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Disability and treatment of specific mental and physical disorders across the world: Results from the WHO World Mental Health Surveys

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Abstract

Background—Advocates of expanded mental health treatment assert that mental disorders are as disabling as physical disorders, but little evidence supports this assertion.

Aims—To establish the disability and treatment of specific mental and physical disorders in developing and developed countries.

AUTHOR CONTRIBUTION Professors Ormel and Kessler designed the initial study. All other authors participated in the elaboration of the design of the manuscript and made contributions to the interpretation of the data. The following authors made substantial contributions to the statistical analysis: Ormel, Kessler and Petukhova. All of the authors contributed to part of the content, took part in critical revision of the manuscript, and contributed to the acquisition of the data. All of the authors had access to data from their own country, but only Petukhova and Kessler had access to the consolidated cross-national dataset. Kessler had full access to all the data in the study and had -with Ormel- final responsibility for the decision to submit for publication.

Method—Community epidemiological surveys were administered in 15 countries through the WHO World Mental Health (WMH) Survey Initiative.

Results—Respondents in both developing and developed countries attributed higher disability to mental disorders than to the commonly occurring physical disorders included in the surveys. This pattern held for all disorders and also for treated disorders. Disaggregation showed that the higher disability of mental than physical disorders was limited to disability in social and personal role functioning, whereas disability in productive role functioning was generally comparable for mental and physical disorders.

Conclusion—Despite often higher disability, mental disorders are under-treated compared to physical disorders both in developed and developing countries.

INTRODUCTION

As health care spending continues to rise,¹ resource allocation decisions will need to be based increasingly on information about prevalence, severity, and chronicity of disorders and cost-effectiveness of interventions. This will require concern about specific disorders to be based not only on information about prevalence and mortality, but also on disability.^{2, 3} Despite the fact that many studies in developed countries have estimated the effects of specific disorders on disability,⁴⁻⁶ comparable broad-based studies are rare in developing countries.⁷ The aims of the current report are to determine whether in both developing and developed countries commonly occurring mental disorders are as seriously disabling as commonly occurring physical disorders according to respondent self-reports obtained in the WHO World Mental Health (WMH) Surveys.^{7, 8}

METHODS

Sample

WMH surveys were carried out in six countries classified by the World Bank (World Bank, 2003) as developing (Colombia, Lebanon, Mexico, Peoples' Republic of China, South Africa, Ukraine) and nine as developed (Belgium, France, Germany, Italy, Japan, Netherlands, New Zealand, Spain, and United States of America). (Table 1) The total sample size was 73,441, with individual country samples from 2372 (the Netherlands) to 12,992 (New Zealand). The weighted average response rate was 70.3%, with country-specific response rates from 45.9% (France) to 87.7% (Colombia). All surveys were based on probability household samples representative of regions (in China, Colombia, Japan, and Mexico) or nationally representative (other countries).

All interviews were conducted face-to-face by trained lay interviewers. Each interview had two parts. All respondents completed Part I, which contained assessments of core mental disorders, while all Part I respondents who met criteria for any core mental disorder plus a probability sub-sample of approximately 25% of other Part I respondents were administered Part II. The latter assessed correlates, service use, and disorders of secondary interest. Physical disorders were assessed in Part II. The Part II data were weighted to adjust for over-sampling people with mental disorders and for differential probabilities of selection within households and to match samples to population socio-demographic distributions.

Standardized interviewer-training procedures, WHO translation protocols, and quality control procedures were applied across all WMH countries to ensure comparability. These procedures are described in more detail elsewhere.⁸ Informed consent was obtained in all countries. Procedures for obtaining informed consent and protecting human subjects were approved and monitored for compliance by the Institutional Review Boards of the organizations coordinating the surveys in each country.

Measures

Physical disorders were assessed with a standard chronic disorders checklist⁹ containing ten conditions that include asthma, cancer, cardiovascular (hypertension, other heart disease), diabetes, musculoskeletal (arthritis, chronic back/neck pain), chronic headaches, other chronic pain disorders, and ulcer. Respondents were asked to report whether they had each of the symptom-based conditions (e.g., chronic headaches) in the past 12-months and to say whether a doctor ever told them they had each of the silent conditions (e.g., hypertension) and, if so, whether they still had them in the past 12 months.

Checklists of this sort yield more complete and accurate reports about chronic conditions than do open-ended questions.¹⁰ Methodological studies have documented moderate-good concordance between checklist reports and medical records in developed countries.¹¹⁻¹⁴ Comparable studies do not exist in developing countries. Self-reports are obviously less accurate than assessments based on biological tests. Caution is consequently needed in interpreting the results of studies, like this one, that use self-report to assess physical conditions. The implications of this imperfect assessment were evaluated by replicating analyses only for treated cases of physical disorders. Treated cases are both more likely to meet full diagnostic criteria and more disabling than self-reported untreated cases. A remaining bias is that the conditions included in the checklist did not include the infectious diseases that are known to be so burdensome in developing countries.

