a part leading to their genesis (Cronin-Fenton et al., 2011).

Aside from deaths from cancer and tuberculosis, rates of suicide differ between the two samples. The historical cohort shows a much higher suicide rate than found in patients with schizophrenia from the same period (Healy et al., 2006). Contemporary suicide rates are 2.5 times higher for the first year of service contact. These increases need to be set against a constant background suicide rate in North Wales (9.3/100,000 in 1901 and 7.0/100,000 in 2001). We have also found a comparable increase in suicide rates for schizophrenia during the first five years after initial admission, suggesting that factors related to modern treatment are responsible.

One possibility is that the briefer lengths of stay associated with contemporary admissions increase suicide risk. It has been recognized that suicides concentrate in the period after discharge (Department of Health, 2001; Goldacre, Seagroatt and Hawton, 1993). In this study, contemporary patients with melancholia almost tripled their rates of re-admission compared with historical patients (Harris et al., 2011), which in turn increases the number of discharge periods to which these patients are exposed.

Our finding that 20–25% of deaths in the contemporary sample were deaths from suicide maps almost precisely onto the 26% figure reported by Avery and Winokur (1976) for severe affective disorders. Avery and Winokur note that a series of studies from the 1960s suggested that the advent of effective antidepressants led to increased rates of suicide in hospitalized patients. In the contemporary sample, owing to earlier discharges, these suicides are more likely to happen in community settings.

This is an emblematic issue that should be of interest to historians. Current sales of psychotropic drugs are fuelled heavily by claims that untreated melancholia is linked to high suicide rates (Guze and Robins, 1970). These claims draw on studies of melancholia before the emergence of major depressive disorder but rest heavily on treated samples (Avery and Winokur, 1976; Bratfos and Haug, 1968; Dayton, 1940; Norris, 1959). There has been comparatively little research on such outcomes since, and none that attempts to construct relatively comparable modern and historical cohorts, but even in the absence of data there is always room for scepticism about these claims – and if not from historians, from who else?

## *Morbidity*

In addition to mapping causes of death and calculating mortality rates, we have also mapped morbidity in both historical and contemporary cohorts, to see whether other disorders might trigger melancholia or whether it might increase rates of morbidity.

There are clear differences in the absolute rates of prior medical diagnosis between the two cohorts. This is partly, presumably, because of differences in the availability of medical services and partly because certain diagnoses such as hypertension could not have been made in the historical period. The converse of this is that diagnostic thresholds have been lowered so much today,

with patients ending up on treatments they do not need such as statins or drugs for osteoporosis, that one might wonder at the benefits of modern diagnostic aids given the relatively good outcomes in the historical cohort.

There is a notable similarity in the morbidity profiles across historical and contemporary samples prior to the diagnosis of depression. Respiratory and cardiovascular disorders feature prominently, and these sources of morbidity extend into sources of mortality. While an increased risk of diagnosis of concomitant disorders is the likeliest source of the difference in absolute numbers, age must also be taken into account. The modern cohort is older, and cardiovascular disorders and cancers are more likely to appear with age. Former ideas about the distinctiveness of melancholia during the involutional period may in fact stem from a failure to recognize the inevitable emergence of comorbid disorders at this time of life.

The availability of morbidity data on admission for depression, as well as data from more than one sample of patients, offers an important control not found in other studies for claims of linkage between severe depressive disorders and other conditions. For example, depression has also been linked to cardiovascular risk (Schulz, Draye and Rollman, 2002; Steptoe, 2007). The data here point to a substantial cardiovascular risk profile prior to admission in the contemporary sample. It is possible that cardiovascular problems may give rise to depression, but the age profile of the contemporary sample probably accounts for the prevalence of these features along with capacities to diagnose hypertension and other disorders not available a century ago.

The only other study which did what we have attempted here was undertaken by Avery and Winokur in 1976, who offered persuasive evidence that effective antidepressant treatment (primarily ECT) might lower mortality and morbidity from depressive disorders. But their argument rested on the lack of physical treatments afforded to a sample of patients with depressive neuroses. They conceded that depressive neuroses might have had a different mortality and morbidity profile from melancholic disorders. The lack of benefit from treatment in this sample may stem from the fact that our untreated historical sample seems more likely to have the same condition as the treated sample has.

## Conclusions

If we exclude deaths from tuberculosis, the outcomes for melancholia historically appear at least as good as those today. Indeed, a case can be made that patients did better a century ago, if the lack of recurrences in the historical sample is taken into account. This indictment of current care asks a question of historians.

Aside from this, our data paint a picture of what it was like to be treated in an asylum for melancholia in the nineteenth and early twentieth centuries. There were two kinds of emergency admissions: one the suicidal patient and the other the exhausted patient. The system dealt well with the former but not so well with the latter. Death from exhaustion is rarely encountered today. The ultimate cause of death seems likely to be cardiovascular collapse but the topic needs further research. It was relatively specific to melancholia, but was also found in other states involving catatonic features. Otherwise, provided they avoided contracting tuberculosis, patients were highly likely to recover and to remain well thereafter.

A further feature of the asylum was the severity of the conditions affecting those committed. Almost all were actively psychotic. The severely depressed patients in our contemporary sample represent less than a third of admissions for ‘depression’ today. Given the availability today of treatments touted as effective, such admissions seem paradoxical, and worthy of further investigation. But ultimately the importance of these data to historians is the picture they paint of the probabilities of various developments for people affected with conditions like melancholia, once admitted to an asylum.

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