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Original article

Early retirement from work among employees with a diagnosis of personality disorder compared to anxiety and depressive disorders

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ABSTRACT

Objective. – Risk of retirement from work before statutory retirement age among employees with personality disorders is unknown.

Method. – We used diagnoses of awarded medical rehabilitations and hospitalisations to select two clinical cohorts from a population of 151,618 employees: participants in rehabilitation (total $N = 1942$, 233 personality disorder, 419 anxiety disorder and 1290 depression cases) and hospitalised patients ($N = 1333$, 354, 126 and 853, respectively). Early retirement from work was tracked through national registers during a period of 5 years. Cox proportional hazard models were used to examine the association of diagnostic groups with risk of early retirement.

Results. – In models adjusted for age, sex and socioeconomic position, the relative risk of early retirement for patients with personality disorders was 3.5-fold (95% CI 2.1 to 5.8) in the rehabilitation cohort and 2.3-fold (95% CI 1.6 to 3.5) in the hospital cohort compared with anxiety disorders. The corresponding hazard ratios of early retirement for personality disorders compared with depressive disorders were 1.1 (95% CI 0.8–1.5) and 1.7 (95% CI 1.4–2.1), respectively.

Conclusions. – Personality disorders increase the risk of early retirement at least to an equal extent as depression and more than twice that of anxiety disorders.

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Personality disorders are relatively common with prevalence estimates ranging from 4% to 9% in recent large-scale population-based studies using adequate measures [2,5,8]. These disorders exert a heavy burden on society with frequent health care use, increased impairment [5,8], unemployment and loss of productivity [2,17,19]. The disease-specific reduced quality of life in personality disorders is comparable to that in physical illnesses [17]. Furthermore, personality disorders are associated with high psychiatric and somatic co-morbidity and in severe personality disorders suicide mortality is considerable [13,15], the life expectancy being comparable to that in patients with myocardial infarction [4].

In working-aged populations, depression and anxiety are the most common mental disorders [3] and depression is also known to be one of the leading causes of early retirement on health grounds (i.e., before statutory retirement age). However, very few empirical studies have considered functional outcomes of personality disorders in such populations and no published research exists on early retirement from work among employees with personality disorder. This study was set out to examine the risk of early retirement on health grounds among individuals with a diagnosis of personality disorder compared to depressive and anxiety disorders by targeting employees who had received treatment for these conditions.

1. Material and methods

This study is based on the Finnish Public Sector Study of the entire staff of local government employees working in 10 towns

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and 21 hospitals in Finland including 151,618 employees with a minimum of 6-month job contract during any year between 1991 and 2005 [6,18]. We selected two clinical cohorts using awarded medical rehabilitations and hospitalisations as inclusion criteria (the only method available for the identification of personality disorder cases prior to early retirement in these data). We analysed the cohorts separately as the severity of personality disorder cases is likely to differ considerably between individuals receiving rehabilitation and those who were hospitalized. A total of 1942 employees who had a diagnosis of personality disorder, depression, or anxiety as a cause for medical rehabilitation were included in the rehabilitation cohort. The hospital cohort included 1333 employees with these diagnoses set during a hospital treatment. The Ethics Committee of the Finnish Institute of Occupational Health approved the study.

1.1. Ascertainment of personality disorder, depression, and anxiety disorder

Participants' personal identification numbers (a unique number assigned to each Finnish resident) were used to collect records from national registers on all granted rehabilitations and all hospitalizations between 1994 and 2004. In Finland, the validity of the national health registers has been found to be high, i.e. few missing data, accurate and highly reliable for the purposes of epidemiological studies [11,12].

We obtained the diagnoses and the day the rehabilitation was started from register data on rehabilitation granted by the Social Insurance Institution, Finland. The Social Insurance Institution is the main provider of medical rehabilitation, such as long-term psychotherapy in order to improve and sustain work capacity in the work force in the presence of a documented functional impairment due to mental disorder and evidence of decrease in capability to work or marked disability.

The dates and diagnoses for hospitalisation were obtained from the Hospital Discharge Register that is comprised of countrywide information on virtually all inpatient hospital admissions.

We used the following International Classification of Diseases (ICD) codes to identify cases from the two registers: ICD-9 code 301 and ICD-10 codes F60–F61 for personality disorder, ICD-9 codes 296 and 3004 and ICD-10 codes F32–F34 for depression and ICD-9 codes 300.0, 300.2, 300.3, 300.5, 300.7, 300.9; ICD-10 codes F40–42 for anxiety disorders. A case was defined as having personality disorder if either the main or comorbid diagnosis code was that of a personality disorder. The rehabilitation registers did not include comprehensive data on specific ICD-10 personality disorder diagnoses since more than half of the diagnoses were recorded using only 3-digit level (F60 or F61). Thus, we refrained from detailed analyses of individual personality disorder diagnoses. Employees with a main diagnosis of depression or anxiety disorders but without a comorbid diagnosis of a personality disorder formed the reference groups. Personality disorder cases with anxiety or depression were included only in the personality disorder group.

