

# Prevalence of common mental disorders in general practice attendees across Europe

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## Background

There is evidence that the prevalence of common mental disorders varies across Europe.

## Aims

To compare prevalence of common mental disorders in general practice attendees in six European countries.

## Method

Unselected attendees to general practices in the UK, Spain, Portugal, Slovenia, Estonia and The Netherlands were assessed for major depression, panic syndrome and other anxiety syndrome. Prevalence of DSM-IV major depression, other anxiety syndrome and panic syndrome was compared between the UK and other countries after taking account of differences in demographic factors and practice consultation rates.

## Results

Prevalence was estimated in 2344 men and 4865 women. The highest prevalence for all disorders occurred in the UK and Spain, and lowest in Slovenia and The Netherlands. Men aged 30–50 and women aged 18–30 had the highest prevalence of major depression; men aged 40–60 had the highest prevalence of anxiety, and men and women aged 40–50 had the highest prevalence of panic syndrome. Demographic factors accounted for the variance between the UK and Spain but otherwise had little impact on the significance of observed country differences.

## Conclusions

These results add to the evidence for real differences between European countries in prevalence of psychological disorders and show that the burden of care on general practitioners varies markedly between countries.

Depression occurs in around 10% of general practice attendees.<sup>1</sup> Relapse often occurs 5–10 years after first presentation<sup>2–4</sup> and residual disability is common.<sup>5</sup> Anxiety disorders are also highly prevalent in primary care<sup>6,7</sup> and lead to increased use of health services and morbidity.<sup>8</sup> The estimated prevalence of generalised anxiety disorder is 5–16%,<sup>7</sup> and that of panic disorder varies between 1.5 and 13%.<sup>9</sup> Most people with anxiety or depression will visit their general practitioner, whether or not they complain of their psychological symptoms.<sup>10</sup>

The PREDICT study took place in six European countries in order to develop a multifactor risk index to predict onset of depression in primary care attendees.<sup>11</sup> In this paper we report on differences in prevalence of common mental disorders between participating countries.

## Method

### Design

The study design has been previously described.<sup>11</sup> In summary, we recruited consecutive general practice attendees in six European countries who were assessed for common mental disorders.

### Setting

The participating general practices extended across urban and rural settings in each country and served populations with diverse socio-economic and ethnic characteristics. The nature of the practices in each country was as follows:

- (a) 25 general practices in the Medical Research Council's General Practice Research Framework, distributed across the UK
- (b) 9 large primary care centres in Andalucía, Southern Spain
- (c) 74 general practices distributed nationwide in Slovenia

(d) 23 general practices distributed nationwide in Estonia

(e) 7 large general practice centres near Utrecht, The Netherlands

(f) 2 large primary care centres in urban and rural areas of Portugal, each containing 25 general practitioners.

### Sample

We recruited consecutive attendees aged 18–76 to the study practices between July 2003 and September 2004. Exclusion criteria were an inability to understand one of the main languages involved, severe organic mental illness and terminal illness. Recruitment differed slightly in each country because of local service preferences. In the UK and The Netherlands, researchers spoke to patients while they waited to see practice staff. In the four other European countries the doctors introduced the study before contact with the researcher. Participants who gave informed consent undertook a research evaluation within 2 weeks at their home or the general practice. For ethical reasons we were unable to collect data on people who declined to participate.

### Measures of outcome and exposure

Psychiatric disorders

We evaluated participants' mood using the Depression Section of the Composite International Diagnostic Interview (CIDI)<sup>12,13</sup> and made psychiatric diagnoses according to DSM-IV criteria based on symptoms experienced in the past 6 months. We also assessed participants for 'other anxiety syndrome' and 'panic syndrome' as defined by specific sections of the Patient Health Questionnaire, a brief instrument designed to assess psychiatric symptoms.<sup>14</sup> We classified participants on major depression (CIDI) or anxiety disorder or panic syndrome (Patient Health Questionnaire) by using decision algorithms that overlooked minor missing data if

such data, even if answered positively, would not have led to a diagnosis.

We collected information on socio-demographic characteristics of the participants. These included gender, age, education, employment status, household income, ethnicity, living status and occupation type. Consultation rate data for the previous 6 months could not be collected from practices in Estonia but were collected directly from the general practices in all other countries.

### Statistical analysis

We compared participants in each country using descriptive statistics. Since previous research suggests that women are more likely than men to receive a diagnosis of major depression or anxiety disorder,<sup>15–17</sup> we initially tested whether the size of gender differences varied between the countries. We detected a significant interaction between gender and country for all three diagnoses (for major depression  $B = -0.5360$ ,  $P < 0.001$ ; other anxiety syndrome  $B = -0.1163$ ,  $P < 0.001$ ; panic syndrome  $B = -0.1961$ ,  $P < 0.001$ ) and therefore report results separately for men and women.

