

## Short report

## Excess cause-specific mortality in out-patients with personality disorder

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**Summary**

Personality disorders (PDs) are associated with increased overall mortality. In patients hospitalised with a principal diagnosis of PD, this is observed for all clusters and for natural as well as unnatural causes of death. Data from Swedish nationwide registers were used to assess whether this was also true for the majority of patients diagnosed with PDs not severe enough to lead to hospitalisation. There was an increased mortality in all clusters, and for natural as well

as unnatural death, also in patients treated as out-patients only, although not to the same extent as in those hospitalised.

**Declaration of interest**

None.

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It is well established that individuals with a personality disorder (PD) have higher overall mortality and a shorter life expectancy compared to the general population.<sup>1–4</sup> These mortality figures are, however, largely based on investigations in patients given in-patient care or without differentiating between in- and out-patient care. In line with this, we have recently shown<sup>5</sup> that individuals hospitalised with a primary diagnosis of PD have an increased mortality both overall, and in all clusters, and for natural as well as unnatural causes of death.

There are a number of arguments indicating that those hospitalised because of PD may represent a subgroup of patients with more severe problems in personality functioning, making uncritical extrapolation to patients who are not treated as in-patients impossible. First, hospital admission is related to more complex personality pathology.<sup>6</sup> Second, the gender distribution and the distribution between clusters observed in the nationwide Swedish cohort, with a preponderance of females and dominance of Cluster B patients and those defined as ‘other PD’,<sup>5</sup> differed from what was expected from global health survey data where there is a preponderance of males, and a fairly equal distribution between clusters.<sup>7</sup> Furthermore, the group ‘other PD’ reasonably includes individuals with more severe personality pathology.<sup>6,8</sup> Finally, the fact that some persons with PD actually seek care, while others reject care,<sup>9</sup> affects generalisability from in-patient data.

In the present study we extracted data from nationwide Swedish registers in an attempt to reveal whether overall and cause-specific increased mortality were increased in persons treated as out-patients only and, if so, to compare this increase in mortality with that in individuals also treated as in-patients.

**Method**

The unique personal identity number assigned to each Swedish resident<sup>10</sup> was used to link information from two population-based registers. All individuals undergoing either in-patient care or specialised out-patient care in Sweden between 2001 and 2011 with a primary diagnosis of PD were identified using the National Patient Register. This register includes all individuals admitted to any psychiatric or general hospital and has almost complete coverage.<sup>11</sup> Since 2001, the first year of our cohort, all out-patient visits to specialised care have been included. The patients were divided into two groups, those given out-patient care only, and those given in-patient care with or without also receiving

out-patient care. The patients were classified according to ICD-10 as follows: Cluster A: Paranoid (F600), Schizoid (F601); Cluster B: Antisocial/dissocial (F602), Emotionally unstable/explosive/borderline (F603), Histrionic (F604); Cluster C: Anankastic (F605), Anxious (avoidant) (F606), Dependent (F607); and unclustered: Other specific (F608) and Unspecified (F609). Patients not included in Cluster A, B or C were classified as ‘other PD’. As it is very rare to diagnose individuals under the age of 15, or elderly individuals, with PD, we excluded those younger than 15 years and older than 64 years, and also those with a prior hospitalisation for PD before 2001. Our cohort comprised 33 196 individuals (data supplement, Fig. DS1).

The Cause of Death Register was used to obtain information on cause of death. This register contains information on all deceased Swedish residents since 1952.<sup>12</sup> The patients were followed from the date of first discharge or date of first out-patient visit until death or until the end of the follow-up period on 31 December 2011, i.e. for up to 10 years. The underlying causes of death were also coded according to ICD-10.

The number of expected deaths was calculated by multiplying number of person-years at risk by 5-year age group and calendar-year specific mortality rates in the general population. The standardised mortality rates (SMRs; i.e. the ratio between the observed number of deaths and the expected number of deaths during the follow-up period), were used as a measure of risk. SMRs were calculated with 95% confidence intervals, assuming that the observed number of deaths in each group follows a Poisson distribution. In running text SMRs are given with 95% CIs within brackets. SAS v. 9.2 (SAS Institute Inc., Cary, NC, USA) was used.

The study was approved by the Regional Ethical Review Board in Stockholm, Sweden.

**Results**

In total, 21 136 women and 12 060 men with a primary diagnosis of PD were treated at least once between 2001 and 2012 (data supplement, Table DS1). The vast majority (70% of individuals) were treated in out-patient care only.

Cluster B PD was by far the most common in women, as 61% of female patients in in-patient care and 44% in out-patient care were diagnosed with a Cluster B diagnosis. For men, diagnoses derived from the group ‘other PD’ were most common in both in- and out-patient care.

