

# Prevalence of mental disorders in elderly people: the European MentDis\_ICF65+ study

Sylke Andreas, Holger Schulz, Jana Volkert, Maria Dehoust, Susanne Sehner, Anna Suling, Berta Ausin, Alessandra Canuto, Mike Crawford, Chiara Da Ronch, Luigi Grassi, Yael Hershkovitz, Manuel Muñoz, Alan Quirk, Ora Rotenstein, Ana Belén Santos-Olmo, Arieh Shalev, Jens Strehle, Kerstin Weber, Karl Wegscheider, Hans-Ulrich Wittchen and Martin Härter

## Background

Except for dementia and depression, little is known about common mental disorders in elderly people.

## Aims

To estimate current, 12-month and lifetime prevalence rates of mental disorders in different European and associated countries using a standardised diagnostic interview adapted to measure the cognitive needs of elderly people.

## Method

The MentDis\_ICF65+ study is based on an age-stratified, random sample of 3142 older men and women (65–84 years) living in selected catchment community areas of participating countries.

## Results

One in two individuals had experienced a mental disorder in their lifetime, one in three within the past year and nearly

one in four currently had a mental disorder. The most prevalent disorders were anxiety disorders, followed by affective and substance-related disorders.

## Conclusions

Compared with previous studies we found substantially higher prevalence rates for most mental disorders. These findings underscore the need for improving diagnostic assessments adapted to the cognitive capacity of elderly people. There is a need to raise awareness of psychosocial problems in elderly people and to deliver high-quality mental health services to these individuals.

## Declaration of interest

None.

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In 2010, 16.2% of the world population consisted of people aged 65 or over, a figure that is expected to rise to 26.9% by 2050.<sup>1</sup> Increasing life expectancy highlights the importance of physical and mental health in old age.<sup>2</sup> Previous studies have generated very inconsistent findings about the prevalence of mental illness among older adults,<sup>3,4</sup> although most studies report decreased prevalence rates in advanced age.<sup>3,5,6</sup> Studies have tended to focus on selective disorders such as dementia<sup>7</sup> or depression,<sup>8–10</sup> implying that the entire range of mental disorders has been insufficiently addressed.<sup>9</sup> Previous studies using different study designs have found lifetime and current prevalence rates of mental disorders in elderly people ranging from 1 to 18%.<sup>9,11</sup> Studies of bipolar disorder, anxiety disorders and alcohol disorders based on structured and standardised assessment instruments such as the Composite International Diagnostic Interview (CIDI)<sup>12</sup> are scarce.<sup>9</sup> Currently prevalence estimates for depression – the only disorder that is examined consistently – are approximately 3%.<sup>9</sup> A few studies report lifetime prevalence rates of substance-related (in particular alcohol-related) disorders in people 65 years and over ranging from 1 to 12%; for schizophrenia, schizotypal disorders and other psychotic disorders, the lifetime and current rate is estimated at 0.5–1.0%, respectively.<sup>9</sup> Rates for anxiety disorders vary between 0.9 and 6.7%.<sup>9</sup> Only one study used the CIDI to evaluate somatoform disorders in elderly people<sup>13</sup> and found a current prevalence rate of 18.4% (participants were 66 and older from Norway's general population).<sup>13</sup>

There is debate over the source and the causes of the heterogeneity of these empirical results: some authors have argued that older people may have developed coping strategies over the course of their lives that enable them to manage their mental health better than younger people,<sup>14,15</sup> whereas others have attributed the heterogeneity of the findings to a lack of feasible

and age-sensitive standardised and structured instruments for diagnosing mental disorders in elderly people.<sup>16–18</sup> Older adults with health problems may also deny symptoms when asked to complete lengthy assessments.<sup>16,17</sup> Additionally, important information on the planning of intervention-based approaches must consider severity, impairment, quality of life and coping mechanisms. Taken together, this information indicates an urgent need to administer diagnostic instruments that have been adapted to the needs of elderly people.

The aim of the study is to determine lifetime, 12-month and current prevalence estimates for a wide range of mental disorders for people aged 65–84 years based on DSM-IV<sup>19</sup> in different European and associated countries using a standardised and structured interview that was specifically adapted for elderly people.

## Method

### Participants

The MentDis\_ICF65+ study is a cross-sectional multicentre survey<sup>20</sup> and the protocol has been previously reported.<sup>20</sup> The selection of different catchment areas and countries was balanced according to geographical and socioeconomic population distribution in Europe. Southern European regions of Ferrara (Italy) and Madrid (Spain) were selected as well as London and Canterbury (England) for northern Europe and Hamburg (Germany) for central Europe. The sample further consisted of European Union (EU)-associated regions including Jerusalem (Israel) and Geneva (Switzerland). A random sample of  $n = 3142$  older men and women (65–84 years) living in selected catchment community areas of each participating country (at least 500

participants from each country) stratified by age and gender was drawn from the population registries in Hamburg and Ferrara and from postal addresses of market research units in Madrid, Geneva, London/Canterbury and Jerusalem. Inclusion criteria for participating in the study included the ability to provide informed consent, having residence in the predefined catchment area at the beginning of the study, and being at least 65 and less than 85 years old. Potential participants were excluded on the basis of moderate cognitive impairment as assessed by the Mini-Mental State Examination (MMSE; cut-off score  $>18$ )<sup>21</sup> or an insufficient level of corresponding language. A harmonised procedure in contacting each participant and conducting the survey was realised, including initial contact by phone and mail, standardised interviewer training, implementation of a standardised study protocol for all test centres, and using stringent, high-quality data-control procedures.