Mental disorders were assessed with Version 3.0 of the World Health Organization (WHO) Composite International Diagnostic Interview (CIDI),⁸ a fully structured lay-administered interview that generates research diagnoses of commonly occurring DSM-IV mental disorders.¹⁵ The ten disorders considered here include anxiety disorders (panic disorder, generalized anxiety disorder, specific phobia, social phobia, post-traumatic stress disorder), mood disorders (major depressive disorder or dysthymia, bipolar disorder), and impulse-control disorders (intermittent explosive disorder, adult attention-deficit/hyperactivity disorder, oppositional-defiant disorder). Only disorders present in the past 12 months are considered. Generally good concordance has been found between CIDI diagnoses of anxiety-mood disorders and blinded clinical assessment.¹⁶ CIDI diagnoses of impulse-control disorders have not been validated.

Treatment was assessed for physical disorders by asking respondents if they saw a medical doctor or other health professional in the past 12 months for the disorder. For mental disorders, disorder-specific treatment was assessed by asking each respondent if “you ever in your life talk(ed) to a medical doctor or other professional about (the disorder)” and, if so, if “you receive (d) professional treatment for (the disorder) at any time in the past 12 months.” Treatment of mental disorders was also assessed in a series of more general questions that asked respondents if they in the past 12 months went to each of a long list of types of professionals (the list varying across countries depending on the types of professionals available in the country) “for problems with your emotions, nerves, or your use of alcohol or drugs.” Self-reports about treatment have been shown in previous methodological studies to have generally good concordance with archival health care utilization records,¹⁷ although this research has been carried out exclusively in developed countries.

Disability was assessed with the Sheehan Disability Scales (SDS), a widely used self-report measure of condition-specific disability that, although heretofore used only in the assessment of mental disorders, can just as well be used to assess disability caused by physical disorders. The SDS consists of four questions, each asking the respondent to rate on a 0-10 scale the extent to which a particular disorder “interfered with” activities in one of four role domains during the month in the past year when the disorder was most severe. The four domains include: (i) “your home management, like cleaning, shopping, and taking care of the (house/apartment)” (home); (ii) “your ability to work” (work); (iii) “your social life” (social); and (iv)

“your ability to form and maintain close relationships with other people” (close relationships). The 0-10 response options were presented in a visual analogue format with labels for the response options of None (0), Mild (1-3), Moderate (4-6), Severe (7-9), and Very Severe (10). A global SDS disability score was also created by assigning each respondent the highest SDS domain score reported across the four domains.

Previous methodological studies have documented good internal consistency reliability across the SDS domains,^{18, 19} a result that we replicated in the WMH data by finding Cronbach’s alpha (a measure of internal consistency reliability) in the range .82-.92 across countries. Importantly, reliability was high both in developed countries (median .86; inter-quartile range .84-.88) and developing countries (median .90; inter-quartile range .88-.90). Previous methodological studies also have documented good discrimination between role functioning of cases and controls based on SDS scores in studies of social phobia,¹⁸ PTSD,²⁰ panic disorder,¹⁹ and substance abuse.²¹ Similar results were found in the WMH surveys based responses to a question asked after the SDS about “How many days out of 365 in the past year were you totally unable to work or carry out your normal activities because of (the illness)?” We examined the strength of SDS scores predicting variation in this relatively objective measure of disability. If the SDS measures genuine disability, we would expect correlations to be significant and comparable for physical and mental disorders. This is, in fact, what we found. In developed countries, the multiple correlations of the four SDS domain scores predicting days out of role were .55 for mental disorders and .50 for physical disorders, while the comparable correlations in less developed countries were .39 for mental disorders and .36 for physical disorders. (Results available upon request)

It is important to recognize that the SDS scales are *condition-specific*. Respondents were asked to rate the interference in role functioning caused by a particular disorder rather than the interference caused by all their health problems. This focused approach to questioning allows SDS scores to be compared across disorders without adjusting for comorbidity. However, this requires respondents with multiple health problems to sort out the relative effects of their various conditions on their overall functioning. An indication that respondents are able to do this comes from controlled treatment studies that have documented significant improvements in SDS measures of condition-specific role functioning with treatment for generalized anxiety disorder,²² panic disorder,²³ and major depression.²⁴

Because they are condition-specific, the SDS scales were administered separately for each of the ten mental disorders considered in this report. In the case of the physical disorders, which were only of secondary interest in the WMH surveys, the SDS scales were administered only for one physical disorder per respondent. This one disorder was selected randomly from among all the physical disorders reported by the respondent as being in existence during the 12 months before interview. This method of selection under-represents comorbid physical disorders, which may be more severe than pure disorders, as a function of number of such disorders. In order to correct this bias, a weight was applied to each case equal to the number of physical conditions reported by the respondent.

