The Size and Burden of Mental disorders

– European Perspectives –

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Unresolved Questions

How frequent are mental disorders?
How many suffer each year from major depression, panic disorder, alcohol and other substance use disorders or dementia?
What is the risk to suffer a mental disorder in your lifetime?
Which factors influence the onset and course?
How many are recognized and treated?
Are prevalence rates of mental disorders increasing?
What is the overall burden and costs associated with mental disorders?

Questions for clinical epidemiology
Research and reference populations

Total general population

Epidemiology is able to provide a more complete picture of patterns of morbidity and supplement findings from clinical research.

Subjects with a diagnosis in lifetime (lifetime prevalence/risk)

High risk subjects (current subsyndromal, partial remission)

Subjects with current disorders but not in treatment (undiagnosed, untreated)

Patients in treatment services (treated prevalence)

Outline

Background
Aims and methods of the ECNP Task Force study
Findings
   - The Frequency of mental disorders
   - The special characteristics of mental disorders
   - The Burden of mental disorders
   - The Cost of mental and other disorders of the brain
Conclusions: Implications and recommendations
Background: The status

We do not know the size of the problem in the EU
+ Numerous regional, several national, a few cross-national studies
- different designs/methods, seemingly large variability in findings
- Incomplete coverage in terms of types of mental disorders covered

We do not know the overall burden associated with treated and untreated mental disorders
+ Several regional and national, a few cross-national studies
- Only few detailed data on disability, impairments, treatment
- No EU-wide estimates for single or aggregated disorders (comorbidity burden)

We do not know the costs (direct=treatment costs, indirect=disability costs)
- Very few diagnosis-specific studies, mostly highly selected samples, no cross-national findings

Consequence
- Confusion about rates and epidemiologic measures
- Reduced research utility
- Little public health utility
- Poor basis for EU policies (research, training, education)

Projected Years Lived with Disability (YLD) by selected disorders for the EU (Olesen & Leonardi, 2003)

Limitations:
- Unreliable prevalence estimates
- Grossly incomplete coverage
Why are such data needed?

Providing "state-of-the-art" data to science and research
- true size and scope and patterns of comorbidity of mental disorders/disorders of the brain
- age of onset, course and outcome of mental disorders in the community
- information about vulnerability and risk factors/markers, unbiased of clinical selection bias
- Identification of needs for further research

Supporting public health decisions
- Epidemiological data are the core prerequisite for resource allocation
- degree of met and unmet needs for services and interventions
- Action to improve recognition and treatment

Influencing funding decisions in favor of mental disorders
- To support funding decisions and setting priorities on all levels (national, EU)

Informing society and policy makers
- relevance of mental disorders, priorities for action (legislation, training, education, stigma)

ECNP-Task Force: Aims

- To estimate the size (prevalence) of mental disorders in Europe
- To describe the burden (comorbidity, disability) of mental disorders
- To estimate the direct and indirect cost of mental disorders

Additional tasks
- To identify achievements and deficits in our epidemiologic knowledge
- To establish interdisciplinary links amongst EU-groups (psychiatry, neurology, psychology, neurosurgery, European Brain Council)
- To stimulate collaboration of clinicians, researchers, epidemiologists in the EU (future studies)
Material and methods

- Standardized search for EU-publications (N=212 studies all languages)
- Iterative data collection process (114 country-specific experts)
- Inclusion of unpublished material (additional 19 studies)
- Agreement on definition and conventions (DSM-II-R/IV-diagnoses & criteria, 12-month, etc.)
- Original data for standardized reanalyses (7 EU-countries, n=28.000+, mean, 95% CI)
- Data compilation by country, age, gender and diagnoses for experts review
- Preparation of peer review “state of the art” papers by diagnostic domains
- Circulation to all country- and topic-specific experts (over 246 experts)
- Linkage with Health-Economic panel (collaboration with European Brain Council)
- Reanalyses and statistical modelling of data