The response rate was defined as the total percentage of participants who completed interviews in the study compared with who were contacted with a written invitation letter.<sup>22</sup> In most of the study centres, a written invitation letter was followed by a phone call to ask potential participants if they were willing to take part in the study. As a result of ethical regulations in some countries, potential participants had to write back to indicate their interest in participating; phone calls were not acceptable. The response rates varied by country, age and gender. Responder analyses showed significant differences in the response rate between the centres ( $P < 0.001$ ) and age groups ( $P < 0.001$ ) but not between genders ( $P = 0.738$ ). The age effect indicates that the response rate was significantly higher for younger participants than for older participants. The overall response rate of our study was 20%, which is comparable with that of previous studies with similar recruitment procedures.<sup>23</sup> Furthermore, representativeness analysis showed that the differences were small between the catchment areas in our study compared with catchment areas of the overall population of the participating countries with regard to sociodemographic characteristics (such as work status, marital status and education) according to the effect sizes by Somers'  $d^{24}$  (all  $d < 0.01$ ); however, these differences were significant because of the large size of the databases. Furthermore, the minor differences that were identified are not clinically relevant.

## Measures

CIDI adaptation process, structure and training

Mental disorders were diagnosed with an adapted, age-sensitive version of the CIDI, the CIDI65+.<sup>25</sup> This fully structured lay interview generates diagnoses according to DSM-IV criteria.<sup>19</sup> The process of adapting the test to the unique conditions of elderly people included several facets, including adding words, alternative questions and detailed section introductions, breaking down long questions into less complicated questions, sensitising scales upfront and embedding a fuller spectrum of syndromes. The English paper and pencil version was translated into German, Spanish, Hebrew, Italian and French with a back-translation and then computerised. A pre-testing phase was conducted in Germany and the UK to evaluate feasibility and verify the acceptability of the CIDI65+ to respondents. To evaluate the usability and reliability of the CIDI65+, a pilot phase was conducted.<sup>25</sup> Overall, the results on the reliability of the CIDI65+ were good for most diagnoses (such as depression ( $k = 0.79$ ) and anxiety disorders ( $k = 0.69$ )). Lower  $k$ -scores were found for less frequent disorders such as panic disorders ( $k = 0.37$ ), similar to other diagnostic instruments that also report lower reliability scores<sup>26</sup> or that have classification systems that are less precise.<sup>25</sup>

The interview covers a wide range of mental health problems such as anxiety disorders, affective disorders, psychotic symptoms, obsessive-compulsive disorder, substance misuse, somatoform disorders and acute and post-traumatic stress disorders. Cognitive impairment, somatic morbidity and the use of healthcare services were also assessed. The instrument also provides differential diagnoses for mental disorders because of general medical conditions.

## Statistical analyses

Survey analyses were weighted according to the number of inhabitants in each country and stratified by gender and two age groups: 65–74 years old and 74 years or older. The adjusted lifetime, 12-month and current prevalence rates and 95% confidence limits were estimated as marginal means from a weighted logistic regression adjusting for age in 5-year intervals, gender and test centre.<sup>27</sup> Group differences were tested using the main effect  $P$ -value of the model. Odds ratios (OR) and 95% confidence limits were also reported. All analyses were computed using Stata 12.1.

## Results

### Sample characteristics

The mean age of the  $n = 3142$  MentDis\_ICF65+ participants was 73.7 years after stratification (s.d. = 5.6), and half of the sample was female (50.7%). Participants had attended school for a mean of 10.3 years (s.d. = 3.2). The majority of participants were married (61%), 35% were separated, divorced or widowed and 5% had never been married (Table 1). Approximately 85% of participants were retired. About half of the participants rated their financial situation as good or very good (55%), with 8% rating it as poor or very poor.

### 12-month and lifetime prevalence

One in two individuals aged 65–84 years had experienced a mental disorder in their lifetime (Table 2). About one-third of the sample had a mental disorder within the past year (35.2%, 95% CI 31.0–39.5) (Table 3). There were significant differences between centres for all mental disorders in the past year except

**Table 1** Demographic characteristics of the participants

Demographic characteristic	Total sample ( $n = 3142$ )
Age, $n$ (%)	
65–74 years	1715 (54.6)
75–84 years	1427 (45.4)
Gender, $n$ (%)	
Women	1592 (50.7)
Men	1550 (49.3)
Education, years of schooling (cut-off 13 years): mean (s.d.)	10.3 (3.2)
Born in country of interview, $n$ (%)	2519 (80.2)
Marital status, $n$ (%)	
Married	1915 (61.0)
Separated/divorced/widowed	1082 (34.5)
Never been married/other	142 (4.5)
Work status, retired: $n$ (%) <sup>a</sup>	2640 (84.6)
Financial situation, $n$ (%) <sup>a</sup>	
Very good	356 (11.4)
Good	1372 (43.8)
Just enough	1145 (36.6)
Poor	219 (7.0)
Very poor	37 (1.2)
a. $n = 3128$	