Statistical Analysis

A separate observational record was created for each 12-month physical disorder for which SDS ratings were obtained (i.e., one for each respondent who reported one or more disorders) as well as for each 12-month mental disorder reported by each respondent. An otherwise average respondent who met criteria for five 12-month mental disorders and three physical disorders would consequently be represented by six records that had a sum of weights of 8.0: one record for each of the five mental disorders (each with a condition weight of 1.0) and a sixth record for a randomly selected physical disorder (with a condition weight of 3.0).

Standard WMH respondent weights were also applied to each observational record. As noted above in the sub-section on the sample, these weights adjusted for differential sampling of respondents in the Part I sample as a function of household size and into the Part II sample as a function of whether or not core disorders were reported in Part I. These weighted records, which are representative of the conditions in the populations, were pooled across samples for comparative analysis. Domain-specific and global SDS means, proportions rated severe or very severe (henceforth referred to as severe), and the standard errors of these estimates were then calculated separately for each condition in each country and in more aggregated form for all developed and all developing countries.

Significance tests were used to test the statistical significance of pair-wise differences in SDS scores across all pairs of conditions. Within-disorder comparisons were also made to determine whether disability ratings differ in developing versus developed countries. Between-disorder comparisons were made to determine whether disability ratings are systematically different for physical than mental disorders within countries. All these analyses were then replicated using only the sub-sample of respondents with treated physical disorders. Finally, all pair-wise comparisons were repeated on a within-person basis: that is, by comparing SDS scores for specific pairs of conditions for the same individual (e.g., a single person who had both depression and cancer who provided separate SDS ratings for these conditions). All these significance tests adjusted for the clustering and weighting of observations using the jackknife repeated replications pseudo-replication simulation method.²⁵ Significance was consistently evaluated at the .05 level with two-sided tests.

RESULTS

Self-reported disorder prevalence and treatment

Despite most prevalence estimates of self-reported chronic physical disorders differing significantly between developed and developing countries, the broad pattern of prevalence estimates is quite similar in the two sub-samples. (Table 2) Chronic back-neck pain, arthritis, chronic headaches, and hypertension are estimated to be the four most common disorders in both sub-samples. Cancer, diabetes, and ulcer are estimated to be among the least common in both sub-samples. Five of the ten physical disorders are estimated to be more prevalent in developed and the other five more prevalent in developing countries. The percent of respondents that reported being in treatment for the focal disorders at the time of interview is generally a good deal higher, though, in developed than developing countries.

The broad rank-ordering of mental disorder prevalence estimates is also fairly similar across sub-samples despite the fact that, unlike physical disorders, most mental disorders are estimated to be significantly more prevalent in developed than developing countries. Specific phobia, depression, and social phobia are estimated to be the most prevalent disorders in both sub-samples, while oppositional-defiant disorder and ADHD are estimated to be the least common. As with physical disorders, the percent of respondents that reported being in treatment for the focal disorder at the time of interview is consistently higher in developed than developing countries.

The physical disorders were more likely to be treated than the mental disorders. In developed countries, 64.9% (n = 6720) of all the physical disorders were treated versus 23.7% (n = 2637) of all the mental disorders. In developing countries, only 7.7% (n=319) of the mental disorders were treated versus 53.2% (n = 2884) of the physical disorders. This pattern also holds for severely disabling disorders, with 35.3% (n = 1378) of severe mental disorders in developed countries and 11.9% (n = 145) in developing countries in treatment compared to 77.6% (n = 2172) of severe physical disorders in developed countries and 64.0% (n = 763) in developing

countries. It is noteworthy that these results show the mental-physical treatment gap to be considerably higher in developing than developed countries.

Individual-level disability

The physical disorders with the highest mean SDS global disability ratings in both sub-samples are chronic pain disorders, although between-disorder variation in disability ratings is much greater in developed than developing countries. Three physical disorders have significantly higher mean SDS global disability ratings in developed countries (back/neck pain, headaches, other chronic pain disorders). Three others have significantly higher ratings in developing countries (asthma, diabetes, hypertension). A similar pattern of relative disability is found for the proportion of cases rated severely disabled in the total sample as well as among treated cases. (Results not reported, but available on request.)

The mental disorders with the highest mean SDS global disability ratings in both sub-samples are bipolar disorder and depression. The lowest ratings are for specific phobia. Four mental disorders have significantly higher mean global disability ratings in developed countries (bipolar disorder, depression, generalized anxiety disorder, post-traumatic stress disorder). None has a significantly higher rating in developing countries. A similar pattern of relative disability is found for the proportion of cases rated severely disabled in the total sample as well as among treated cases. (Results not reported, but available on request.)