The collaborative EBC-ECNP network: Contributing core experts

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Frank Jacobi DE

Steering committee members are underlined
Coverage and Definitions

Mental disorders (DSM-IIIR / DSM-IV)

Affective disorders: Bipolar disorders, major depression, dysthymia
Anxiety disorders: panic disorder, agoraphobia, GAD, social phobia, specific phobia, OCD, PTSD
Dementia
Psychotic disorders (focus on schizophrenia)
Somatoform disorders: hypochondriasis, pain disorders, Somatisation disorder
Substance use disorders: Alcohol abuse and dependence, illegal drug abuse and dependence, nicotine dependence
Eating disorders: anorexia nervosa, bulimia

Other disorders of the brain:
Parkinson's disease, Migraine and other headaches
Stroke, Epilepsy, Brain trauma, Brain tumour, Multiple Sclerosis

Geographical Scope

EU member countries (EU-25) and Iceland, Norway and Switzerland

Population-based EU studies on the epidemiology of mental disorders (after 1990)

<table>
<thead>
<tr>
<th>Country</th>
<th>Study Name, Time of Fieldwork</th>
<th>N (Age)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Belgium (Laghe/Luxembourg)</td>
<td>1996-1999</td>
<td>1244 (18-54)</td>
</tr>
<tr>
<td>2. Belgium (Laghe)</td>
<td>Quality of Life and Health Study, 1990</td>
<td>250 (20-40)</td>
</tr>
<tr>
<td>4. Denmark</td>
<td>2000</td>
<td>2040 (20-79)</td>
</tr>
<tr>
<td>5. Finland</td>
<td>The Health 2000 Study, 2000-2001</td>
<td>6025 (18-75)</td>
</tr>
<tr>
<td>6. Finland</td>
<td>Part of the Finnish Health Care Survey, 1998</td>
<td>5303 (15-75)</td>
</tr>
<tr>
<td>8. Germany, Munich</td>
<td>Early development stages of psychopathology study (ESTIP), 1996-2004</td>
<td>3021 (14-24 at baseline)</td>
</tr>
<tr>
<td>9. Germany, Schleswig Holstein</td>
<td>Transitions in Alcohol Consumption and Smoking (TACOS), 1986-1989</td>
<td>4075 (18-64)</td>
</tr>
<tr>
<td>10. Germany, (nationally representative)</td>
<td>German National Health Interview and Examination Survey (GHS-MHS), 1986-1999</td>
<td>4181 (18-65)</td>
</tr>
<tr>
<td>12. Iceland</td>
<td>1997</td>
<td>775 (16-75)</td>
</tr>
<tr>
<td>13. Iceland</td>
<td>1997-1998</td>
<td>662 (all born 1931)</td>
</tr>
<tr>
<td>14. Italy, Florence region</td>
<td>Sesto Fiorentino study, 2000-2001</td>
<td>2503 (14+)</td>
</tr>
<tr>
<td>15. Italy</td>
<td>1998</td>
<td>3550 (16-60+)</td>
</tr>
<tr>
<td>16. Netherlands (nationally representative)</td>
<td>Netherlands Mental Health Survey and Incidence Study (NEMESIS), 1990</td>
<td>1107 (18-64)</td>
</tr>
<tr>
<td>17. Netherlands, Amsterdam</td>
<td>Longitudinal Aging Study Amsterdam (LASA), 1993/95 and 1995/97</td>
<td>1510 (55+)</td>
</tr>
<tr>
<td>18. Netherlands, South Holland</td>
<td>Zuid Holland Study, 1993-1995</td>
<td>2075 (first wave; age 11-70)</td>
</tr>
<tr>
<td>20. Norway, Oslo &amp; Luthen</td>
<td>Out of study, 2001</td>
<td>1931 (18+)</td>
</tr>
<tr>
<td>21. Sweden, Stockholm</td>
<td>PART-study</td>
<td>1044 (20-64)</td>
</tr>
<tr>
<td>22. Switzerland, Basel</td>
<td>The Zurich Cohort Study, 1979-1999</td>
<td>470 (18-60)</td>
</tr>
<tr>
<td>23. UK (nationally representative)</td>
<td>OPCS UK Household survey, 1993/4; repeat survey in 2000</td>
<td>10108 (18-64) repeat survey: 6886 (16-74)</td>
</tr>
<tr>
<td>25. Belgium, District of France, Germany, Italy, Netherlands, Spain</td>
<td>ESEMeD (European Study of the Epidemiology of Mental Disorders), 2000-2001</td>
<td>16140 (18-64)</td>
</tr>
<tr>
<td>26. Belgium, France, Germany, Netherlands, Spain, UK</td>
<td>DEPRES, 1985 DEPRES 2</td>
<td>1426 (18-64)</td>
</tr>
<tr>
<td>27. Liverpool (UK), Dublin (Ireland), Oslo (Norway), Turku</td>
<td>74653 (screening on cleansing market research survey)</td>
<td>8582 (18-64)</td>
</tr>
</tbody>
</table>
Results: 12-Month EU-prevalence of mental disorders