**Table 2** Lifetime prevalence rates of frequent mental disorders<sup>a</sup>

	Hamburg (Germany)	Ferrara (Italy)	London (England)	Madrid (Spain)	Geneva (Switzerland)	Jerusalem (Israel)	Over all
Affective disorder							
Major depressive episode	11.6 (9.5–13.7)	9.2 (6.5–12.0)	14.6 (11.4–17.8)	10.5 (5.3–15.7)	23.3 (19.3–27.4)	14.8 (10.7–18.9)	11.8 (9.7–14.0)***
Dysthymia	2.5 (1.4–3.6)	3.1 (2.1–4.1)	3.4 (2.6–4.2)	2.5 (1.6–3.5)	4.0 (2.6–5.4)	5.2 (3.5–6.8)	2.9 (2.3–3.5)*
Any bipolar disorder	4.7 (3.2–6.2)	2.4 (1.4–3.5)	4.2 (2.9–5.5)	6.9 (4.0–9.7)	3.0 (2.2–3.7)	6.1 (4.8–7.4)	4.4 (3.3–5.5)*
Any affective disorder	13.2 (10.9–15.4)	11.9 (9.5–14.4)	18.0 (14.9–21.1)	13.0 (7.8–18.3)	26.5 (22.5–30.5)	18.5 (12.3–24.6)	14.3 (12.0–16.6)***
Anxiety							
Agoraphobia	9.3 (7.3–11.4)	4.7 (2.8–6.5)	15.1 (11.8–18.4)	10.0 (8.1–12.0)	6.5 (4.3–8.7)	4.1 (3.4–4.7)	9.3 (6.7–12.0)
Panic disorder	3.9 (2.8–5.1)	5.0 (2.3–7.8)	7.5 (4.2–10.9)	1.3 (0.8–1.8)	3.5 (1.6–5.4)	3.0 (2.2–3.8)	4.5 (2.6–6.4)**
Post-traumatic stress disorder	2.0 (0.8–3.1)	1.3 (0.8–1.7)	6.3 (4.9–7.7)	0.3 (0.0–0.8)	2.0 (1.3–2.6)	8.4 (5.6–11.2)	2.5 (1.1–4.0)***
Any simple phobia	15.7 (12.7–18.6)	11.6 (9.3–14.0)	21.2 (17.3–25.2)	21.5 (16.4–26.7)	15.3 (13.0–17.5)	14.9 (11.8–17.9)	16.7 (13.4–20.1)***
Any anxiety disorder	24.1 (21.1–27.0)	20.1 (16.5–23.7)	32.6 (27.1–38.1)	29.3 (23.9–34.8)	20.7 (16.6–24.8)	21.5 (16.3–26.6)	25.6 (21.4–29.7)***
Substance misuse							
Alcohol dependence or misuse	12.9 (9.8–16.1)	1.7 (0.9–2.4)	13.8 (10.5–17.1)	3.8 (1.5–6.1)	14.1 (9.5–18.8)	3.2 (2.4–3.9)	8.8 (4.5–13.2)***
Any substance-related disorder	21.3 (18.1–24.6)	12.9 (10.6–15.2)	20.6 (17.1–24.0)	16.3 (12.3–20.3)	21.8 (16.6–26.9)	12.8 (10.9–14.6)	18.2 (14.6–21.8)***
Any somatoform disorder	9.2 (7.4–11.0)	5.9 (3.6–8.2)	9.4 (7.2–11.5)	3.5 (2.1–4.8)	7.7 (6.6–8.8)	10.7 (9.3–12.0)	7.5 (5.7–9.3)***
Any mental disorder	47.0 (44.1–49.9)	38.8 (34.3–43.3)	56.3 (49.7–63.2)	46.3 (41.6–51.0)	55.7 (53.5–58.0)	46.0 (42.0–50.1)	47.0 (42.8–51.3)***

a. Rates are adjusted for age and gender and accompanied by 95% confidence intervals.

\* $P < 0.05$ , \*\* $P < 0.01$ , \*\*\* $P < 0.001$ .

**Table 3** Twelve-month prevalence rates of frequent mental disorders<sup>a</sup>

	Hamburg (Germany)	Ferrara (Italy)	London (England)	Madrid (Spain)	Geneva (Switzerland)	Jerusalem (Israel)	Over all
Affective disorder							
Major depressive episode	11.1 (9.1–13.2)	9.1 (6.4–11.8)	14.5 (11.5–17.4)	10.3 (5.3–15.3)	23.1 (18.9–27.4)	14.6 (10.3–18.9)	11.6 (9.5–13.6)
Dysthymia	2.5 (1.4–3.6)	3.1 (2.1–4.1)	3.4 (2.6–4.2)	2.5 (1.6–3.5)	4.0 (2.6–5.4)	5.2 (3.5–6.8)	2.9 (2.3–3.5)*
Any bipolar disorder	2.1 (0.3–4.0)	1.2 (0.3–2.2)	2.9 (0.8–5.0)	4.9 (2.1–7.6)	1.2 (0.3–2.2)	4.7 (3.0–6.5)	2.5 (1.3–3.7)*
Any affective disorder	12.7 (10.6–14.8)	11.1 (8.5–13.6)	17.6 (14.7–20.4)	12.4 (7.7–17.0)	25.7 (21.2–30.3)	17.8 (12.2–23.3)	13.7 (11.4–15.9)***
Anxiety							
Agoraphobia	6.0 (4.6–7.4)	1.9 (0.2–3.5)	7.4 (5.5–9.2)	4.5 (2.7–6.2)	3.7 (2.3–5.1)	2.0 (1.5–2.5)	4.9 (3.3–6.6)***
Panic disorder	3.9 (2.9–5.0)	4.2 (2.1–6.4)	5.4 (3.3–7.4)	1.1 (0.7–1.6)	2.7 (1.6–3.9)	2.3 (1.8–2.8)	3.8 (2.6–5.0)
Post-traumatic stress disorder	1.0 (0.0–2.6)	0.7 (0.0–1.5)	2.4 (1.2–3.6)	0	1.1 (0.1–2.2)	5.9 (4.2–7.5)	1.4 (0.4–2.4)***
Any simple phobia	9.1 (7.3–10.9)	6.8 (5.5–8.1)	9.4 (6.1–12.7)	12.7 (9.4–16.1)	9.2 (7.4–11.1)	8.9 (7.1–10.6)	9.2 (7.2–11.1)*
Any anxiety disorder	16.8 (14.4–19.2)	14.4 (11.6–17.3)	20.8 (15.6–26.0)	18.3 (14.4–22.3)	14.1 (10.4–17.8)	14.7 (10.7–18.7)	17.2 (14.0–20.4)*
Substance misuse							
Alcohol dependence or misuse	7.4 (5.5–9.2)	1.0 (0.5–1.5)	9.5 (6.4–12.6)	1.3 (0.4–2.2)	9.1 (5.7–12.5)	1.2 (0.2–2.2)	5.3 (2.3–8.2)***
Any substance-related disorder	11.2 (9.7–12.7)	5.8 (1.5–10.2)	11.2 (6.2–16.1)	5.6 (3.5–7.6)	12.7 (9.4–15.9)	3.7 (2.6–4.7)	8.9 (6.1–11.7)***
Any somatoform disorder	4.8 (4.0–5.7)	2.7 (1.3–4.2)	5.3 (3.0–7.6)	2.5 (1.3–3.8)	3.7 (3.0–4.5)	8.4 (5.4–11.5)	4.1 (3.1–5.1)*
Any mental disorder	35.4 (33.2–37.6)	27.7 (21.1–34.4)	44.4 (39.5–49.3)	32.2 (29.1–35.3)	47.1 (44.4–49.9)	36.7 (33.0–40.4)	35.2 (31.0–39.5)***