The SDS disability ratings for mental disorders are generally higher than for physical disorders. This is true, using Mann-Whitney tests, both for mean disability ratings ($z = 3.0$, $p = .002$ developing; $z = 3.0$, $p = .002$ developed) and proportions rated severely disabled ($z = 2.5$, $p = .011$ developing; $z = 2.7$, $p = .007$ developed). Of the 100 logically possible pair-wise disorder-specific mental-physical comparisons, mean ratings are higher for the mental disorder in 91 comparisons in developed and 91 in developing countries. Nearly all of these higher mental-than-physical ratings are statistically significant at the .05 level. Comparable results are obtained for severe disability ratings and also for both mean and severe disability ratings when we control for respondent age, sex, and education, and when we focus exclusively on the sub-samples of cases in treatment. (Results not reported, but available on request.)

Consistently higher mental than physical disability ratings can also be found in both developed and developing countries when individual SDS domains are considered instead of global ratings. (Table 4) These differences are much more pronounced for disability in social life and personal relationships than in work or household management. For example, the proportions of severe disability in work functioning associated with mental disorders in developing and developed countries (19.4-21.7%, $n=673-2135$) are only slightly higher than the proportions associated with physical disorders (17.9-18.1%, $n=874-2028$). The proportions of severe disability in social functioning associated with mental disorders (21.8-28.0%, $n=775-2758$), in comparison, are dramatically higher than those associated with physical disorders (10.3-8.9%, $n=513-1168$). Similar patterns are found when we compare means disability ratings rather than the proportions rated severe and when we compare both means and proportions rated severe among cases in treatment. (Results not reported, but available on request.) In addition, an attenuated version of the same general pattern holds when we compare treated physical disorders to all (i.e., treated or not) mental disorders to address the concern about the more superficial assessment of physical than mental disorders leading to the inclusion of sub-threshold cases of physical disorders that might have low disability. (Results not reported, but available on request.)

DISCUSSION

Four key findings emerged from the above analyses. First, respondents generally attributed more disability to their mental than physical disorders. Second, the higher disability of the mental than physical disorders held as strongly in developing as in developed countries. Third, the higher aggregate disability of mental than physical disorder was much more pronounced for disability in social and personal relationships than in productive (work and housework) roles. Fourth, the proportion of cases in treatment at the time of interview was much lower for mental than physical disorders in developed countries and even more so in developing countries both in the total sample and when we focused exclusively on cases rated severely disabling. These findings substantially extend the results of previous studies, none of which documented comparability in the disabilities associated with such a varied set of physical and mental disorders or disaggregated disability into the domains considered here to detect the greater relative impact of mental than physical disorders in social-personal domains than productive role domains.^{2, 4-7}

These results are limited by a number of sampling and measurement problems. With regard to sampling, results could be influenced by a truncation of the severity spectrum of physical disorders. For example, persons facing the end stage of chronic physical disease might be institutionalised or not willing or able to participate in an interview to a greater extent than people with severe mental disorders, leading to under-estimation of the relative disability of physical compared to mental disorders. Whether such a difference in sample bias actually exists, though, is unknown.

There were a number of measurement problems in the analysis. One is that the physical conditions checklist did not include the infectious diseases that play such an important part in the morbidity of developing countries. Our results consequently can be generalized only to chronic cardiovascular, digestive, metabolic, musculoskeletal, pain, and respiratory conditions. Despite this limitation, though, the conditions considered are important sources of morbidity even in developing countries and the results are consequently relevant to those countries despite the exclusion of infectious diseases.

Another measurement problem is that the physical disorders were assessed by simple self-report rather than by abstracting medical records or administering medical examinations. Mental disorders were assessed more comprehensively with a fully structured lay-administered diagnostic interview. The more superficial assessment of physical disorders could have led to the inclusion of more sub-threshold cases than mental disorders, introducing an artificial lowering of the estimated disability of physical disorders, although we addressed this in our analysis of treated physical conditions. It could also have led to artificial overlap between the assessments of mental and physical disorders to the extent that core symptoms of some physical conditions (e.g., headache, unexplained chronic pain) are markers of underlying mental disorders, although this would have attenuated physical-mental differences by increasing overlap between the two classes of disorders. In addition, the use of a self-report checklist almost certainly led to an under-estimation of undiagnosed silent physical conditions. As the latter are likely to be less disabling than symptom-based conditions or diagnosed silent conditions, though, this bias presumably led to an artificial increase in the estimated disability of physical disorders.

Some of the WMH physical disorder prevalence estimates are lower than those in gold standard assessments. For example, the population prevalence of diabetes has been assessed in a number of community surveys using glucose tolerance tests from blood samples.²⁶ A meta-analysis of these studies suggests that the prevalence of diabetes is highest in North America (9.2%) and Europe (8.4%), lower in India and most of Latin America (5-8%), and lowest in most of

Africa and China (2-5%).²⁷ The WMH prevalence estimates, 4.6% in developed countries and 3.9% in developing countries, are lower than these gold-standard estimates, presumably reflecting the fact that the latter include undiagnosed cases.

