

Functional disability of mental disorders and comparison with physical disorders: a study among the general population of six European countries

Buist-Bouwman MA, De Graaf R, Vollebergh WAM, Alonso J, Bruffaerts R, Ormel J, and the ESEMeD/MHEDEA 2000 investigators. Functional disability of mental disorders and comparison with physical disorders: a study among the general population of six European countries.

Objective: To examine the association of mental and physical disorders with multiple domains of functioning and compare the two. **Method:** Data were derived from the European Study of the Epidemiology of Mental Disorders, a general population study in which adults ($n > 21\ 000$) from Belgium, France, Germany, Italy, the Netherlands and Spain were assessed using the Composite International Diagnostic Interview (mental disorders), World Health Organization Disability Assessment Schedule second edition (functional disability) and self-report (physical disorders). Means in different groups were compared using the Mann–Whitney *U*-test and multiple regression analyses.

Results: Mental disorders were related to disability in all domains of functioning: anxiety disorders the most, followed by mood disorders, and finally alcohol disorders. The findings suggest that mental disorders are associated with similar or higher levels of disability in all domains, except getting around, than arthritis and heart disease.

Conclusion: Mental disorders are associated with a similar or higher negative impact on daily functioning than arthritis and heart disease.

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Key words: mood disorders; anxiety disorders; substance-related disorders; arthritis; heart diseases

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Significant outcomes

- Mental disorders were related to functional disability on all domains measured by the WHO-DAS.
- Anxiety disorders were related to most disability followed by mood disorders and alcohol related disorders were related to the least functional disability.
- Mental disorders were associated with similar or more disability than arthritis and heart disease on all domains of functioning, except getting around.

Limitations

- Cross-sectional design.
- Self-report measures.
- Difference in assessment between mental and physical disorders.

Introduction

Disability refers to limitations in performing socially defined roles and tasks expected within a social-cultural and physical environment such as family, work, recreation, and self-care (1). Psychiatric epidemiological studies have documented significant disability in respondents with mental disorder in the community (2–4). Few studies, however, have systematically examined the association of different mental disorders with multiple domains of functioning or contrasted this with the contribution of physical disorders. With regard to multiple domains, Ormel et al. (4) found a relationship between mental disorders and disability that was consistent across different domains of functioning, namely occupational role functioning, physical functioning, and disability days. With regard to the contrast between disability associated with mental disorders and physical disorders, Wells et al. (5) found that functioning associated with depressive symptoms was worse than or comparable with that uniquely associated with several physical disorders. In a community sample among both adults (2) and middle-aged and older persons (6) it was found that respondents with one or more mental disorder functioned worse or comparable with respondents with one or more physical disorder.

The present study seeks to expand the above-mentioned findings by using a cross-national sample, multiple mental and multiple physical disorders and a multi-dimensional disability assessment scale which is consistent with the revision of the International Classification of Impairment, Disabilities and Handicaps (ICIDH-2) recently introduced by the World Health Organization (WHO) (7). The ICIDH-2 organizes the consequences of disease into three dimensions: i) body functions and structure (symptoms and impairment), ii) activities, and iii) participation (8). The World Health Organization Disability Assessment Scale second edition (WHO-DAS-II) is a new disability instrument conceptually linked to the ICIDH-2. It addresses the need for a standardized cross-cultural measurement of disability across both mental and physical disorders and was incorporated in the European Study of the Epidemiology of Mental Disorders/Mental Health Disability: a European Assessment in the year 2000 (ESEMeD/MHEDEA 2000), here after referred to as ESEMeD. The study is part of the WHO World Mental Health (WMH) Survey Initiative and has a cross-sectional design carried out among 21 425 adults from Belgium, France, Germany, Italy, the Netherlands and Spain (9).

Aims of the study

The aims of the current study were to refine knowledge on i) the disability profiles of different mental disorders and ii) to contrast these profiles with those found for arthritis and heart disease.

