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Research report

Mortality of subjects with mood disorders in the Lundby community cohort: A follow-up over 50 years

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ABSTRACT

Aims: To compare causes of death and mortality among subjects with and without mood disorder in the Lundby Cohort and to analyse additional mental disorders as risk factors for mortality in subjects with mood disorders.

Background: The Lundby study is a longitudinal study that investigated mental health in an unselected population. The study commenced in 1947; the population was further investigated in 1957, 1972, and 1997.

Methods: Experienced psychiatrists performed semi-structured diagnostic interviews, and best estimate consensus diagnoses of mental disorders were assessed at each field investigation. Subjects with mood disorder ($n=508$, 195 males, 313 females) were identified until 1997. Causes and dates of death between 1947 and 2011 were obtained from the Swedish cause of death register and were compared between subjects diagnosed with mood disorder and other participants.

Mortality was compared between those with mood disorders and the remaining cohort with Cox regression analyses. Other mental disorders were considered as risk factors for death for subjects with mood disorders.

Results: The hazard ratio for mortality in mood disorders was HR=1.18. However, the mortality was elevated only for males, HR=1.5. Comorbid anxiety disorders, organic disorders, dementia and psychotic disorders were significant risk factors for death. A total of 6.3% of the participants with mood disorder and 1.2% of the remaining participants committed suicide.

Conclusions: As expected, the suicide rate was higher among participants with mood disorders. Only males with mood disorders had elevated mortality. The impact on mortality from other mental disorders seems to vary between the genders.

1. Introduction

It is a well-established fact that subjects suffering from mental illness die at an earlier age than healthy people. Psychiatric patients have elevated mortality rates, between 36% and 100% higher than those of the general population (Rorsman, 1974; Murphy et al., 1989). Despite progress in psycho-pharmacologic and psychotherapeutic treatment options, people with psychiatric illness continue to have increased mortality (Hansen et al., 1997). Elevated mortality rates also include subjects with mood disorder (Murphy et al., 1987; Ösby et al., 2001; Angst et al., 2002, 2013); these findings have been demonstrated in both clinical samples of hospitalised subjects and epidemiological studies of general populations (Zheng et al., 1997, Murphy et al., 1987). A review using a systematic method by Wulsin et al. (1999) showed that depression is associated with an increased mortality. Also, cardiovascular mortality and suicide are related to depression according to Wulsin.

In an earlier investigation from the Lundby Study, the mortality rate from natural causes of death among subjects with a history of mental disorders was studied. The relative death rate was 1.5 in males and 1.2 in females with histories of mental disorder (Rorsman et al., 1982). For both sexes it was organic brain disorders that accounted wholly for the excess mortality. The mortality rate in the Lundby Study was described also in 1983, when findings of the study showed increased mortality among men with untreated as well as treated mental disorders (Rorsman et al., 1983). It was found that the relative overall death rate for mentally ill subjects compared to the standard population to be 1.8 for males and 1.2 for females. Similarly, a Norwegian study showed minimal improvement in the mortality rate in males over the previous 50 years in spite of better treatment

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options (Hansen et al., 1997). The Stirling County Study reported that depressed men had a significant risk of mortality not detected among matched depressed women (Murphy et al., 2010).

Several studies have found increased mortality in patients with major depressive as well as bipolar disorder (Höyer et al., 2000; Ösby et al., 2001; Brådvik et al., 2010; Sharma and Markar, 1994). One exception is the follow-up study of mortality in the Epidemiological Catchment Area Study, which did not confirm higher mortality among subjects with mood disorder (Eaton et al., 2013). The elevated mortality of subjects with mood disorder is mainly due to suicide (Berglund and Nilsson, 1987). In particular, studies of inpatients hospitalised for mood disorder have demonstrated high rates of suicide (Höyer et al., 2000; Angst et al., 2013). It is clear that studies of community and outpatient populations show much lower suicide rates than studies of hospitalised inpatients (Mattisson et al., 2007). There is a notion that the suicide rate is higher in Scandinavian countries than elsewhere. However, Sweden and Denmark have showed a marked decline in suicide mortality in the last 2–3 decades to around 16 number of suicides per 100.000 inhabitants in contrast to Finland, which still has a high number of suicides, 29 per 100.000. The suicide rate in Iceland is similar to rates in Sweden and Denmark, whereas it is somewhat lower in Norway (Wasserman et al., 2012).

Comorbid non-psychiatric conditions among psychiatric populations have also been suggested as factors that contribute to low life expectancy. It has been suggested that physical disease contributes more to mortality than psychiatric illness (Batty et al., 2012). Cardiovascular and psychiatric conditions often coexist (Huang et al., 2009). Furthermore, subjects with depression are more likely to develop cardiovascular disease (Hare et al., 2014). Moreover, in a recent review it is stated that the presence of mood disorder is linked to excess mortality from cardiovascular disease (Fiedorowicz, 2014). It is likely that there are other causes, such as comorbid alcohol and drug use, that contribute to elevated mortality in patients with mood disorders (Yoon et al., 2011).