27% of the adult EU-population has been suffering from at least one mental disorder in the past 12-months

Estimated total number affected: 82.7 million (95% CI: 78.5-87.1)

Conservative estimate - childhood disorders and elderly not covered
E.g. 5.9 to 9.4% of the elderly (65+) were diagnosed with dementia (Berr et al 2005)

Diagnoses included: alcohol dependence, illicit substance dependence, psychotic disorders, major depression, bipolar disorders, panic disorder, agoraphobia, social phobia, generalized anxiety disorder (GAD), specific phobias, obsessive-compulsive disorder (OCD), somatoform disorders, eating disorders, migraine/headache

Countries included: all EU countries plus Iceland, Norway, Switzerland (total population: 301.7 Mio.)

Data base: 27 studies and a total of 156,000 subjects in the age range of 18-65

12-month prevalence (%), 95% CI) and estimated number of subjects affected in the EU

- Major depression: 18.9 (12.6-21.1)
- Specific phobias: 18.4 (17.2-19.0)
- OCD: 6.6 (5.4 - 5.2)
- Alcohol dependence: 7.1 (5.8 - 8.6)
- Panic disorder: 5.2 (4.3 - 5.3)
- Social phobia: 5.0 (4.3 - 5.3)
- Agoraphobia: 3.9 (3.3 - 4.7)
- Bipolar disorder: 2.4 (1.7 - 2.4)
- Psychotic disorders: 3.6 (2.8 - 3.3)
- Ill. subst. dep.: 2.0 (1.4 - 2.1)
- Eating disorders: 1.1 (0.9 - 1.7)

Note: Numbers add up to more than 27% and 82 million subjects, because subjects can have more than one disorder (comorbidity)
12-month and lifetime risk of suffering mental disorders up to age of 65

**DSM-IV mental disorders**

- Any mental disorder
- Nicotine dependence
- Drug dependence
- Alcohol dependence
- Psychotic disorders
- Any mood disorder
- Any anxiety disorder
- Eating disorders

**12-month prevalence/lifetime risk**

- **12-month risk**
- **Lifetime risk**

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**ECNP-Task Force Report 2005: Size and burden of Mental Disorders in the EU**

**Is this 12-month prevalence EU estimate “suprisingly” high?**

**Yes** – if you consider that some of the previous epidemiological studies revealed somewhat lower estimates, because of:

- A restricted range of disorders covered
- Narrower time window (e.g. restricted the prevalence period to 2 weeks)
- Additional so-called “clinical significance” criteria

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**ECNP-Task Force Report 2005: Size and burden of Mental Disorders in the EU**
Uncorrected for design and method there is indeed considerable variability in 12-month prevalence