In other cases the WMH prevalence estimates are higher than those in gold standard assessments. For example, cancer prevalence data have been assembled from various administrative databases and registries in a number of countries.²⁸ Meta-analysis of these data suggest that cancer is much more common in developed than developing countries, with the highest prevalence in North American (1.5% of the population ages 15 and older diagnosed within the past 5 years), followed by Western Europe (1.2%), Australia and New Zealand (1.1%), Japan (1.0%), Eastern Europe (0.7%), Latin America and the Caribbean (0.4%), with a much lower estimated prevalence in the rest of the world (0.2%). The much higher cancer prevalence estimates in the WMH data, 4.0% in developed countries and 0.6% in developing countries, presumably reflect the fact that cancer survivors who were diagnosed and treated more than five years ago, although not counted in cancer prevalence estimates because they have the same survival rates as the general population, often consider themselves still to have cancer and report this in community surveys.

Based on comparison such as these with gold standard assessments, caution is needed in interpreting the WMH prevalence estimates of physical disorders. However, the fact that the same general pattern of higher disability among mental than physical disorders held in comparisons of treated physical disorders argues strongly that the finding of higher SDS disability associated with mental than physical disorders is not due to imprecision in the measurement of physical disorders.

Another measurement problem involves the fact that disability was assessed with brief self-report scales rather than clinical evaluations. This might have introduced upward bias in the reported disability caused by mental disorders compared to physical disorders to the extent that people with mental disorders gave overly pessimistic appraisals of their functioning. This would seem to be an unlikely interpretation, though, in that the associations of SDS ratings with reported numbers of days out of role – a more objective indicator of disability than the SDS ratings – were found to be equivalent for mental and physical disorders. Furthermore, within-person comparison, which controlled for individual differences in perceptions, found similar results.

Another possibility is that the SDS questions might have been biased in the direction of assessing the disabilities associated with mental more than physical disorders. This would seem unlikely, though, as the SDS questions are quite broad and cover all the main areas of adult role functioning. Another possible limitation is that the SDS focused on the “worst month” in the past year, introducing recall error that possibly was more extreme for physical than mental disorders. In addition, between-disorder differences in persistence were not taken into consideration, which means that particular disorders might have been more dominant in severity ratings than suggested here if they were more persistently severe than others. The aggregate disability estimates should be interpreted cautiously due to these limitations regarding the recall period.

A final measurement problem concerning the assessment of disability relates to our use of a *condition-specific* measurement approach. This is an attractive approach from a statistical perspective in comparison to an unconditional measurement approach (i.e., an approach that simply assesses overall disability without asking the respondent to make inferences about the conditions that caused the disability) because it produces condition-specific estimates directly, avoiding the need to rely on multivariate equations that adjust for the effects of comorbidity in predicting overall disability. However, this advantage in analytic simplicity is achieved by

requiring respondents with comorbid conditions to perform the difficult task of making judgments about the effects of individual conditions on their functioning. Because of likely imprecision in these assessments, it would be useful to replicate the results reported here in multivariate analyses that evaluated the separate and joint effects of comorbid conditions in predicting an unconditional measure of disability. Unfortunately, the statistical methods needed to estimate models of this sort are very complex,²⁹ making it difficult to carry out such analyses.

Within the context of these limitations, the results reported here are consistent with previous comparative burden-of-illness studies in suggesting that musculoskeletal disorders and major depression are the disorders with the largest contribution to disability at the individual level both in developed and developing countries. Previous studies have documented this pattern only for the US,³⁰⁻³² although the importance of depression has also been documented throughout the world in the World Health Surveys (WHS).⁷ The current report replicates the WHS results regarding depression and documents for the first time the cross-national importance of musculoskeletal disorders. As noted above, the WMH results also suggest that mental disorders are especially disabling to personal relationships and social life, which implies that they are disabling more because they create psychological barriers than physical barriers to functioning. Amongst these barriers are limitations in cognitive and motivational capacities, affect regulation, embarrassment and stigma,³³ and a tendency to amplify physical symptoms³⁴ and associated disability.³⁵

Given this greater disability of mental than physical disorders, it is disturbing to find that only a minority of even severe cases of mental disorder receive treatment and that treatment was substantially more common among comparably severe physical disorders. In developed countries, seriously disabling mental disorders were only about half as likely to be treated as seriously disabling physical disorders (35.3% vs. 77.6%), while they were only about 20% as likely to be treated as comparably severe physical disorders in developing countries (11.9% vs. 64.0%). This low treatment rate is consistent with the low rate of recognition and treatment of mental disorders in primary care, especially if comorbid with physical disorders.^{36, 37} In combination with the burden of disability that mental disorders produce, the low treatment rates call for more attention to mental disorders.