We used a random effects model in logistic regression to examine between-country differences in prevalence of common mental disorders while adjusting for demographic variables that were considered *a priori* to be associated with depression, other anxiety syndrome and panic syndrome, and which differed on between-country variance. We used the panel version (xt) logistic regression to take account of intra-practice correlation (cluster). Missing data on at least one demographic variable were found in 812 (16.7%) women and 308 (13.1%) men. We ran the models using only complete case data but also conducted a sensitivity analysis using all participants. Because of its consistently high prevalence figures, the UK was used as the reference country against which others were compared. We first examined the effect of country on prevalence rates in men and women separately after which we adjusted for age, marital status, employment, education, living alone, immigrant status, ethnicity, professional status and income in a full model. Finally, we repeated the analysis also adjusting for consultation rates in all countries except Estonia.

Since the differences in consultation rates between attendees with a common mental disorder and those without varied between countries, we also adjusted for the interaction between country and consultation rate in this analysis. We undertook all statistical analyses in Stata Release 9.1 for Windows/DOS.

## Results

### Response to the study and missing data

Overall, of the people approached 59% participated in the study, ranging from lowest participation in the UK (44%) and The Netherlands (45%) to the highest (87%) in Spain.<sup>11</sup> Women made up two-thirds of participants in each country, giving a total study population of 4865 women and 2344 men.

### Demographic profile of participants

The demographic structure of the Estonian sample varied most from the overall study population in containing more young people (see online Tables DS1 and DS2). The highest proportion of single participants occurred in Spain for men and in Estonia for women. The Netherlands recruited the highest numbers of attendees who lived alone, the educational levels for attendees was highest in the UK and unemployment the highest in Portugal. Slovenia had the highest proportion of immigrants (Tables DS1 and DS2).

### Prevalence of major depression and other psychiatric syndromes

Prevalence was estimated using the full data of 2344 men and 4865 women. In men, the prevalence of current DSM-IV major depression and panic syndrome were highest in the UK. Other anxiety syndrome, however, was most prevalent in Spain. In women, the prevalence of major depression, lifetime depression and other anxiety syndrome were highest in Spain, whereas panic syndrome was most prevalent in Portugal (Table 1).

Highest prevalence of depression in men was observed between the ages of 30 and 50, whereas the highest prevalence in

**Table 1** Prevalence of depression and other psychiatric syndromes in each country

	All	UK	Spain	Slovenia	Estonia	Netherlands	Portugal	$\chi^2$	P
Total, n (%)									
Men	2344 (100)	441 (18.8)	375 (16.0)	409 (17.4)	291 (12.4)	446 (19.0)	382 (16.3)		
Women	4865 (100)	884 (18.2)	895 (18.4)	710 (14.6)	803 (16.5)	775 (15.9)	798 (16.4)		
Major depression, n (%)									
Women									
Present	677 (13.9)	117 (13.2)	165 (18.4)	46 (6.5)	119 (14.8)	88 (11.4)	142 (17.8)	66.66	<0.001
Missing	107 (2.2)	17 (1.9)	41 (4.6)	4 (0.6)	19 (2.4)	19 (2.5)	7 (0.9)		
Men									
Present	199 (8.5)	56 (12.7)	42 (11.2)	18 (4.4)	27 (9.3)	31 (7.0)	25 (6.5)	26.81	<0.001
Missing	36 (1.5)	4 (0.9)	16 (4.3)	3 (0.7)	6 (2.1)	6 (1.4)	1 (0.3)		
Other anxiety syndrome, n (%)									
Women									
Present	485 (10.0)	100 (11.3)	180 (20.1)	21 (3.0)	82 (10.2)	37 (4.8)	65 (8.2)	164.93	<0.001
Missing	69 (1.4)	16 (1.8)	4 (0.5)	13 (1.8)	0 (0)	36 (4.7)	0 (0)		
Men									
Present	117 (5.0)	37 (8.4)	37 (9.9)	9 (2.2)	16 (5.5)	9 (2.0)	9 (2.4)	49.86	<0.001
Missing	30 (1.3)	9 (2.0)	1 (0.3)	2 (0.5)	0 (0)	18 (4.0)	0 (0)		
Panic syndrome, n (%)									
Women									
Present	445 (9.2)	91 (10.3)	104 (11.6)	54 (7.6)	64 (8.0)	26 (3.4)	106 (13.3)	57.62	<0.001
Missing	38 (0.8)	11 (1.2)	2 (0.2)	0 (0)	2 (0.3)	20 (2.6)	3 (0.4)		
Men									
Present	132 (5.6)	39 (8.8)	22 (5.9)	19 (4.7)	16 (5.5)	14 (3.1)	22 (5.8)	14.48	0.013
Missing	19 (0.8)	5 (1.1)	2 (0.5)	2 (0.5)	0 (0)	10 (2.2)	0 (0)		