Material and methods

Sampling procedure

European Study of the Epidemiology of Mental Disorders is a cross-sectional face-to-face household interview survey based on probability samples representative of the adult population of six European countries. The target population was individuals aged 18 years or older residing in private households. Individuals living in institutions, as well as those not able to understand the language in which they were assessed, were not eligible for the study. A stratified multi-stage random sample without replacement was drawn in each country. Replacement was prohibited to ensure that every individual had a known probability of selection. As we approached the end of the data collection period, we tried to minimize non-response rates in each country by identifying individuals or households that had been either difficult to reach or were committed refusals. A random selection of individuals within these groups was re-approached to attempt a refusal conversion.

A total number of 21 425 individuals were interviewed between January 2001 and July 2003. The response rate was calculated for each country taking into account details of the random selection of hard-to-reach individuals that were re-approached at the end of the fieldwork. The overall response rate of the study was 61.2% but ranged from 45.9% in France to 78.6% in Spain.

The sample data have been weighted with the purpose to produce estimates of statistics that would have been obtained if the entire sampling-frame had been surveyed and participated (i.e. all individuals aged 18 years and older living in the six countries and meeting the inclusion criteria) Another ESEMeD paper elaborates in more detail about the sampling, methods and weighting procedure of ESEMeD (10).

The survey interview

The Computer Assisted Personal Interview (CAPI) used in ESEMeD is structured in different sections. For the purpose of this study, the following sections are important: screening section,

Composite International Diagnostic Interview (CIDI), physical disorders and the WHO-DAS-II.

Screening section

The screening section (a Lifetime Psychiatric Screening Instrument), located at the beginning of the interview, was administered to all respondents. All participants responding positively to any of the screening questions had to complete the CIDI section of the specific disorder prompted by that question.

Depending on the responses provided in the mood and anxiety sections, two interview paths were chosen. Individuals who could be considered as 'high risk individuals' (based on their anxiety or depression symptoms) and a random subsample (25%) of the respondents without symptoms (low risk individuals) followed the long path of the interview. The remaining 75% of respondents without symptoms followed the short path of the interview.

In addition, individuals were classified as being 'low impaired' if their answers to questions 2–8 of the SF-12 indicated best health state and as 'impaired' otherwise.

Composite International Diagnostic Interview

For ESEMeD, a revised and further enhanced version of the CIDI, called WMH-CIDI, was developed and adapted by the Coordinating Committee of the WHO-WMH 2000 Initiative (11). The WMH-CIDI was first produced in English and underwent a rigorous process of adaptation in order to obtain conceptually and cross-culturally comparable versions in each of the target countries and languages. This process included forward and backward translations, a review by a panel of experts, pretesting using cognitive interview and debriefing techniques and the intervention of focus groups. The CIDI is a comprehensive, fully structured diagnostic interview for the assessment of mental disorders. For the purpose of this paper, 12-month diagnoses according to the Diagnostic and Statistical Manual for Mental Disorders (DSM-IV) for mood disorders (depression and dysthymia), anxiety disorders [panic disorder, generalized anxiety disorder (GAD), agoraphobia, social phobia, specific phobia], and alcohol use disorders (alcohol abuse and alcohol dependence) were used.

Physical disorders

The ESEMeD included a checklist of 19 physical disorders that was administered to the respondents

that followed the long path of the interview. For the purpose of this study, only respondents who also answered the WHO-DAS-II questionnaire were screened for physical disorders. These respondents were asked whether they experienced each of these disorders in the 12 months prior to the interview. Two common physical disorders were selected to contrast disability associated with mental disorders to disability associated with physical disorders. Arthritis and heart disease were selected for two reasons: first, these disorders are not strongly associated with mental disorders and secondly, record check studies carried out in the USA and Canada have documented acceptable to good concordance between self-report and medical record measures of these two disorders (http://www.cdc.gov/nchs/data/series/sr_02/sr02_120.pdf).