1.2. Early retirement from work

Data on early retirement on health grounds were obtained from a register kept by the Finnish Centre of Pensions. This register provides complete retirement data for the entire population. We obtained dates and types of retirement of all participants who were granted permanent disability pension by 31 December 2005. To determine the follow-up period, mortality data were collected from the Statistics Finland register, which provides virtually complete population mortality data [1]. The dates and causes of death were obtained for all the participants who died not later than 31 December 2005.

1.3. Covariates

We derived information on sex, age and occupational status (higher-grade non-manual, lower-grade non-manual, and manual employees) from employers' records. The presence of a physical illness was defined by entitlement to special reimbursement granted by the Social Insurance Institution for the treatment of long-standing physical illness. Those data were recorded in the Drug Reimbursement Register and were reviewed to identify cases of the following diagnosed chronic conditions: diabetes, rheumatoid diseases, asthma and chronic obstructive pulmonary disease, hypertension, and coronary heart disease.

1.4. Statistical analysis

Rehabilitation and hospital cohorts were analysed separately. Baseline differences by diagnostic group were assessed using the Chi-square test. We used Cox proportional hazard models to examine the association of personality disorder, depression, and anxiety disorder with early retirement from work. Hazard ratios (HR) and their 95% confidence intervals (CI) were reported, using anxiety disorders and depressive disorders as reference groups. The models were sequentially adjusted for age, sex, socioeconomic status, and the presence of a physical illness. The follow-up started from the beginning of the rehabilitation or from the first day of hospital treatment. The end of the follow-up was the beginning of disability pension, other retirement, death or 31 December 2005, whichever ever came first. All the analyses were performed with the SAS 9.1.3 statistical software (SAS Institute, Inc., Cary, North Carolina).

2. Results

Table 1 shows the baseline characteristics separately for the two cohorts by diagnostic group. There were no differences in the baseline characteristics between these groups. The prevalence of comorbid psychiatric disorder among individuals with personality disorder was 80% in the rehabilitation cohort and 84% in the hospital cohort. Among depression and anxiety disorder cases, the proportion of comorbid diagnoses (excluding comorbid personality disorders) ranged from 16 to 17% (rehabilitation cohort) and from 10 to 18% (hospital cohort).

During the mean follow-up of 5.4 years (S.D. 3.0) among all subjects at risk, six subjects in the rehabilitation cohort and 57 subjects in the hospital cohort died – a total of 40 deaths were due to suicide (two in the rehabilitation cohort and 38 in the hospitalisation cohort). The majority (75%) of suicide cases belonged to the depression group, a fifth to the anxiety disorder group and only 5% to the personality disorder group. Of the survived, altogether 310 rehabilitees (16%) and 514 (39%) hospital patients retired on health grounds. The main reason for these retirements was psychiatric disorder in both cohorts (81% in the rehabilitation cohort and 88% in the hospital cohort). Table 2 shows the mean age at the time of retirement on health grounds. The mean age at retirement differed by primary diagnosis: those with personality disorder were 1–5 years younger at retirement on health grounds than those in the other groups.

As illustrated in Fig. 1, the cumulative hazard of retirement on health grounds differed by diagnostic groups as a function of time in both cohorts. This hazard was greater for individuals with personality disorders or depressive disorders than those with anxiety disorders. In the rehabilitation cohort, crude hazard ratios for early retirement from work were 3.5 (95% CI 2.1 to 5.8) and 4.2 (2.7 to 6.4) times higher for employees with personality disorders and depression than for those with anxiety disorder. In the hospital cohort, the corresponding hazard ratios were 2.3 (95% CI

Table 1
Descriptive characteristics of the cohorts.