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Median</th>
<th>Included studies from Table 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol dependence</td>
<td>2.4</td>
<td>5, 24, 19, 17, 20, 22, 23, 28</td>
</tr>
<tr>
<td>Illicit substance dependence</td>
<td>0.5</td>
<td>19, 15, 19, 23, 14</td>
</tr>
<tr>
<td>Psychotic disorders</td>
<td>0.8</td>
<td>19, 20, 15, 17, 23</td>
</tr>
<tr>
<td>Major depression</td>
<td>0.9</td>
<td>19, 2, 3, 5, 6, 20, 24, 11, 15, 17, 22, 23, 28</td>
</tr>
<tr>
<td>Bipolar disorders</td>
<td>0.9</td>
<td>19, 26, 11, 17</td>
</tr>
<tr>
<td>Any panic disorder</td>
<td>1.6</td>
<td>19, 2, 3, 5, 6, 11, 15, 17, 20, 24, 23</td>
</tr>
<tr>
<td>Agoraphobia</td>
<td>1.3</td>
<td>19, 5, 28, 24, 11, 17, 29</td>
</tr>
<tr>
<td>Social phobia</td>
<td>1.7</td>
<td>19, 1, 28, 5, 20, 24, 11, 15, 17, 29, 23</td>
</tr>
<tr>
<td>Any specific phobia</td>
<td>2.3</td>
<td>19, 1, 3, 20, 24, 11, 15, 17, 20</td>
</tr>
<tr>
<td>OCD</td>
<td>6.4</td>
<td>19, 20, 11, 17, 28, 29, 24, 23, 2</td>
</tr>
<tr>
<td>Any somatoform disorder</td>
<td>6.7</td>
<td>19, 11, 15, 17, 28, 24, 23</td>
</tr>
<tr>
<td>Any eating disorder</td>
<td>6.4</td>
<td>19, 11, 15, 28, 29, 8, 28</td>
</tr>
</tbody>
</table>

*: 12-month prevalence by study  | : weighted Median across studies

Is this 12-month prevalence EU estimate “suprisingly” high?

Yes – if you consider that some of the previous epidemiological studies revealed somewhat lower estimates, because of:
- A restricted range of disorders covered
- Narrower time window (e.g. restricted the prevalence period to 2 weeks)
- Additional so-called “clinical significance” criteria

Not – however if you account in such studies for such methodological differences

Not - in comparison to somatic disorders: In this age range, over 70% of the general population has at least one somatic disorder (“Why should the brain less frequently affected?”)

Not – when considering that we covered only a few of all disorders of the brain

ECNP-Task Force Report 2005: Size and burden of Mental Disorders in the EU
The “true” size of the problem is even larger!

- Incomplete coverage of disorders in epidemiology
- The spectrum of brain disorders

Including dementias, selected neurological and neurosurgical conditions each year an estimated 33% of the adult population in the EU suffer from disorders of the brain!

Markedly increased risk by age for:
- Having any brain disorder
- Having severe brain disorder
- Having more than one condition (comorbidity)

Neurological/neurosurgical dis.:
- Dementia, Parkinsons disease, migraine/headache, brain tumours, epilepsy, multiple sclerosis, stroke, traumatic brain injuries

Lifetime risk for suffering any disorder of the brain can not be estimated (lack of studies!) – but will be at least 51%!
Special features of mental disorders

- Women are affected more frequently
- Onset is predominantly before age of 20
- High comorbidity rates, increasing by age
- Low rates of treatment
- Almost invariably marked social impairment and disability

Females suffer more frequently from mental disorders and have higher comorbidity rates (12-month prevalence)

Gender ratio (M:F) 27.7:33.2
Comorbidity:
Male: 35.3%
Female: 54.3%
Similar high prevalence across age groups – onset of first disorder is predominantly before age 18

Disorders with early onset (<18)
- Illegal drug use disorders, nicotine dependence
- Social and specific phobias, (panic attacks in females), OCD
- Anorexia nervosa, undifferentiated somatisation