women was found between the ages of 18 and 30 (Table DS3). This peak was steeper in men than in women. The highest prevalence of anxiety occurred between the ages of 40 and 60 for men and the association was non-linear. For panic syndrome, the highest prevalence was between the ages of 40 and 50 for men and women.

### Consultation rates and common mental disorder

Mean number of consultations at the general practices in the preceding 6 months differed significantly between the five countries in which they could be collected (Table DS4). Although consultation rates in all five countries were significantly higher in attendees with any one of the common mental disorders than attendees without any such disorder, this difference varied in size between countries, with the lowest difference in Portugal (Table DS4).

### Differences between countries

There was a significant overall difference between countries for each common mental disorder (see unadjusted analyses in Tables 2–4). A number of patterns emerged in the comparison of prevalence of common mental disorders between the UK and the other five countries. The first main finding was that differences between the UK and Spain were no longer significant after adjustment for important demographic variables (Tables 2–4). The second overall finding was that significant differences in prevalence between attendees in the UK and those in Slovenia, Portugal, The Netherlands and Estonia were more common in men than women and were little affected by adjustment for demographic factors. Further adjustment for consultation rates in the five countries had little further impact except in men with panic syndrome, where significant differences reappeared between the UK and

**Table 2** Depression: country differences in common mental disorders stratified by gender and controlled for practice clustering

	Unadjusted OR (95% CI)	Adjusted for demographic factors <sup>a</sup> OR (95% CI)	Adjusted for demography, consultation rate and interaction <sup>b</sup> OR (95% CI)
<b>Women</b>			
UK	1.00	1.00	
Spain	1.64 (1.13–2.39)*	1.15 (0.74–1.78)	0.95 (0.62–1.44)
Slovenia	0.51 (0.34–0.76)**	0.38 (0.24–0.60)**	0.34 (0.21–0.55)**
Estonia	1.13 (0.80–1.61)	0.74 (0.49–1.13)	–
The Netherlands	0.87 (0.56–1.35)	0.85 (0.54–1.35)	0.63 (0.37–1.10)
Portugal	1.57 (0.94–2.60)	1.05 (0.60–1.81)	1.07 (0.62–1.85)
P-value of country factor	<0.001	<0.001	<0.001
<b>Men</b>			
UK	1.00	1.00	
Spain	0.86 (0.53–1.40)	0.92 (0.50–1.69)	0.62 (0.32–1.17)
Slovenia	0.30 (0.17–0.54)**	0.33 (0.16–0.67)**	0.26 (0.12–0.56)**
Estonia	0.54 (0.31–0.96)*	0.51 (0.25–1.07)	–
The Netherlands	0.47 (0.28–0.81)**	0.43 (0.23–0.78)**	0.25 (0.11–0.53)**
Portugal	0.42 (0.24–0.76)**	0.48 (0.24–0.95)*	0.38 (0.17–0.81)*
P-value of country factor	<0.001	0.002	0.001

a. Analysis on those individuals with complete records on demographic factors (4053 women; 2036 men). Demographic factors included age, marital status, employment, education, living alone, immigrant status, ethnicity, professional status and income.  
b. Interaction between consultation rate and country for common mental disorders.  
\* $P < 0.05$ ; \*\* $P < 0.01$ .

**Table 3** Other anxiety syndrome: country differences in common mental disorders stratified by gender and controlled for practice clustering