a. Rates are adjusted for age and gender and accompanied by 95% confidence intervals.

\*\* $P < 0.05$ , \*\*\* $P < 0.001$ .

for panic disorder and major depressive episodes, with the highest prevalence rates found in Geneva (Switzerland: 47.1%), London/Canterbury (England: 44.4%), Jerusalem (Israel: 36.7%) and Hamburg (Germany: 35.4%). The lowest 1-year prevalence rates were in Madrid (Spain: 32.2%) and Ferrara (Italy: 27.7%).

The most prevalent mental disorders were anxiety disorders (17.2%, 95% CI 14.0–20.4), affective disorders (13.7%, 95% CI 11.4–15.9) and substance-related disorders (8.9%, 95% CI 6.1–11.7). Elderly people living in London/Canterbury and in Madrid showed the highest prevalence rates for anxiety disorder in the past year (England: 20.8%, 95% CI 15.6–26.0; Spain: 18.3, 95% CI 14.4–22.3), whereas participants living in Ferrara and Geneva reported the lowest prevalence rates (Italy: 14.4, 95% CI 11.6–17.3; Switzerland: 14.1, 95% CI 10.4–17.8). Participants living in Jerusalem reported the highest lifetime and 12-month rates of post-traumatic stress disorder (Israel: 5.9, 95% CI 4.2–7.5) (Tables 2 and 3). Elderly people in Geneva reported the highest prevalence rate for affective disorder within the past year (Switzerland: 25.7%, 95% CI 21.2–30.3), followed by Jerusalem (Israel: 17.8%, 95% CI 12.2–23.3) and London/Canterbury (England: 17.6%, 95% CI 14.7–20.4). Lower prevalence rates were found in Hamburg (Germany: 12.7, 95% CI 10.6–14.8), Madrid (Spain: 12.4, 95% CI 7.7–17.0) and Ferrara (Italy: 11.1%, 95% CI 8.5–13.6). The highest prevalence rates for substance-related disorders were found in Geneva (Switzerland: 12.7%, 95% CI 9.4–15.9), Hamburg (Germany: 11.2%, 95% CI 9.7–12.7) and London/Canterbury (England: 11.2%, 95% CI 6.2–16.1). The lowest prevalence rate for substance-related disorders was found in Jerusalem with 3.7% (Israel: 95% CI 2.6–4.7) (Table 3).

### Current prevalence

Current prevalence rates are shown in Table 4. Nearly a quarter of the sample were diagnosed with any current mental disorder (23.3%, 95% CI 19.9–26.7) with the highest prevalence rates found in Geneva (30.4%), London/Canterbury (28.4%) and Jerusalem (27.0%). Lower prevalence rates for any current mental disorder were found in Hamburg (23.3%), Madrid (21.0) and Ferrara (19.5%).

The most prevalent category was anxiety disorders (11.4%, 95% CI 9.1–13.6), followed by affective disorders (8.0%, 95% CI 6.3–9.6) and substance-related disorders (4.6%, 95% CI 3.7–5.6). Elderly participants living in London/Canterbury or Hamburg had the highest prevalence rates for anxiety disorders in the past month (England: 13.4%, 95% CI 10.2–16.5; Germany: 12.0%, 95% CI 10.1–13.8). In contrast, elderly people living in Ferrara and Geneva had the lowest current prevalence rates for anxiety disorders (Italy: 9.4%, 95% CI 7.5–11.4; Switzerland: 7.8%, 95% CI 5.5–10.1) (Table 4). The current prevalence rate for affective disorders was markedly higher in Geneva (Switzerland: 15.6%, 95% CI 11.5–19.7) than in Ferrara (Italy: 7.5%, 95% CI 5.2–9.8) and Madrid (Spain: 6.5%, 95% CI 4.7–8.3). The highest prevalence rates for current substance-related disorders were 7.7% in Geneva (Switzerland: 95% CI 7.0–8.4) and 5.4% in Hamburg (Germany: 95% CI 5.0–5.8); the lowest rate was 2.1% in Jerusalem (Israel: 95% CI 1.2–3.0) (Table 4).