Earlier, researchers in the Lundby Study have studied mortality in the Lundby Cohort, which is an unselected population. It was reported within the framework of the Lundby Study that severe depression with psychotic and/or melancholic features in particular carries a high risk of accomplished suicidality (Brådvik et al., 2008). Moreover, male gender has been linked to a higher risk of suicide.

In the Lundby Study there is a unique access to information about not only mood disorders but also additional diagnoses. The Lundby Study had a long period of follow-up giving opportunities to study the course of depressive disorder including the duration of depressive disorder. Around 75% of subjects with first incidence depressive disorder followed up for more than 30 years had a recurrence (Mattisson et al., 2007). The median duration of an episode of depressive disorders in the Lundby Cohort was for males ($n=195$) 5.00 months, whereas the duration for females was somewhat longer, ($n=313$) 6.0 months.

The aim of the present study is to investigate the mortality of subjects with mood disorders in a general population the Lundby Community Cohort and to compare causes of death of those with and without mood disorder. The present study also aims to assess additional diagnoses in subjects with mood disorder in the Lundby cohort. Finally, another aim is to study whether the presence of an additional mental disorder was associated with an increase in mortality among subjects with mood disorder in the Lundby community cohort.

1.1. Background

The present study was performed within the framework of the Lundby Study, which is an epidemiological study with a long follow-up period; it commenced in 1947 in a rural area in the south of Sweden. The original population included 2550 subjects. In 1957, 10 years after the first survey, a follow-up was conducted, and 1013 subjects who had either moved into the area or had been born were added to the original population. The total cohort thus comprises 3563 subjects. In 1972, 25 years after the first field investigation, a second follow-up was performed (Hagnell et al., 1990). In 1997, a 50-year follow-up was performed (Nettelbladt et al., 2005). Survivors of the total cohort, regardless of residence have been followed up in 1972 and in 1997. At the beginning of the study, many of the inhabitants were farmers and farm labourers. In 1997, the Lundby area had changed into a suburban society in which subjects of working age commuted to neighbouring city areas. During the previous decades, migration from the area had been substantial, though limited mostly to nearby municipalities.

1.2. Procedure

All individuals in the rural catchment area in the south of Sweden in 1947 ($n=2550$) were included and personally examined in the first survey. All persons in 1957 were again examined by a personal interview conducted by psychiatrists. At all investigations, observations of clinical behaviours, the participants' subjective report on various personality-related items was scored at the semi-structured interviews conducted by psychiatrists. Participants provided written consent. A preliminary diagnosis of an eventual episode of mental disorder was established after the interview. Episodes of mental disorder were assessed at each field investigation, by the fieldworkers (psychiatrists). The participants were also surveyed for mental problems and episodes of mental disorders as well as alcohol abuse during the intervals between follow-up periods. The interview comprised about 150 items that were to be answered and graded. Other sources of information such as medical records, registers, and key-informants were utilised in order to get as much information as possible before the diagnostic evaluation took place within the research team. When a subject had died, nearest next of kin, other persons or key-informants that knew the deceased person well were interviewed. The research team agreed upon the best estimate consensus diagnoses of episodes of mental disorders after gathering all data.

Certified causes of death were obtained from the national cause of death register (Epidemiological Centre, National Board Health and Welfare, 2004). The causes of death were coded according to the ICD-9 (World Health Organization, 1977). On each death certificate in Sweden there is one underlying cause of death and an option to specify contributing causes. For subjects who are hospitalised, the death certificate is made by the consultant in charge, and for deaths outside the hospital, the physician in charge (mostly a general practitioner) certifies the death as well as the date of death (Statistics, Sweden).

All subjects of working age in the cohort were classified in 1997 according to the principles established in the Swedish socio-economic classification (Swedish Socio-Economic Classification, 1982). Three socioeconomic levels were applied: (1) blue-collar workers, including unskilled, semi-skilled, and skilled workers; (2) white-collar workers, such as assistant non-manual employees, professionals (self-employed or otherwise), higher civil servants, or executives; or (3) self-employed (other than professionals).

1.3. Diagnostic criteria

The Lundby Study started before the DSM-system was developed and before structured diagnostic schedules were in use (American Psychiatric Association, 1994). Since 1957, the Lundby Study applied a simple and comprehensive diagnostic system that was adapted to fieldwork and has 11 diagnostic categories. A diagnosis according to the simplified Lundby diagnostic system and a diagnosis according to the ICD-system and the DSM-system were applied. The main groups of the Lundby diagnostic system are depression, anxiety disorders,