World Health Organization Disability Assessment Schedule

For ESEMeD, a slightly revised version of the WHO-DAS-II scale (12) was administered to a specific subgroup of the respondents: 100% of those who followed the long path of the interview and were classified as being 'impaired' and 10% of the respondents who followed the long path of the interview and were classified as being 'low impaired' according to the SF-12 ($n = 5565$). In the original WHO-DAS-II, all scales range from 0 to 1 with a higher score indicating greater disability in the past 30 days. In the present study, only the six domains that matched the original WHO-DAS-II scales were used and multiplied by 100 for interpretive reasons:

- i) '*Life activities*' (three items, Cronbach's $\alpha = 0.75$), which records days in which the respondent was totally unable to perform daily activities, such as work or had to cut down amount or quality due to physical, mental or alcohol-related disorders.
- ii) '*Understanding and communication*' (five items, Cronbach's $\alpha = 0.68$), which records difficulty concentrating on something for more than 10 min, understanding, remembering and learning new tasks.
- iii) '*Getting around*' (four items, Cronbach's $\alpha = 0.66$) which assesses difficulty standing for long periods, moving around the house and getting out of the house.
- iv) '*Self-care*' (four items, Cronbach's $\alpha = 0.59$) which assesses difficulty in self-care such as washing, getting dressed and feeding.
- v) '*Getting along with people*' (six items, Cronbach's $\alpha = 0.75$), which records problems with

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social activities such as starting and maintaining a conversation, dealing with unknown people and maintaining or forming new friendships.

- vi) ‘Participation in society’ (four items, Cronbach’s $\alpha = 0.60$), which assesses problems in joining community activities such as festivities or religious activities and feelings of embarrassment and unfair treatment experienced by the respondent because of health problems.

In addition to these six subscales, a ‘total-scale’ was calculated which is the average score of the six domains (26 items, Cronbach’s $\alpha = 0.86$).

Statistical analyses

We examined the difference in mean values between subgroups using the Mann–Whitney *U*-test. Because this procedure leads to many different tests, we tested against an α of 0.01. In addition, multiple linear regression analyses were used to clear the effects found in the first analyses from confounding by the demographic characteristics gender, age and educational attainment. In addition, the effect of mental disorders was adjusted for the effects of *all* physical disorders (thus not just arthritis and heart disease), but not for other mental disorders. Likewise, the effect of physical disorders was adjusted for the effects of mental disorders, but not for other physical disorders. Part of what makes a disorder disabling is the frequent co-occurrence with other disorders. Many

disorders frequently co-occur with both mental and physical disorders (13). In the analytic approach used in this paper, controlling for this comorbidity is artificial and does little justice to the way disorders manifest themselves. The unstandardized regression coefficient (*B*) can thus be interpreted as the unique risk which is the adjusted difference in mean between those with the characteristic and those without the characteristic. The standardized regression coefficient (Beta) can be interpreted as the unique contribution, which is a crude indicator of the proportion variance in the outcome (i.e. disability in different domains of functioning) accounted for by the predictor (i.e. mental and physical disorders). Both measures are expressed in standard deviation units, because outcomes used in the multiple linear regression analyses were normalized.

Results

Functional disability associated with type of mental disorder

Table 1 presents mean WHO-DAS-II subscale scores by 12-month mental disorders. The results concerning the main categories, show that all mental disorders are associated with significant functional disability in all domains of functioning. Anxiety disorders are associated with higher (total WHO-DAS-II score, getting around, self-care, and participation) or comparable (life activities, and getting along) levels of disability than respondents with mood disorders. Mood disorders are, in turn,