**Table 1** Absolute numbers of deaths and SMRs with 95% CIs for all cases in women and men

	Women		Men	
	n	SMR (95% CI)	n	SMR (95% CI)
<i>In-patient care with or without out-patient care</i>				
Total	311	10.8 (9.7–12.1)	310	9.6 (8.6–10.7)
Natural	91	4.0 (3.2–4.9)	115	3.5 (3.0–4.3)
Cancer	20	1.5 (1.0–2.4)	20	2.3 (1.5–3.5)
Mental	3	8.2 (2.7–25.6)	10	11.4 (6.1–21.1)
Cardiovascular	31	8.1 (5.7–11.5)	46	5.8 (4.4–7.8)
Respiratory	6	6.5 (2.9–14.6)	3	3.4 (1.1–10.4)
Gastrointestinal	6	6.3 (2.8–14.0)	8	5.2 (2.6–10.4)
Other	25	6.9 (4.6–10.2)	28	7.4 (5.1–10.7)
Unnatural	220	37.7 (33.0–43.0)	195	22.5 (19.5–25.8)
Suicide	149	55.0 (46.8–64.6)	120	35.8 (29.9–42.8)
Deaths with undetermined intent	35	50.6 (36.3–70.4)	28	28.2 (19.5–40.9)
Traffic accidents	5	5.9 (2.5–14.2)	4	2.9 (1.1–7.8)
Other	31	19.5 (13.7–27.7)	43	14.5 (10.7–19.5)
<i>Out-patient care only</i>				
Total	295	3.7 (3.3–4.1)	390	3.8 (3.4–4.2)
Natural	145	2.1 (1.8–2.5)	173	2.2 (1.9–2.6)
Cancer	54	1.3 (1.0–1.8)	36	1.2 (0.9–1.7)
Mental	4	4.0 (1.5–10.7)	7	2.4 (1.2–5.1)
Cardiovascular	39	3.3 (2.4–4.5)	58	2.2 (1.7–2.8)
Respiratory	15	5.4 (3.2–8.9)	9	3.1 (1.6–6.0)
Gastrointestinal	9	3.0 (1.6–5.8)	18	3.5 (2.2–5.5)
Other	24	2.5 (1.7–3.8)	45	3.8 (2.8–5.1)
Unnatural	150	12.6 (10.7–14.7)	217	9.0 (7.9–10.3)
Suicide	97	17.6 (14.5–21.5)	103	11.0 (9.0–13.3)
Deaths with undetermined intent	25	16.7 (11.3–24.7)	40	14.8 (10.9–20.2)
Traffic accidents	4	2.7 (1.0–7.1)	9	2.5 (1.3–4.8)
Other	24	6.9 (4.6–10.2)	65	7.7 (6.1–9.9)

Altogether 606 women and 700 men died during the follow-up period (Table 1). This corresponded to 5 and 10%, respectively, of those given in-patient care and 2 and 4%, respectively, of those given out-patient care.

There was an increased all-cause SMR in both genders, both in in- and out-patient-treated patients with PD (Table 1). The increase was more pronounced in those treated as in-patients than in those only treated as out-patients, with SMR of 10.8 in women and 9.6 in men *v.* 3.7 and 3.8, respectively.

There was also an increased all-cause SMR for all clusters, both in in- and out-patient-treated patients with PD (Table DS2). The highest all-cause SMRs were observed for Cluster B in both genders, with a value of 13.3 in women and 12.8 in men given in-patient care, *v.* 4.3 in women and 5.7 in men given out-patient care.

The SMR was increased both for natural causes of death, 10.8 in women and 9.6 in men in in-patient care *v.* 2.1 and 2.2, respectively in out-patient care, and for unnatural causes of death, 37.7 in women and 22.5 in men *v.* 12.6 and 9.0 respectively (Table 1). In particular, SMR for suicide was 55.0 in women and 35.8 in men in in-patient care *v.* 17.6 and 11.0 in out-patient care.

## Discussion

This investigation, where patients were followed for up to 11 years, shows that the increased SMRs for all clusters of PD previously shown for persons treated as in-patients<sup>5</sup> are also seen in those persons who have undergone out-patient care only. The

SMRs reported here are actually even higher than in the previous study. As most deaths occur less than 10 years after the index episode,<sup>5</sup> the longer follow-up in the previous study, up to 25 years, may explain that difference.

The observations reported here refute arguments that only those persons with a PD severe enough to motivate in-patient treatment are burdened by an increased mortality risk. This has important practical implications, as most patients with clinical problems related to a PD are treated as out-patients only, in this sample 70%.

On the other hand, the death risk in those treated as out-patients only is clearly less than in those who are given in-patient care, supporting the concept of a difference in clinical severity between these groups.<sup>6</sup>

The strength of this study is the use of population-based national registers with high coverage. The limitation is that the formal diagnoses required by the Swedish healthcare system are given at the discretion of the treating physician which is why its scientific validity in individual cases can be questioned.

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