Implications of the WMH findings for treatment are not clear because, even though treatment effectiveness trials document that common anxiety and mood disorders can often be successfully treated,^{38, 39} uncertainties exist regarding long-term outcomes. Another limitation of existing trials is that they focused on symptoms and did little to assess the effects of treatment on reduced disability.^{38, 39} In particular, long-term functional outcomes are important to track because residual disability and recurrence of disability are major problems with chronic mental disorders.⁴⁰ Despite this uncertainty about long-term outcomes, though, the results reported here argue strongly that, on the basis of population disease burden associated with disorder-specific disability, more attention should be given to the treatment of mental disorders and that this is especially so in developing countries.

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Table 1

Sample Characteristics

Country	Survey*	Sample Characteristics [†]	Field Dates	Age Range	Sample Size		Response Rate [‡]
					Part I	Part II	
I. Developed Countries							
Belgium	ESEMeD	Stratified multistage clustered probability sample of individuals residing in households from the national register of Belgium residents. Nationally representative. NR	2001-2	18+	2419	1043	50.6
France	ESEMeD	Stratified multistage clustered sample of working telephone numbers merged with a reverse directory (for listed numbers). Initial recruitment was by telephone, with supplemental in-person recruitment in households with listed numbers. NR	2001-2	18+	2894	1436	45.9
Germany	ESEMeD	Stratified multistage clustered probability sample of individuals from community resident registries. NR	2002-3	18+	3555	1323	57.8
Italy	ESEMeD	Stratified multistage clustered probability sample of individuals from municipality resident registries. NR	2001-2	18+	4712	1779	71.3
Japan	WMHJ2002-2003	Un-clustered two-stage probability sample of individuals residing in households in four metropolitan areas (Fukuiage, Kushikino, Nagasaki, Oiyayama)	2002-3	20+	2436	887	56.4
Netherlands	ESEMeD	Stratified multistage clustered probability sample of individuals residing in households that are listed in municipal postal registries. NR	2002-3	18+	2372	1094	56.4
New Zealand	NZMHS	Stratified multistage clustered area probability sample of household residents. NR	2004-5	16+	12992	7435	73.3
Spain	ESEMeD	Stratified multistage clustered area probability sample of household residents. NR	2001-2	18+	5473	2121	78.6
United States	NCS-R	Stratified multistage clustered area probability sample of household residents. NR	2002-3	18+	9282	5692	70.9
II. Developing Countries							

Country	Survey*	Sample Characteristics [†]	Field Dates	Age Range	Sample Size		Response Rate [‡]
					Part I	Part II	
Colombia	NSMH	Stratified multistage clustered area probability sample of household residents in all urban areas of the country (approximately 73% of the total national population)	2003	18-65	4426	2381	87.7
Lebanon	LEBANON	Stratified multistage clustered area probability sample of household residents. NR	2002-3	18+	2857	1031	70.0
Mexico	M-NCS	Stratified multistage clustered area probability sample of household residents in all urban areas of the country (approximately 75% of the total national population).	2001-2	18-65	5782	2362	76.6
PRC Beijing	B-WMH	Stratified multistage clustered area probability sample of household residents in the Beijing metropolitan area.	2002-3	18+	2633	914	74.8
PRC Shanghai	S-WMH	Stratified multistage clustered area probability sample of household residents in the Shanghai metropolitan area.	2002-3	18+	2568	714	74.6
South Africa	SASH	Stratified multistage clustered area probability sample of household residents. NR	2003-4	18+	4315	--	87.1
Ukraine	CMDPSD	Stratified multistage clustered area probability sample of household residents. NR	2002	18+	4725	1720	78.3

* ESEMeD (The European Study Of The Epidemiology Of Mental Disorders); NSMH (The Colombian National Study of Mental Health); NHS (Israel National Health Survey); WMHJ2002-2003 (World Mental Health Japan Survey); LEBANON (Lebanese Evaluation of the Burden of Ailments and Needs of the Nation); M-NCS (The Mexico National Comorbidity Survey); NZMHS (New Zealand Mental Health Survey); NSMHW (The Nigerian Survey of Mental Health and Wellbeing); B-WMH (The Beijing World Mental Health survey); S-WMH (The Shanghai World Mental Health Survey); SASH (South Africa Health Survey); CMDPSD (Comorbid Mental Disorders during Periods of Social Disruption); NCS-R (The US National Comorbidity Survey Replication).