	Unadjusted OR (95% CI)	Adjusted for demographic factors <sup>a</sup> OR (95% CI)	Adjusted for demography, consultation rate and interaction <sup>b</sup> OR (95% CI)
<b>Women</b>			
UK	1.00	1.00	
Spain	2.18 (1.49–3.19)**	1.39 (0.87–2.22)	1.13 (0.64–2.00)
Slovenia	0.25 (0.15–0.43)**	0.22 (0.12–0.40)**	0.21 (0.11–0.41)**
Estonia	0.82 (0.56–1.21)	0.74 (0.46–1.18)	–
The Netherlands	0.40 (0.24–0.68)**	0.39 (0.22–0.67)**	0.33 (0.14–0.74)**
Portugal	0.67 (0.38–1.16)	0.40 (0.21–0.74)**	0.51 (0.27–0.96)*
P-value of country factor	<0.001	<0.001	<0.001
<b>Men</b>			
UK	1.00	1.00	
Spain	1.10 (0.63–1.91)	1.01 (0.49–2.07)	0.90 (0.42–1.94)
Slovenia	0.25 (0.11–0.55)**	0.25 (0.10–0.62)**	0.24 (0.09–0.65)**
Estonia	0.50 (0.25–1.03)	0.51 (0.21–1.28)	–
The Netherlands	0.28 (0.13–0.61)**	0.28 (0.12–0.67)**	0.27 (0.09–0.83)*
Portugal	0.26 (0.11–0.58)**	0.28 (0.11–0.73)**	0.32 (0.11–0.97)*
P-value of country factor	<0.001	<0.001	0.015

a. Analysis on those individuals with complete records on demographic factors (4053 women; 2036 men). Demographic factors included age, marital status, employment, education, living alone, immigrant status, ethnicity, professional status and income.  
b. Interaction between consultation rate and country for common mental disorders.  
\* $P < 0.05$ ; \*\* $P < 0.01$ .

**Table 4** Panic syndrome: country differences in common mental disorders stratified by gender and controlled for practice clustering

	Unadjusted OR (95% CI)	Adjusted for demographic factors <sup>a</sup> OR (95% CI)	Adjusted for demography, consultation rate and interaction <sup>b</sup> OR (95% CI)
<b>Women</b>			
UK	1.00	1.00	
Spain	1.25 (0.86–1.81)	0.84 (0.53–1.33)	0.69 (0.42–1.12)
Slovenia	0.82 (0.56–1.21)	0.67 (0.42–1.06)	0.66 (0.40–1.11)
Estonia	0.78 (0.53–1.15)	0.71 (0.44–1.15)	–
The Netherlands	0.38 (0.23–0.65)**	0.39 (0.22–0.67)**	0.30 (0.15–0.61)**
Portugal	1.29 (0.85–1.97)	0.79 (0.48–1.30)	0.88 (0.48–1.61)
P-value of country factor	<0.001	0.019	0.003
<b>Men</b>			
UK	1.00	1.00	
Spain	0.51 (0.27–0.95)*	0.56 (0.27–1.17)	0.30 (0.13–0.70)**
Slovenia	0.52 (0.29–0.92)*	0.54 (0.26–1.13)	0.37 (0.16–0.86)*
Estonia	0.47 (0.24–0.93)*	0.43 (0.18–1.02)	–
The Netherlands	0.31 (0.16–0.63)**	0.33 (0.15–0.70)**	0.20 (0.08–0.54)**
Portugal	0.54 (0.29–1.01)	0.71 (0.34–1.51)	0.57 (0.24–1.37)
P-value of country factor	0.014	<0.0610	0.001

a. Analysis on those individuals with complete records on demographic factors (4053 women; 2036 men). Demographic factors included age, marital status, employment, education, living alone, immigrant status, ethnicity, professional status and income.  
b. Interaction between consultation rate and country for common mental disorders.  
\* $P < 0.05$ ; \*\* $P < 0.01$ .

Spain, Slovenia and The Netherlands. Thus, the UK led the six countries, with significantly high prevalence of common mental disorders in both men and women. To summarise: (a) the odds of major depression were lower in men and women in Slovenia and in men in The Netherlands than in the UK; (b) the odds of other anxiety syndrome were lower in men and women in Slovenia, The Netherlands and Portugal than in the UK; and (c) the odds of panic syndrome were lower in women in The Netherlands, and lower in men in The Netherlands, Spain and Slovenia, than in the UK.

A sensitivity analysis of these country differences using all 7209 participants did not change the significance of this finding, suggesting that limiting the analysis to those with full data did not affect our main finding.

## Discussion

Our main finding is that prevalence of major depression, other anxiety syndrome and panic syndrome in people attending their general practitioners varies significantly between European nations. We found the highest prevalence of common mental disorder in the UK and Spain, and lowest in The Netherlands and Slovenia. There was a significant variation in common mental disorders with age. However, although demographic factors accounted for the variance between the UK and Spain, they otherwise had little impact on the significance of observed country differences. Taking account of consultation rates also had little overall impact on the inter-country differences found.