Table 1. Functional disability by type of 12-month mental disorder

12-Month diagnoses	<i>n</i> †	%*	WHO-DAS-II subscales													
			Life activities*		Understanding*		Getting around*		Self-care*		Getting along*		Participation*		Total*	
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
No DSM diagnosis	4223	91.9	7.1	20.2	0.3	2.8	3.5	13.6	0.7	6.5	0.3	3.1	2.4	8.3	2.3	6.4
Mood disorders	841	4.2	22.7	35.1	4.7	12.9	8.0	20.0	3.0	13.3	3.0	11.8	10.5	17.4	8.7	13.8
Anxiety disorders	815	5.4	23.1	35.7	3.6	11.1	11.0	23.1	3.8	14.0	3.0	11.2	12.0	19.3	9.7	14.9
Alcohol disorders	70	0.5	19.4	35.0	2.7	8.4	4.4	13.1	1.3	5.6	2.2	11.1	8.0	14.3	6.6	10.9
Mood disorders																
Depression	768	3.7	23.4	35.6	4.9	13.1	8.0	20.2	2.9	13.3	3.3	12.3	10.5	17.7	8.9	14.2
Dysthymia	254	1.2	26.6	39.0	6.1	15.0	11.6	23.7	4.6	16.6	5.4	16.7	12.8	18.1	11.2	16.8
Anxiety disorders																
Panic disorders	152	0.9	26.9	36.0	4.8	13.9	8.5	21.4	2.9	11.3	2.6	9.8	14.9	19.8	10.8	14.3
GAD	172	0.8	27.4	37.6	6.2	13.5	10.5	22.4	2.1	8.7	4.8	15.5	13.6	18.6	11.7	14.8
Agoraphobia	59	0.3	35.1	40.0	6.7	13.2	12.4	23.1	6.7	19.6	4.0	10.6	14.3	16.8	13.1	15.2
Social phobia	156	1.0	22.6	35.1	4.5	12.1	7.7	18.1	2.9	11.3	4.8	13.8	15.4	20.2	10.2	14.1
Specific phobia	339	2.7	24.3	37.2	3.3	11.1	13.9	25.8	5.7	17.0	3.4	11.9	12.1	21.2	10.6	16.5
Alcohol disorder																
Alcohol abuse	58	0.4	21.6	36.9	2.5	8.7	4.9	14.0	1.5	6.0	0.7	6.0	7.2	12.3	6.5	10.9
Alcohol dependence	27	0.1	22.6	35.1	6.5	12.8	3.1	8.5	1.8	8.7	8.7	21.3	15.7	21.3	10.5	13.6

Values in bold indicate Mann–Whitney *U*-tests: $P < 0.01$ compared with ‘No DSM diagnosis’ group.

*Weighted, †unweighted.

associated with more disability than alcohol disorders on all domains of functioning. This general trend does not hold for understanding on which respondents with a mood disorder function worse than those with an anxiety disorder.

Within the mood disorders, dysthymia is more disabling than depression on all domains of functioning and within the alcohol disorders, alcohol dependence is more disabling than alcohol abuse on almost all domains of functioning. Different anxiety disorders have differential impacts on different domains of functioning. Overall, agoraphobia appears the most disabling anxiety disorder in total WHO-DAS-II score, and in the domains of life activities, understanding, and self-care. The least disabling anxiety disorder on total WHO-DAS-II score is social phobia. Social phobia is associated with relatively low levels of disability in the domains of life activities and getting around. The other three anxiety disorders, panic disorder, GAD and specific phobia are comparable on total WHO-DAS-II score, but arrive at this total score via different routes. Panic disorder is related to relatively high disability in participation. GAD is related to high disability in getting along and finally, specific phobia is associated with high disability in getting around.

These analyses were repeated for all countries separately. The results are available upon request, but detailed description of them is beyond the scope of this article. In general, little difference between the countries was found in the general pattern of disability, i.e. anxiety disorders were related to most disability followed by mood disorders and alcohol disorders. However, the extent of functional disabilities did differ across countries.

Functional disability associated with two prototypical physical disorder

Table 2 presents mean WHO-DAS-II subscale scores for 12-month arthritis and heart disease

compared with those without any 12-month physical disorders. Both physical disorders are associated with significant disability in all domains of functioning. Heart disease is more disabling in all domains of functioning than arthritis except understanding on which no difference was found.

In general, mental disorders are as disabling as physical disorders on total WHO-DAS-II score, self-care, getting along, and participation. On life activities and understanding respondents with a mental disorder function worse than individuals with a physical disorder while respondents with physical disorders have more difficulty getting around than respondents with a mental disorder. More specific, the most disabling disorder was found to be heart disease, followed by anxiety disorders, mood disorders, arthritis, and alcohol disorders.