## Discussion

### Main findings

Studies of mental disorders that do not focus on dementia or depression among elderly Europeans are very scarce. This is the first study to use a standardised and structured clinical interview for mental disorders adapted to the needs of elderly people to report lifetime, 12-month and current prevalence rates for a range

**Table 4** Current prevalence rates of frequent mental disorder<sup>a</sup>

	Hamburg (Germany)	Ferrara (Italy)	London (England)	Madrid (Spain)	Geneva (Switzerland)	Jerusalem (Israel)	Overall
<b>Affective disorder</b>							
Major depressive episode	5.0 (4.2–5.8)	5.5 (3.5–7.4)	8.0 (6.3–9.7)	4.9 (2.2–7.5)	13.0 (10.1–16.0)	9.4 (3.8–15.0)	6.0 (4.7–7.3)***
Dysthymia	2.5 (1.3–3.7)	2.9 (1.8–4.1)	2.9 (2.0–3.8)	2.6 (1.8–3.4)	3.8 (2.6–5.1)	4.3 (3.2–5.4)	2.7 (2.1–3.4)*
Any bipolar disorder	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>	0 <sup>b</sup>
Any affective disorder	6.9 (5.6–8.3)	7.5 (5.2–9.8)	10.3 (7.9–12.6)	6.5 (4.7–8.3)	15.6 (11.5–19.7)	11.4 (5.2–17.7)	8.0 (6.3–9.6)***
<b>Anxiety</b>							
Agoraphobia	4.9 (3.9–5.9)	1.5 (0.0–3.6)	3.8 (2.1–5.6)	2.9 (0.9–3.9)	2.7 (1.9–3.5)	1.6 (1.1–2.0)	3.4 (0.1–4.8)***
Panic disorder	1.4 (0.8–2.1)	0.7 (0.1–1.4)	1.2 (0.5–1.8)	0.4 (0.1–0.6)	0.6 (0.0–1.1)	0.8 (0.6–1.0)	1.0 (0.6–1.4)
Any simple phobia	7.0 (5.8–8.1)	5.0 (3.9–6.0)	7.6 (4.9–10.3)	7.1 (5.1–9.2)	5.3 (3.9–6.7)	5.6 (4.0–7.1)	6.6 (5.1–8.0)*
Post-traumatic stress disorder	1.0 (0.0–2.6)	0.7 (0.0–1.5)	2.4 (1.2–3.6)	0	1.1 (0.1–2.2)	5.6 (3.8–7.4)	1.4 (0.4–2.4)**
Any anxiety disorder	12.0 (10.1–13.8)	9.4 (7.5–11.4)	13.4 (10.2–16.5)	11.3 (8.5–14.0)	7.8 (5.5–10.1)	10.2 (7.3–13.1)	11.4 (9.1–13.6)*
<b>Substance misuse</b>							
Alcohol dependence or misuse	1.8 (1.5–2.1)	0.2 (0.0–0.4)	1.4 (1.0–1.8)	0.2 (0.0–0.5)	4.9 (3.5–6.3)	0.5 (0.1–0.9)	1.1 (0.5–1.7)***
Any substance-related disorder	5.4 (5.0–5.8)	4.8 (2.5–7.1)	3.4 (2.4–4.3)	4.1 (2.0–6.2)	7.7 (7.0–8.4)	2.1 (1.2–3.0)	4.6 (3.7–5.6)***
Any somatoform disorder	4.0 (3.1–4.9)	2.0 (1.0–3.1)	4.7 (2.8–6.5)	2.3 (1.3–3.4)	2.7 (1.7–3.7)	7.4 (5.0–9.7)	3.4 (2.5–4.4)
Any mental disorder	23.3 (21.2–25.6)	19.5 (16.0–23.1)	28.4 (23.8–33.0)	21.0 (17.0–25.3)	30.4 (27.1–33.6)	27.0 (20.0–33.9)	23.3 (19.9–26.7)***

a. Rates are adjusted for age and gender and accompanied by 95% confidence intervals.

b. Prevalence was below 0.5.

\*P < 0.05, \*\*P < 0.01, \*\*\*P < 0.001.



of mental disorders in elderly people residing in different European and associated countries. One in two individuals aged 65 to 84 years had experienced at least one mental disorder in their lifetime, one in three had done so within the past year, and nearly one in four currently had a mental disorder. The most prevalent disorders were anxiety disorders, followed by affective and substance-related disorders.

### Comparison with findings from other studies

In comparison with other epidemiological studies of old age<sup>9,27</sup> and adulthood<sup>3,28</sup> that used standardised interviews such as the CIDI, our findings show higher prevalence rates, whereby the proportion of those affected is in accordance with the prevalence rates in adulthood.<sup>3,28</sup> Compared with other studies on old age, we found higher current prevalence rates of major depression (6% in our study *v.* 3.3%),<sup>9,27</sup> agoraphobia (3.4% *v.* 0.5%)<sup>9,27</sup> and alcohol disorders (1.4% *v.* 0.96%).<sup>9,27</sup> There was only one European study from the 1990s that found comparable rates for current affective disorders, which also used an age-sensitive measure for depression.<sup>29</sup> It is plausible that previous epidemiological studies underestimated the prevalence rates of mental disorders in elderly people because they did not use an interview adapted to meet concerns specific to elderly people. The sentences in the CIDI65+ were changed to make them easier for elderly people to understand and respond to, and this may have contributed to more valid estimates of mental disorders.<sup>25</sup> Another reason for the higher prevalence rates in our study could be that all countries used the same methodological approach, whereas previous studies may have underestimated prevalence through use of different instruments and possible measurement errors. Another important point to consider is the use of categorical *v.* dimensional instruments. There is an explicit difference in prevalence rates obtained with dimensional and categorical instruments in affective disorders. Our study builds on established categorical criteria for mental disorders as defined by the DSM-IV.<sup>19</sup> However, due to the multidimensional nature of psychopathology, the criteria and thresholds of the DSM-IV are not without major problems. Reviews that compare findings for dimensional measures of current psychopathology with categorical current prevalence typically reveal higher rates for dimensional measures that might vary depending on the choice of cut-offs that are used.<sup>9</sup> There is also a possibility that the presented rates are still underestimating the true prevalence of mental disorders in elderly people because we excluded people with severe cognitive impairment from the study.<sup>30</sup>