Disorders with later onsets (>18)
- Bipolar disorders, major depression, dysthymia
- Psychotic disorders
- Panic disorder, agoraphobia, GAD, PTSD
- Alcohol dependence, legal drug dependence

Late onset disorders
- Dementia
- Neurological disorders

Comorbidity is a fundamental characteristic of mental disorders (and the way they are defined in current classification systems) and increases by age

OR Anxiety with:
- Suds: 2.6
- Depression: 6.9
- Somatoform: 3.4

OR Depression:
- Anxiety: 7.0
- Suds: 2.7
- Somatoform: 3.5

OR Substance with:
- Anxiety: 2.5
- Depression: 2.7
- Somatoform: 1.9

OR Somatoform:
- Anxiety: 3.5
- Suds: 2.1
- Depression: 3.5
.. And might have important etiological implications, for example

**Symptom progression models: Sequential comorbidity in anxiety disorders**

**Onset of cascade**

- Precursors: Behavioral inhibition/separation anxiety, (trauma)
- Specific and social phobia
- Increased neurobiological, cognitive, behavioral sensitization
- Increased impairment/disability

**Symptoms**

- **panic attacks, agoraphobia, panic disorder**
- **GAD**
- **Secondary depression**
- **Suicidality**
- **Substance use disorders**

**Cumulative risk of cases with primary anxiety disorder by age of onset of secondary depressive disorder**

**Cumulative % of depression**

- 0
- 10
- 20
- 30
- 40
- 50
- 60

**By age of onset**

- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24
- 25
- 26
- 27
- 28
- 29

**EDSP, 2001**
Cumulative risk of cases with primary anxiety disorder by age of onset of secondary depressive disorder

Cumulative % of depression by age of onset

- PD
- GAD
- AG
- SPP
- SoP
- no anxiety dx

Cumulative risk of depression by age of onset.

EDSP, 2001

Anxiety disorders are also associated with increased somatic morbidity: Comorbidity with selected physical conditions

<table>
<thead>
<tr>
<th>Physical Conditions</th>
<th>No Anxiety Disorder n (%)</th>
<th>Anxiety Disorder n (%)</th>
<th>AOR (95% CI)</th>
<th>significant reduction of health related QoL (SF-36)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac diseases</td>
<td>88 (2.3)</td>
<td>18 (3.7)</td>
<td>1.79 (0.85-3.79)</td>
<td>X</td>
</tr>
<tr>
<td>Respiratory diseases</td>
<td>191 (5.4)</td>
<td>43 (10.5)</td>
<td>1.71 (1.13-2.57)**</td>
<td>X</td>
</tr>
<tr>
<td>Gastrointestinal diseases</td>
<td>113 (2.9)</td>
<td>29 (7.4)</td>
<td>2.10 (1.24-3.54)**</td>
<td>X</td>
</tr>
<tr>
<td>Arthritic conditions</td>
<td>956 (24.6)</td>
<td>138 (32.0)</td>
<td>1.66 (1.24-2.21)**</td>
<td>X</td>
</tr>
<tr>
<td>Metabolic syndromes</td>
<td>279 (7.6)</td>
<td>38 (9.9)</td>
<td>1.56 (1.02-2.37)*</td>
<td>X</td>
</tr>
<tr>
<td>Allergic conditions</td>
<td>461 (12.3)</td>
<td>75 (18.1)</td>
<td>1.39 (1.00-1.95)*</td>
<td>X</td>
</tr>
<tr>
<td>Migraine headaches</td>
<td>271 (6.2)</td>
<td>72 (17.0)</td>
<td>2.12 (1.51-2.98)**</td>
<td>X</td>
</tr>
<tr>
<td>Thyroid diseases</td>
<td>340 (8.4)</td>
<td>68 (15.9)</td>
<td>1.59 (1.13-2.24)**</td>
<td>X</td>
</tr>
<tr>
<td>Any past month physical condition</td>
<td>2295 (59.6)</td>
<td>315 (74.2)</td>
<td>1.70 (1.27-2.27)**</td>
<td>X</td>
</tr>
</tbody>
</table>