The unique risk and contribution of mental and physical disorders

Table 3 presents the unique risk (unstandardized regression coefficient) and the unique contribution (standardized regression coefficients) of mental and physical disorders in relation to disability while controlling for gender, age, and educational attainment. In addition, the effect of mental disorders is adjusted for the effect of *all* physical disorders, not just arthritis and heart disease, but not for other mental disorders. Likewise, the effect of physical disorders is adjusted for the effect of all mental disorders, but not for other physical disorders.

The unique risks presented in Table 3 (entries without parentheses) roughly replicate the bivariate findings in Tables 1 and 2, but seem to point in the direction of higher unique risks associated with mental disorders compared with physical disorders. The unique risk on total WHO-DAS-II score is highest for anxiety disorders, followed by heart disease and mood disorders, arthritis, and alcohol disorders. On four out of six subscales mental disorders were related to higher unique risks than physical disorders. These subscales were life

Table 2. Functional disability by type of 12-month physical disorders

12 Month diagnoses	n†	%*	WHO-DAS-II subscales													
			Life activities*		Understanding*		Getting around*		Self-care*		Getting along*		Participation*		Total*	
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
No chronic condition	1919	50.1	5.3	17.0	0.3	3.1	1.4	8.1	0.3	3.7	0.2	2.7	1.3	5.8	1.4	4.3
Arthritis/rheumatism	1077	10.4	19.0	32.6	1.4	6.7	13.3	25.5	3.6	14.0	1.3	7.3	9.1	16.6	7.8	12.6
Heart disease	352	3.6	20.1	35.2	1.3	7.3	18.9	31.2	6.3	19.8	3.2	10.8	12.5	21.9	10.7	17.3

Values in bold indicate Mann-Whitney U-tests: $P < 0.01$ compared with 'No chronic condition' group.

*Weighted, †unweighted.

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Table 3. Multivariate linear regression analyses of functional disability on 12-month mental disorder controlled for any 12-month physical disorder, age, gender and educational attainment and physical disorders controlled for any 12-month mental disorder, age, gender and educational attainment

	<i>n</i> ‡	%†	WHO-DAS-II subscales						Total ^W
			Life activities†	Understanding†	Getting around†	Self-care†	Getting along†	Participation†	
			B(Beta)	B(Beta)	B(Beta)	B(Beta)	B(Beta)	B(Beta)	B(Beta)
Mental disorders									
Mood disorders	841	4.2	0.65 (0.13)**	1.05 (0.22)**	0.29 (0.06)**	0.31 (0.06)**	0.63 (0.13)**	0.77 (0.16)**	0.80 (0.16)**
Anxiety disorders	815	5.4	0.67 (0.15)**	0.79 (0.18)**	0.50 (0.12)**	0.43 (0.10)**	0.64 (0.15)**	0.95 (0.22)**	0.94 (0.22)**
Alcohol disorder	70	0.5	0.51 (0.04)**	0.56 (0.04)**	0.17 (0.01)	0.13 (0.01)	0.45 (0.03)**	0.61 (0.04)**	0.59 (0.04)**
Physical disorders									
Arthritis/rheumatism	1077	10.4	0.48 (0.15)**	0.16 (0.05)**	0.07 (0.15)**	0.29 (0.09)**	0.14 (0.04)**	0.53 (0.16)**	0.58 (0.18)**
Heart disease	352	3.6	0.43 (0.08)**	0.07 (0.01)	0.82 (0.16)**	0.63 (0.12)**	0.60 (0.11)**	0.79 (0.15)**	0.88 (0.16)**

* $P < 0.01$, ** $P < 0.001$, †weighted, ‡unweighted.

Predictors in this table are dichotomized. Outcomes are normalized (z-scores with zero mean and one variance). Estimates for mental disorders are adjusted for age, gender, educational attainment and presence of any physical disorder whereas estimates for physical disorders are adjusted for age, gender, educational attainment and presence of any mental disorder. Higher scores indicate poorer functioning and thus more disability.