	N (%) by diagnostic group			P-value
	Personality disorder	Depression	Anxiety disorder	
Rehabilitation cohort (N=1942, mean [S.D.] age 41 [9.2] years)				
Number of participants	233 (100)	1288 (100)	418 (100)	
Sex				
Women	186 (79.8)	1120 (86.8)	347 (82.8)	0.0072
Men	47 (20.2)	170 (13.2)	72 (17.2)	
Socioeconomic position				
Manual employers	28 (12.0)	158 (12.3)	48 (11.5)	0.8864
Lower-grade non-manual	100 (42.9)	591 (46.0)	188 (45.0)	
Higher-grade non-manual	105 (45.1)	539 (41.9)	182 (43.5)	
Physical illness				
No	213 (91.4)	1126 (87.3)	390 (93.1)	<0.0001
Yes	20 (8.6)	164 (12.7)	29 (6.9)	
Hospital cohort (N=1333, mean [S.D.] age 41.9 [9.4] years)				
Number of participants	354 (100)	853 (100)	126 (100)	
Sex				
Women	233 (65.8)	615 (72.1)	94 (74.6)	0.0551
Men	121 (34.2)	238 (27.9)	32 (25.4)	
Socioeconomic position				
Manual employers	107 (30.3)	223 (26.1)	40 (31.8)	0.3531
Lower-grade non-manual	157 (44.5)	378 (44.3)	51 (40.5)	
Higher-grade non-manual	89 (25.2)	252 (29.5)	35 (27.8)	
Physical illness				
No	313 (88.4)	723 (84.8)	111 (88.1)	0.1944
Yes	41 (11.6)	130 (15.2)	15 (11.9)	

Table 2
Mean age at disability pension by diagnostic groups.

	Personality disorders	Depression	Anxiety disorders	P-value
Rehabilitation cohort				
Number of participants	43	244	23	0.0026
Mean age (S.D.)	45.9 (8.5)	50.0 (7.7)	46.7 (9.5)	
Hospital cohort				
Number of participants	170	315	29	0.0001
Mean age (S.D.)	42.6 (8.7)	48.1 (8.2)	46.2 (9.3)	

1.6 to 3.5) and 1.8 (1.3 to 2.7), respectively. **Table 3** shows multivariable adjusted test of these differences. Adjustment for sociodemographics or physical illness did not remove these associations. Controlling for sociodemographic characteristics attenuated the associations by 31–51% in the rehabilitation cohort, but adjustment for physical comorbidity had little effect (**Table 3**). We found no evidence to suggest that the differences in

risk of retirement on health grounds between diagnostic groups would vary by sex.

We repeated these analyses using participants with depressive disorder as the reference. The age-, sex- and socioeconomic position adjusted relative risk of retirement on health grounds between employees with personality disorder and those with depressive disorders was 1.09 (95% CI 0.78–1.52) in the

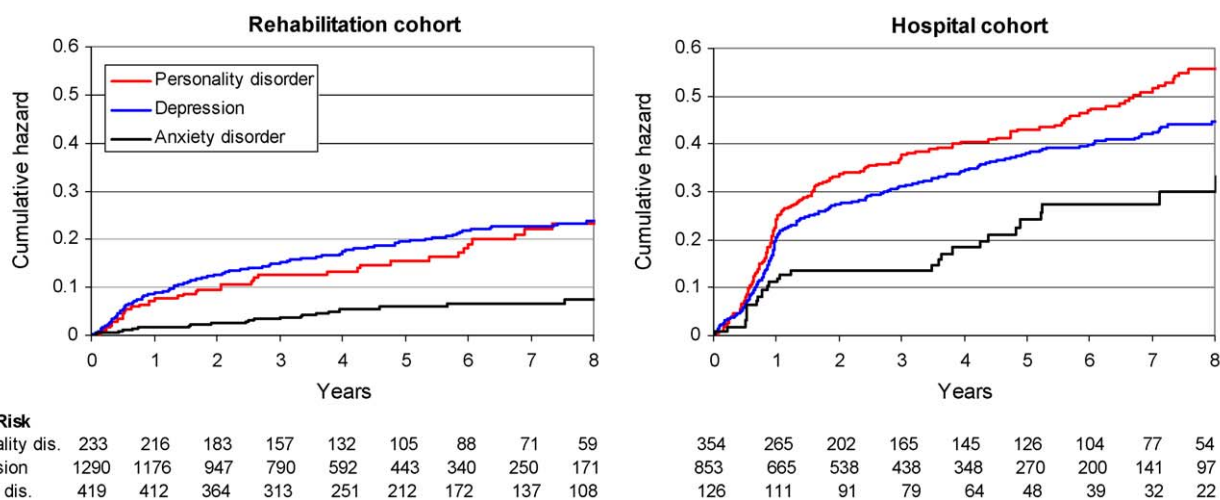


Fig. 1. Cumulative hazard of retirement on health grounds differed by diagnostic groups as a function of time in both cohorts.

Table 3

Risk of disability pension by diagnostic group as hazard ratio and their 95% confidence intervals (95% CI) from Cox proportional hazards models.