### Prevalence rates in different countries

The prevalence rates found in our study are comparable among the participating countries except for fluctuations in the absolute size. Furthermore, there were several important differences between the six catchment areas. Interpreting those differences is complex because of the large differences between the countries with regard to the availability of mental healthcare, the specific economic situation, immigration status, living circumstances, attitudes towards mental disorders in elderly people, experience of traumatic events and lifestyles.<sup>3,31</sup> Such factors may be associated with greater or lesser willingness and ability to express psychological symptoms during an interview. Another interesting finding is the marked difference between the rates of substance misuse in the southern areas of Ferrara (Italy), and Madrid (Spain) and the more northern European areas of London/Canterbury (England), Hamburg (Germany), Geneva (Switzerland); these

results are in line with previous European studies on substance misuse in adulthood.<sup>32,33</sup>

### Strengths and limitations

An advantage of the current study was the use of a reliable, structured and standardised instrument that was adapted to the needs of elderly people. Trained interviewers assessed participants in catchment areas in Hamburg (Germany), in London/Canterbury (England), Geneva (Switzerland), Madrid (Spain), Ferrara (Italy) and Jerusalem (Israel) face to face according to DSM-IV criteria, and the reliability of the instrument was evaluated beforehand in a pilot phase of the study.

Nevertheless, the study has some limitations. First, the size of the sample was limited per country and per catchment area. Second, the representativeness of our study may be limited because we found small but significant differences for some socio-demographic data between our sample and the total population of the catchment area or country. Third, this study found higher prevalence rates of mental disorders in older people than did previous studies; thus, the question arises of whether the response rate in this study is associated with an overestimation or underestimation of prevalence compared with previous studies. However, previous studies have found both higher<sup>34,35</sup> and lower prevalence rates of mental disorders in non-responders.<sup>3</sup> Kessler *et al.*<sup>36</sup> found no evidence for a selection bias related to mental illness in the US National Comorbidity Survey Replication (NCS-R). The authors concluded that to the extent the bias exists, prevalence estimates may be regarded as more conservative. In addition, many authors have stated that non-response can, but need not, automatically mean there is a non-response bias in survey estimates.<sup>37–39</sup> Therefore, it may also be possible that the prevalence of mental disorders in older people is still underestimated in our study. Furthermore, we were unable to include other important population variables such as educational level or financial situation. Another limiting factor regarding representativeness was our set of inclusion criteria: we did not include people with severe cognitive impairment, homeless people or people who did not have sufficient knowledge of the language in which the interview was conducted. In addition, due to the nature of epidemiological studies with elderly people, we were unable to control for a possible recall bias, especially regarding lifetime symptoms.<sup>27</sup>

### Future directions for research

Our study showed a high prevalence rate of lifetime, 12-month and current mental disorders in people aged 65 to 84 years in different European and associated countries. The newly adapted CIDI65+ instrument shows the need for further research in the diagnostics of mental disorders in elderly people, which is a crucial step towards more comprehensive mental health approaches for these age groups. Future studies could investigate the prevalence of mental disorders in even older people (of 85 years and above, as this age group is growing rapidly). However, this group may require additional modifications in diagnostic assessment, as additional challenges are associated with very old age (for example, cognitive impairment). Future European studies could also include more countries, such as those from the Scandinavian or Eastern European regions, and consider including nursing home residents or elderly people with cognitive impairments. Translations into further languages and extensions to surveys in other continents would be a further milestone. In addition, data about somatic diseases and their relationship with quality of life are needed. Additional studies could also integrate

primary care perspectives into the diagnostics as this is where the majority of older adults with mental health problems are treated; thus, this will enable the general practitioner to give advice on specialised mental healthcare. Finally, further studies should examine whether the use of services corresponds to the high burden of mental illness in elderly people.

**Sylke Andreas**, PhD, Department of Medical Psychology, University Medical Centre Hamburg-Eppendorf, Hamburg, Germany and Institute of Psychology, Alpen-Adria Universität Klagenfurt, Klagenfurt, Austria; **Holger Schulz**, PhD, **Jana Volkert**, PhD, **Maria Dehoust**, PhD, Department of Medical Psychology, University Medical Centre Hamburg-Eppendorf, Hamburg, Germany; **Susanne Sehner**, MSc, **Anna Suling**, PhD, Department of Biometry and Epidemiology, University Medical Centre Hamburg-Eppendorf, Hamburg, Germany; **Berta Ausin**, PhD, School of Psychology, University Complutense of Madrid, Madrid, Spain; **Alessandra Canuto**, PhD, Division of Liaison Psychiatry and Crisis Intervention, Department of Psychiatry and Mental Health, University Hospitals of Geneva (HUG), Geneva, Switzerland; **Mike Crawford**, MD, Royal College of Psychiatrists, London, UK; **Chiara Da Ronch**, PhD, **Luigi Grassi**, MD, Section of Psychiatry, Department of Biomedical and Specialty Surgical Sciences, University of Ferrara, Ferrara, Italy; **Yael Hershkovitz**, MSc, Department of Psychiatry, Hadassah University Medical Center, Kiryat Hadassah, Jerusalem, Israel; **Manuel Muñoz**, PhD, School of Psychology, University Complutense of Madrid, Madrid, Spain; **Alan Quirk**, PhD, Royal College of Psychiatrists, London, UK; **Ora Rotenstein**, PhD, Department of Psychiatry, Hadassah University Medical Center, Kiryat Hadassah, Jerusalem, Israel; **Ana Belén Santos-Olmo**, MSc, School of Psychology, University Complutense of Madrid, Madrid, Spain; **Arieh Shalev**, MD, Department of Psychiatry, Hadassah University Medical Center, Kiryat Hadassah, Jerusalem, Israel; **Jens Strehle**, MSc, Institute of Clinical Psychology and Psychotherapy, Center of Clinical Epidemiology and Longitudinal Studies, Dresden, Germany; **Kerstin Weber**, PhD, Division of Liaison Psychiatry and Crisis Intervention, Department of Psychiatry and Mental Health, University Hospitals of Geneva (HUG), Geneva, Switzerland; **Karl Wegscheider**, PhD, Department of Biometry and Epidemiology, University Medical Centre Hamburg-Eppendorf, Hamburg, Germany; **Hans-Ulrich Wittchen**, PhD, Institute of Clinical Psychology and Psychotherapy, Center of Clinical Epidemiology and Longitudinal Studies, Dresden, Germany; **Martin Härter**, PhD, Department of Medical Psychology, University Medical Centre Hamburg-Eppendorf, Hamburg, Germany