[†] Most WMH surveys are based on stratified multistage clustered area probability household samples in which samples of areas equivalent to counties or municipalities in the US were selected in the first stage followed by one or more subsequent stages of geographic sampling (e.g., towns within counties, blocks within towns, households within blocks) to arrive at a sample of households, in each of which a listing of household members was created and one or two people were selected from this listing to be interviewed. No substitution was allowed when the originally sampled household resident could not be interviewed. These household samples were selected from Census area data in all countries other than France (where telephone directories were used to select households) and the Netherlands (where postal registries were used to select households). Several WMH surveys (Belgium, Germany, Italy) used municipal resident registries to select respondents without listing households. The Japanese sample is the only totally un-clustered sample, with households randomly selected in each of the four sample areas and one random respondent selected in each sample household. Nine of the 15 surveys are based on nationally representative (NR) household samples, while two others are based on nationally representative household samples in urbanized areas (Colombia, Mexico).

[‡] The response rate is calculated as the ratio of the number of households in which an interview was completed to the number of households originally sampled, excluding from the denominator households known not to be eligible either because of being vacant at the time of initial contact or because the residents were unable to speak the designated languages of the survey.

Table 2
 Twelve-month prevalence of disorders and treatment in developed and developing WMH countries

	Disorder prevalence				Treatment prevalence among cases						
	Developed N [†]	Developed %	Developing N [†]	Developing %	Developed N [†]	Developed %	Developing N [†]	Developing %	P		
I. Physical disorders											
Arthritis	4434	18.1	1627	10.0	1127	50.9	229	46.6	4.1	1.0	.31
Asthma	2524	10.0	542	3.5	494	51.0	122	61.4	5.4	0.1	.74
Back/neck	5150	19.3	3375	22.0	1632	64.8*	548	43.7	2.3	56.6	<.001
Cancer	903	4.0	112	0.6	165	51.8	26	59.6	10.2	0.2	.64
Chronic pain	1791	6.0	1240	8.0	472	71.5*	217	52.4	4.4	12.4	<.001
Diabetes	1108	4.6	564	3.9	373	94.4*	168	76.6	5.7	10.0	.002
Headaches	3363	10.9	3260	20.8	833	49.7	677	49.7	2.2	0.0	.96
Heart disease	1168	4.7	1063	5.9	310	77.7*	171	50.9	5.3	13.1	<.001
High blood pressure	3382	14.0	2033	13.1	1194	90.2*	553	69.8	2.7	42.7	<.001
Ulcer	529	1.9	786	5.2	120	67.7	173	60.6	4.8	1.7	.19
II. Mental disorders											
ADHD	249	0.7	59	0.2	81	29.9*	9	12.8	4.2	10.8	.001
Bipolar	612	1.4	174	0.7	165	29.1*	23	13.4	3.4	9.4	.002
Depression	2509	5.7	1360	5.2	737	29.3*	107	8.1	1.1	79.0	<.001
GAD	1064	2.4	360	1.4	327	31.6*	22	7.2	1.9	33.1	<.001
IED	391	1.1	357	1.8	71	16.7*	25	5.2	1.1	25.9	<.001
ODD	76	0.2	34	0.2	24	33.4	2	13.5	10.8	2.7	.10
Panic disorder	685	1.6	211	0.7	212	33.1*	24	9.4	2.4	19.6	<.001
PTSD	962	2.3	211	0.9	284	29.5*	11	8.1	3.2	10.3	.001
Social phobia	1621	4.1	419	1.9	342	20.8*	37	9.3	2.0	14.4	<.001
Specific phobia	2643	6.9	829	3.4	394	13.2*	59	5.5	0.9	29.1	<.001

* Significant difference between developed and developing at the .05 level, two-sided test

[†] Number of respondents with the disorder

‡Number of cases in treatment

Data obtained from administrative databases and registries estimates that the highest prevalence of cancer is in North American, with 1.5% of the population ages 15 and older affected and diagnosed within the past 5 years, followed by Western Europe (1.2%), Australia and New Zealand (1.1%), Japan (1.0%), Eastern Europe (0.7%), Latin America and the Caribbean (0.4%), and the rest of the world (0.2%) (Pisani P et al., 2002 Int J Cancer 72-81). Although cancer survivors who were diagnosed and treated more than five years ago have the same survival as the general population, it is likely that the higher prevalence of self-reported cancer in the WMH surveys than in these administrative databases reflects the fact that some long-term cancer survivors consider themselves still to have cancer.