### Methodological strengths and limitations

Our study was conducted using standardised measures of socio-demographic factors and diagnostic instruments that have been validated internationally. Our findings are unlikely to be due to measurement imprecision between countries, as we collected the data in exactly similar interviews in men and women at each study site. However, our method of recruitment in which patients were approached directly by research staff in general practices in The Netherlands and the UK may have meant that reasons for entering the study differed in these countries compared with the remainder,

where doctors introduced the study first. Response to the study mirrored this approach in that it was lower in the UK and The Netherlands than in other countries. We cannot rule out the possibility that response affected measured prevalence *within* any one country. However, the lack of any clear association between prevalence of common mental disorders and response to the study (i.e. the low-response countries UK and The Netherlands had quite different prevalence) seems to rule out the possibility that a low response might have led to a systematic bias. Nevertheless, people with any of the three common mental disorders were more frequent attendees than those without such disorders, suggesting that overall prevalence in the six countries was higher than would have been found in door-to-door community surveys.

### Prevalence and age

Our findings of a peak age for anxiety-spectrum disorders in mid-life is in keeping with other epidemiological findings around the world<sup>7,18</sup> and suggests that our population is fairly typical of those with common mental disorders in Western countries. Findings are less consistent for major depression, which may peak in young adulthood<sup>19</sup> or mid-life depending on the population studied.<sup>18,19</sup>

### Primary care

To our knowledge, this is the first study to report differences in prevalence of anxiety disorder and panic syndrome in general practice attendees between countries in Europe.<sup>20</sup> However, international variation in major depression has been reported in epidemiological studies across the world.<sup>21–25</sup> We cannot be sure that these between-country differences reflect true disparities in population prevalence of common psychological disorders. It is possible that we are observing differences in consulting behaviour by people with these disorders in our partner countries. However, three factors suggest that we may be seeing real differences in prevalence rather than simply differences in consulting behaviours between countries. The first is that the structure and function of the primary care health service in each country is very similar in that all have a system of national healthcare provision whereby access to general practice care is free to all. The second is that

although consultation rates differed between the countries, adjustment for these data had little impact on our findings. Furthermore, higher consultation rates for attendees with major depression were seen in all five countries in which such data were available, suggesting that differential access to general practitioners was not a confounding factor. The third factor is that we have also adjusted our analysis for demographic factors that are associated with attendance behaviour, as well as prevalence of common mental disorders. Nevertheless, we cannot completely rule out to what extent medical practice, cultural and other national factors influence whether people with psychological disorders approach their family doctor and whether they recover. For example, data from a household study in six European countries has suggested that Spain provides the lowest levels of adequate treatment for common mental disorders.<sup>26</sup> Although this might suggest an explanation for the high prevalence of disorders in that country, Fernández *et al*'s study was limited by a comparison of small numbers, was conducted in a region (Cataluña) that has one of the highest private medical care usages in Spain and was limited by the inaccuracy of self-reported data about treatment received.<sup>27</sup>

## Implications

Our study is the first international study of common mental disorders to include countries that have entered the European Union since 2004 and the second to report on European differences in prevalence of anxiety disorders.<sup>15</sup> Our study also provides information on the differences in common mental disorders between European countries that are not simply the result of differences in demographic factors.<sup>20</sup> There was little sign of a north-south divide in prevalence across Europe and although prevalence tended to be lowest in the newly entrant country Slovenia, rates in Estonia were comparable to those in the other longer-standing European Union member states. Although we cannot rule out completely that cultural factors lead to differences between European countries in consulting behaviour of people with psychological distress, our data add to the mounting evidence that real country differences in prevalence of psychological disorders exist. These figures show that the burden of common mental disorders in general practice is highest in the UK and Spain, and lowest in Slovenia and The Netherlands.

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## Poems by doctors

### When I heard them

Merrill Moore

When I heard them telling the pitiful facts of their lives  
I realized that my life might be pitiful too  
For the first time. They were talking about unappreciative wives  
And husbands and children whose affections withdrew  
(if they ever existed).

One woman said to me:  
"One October day, my father died.  
Then we took him to the family cemetery to be buried.  
The funeral had to go on a ferry boat  
From the mainland to the island where we had lived  
And it rained –"

And a man told me: "When I got to town  
I called her up for I finally knew I wanted  
To marry her but a servant answered the telephone  
And told me she would be away all day  
At a funeral, taking her father to bury him,  
So I never called back: somehow I changed my mind  
And I think to this day she never knew I called."

Merrill Moore (1903–1957) was born in Columbia, Tennessee. He graduated in medicine from Vanderbilt Medical School in 1928. He practised as a psychiatrist at Boston City Hospital and taught at Harvard Medical School. He is reputed to have written between 50 000 and 100 000 sonnets. This poem is from *Clinical Sonnets* (1949), Twayne Publishers, reprinted by kind permission of Adam Moore.

Poem selected by Professor Femi Oyeboode.

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