**Correspondence:** Sylke Andreas, Department of Medical Psychology, Centre for Psychosocial Medicine, University Medical Centre Hamburg-Eppendorf, Martinistrasse 52, Building W26, D-20246 Hamburg, Germany. Email: sandreas@uke.de

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## References

- United Nations – Department of Economic and Social Affairs. *World Population Prospects: The 2010 Revision*. United Nations, 2011.
- Karel MJ, Gatz M, Smyer MA. Aging and mental health in the decade ahead: what psychologists need to know. *Am Psychol* 2012; **67**: 184–98.
- Alonso J, Angermeyer MC, Bernert S, Bruffaerts R, Brugha TS, Bryson H, et al. Prevalence of mental disorders in Europe: results from the European Study of the Epidemiology of Mental Disorders (ESEMeD) project. *Acta Psychiatr Scand Suppl* 2004; **420**: 21–7.
- Snowdon J. Is depression more prevalent in old age? *Aust NZ J Psychiatry* 2001; **35**: 782–7.
- Scott KM, Von Korff M, Alonso J, Angermeyer M, Bromet EJ, Bruffaerts R, et al. Age patterns in the prevalence of DSM-IV depressive/anxiety disorders with and without physical co-morbidity. *Psychol Med* 2008; **38**: 1659–69.
- Kessler RC, Birnbaum H, Bromet E, Hwang I, Sampson N, Shahly V. Age differences in major depression: results from the National Comorbidity Survey Replication (NCS-R). *Psychol Med* 2010; **40**: 225–37.
- Launer LJ, Andersen K, Dewey ME, Letenneur L, Ott A, Amaducci LA, et al. Rates and risk factors for dementia and Alzheimer's disease: results from EURODEM pooled analyses. EURODEM Incidence Research Group and Work Groups. *Neurology* 1999; **52**: 78–84.
- Braam AW, Prince MJ, Beekman AT, Delespaul P, Dewey ME, Geerlings SW, et al. Physical health and depressive symptoms in older Europeans. Results from EURODEP. *Br J Psychiatry* 2005; **187**: 35–42.
- Volkert J, Schulz H, Härter M, Włodarczyk O, Andreas S. The prevalence of mental disorders in older people in Western countries: a meta-analysis. *Ageing Res Rev* 2013; **12**: 339–53.
- Riedel-Heller SG, Busse A, Angermeyer MC. The state of mental health in old-age across the 'old' European Union – a systematic review. *Acta Psychiatr Scand* 2006; **113**: 388–401.
- Reynolds K, Pietrzak RH, El-Gabalawy R, Mackenzie CS, Sareen J. Prevalence of psychiatric disorders in U.S. older adults: findings from a nationally representative survey. *World Psychiatry* 2015; **14**: 74–81.
- World Health Organization. *Composite International Diagnostic Interview – Version 1.1*. WHO, 1993.
- Leiknes KA, Finset A, Moum T, Sandanger I. Current somatoform disorders in Norway: prevalence, risk factors and comorbidity with anxiety, depression and musculoskeletal disorders. *Soc Psychiatry Psychiatr Epidemiol* 2007; **42**: 698–710.
- Yang Y. Is old age depressing? Growth trajectories and cohort variations in late-life depression. *J Health Soc Behav* 2007; **48**: 16–32.
- Villamil E, Huppert FA, Melzer D. Low prevalence of depression and anxiety is linked to statutory retirement ages rather than personal work exit: a national survey. *Psychol Med* 2006; **36**: 999–1009.
- Knäuper B, Wittchen HU. Diagnosing major depression in the elderly: evidence for response bias in standardized diagnostic interviews? *J Psychiatr Res* 1994; **28**: 147–64.
- O'Connor DW, Parslow RA. Different responses to K-10 and CIDI suggest that complex structured psychiatric interviews underestimate rates of mental disorder in old people. *Psychol Med* 2009; **39**: 1527–31.
- Bryant C. Anxiety and depression in old age: challenges in recognition and diagnosis. *Int Psychogeriatr* 2010; **22**: 511–3.
- American Psychiatric Association. *Diagnostic and Statistical Manual (4 edn, revised) (DSM-IV-TR)*. APA, 2000.
- Andreas S, Harter M, Volkert J, Hausberg M, Sehner S, Wegscheider K, et al. The MentDis\_ICF65+ study protocol: prevalence, 1-year incidence and symptom severity of mental disorders in the elderly and their relationship to impairment, functioning (ICF) and service utilisation. *BMC Psychiatry* 2013; **13**: 62.
- Folstein MF, Folstein SE, McHugh PR. "Mini-mental state". A practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res* 1975; **12**: 189–98.
- Kviz FJ. Toward a standard definition of response rate. *Public Opin Q* 1977; **41**: 265–7.
- Keeter S, Kennedy C, Dimock M, Best J, Craighill P. Gauging the impact of growing nonresponse on estimates from a national RDD telephone survey. *Public Opin Q* 2006; **70**: 759–79.
- Goodman LA, Kruskal WH. Measures of association for cross-classification, IV: simplification and asymptotic variances. *J Am Stat Assoc* 1972; **67**: 415–21.
- Wittchen HU, Strehle J, Gerschler A, Volkert J, Dehoust MC, Sehner S, et al. Measuring symptoms and diagnosing mental disorders in the elderly community: the test-retest reliability of the CIDI65+. *Int J Methods Psychiatr Res* 2014; **24**: 116–29.
- Wittchen H-U. *M-CIDI-12M. Münchener Composite International Diagnostic Interview. Studienversion (Version T2)*. Max-Planck-Institut für Psychiatrie, 1998.
- Byers AL, Yaffe K, Covinsky KE, Friedman MB, Bruce ML. High occurrence of mood and anxiety disorders among older adults: the National Comorbidity Survey Replication. *Arch Gen Psychiatry* 2010; **67**: 489–96.
- Kessler RC, Birnbaum HG, Shahly V, Bromet E, Hwang I, McLaughlin KA, et al. Age differences in the prevalence and co-morbidity of DSM-IV major depressive episodes: results from the WHO World Mental Health Survey Initiative. *Depress Anxiety* 2010; **27**: 351–64.
- Copeland JR, Beekman AT, Braam AW, Dewey ME, Delespaul P, Fuhrer R, et al. Depression among older people in Europe: the EURODEP studies. *World Psychiatry* 2004; **3**: 45–9.
- O'Connor DW. Do older Australians truly have low rates of anxiety and depression? A critique of the 1997 National Survey of Mental Health and Wellbeing. *Aust NZ J Psychiatry* 2006; **40**: 623–31.
- Lahelma E, Laaksonen M, Martikainen P, Rahkonen O, Sarlio-Lahteenkorva S. Multiple measures of socioeconomic circumstances and common mental disorders. *Soc Sci Med* 2006; **63**: 1383–99.
- Alonso J, Angermeyer MC, Bernert S, Bruffaerts R, Brugha TS, Bryson H, et al. 12-month comorbidity patterns and associated factors in Europe: results