Cohort diagnostic group	Number of participants (number of disabled)	Hazard ratio ^a	95% CI	Hazard ratio ^b	95% CI
Rehabilitation cohort					
Anxiety disorder	419 (23)	1		1	
Personality disorder	233 (43)	2.75	1.65–4.57	2.77	1.67–4.60
Depression	1290 (244)	2.53	1.64–3.90	2.48	1.61–3.83
Hospital cohort					
Anxiety disorder	126 (29)	1		1	
Personality disorder	246 (118)	2.76	1.83–4.15	2.81	1.86–4.22
Borderline personality disorder	108 (52)	2.86	1.81–4.52	2.75	1.74–4.35
Depression	853 (315)	1.62	1.11–2.37	1.61	1.10–2.35

^a Adjusted for sex, age and socioeconomic position.^b Model 1 + adjusted for physical illness.

rehabilitation cohort and 1.72 (95% CI 1.42–2.10) in the hospital cohort. After further adjustment for physical illness, these hazard ratios were 1.12 (95% CI 0.80–1.55) and 1.73 (95% CI 1.42–2.11), respectively.

3. Discussion

In this occupational cohort study, participants with clinically identified personality disorder had two to three times higher risk of early retirement on health grounds than those with anxiety disorders, and a comparable risk as those with depression. Severe personality disorder, leading to hospitalisation, was a particularly strong predictor of early retirement. Furthermore, individuals with personality disorder were younger when granted early retirement than those with depression or anxiety disorder during the mean follow-up of 5.4 years. The suicide risk was particularly high in the hospitalization cohort supporting our preconception that the cohorts differ substantially in severity of illness.

3.1. Study strengths and limitations

This study benefited from its large sample size and the comprehensive records from national registers used. These data made it possible to avoid issues related to sample attrition. However, some limitations of the present study are noteworthy. This study is based on data from an occupational cohort; thus the findings reflect outcomes of personality disorders in a working population seeking treatment and may not be generalizable to non-working populations including patients who never entered the labour markets.

The diagnoses in the registers used in this study are based on routine clinical assessments using ICD-9 and ICD-10 criteria rather than structured interview methods such as structured clinical interview I and II for DSM-IV (SCID-I and SCID-II). Thus, the identification of personality disorders was crude and we may have missed several cases. Personality disorders, especially the C-cluster or anxious personality disorders, are difficult to identify without a structured diagnostic interview and no such standardized method is in nationwide and regular use. Although effect sizes of B-cluster and C-cluster personality disorders on impairments have been found to be of similar size [5], the severe forms of personality disorders have a higher probability of being identified.

3.2. Comparison with previous studies

We are aware of no previous study on early retirement among individuals with personality disorder. Our findings are in agreement with previous studies suggesting that the influence of personality disorders on dimensions of functioning, such as ability to work, is longstanding [16] and that personality disorders may exert a greater relative economic burden than depression and

anxiety disorders, when the prevalence of the disorders is taken into account [9]. Although some studies suggest that the symptomatic course of a severe personality disorder, such as borderline personality disorder, may be relatively lenient [7,21], our findings are in agreement with the evidence that there are likely to be residual influences on social functional impairment and poorer quality of life [15].

3.3. Meaning of the study

Psychiatric disorders are known to exert their influence on the burden of disease at an earlier age than physical illnesses [14]. Depression is currently one of the major causes of disability attributable to diseases and the leading cause among psychiatric disorders worldwide [10]. Taking into account:

- 1) that personality disorders are associated with unemployment and their impact on early retirement is in relative terms comparable to or higher than in depression;
- 2) that the age at disability retirement may be lower than in depression and anxiety disorders;
- 3) the relatively high prevalence of personality disorders, which typically begin in early adulthood, the total burden to work disability related to personality disorders may be greater than previously thought.

Further research on other forms of work disability, such as sick leaves and hospitalisations that do not lead to early retirement are needed. A more refined diagnosis of personality disorders would also be important as the increased risk of disability among personality disorder cases is likely to be a function of the severity of the psychiatric condition, the existence of psychiatric comorbidity and the influence of personality disorder on the course of an axis I disorder. Symptoms of depression and anxiety tend to reinforce dysfunctional features of personality and, thus, pose a challenge to the clinical assessment and evaluation of work-related functional outcomes [5,20].

4. Conclusion

Our findings suggest that personality disorders increase risk of early retirement on health grounds substantially.

Conflict of interest

No conflict of interest declared (JK, TO, MV, PS, HN, JP, JV, MK).

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