Entries without parentheses are non-standardized regression coefficients and can be interpreted as the adjusted difference in mean between those with the characteristics and those without the characteristic expressed in standard deviation units (outcomes are normalized). Entries within parentheses are standardized coefficients and can be interpreted as crude indicator of the proportion variance in the outcome accounted for by the predictor.

activities, understanding, getting along and participation. Of these scales, getting along and participation bivariate showed same levels of disability. Furthermore, getting around is associated with a higher unique risk among respondents with physical disorders in comparison with mental disorders as was found bivariate. Finally, self-care is associated with similar unique risks among mental and physical disorders which is consistent with bivariate findings.

The unique contribution of mental and physical disorders to the explanation of the variance in functioning are also presented in Table 3 (beta). The unique contribution to the variance in total WHO-DAS-II scores is highest for anxiety followed by and arthritis, heart disease and mood disorders (no difference between these two disorders), and alcohol disorders. Because of the high prevalence of arthritis, this disorder has a substantial contribution to the disability in the population, although it generally has low to moderate unique risks. When comparing mental and physical disorders, we found no difference in unique contributions on the subscales life activities and participation. The unique contribution of mental disorders exceeded that of physical disorders on understanding and getting along whereas the unique contribution of physical disorders exceeded that of mental disorders on getting around and self-care. These results generally replicate the bivariate findings.

Discussion

Key findings

The results of this study can be summarized as follows. First, all mental disorders are related to

functional disability in all domains of functioning. Only exception is alcohol disorders, which is not related to significant more disability on getting around than people without any DSM-IV diagnosis. Secondly, a clear hierarchy in disability was found: anxiety disorders are related to most disability, except for understanding, followed by mood disorders, and finally alcohol disorders. Thirdly, within mood and alcohol disorders a clear hierarchy was found in disability associated with the disorders. Dysthymia is more disabling than depression and alcohol dependence is more disabling than alcohol abuse except for getting around. Fourthly, within anxiety disorders the most disabling disorder depends on the domain of functioning. Fifthly, both bivariate and multivariate findings suggest, for all domains of functioning except getting around, that mental disorders are associated with similar or more disability than arthritis and heart disease.

The first finding supports the notion that mental disorders, by definition, must result in either distress or functional disability. However, alcohol abuse does not impact on all domains of functioning, which is consistent with earlier findings in the Dutch population (2). Three possible explanations for the lack of disability associated with alcohol abuse are i) DSM-IV criteria do not indicate a pathological condition (14, 15), ii) excessive alcohol use (in younger people) is widely tolerated in European societies, and iii) alcohol might be used as self-medication. As disability was assessed using self-report it cannot be excluded that people feel they are in control while using alcohol when in fact they are not. These possibilities need to be addressed in further research. Overall, the first finding suggests that mental disorders have a

considerable impact on personal well-being, ability to perform daily activities, and social relationships. People living in institutions also belong to the general population, but were excluded in ESEMeD. The given estimation of functional disability is, therefore, probably an underestimation of the true disability in the population of individuals with mental disorders.

With regard to disability associated with mood and anxiety disorders, Bijl and Ravelli (2) found in the NEMESIS study that mood disorders were associated with most disability followed by anxiety disorders. Current results are inconsistent with their findings. A likely explanation for the difference in disability between mood and anxiety disorders between the NEMESIS and the ESEMeD study is the difference in controlling for comorbidity. Whereas in the NEMESIS study respondents with a mood disorder experienced more co-morbidity than individuals experiencing an anxiety disorder, this difference was not found in ESEMeD. Thus, a mood disorder is probably more disabling in NEMESIS compared with ESEMeD because people suffering from a mood disorder in the NEMESIS sample experience more comorbidity and comorbid disorders are generally more disabling than pure disorders (13, 16).

The third finding follows the definition with regard to alcohol abuse and dependence, which point to dependence as the more severe of the two. Within mood disorders, it was found that dysthymia was more disabling than depression which is contradictive to the general view. The common view is that dysthymia is a disorder with similar, but longer-lasting and milder symptoms than depression. The contradictive finding might be due to the combination of the 30-day time-frame of the WHO-DAS-II, the 12-month prevalence of mental disorders and the fact that dysthymia is by definition a more chronic condition than major depression. Therefore, the probability that major depression is in remission or improved at the time of assessment is larger than it is for dysthymia. Possible other explanations are: i) dysthymia is really related to more disability and the common view of it being a milder disorder must be changed, ii) dysthymia is related to more comorbidity or iii) depression is very disabling during the active phase of the disorder, but disability quickly disappears when the disorder is in remission (17–19). These possibilities could be addressed in future research using ESEMeD data, but it is beyond the scope of this article.