- from the European Study of the Epidemiology of Mental Disorders (ESEMeD) project. *Acta Psychiatr Scand Suppl* 2004; **420**: 28–37.
- 33 de Girolamo G, Polidori G, Morosini P, Scarpino V, Reda V, Serra G, et al. Prevalence of common mental disorders in Italy: results from the European Study of the Epidemiology of Mental Disorders (ESEMeD). *Soc Psychiatry Psychiatr Epidemiol* 2006; **41**: 853–61.
- 34 Eaton WW, Kramer M, Anthony JC, Dryman A, Shapiro S, Locke BZ. The incidence of specific DIS/DSM-III mental disorders: data from the NIMH Epidemiologic Catchment Area Program. *Acta Psychiatr Scand* 1989; **79**: 163–78.
- 35 de Graaf R, Bijl RV, Smit F, Ravelli A, Vollebergh WA. Psychiatric and sociodemographic predictors of attrition in a longitudinal study: the Netherlands Mental Health Survey and Incidence Study (NEMESIS). *Am J Epidemiol* 2000; **152**: 1039–47.
- 36 Kessler RC, Chiu WT, Demler O, Merikangas KR, Walters EE. Prevalence, severity, and comorbidity of 12-month DSM-IV disorders in the National Comorbidity Survey Replication. *Arch Gen Psychiatry* 2005; **62**: 617–27.
- 37 Groves RM. Nonresponse rates and nonresponse bias in household surveys. *Public Opin Q* 2006; **70**: 646–75.
- 38 Curtin R, Presser S, Singer E. The effects of response rate changes on the index of consumer sentiment. *Public Opin Q* 2000; **64**: 413–28.
- 39 Keeter S, Miller C, Kohut A, Groves RM, Presser S. Consequences of reducing nonresponse in a national telephone survey. *Public Opin Q* 2000; **64**: 125–48.

poems  
by  
doctors

## 'In The Spirit of Rivers'

Jo McFarlane

When I was 25,  
a CPN referred me for psychotherapy  
to cure my personality.

I was assessed and found wanting  
but my need was so great, and my resilience weak,  
so how could anybody sensibly take a chance with me?

The litany of traumas I disclosed,  
like an automaton spitting toxic pellets,  
didn't penetrate its target audience.

Did the therapist think I was lying, perhaps?  
Or was she thrown off guard  
by the detachment in my voice?

The conclusion was predictable,  
if, at the time, incomprehensible to me.  
(The more help one needs, the less one gets).

Disproportionate equations abound in psychiatry:  
If you ask for help, you mustn't need it;  
but refuse it and you're certified psychotic

so they'll throw away the key.  
Side effects of medication are interpreted as symptoms;  
blind compliance is a sign you're in recovery.

Oh would that my brain could shut off so easily!  
I was sent away to write a sonnet  
*Thank you Doctor for 'saving the poet!'*

Naively, at the age of 36, I thought I'd earned the right  
to ditch my load, so cap in hand (with money for them)  
I approached the Institute of Humorous Relations.

My life experience seemed alien and threatening  
to the middle class arbiter of my fate.  
On concluding the assessment,

she paused for reflection, then –  
as though weighing up a bag of cherries in her hand –  
had the cheek to say 'Let's not rock the boat'.

Didn't she give a damn  
about the massive hole in the bottom  
sucking all the water in!

Selected by Femi Oyeboode. From *Stigma & Stones: Living with a Diagnosis of BPD*, poems by Sally Fox & Jo McFarlane.  
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Through their collection *Stigma & Stones*, writers/performers/partners Sally Fox and Jo McFarlane seek to promote understanding, improve treatment and reduce the stigma of living with a diagnosis of BPD.

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