AOR: Odds Ratio adjusted for sociodemographic variables and comorbid depression and SUD

Sareen et al. (subm.)
Treatment rates are extremely low in almost all mental disorders – increase by degree of comorbidity

By type of disorder

By comorbidity

Cumulative lifetime probability of treatment contact in anxiety disorders (Wang et al., 2005)
Disability burden of brain disorders

- By diagnostic definition all mental disorders imply social role impairment and suffering
- A crude indicator applied across the majority of studies is number of disability (sick leave) days

Effects of illness-related life course changes with adverse financial implications:
- Subsequent unemployment
- Work in under-paid jobs
- Educational under-achievement
- Teen childbearing, marital timing and instability
- Earnings
  (School failure, teen childbearing, marital instability are core components of welfare dependency)

![Graph: Proportion of Subjects with Days Lost, Days Impaired (or Both) Due to Mental Illness in Pure and Comorbid 12-month GAD](image)


ECNP Task Force Report 2005: Size and burden of Mental Disorders in the EU
As an effect of early onset, high prevalence, persistence, associated disability and low treatment rates, the disability is overall tremendously high!

Disability days due to any somatic disorder: 53%

Disability days due to mental disorder: 44%

Other: 3%

Of all disability days in the past 12 months 44% can be attributed to mental disorders.

The cost of brain disorders in the EU
**Cost and burden estimations**

**Direct costs** = direct medical care expenditures for treatment  
- Direct medical costs: e.g. hospital care, ambulatory care, drugs, medical procedures  
- Direct non-medical: e.g. social services, informal care, transportation

**Indirect costs** = value of goods and services indirectly related to disorder (disability days, reduced productivity, mortality costs)

**Other related costs** = non-health care costs related to treatment/productivity (crime, welfare, administrative costs etc)

Algorithm: \( NPQV = \text{cost} \times N \times P \times Q \times V \)

<table>
<thead>
<tr>
<th>Cost data available for model</th>
<th>Healthcare</th>
<th>Non-medical</th>
<th>Indirect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addiction</td>
<td>X X X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol dependence</td>
<td>X X</td>
<td></td>
<td></td>
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<tr>
<td>Affective disorders</td>
<td></td>
<td></td>
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<tr>
<td>Depression</td>
<td>X X</td>
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<td></td>
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<tr>
<td>Bipolar</td>
<td>X X</td>
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<td></td>
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<tr>
<td>Anxiety disorders</td>
<td>X X</td>
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<td></td>
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<tr>
<td>Panic disorder</td>
<td>X X</td>
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<tr>
<td>GAD</td>
<td>X X</td>
<td></td>
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<tr>
<td>Specific phobia</td>
<td>X X</td>
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<tr>
<td>OCD</td>
<td>X X</td>
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<tr>
<td>Aphagophobia</td>
<td>X X</td>
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<tr>
<td>Social phobia</td>
<td>X X</td>
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<tr>
<td>Brain tumour</td>
<td>X X</td>
<td></td>
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<tr>
<td>Dementia</td>
<td>X X</td>
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<tr>
<td>Epilepsy</td>
<td>X X</td>
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<tr>
<td>Migrains and other headaches</td>
<td>X X</td>
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<tr>
<td>Multiple sclerosis</td>
<td>X X</td>
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<tr>
<td>Parkinson's disease</td>
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<td>Psychotic disorders</td>
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<tr>
<td>Stroke</td>
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<tr>
<td>Trauma</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Only including reduction in workdays due to sick-leave  
* Not including data on non-migranious headaches

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**The total estimated cost of brain disorders in Europe by disease area (€ PPP billion) Andlin-Sobaocki et al 2005, modified**