The difference between the anxiety disorders points toward the conclusion that anxiety disorder consists of a heterogeneous group of disorders and

cannot easily be organized by severity of the specific disorders. Respondents with a panic disorder may try to avoid possible panic attacks by avoiding community activities and therefore be disabled in participation. Generalized anxiety disorder is related to nausea and dizziness which might be overwhelming and thus intervene with the ability to understand and to get along with others. Agoraphobia is associated with difficulty in getting out of the house, which in turn may lead to difficulties in life activities such as work. Respondents with social phobia avoid contact with large crowds which is closely related to getting along with others. Specific phobia has a disability profile that is consistent with the notion that phobias can usually be avoided by staying indoors. Few studies have systematically examined the association of different mental disorders with multiple domains of functioning and until more research is done in this area, these suggestions remain speculative.

The fifth finding that the negative impact of mental disorders on functioning is similar or even stronger than the impact of arthritis and heart disease, both common chronic physical disorders, is consistent with previous literature (16, 20). It is not unlikely that the observed impact of mental disorders underestimates the true amount of disability due to the 30-day time frame of the WHO-DAS-II. Mental disorders are often episodic whereas physical disorders are more chronic. It is likely that some mental disorders have remitted during the past 12 months while physical disorders are closer to the average level of disability at the time of measurement. The difference in nature between mental and physical disorders might have caused an underestimation of the disability associated with mental disorders. Our findings are inconsistent with the findings of Ormel et al. (6) who found that the unique contribution of depressive symptoms exceeded that of physical disorder. The two most likely explanations for this difference are i) that Ormel et al. focused on depressive symptoms rather than depressive disorder and ii) they focused on older individuals. Symptoms are much more common than disorders, especially in the elderly, and therefore higher unique contributions are likely. In ESEMeD symptoms are assessed as well and it would be of great interest to further address this question. However, it is beyond the scope of this article.

Strengths and limitations

The findings should be interpreted in the light of the following strengths and weaknesses. The first major strength of this study is the use of a

multi-dimensional disability assessment scale. In addition, multiple mental and multiple physical disorders have been assessed.

The first limitation is the cross-sectional design. The data show a clear association between mental disorders and functional disability and between physical disorders and functional disability, however the nature of the associations is not clear. Disorders could induce functional disability or vice versa, but other factors which cause both disorders and functional disability may also account for an association, a spurious one. A second limitation is the use of self-report to assess both disorders and functioning. The validity of the interview could be compromised by the possibility that respondents with mental disorders give overtly pessimistic appraisals of their functioning. In addition, self-report might introduce error because of recall bias, misunderstanding of the nature of the disorder, unwillingness to report stigmatizing disorders and knowledge of the diagnosis. The extent to which this effect has taken place in ESEMeD cannot be determined as ESEMeD did not include objective outcome measures. However, an individual is assumed to be an expert on his own symptoms and complaints. Therefore, self-reported disability is a relevant health constructs for respondents, informative for researchers and relevant for professionals.

Finally, a third limitation is the difference in assessment of the mental compared with the physical disorders. The CIDI is especially designed to assess diagnoses according to the DSM-IV whereas physical disorders were assessed using a checklist which relied solely on the respondent's perception and knowledge of the diseases. If and how this difference may have affected our results, we cannot determine.

In conclusion, the current paper has implications both for policy makers and from a treatment perspective. The most important finding in this respect is that mental disorders are related to equal or more disability than physical disorders. Especially important to policy makers is the finding that mental disorders are related to less engagement in life activities such as work than physical disorders. Reduced engagement in work is not only related to costs for employees in lost earning and standard of living, it is also related to costs for employers and to society as a whole. Mental disorders should, therefore, not be ignored when healthcare issues are debated.

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