<table>
<thead>
<tr>
<th>All brain disorders:</th>
<th>386.176 billion €</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health care costs:</td>
<td>135.446</td>
</tr>
<tr>
<td>Direct non-medical</td>
<td>72.201</td>
</tr>
<tr>
<td>Indirect costs:</td>
<td>178.529</td>
</tr>
</tbody>
</table>

**Mental disorders**

- Health care costs: 110.061  
- Direct non-medical: 51.873  
- Indirect costs: 132.985

**Neurological disorders**

- Health care costs: 21.286  
- Direct non-medical: 20.259  
- Indirect costs: 42.389

**Neurosurgical disorders**

- Health care costs: 4.099  
- Direct non-medical: 269  
- Indirect costs: 3.155
**Distribution of cost in brain disorders by resource item – low direct costs!**

- Premature death: 7%
- Early retirement: 7%
- Sick leave: 32%
- Other direct costs: 2%
- Informal care: 3%
- Social services: 13%
- Outpatient care: 12%
- Drugs: 3%
- Hospitalization: 20%

Pharmaceutical costs account for only 3% (comparison diabetes 13%, CHD: 15%)
Outpatient care for only 12% of the total costs

**European Brain Council: Cost of Brain disorders in the EU (Andlin-Sobocki, Olesen & Wittchen, 2005)**

**Despite past limitations and vast variation with regard to the relative contribution of cost components – good concordance across studies**

**Annual cost estimates for anxiety**
- Rice & Miller (1996): 46 billion $
- DuPont et al. (1996): 47 billion $
- Greenberg et al. (1999): 42 billion $
  (in 1998 costs: 63.1 billion $)
- Andlin-Sobocki et al. (2005): 41 billion €

**Annual cost estimates for depression**
- Rice & Miller (1996): 31 billion $
- DuPont et al. (1996): 44 billion $
- Greenberg et al. (1999): 53 billion $
- Andlin-Sobocki et al. (2005): 105 billion €
  (including bipolar disorders)

The total health care and societal costs of anxiety disorders were under-estimated in the past
## Summary

Total cost of brain disorders amounts to **386 billion Euro in 2004**

The largest cost component is indirect costs: **179 billion Euro (47%)**

Direct healthcare cost is **135 billion Euro (35%)**

Direct non-medical cost is **72 billion Euro (18%)**

### Examples for costs not accounted for in our study

- Cost of nicotine dependence
  - 15 billion Euro in Europe
- Cost of non-migraine headaches
  - 46 billion Euro in Europe
- Cost of crime in addiction
  - 53 billion Euro in Europe
- Cost of intangibles
  - Suggested additional 50% of costs (e.g. multiple sclerosis)
- Cost of less prevalent brain disorders
  - Suggested cost of 50-100 billion Euro in Europe

**True economic burden of brain disorders in Europe: 500 – 700 billion Euro**

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## Conclusion

- The majority of the population will suffer a mental disorder at least once in their lifetime
- **27%** are affected in any given year
- Early onset, high degree of current and lifetime comorbidity
- Large degree of unmet needs of patients with mental disorders
  - Low treatment rates unless complex comorbid complications occur
  - Considerably delayed treatment
  - Particularly low treatment rates in adolescents and young adults
- Extremely high indirect costs and relatively low direct costs; need for action on all levels (policy, research, public helath)

**Limitations:** incomplete data base with regard to prevalence/incidence in the elderly and in children, incomplete costs estimates, incomplete data for many countries, lack of data on sequential comorbidity, lack of data concerning burden

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European Brain Council: Cost of brain disorders in the EU (Andlin-Sobocki, Olesen & Wittchen, 2005)

ECNP-Task Force Report 2005: Size and burden of Mental Disorders in the EU
The underestimated cost and burden of mental disorders

burden as a function of...

prevalence

"active" time within an affected individual

cost per case

Avoidable burden?

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