Table 3
Disorder-specific global Sheehan Disability Scale ratings in developed and developing WMH countries

	Mean disability ratings						Proportion rated severely disabled									
	Developed			Developing			Developed			Developing						
	N†	mean	se	N†	mean	se	χ ²	P	N‡	%	se	N‡	%	se	χ ²	P
I. Physical disorders																
Arthritis	2140	3.5	0.1	580	3.8	0.2	0.5	.49	526	23.3	1.5	127	22.8	3.0	0.1	.73
Asthma	1040	1.9*	0.2	228	3.7	0.4	7.4	.007	119	8.2*	1.4	44	26.9	5.4	9.0	.003
Back/neck	2602	4.8*	0.1	1379	3.9	0.1	30.6	<.0001	912	34.6*	1.5	305	22.7	1.8	27.0	<.0001
Cancer	285	2.0	0.3	42	3.5	0.7	1.9	.16	60	16.6	3.2	8	23.9	10.3	0.0	.87
Chronic pain	685	5.2*	0.2	418	3.8	0.3	18.2	<.0001	296	40.9*	3.6	109	24.8	3.8	12.9	<.0001
Diabetes	408	2.1*	0.4	215	3.5	0.5	3.9	.050	49	13.6	3.4	39	23.7	6.1	1.4	.23
Headaches	1709	5.4*	0.1	1440	4.3	0.2	18.4	<.0001	751	42.1*	1.9	401	28.1	2.1	15.7	<.0001
Heart disease	396	3.3	0.3	319	3.8	0.4	0.3	.59	83	26.5	3.9	63	27.8	5.2	0.3	.56
High blood pressure	1365	1.2*	0.1	797	3.5	0.2	74.9	<.0001	91	5.3*	0.9	144	23.8	2.6	50.0	<.0001
Ulcer	170	2.9	0.4	312	3.3	0.4	0.8	.385	31	15.3	3.9	59	18.3	3.6	0.1	.79
II. Mental disorders																
ADHD	228	5.4	0.2	45	5.1	0.5	0.1	.78	87	37.6	3.6	14	24.3	7.4	0.8	.36
Bipolar	588	7.4*	0.1	158	6.4	0.3	9.5	.002	419	68.3*	2.6	87	52.1	4.9	7.9	.005
Depression	1536	7.1*	0.1	1241	6.3	0.1	35.0	<.0001	1028	65.8*	1.6	622	52.0	1.8	30.4	<.0001
GAD	1002	6.6*	0.1	328	5.5	0.3	11.9	.001	576	56.3*	1.9	127	42.0	4.2	7.9	.005
IED	387	4.9	0.2	345	4.4	0.3	2.4	.12	136	36.3	2.8	106	27.8	3.6	2.0	.15
ODD	67	5.3	0.5	32	5.4	0.6	0.0	.98	29	34.2	6.0	12	41.3	10.3	1.2	.27
Panic disorder	641	5.8	0.2	189	5.2	0.4	2.9	.09	317	48.4*	2.6	67	38.8	4.7	4.3	.040
PTSD	571	6.5*	0.2	112	5.6	0.4	5.3	.020	329	54.8*	2.8	53	41.2	7.3	4.2	.040
Social phobia	1621	5.0	0.1	419	5.4	0.2	2.1	.15	593	35.1	1.4	164	41.4	3.6	2.6	.11
Specific phobia	2643	3.4	0.1	829	3.3	0.1	0.5	.49	537	18.6	1.1	144	16.2	1.6	1.9	.17

* Significant difference between developed and developing at the .05 level, two-sided test

[‡]Number of respondents with valid Sheehan scores for the randomly selected physical disorder or the mental disorder. Note that the numbers for physical disorder are substantially lower than those in Table 2 due to the fact that the prevalence estimates in Table 2 were based on all respondents who reported the disorder while the Sheehan scores were obtained only for the sub-sample of randomly selected physical disorders. The numbers for mental disorders in Table 3 are slightly lower than those in Table 2 because cases with missing values on Sheehan scores were omitted from Table 3 but not Table 2. Skip errors in the Western European surveys led to the number of cases with missing Sheehan scores being higher than would normally be expected based on t, respondent refusals and interviewer recording errors.

[‡]Number of cases rated severely disabled

Table 4

Sheehan Disability Scale global and domain-specific ratings (proportion rated severely disabled) aggregated across physical (total and treated) and mental (total) disorders in developed and developing WMH countries

	Physical disorders			Treated physical disorders			Mental disorders			Physical vs. mental			Treated Physical vs. mental		
	N [§]	%	se	N [§]	%	se	N [§]	%	se	χ ²	p	χ ²	p	χ ²	p
Global disability															
Developed	2918	23.8 [†]	0.7	2172	28.6 [†]	1.0	4051	41.3*	0.8	178.8	<.001	33.9	<.0001		
Developing	1299	24.5 [†]	1.2	763	29.4 [†]	1.6	1396	37.6*	1.3	46.6	<.001	12.0	.0005		
χ ²		0.4			1.5			12.1							
p		.55			.22			.001							
Work disability															
Developed	2028	18.1	0.7	1546	22.4 [†]	1.0	2135	21.7*	0.7	0.8	.38	14.4	.0001		
Developing	874	17.9	1.0	517	21.7	1.4	673	19.4*	0.9	1.4	.24	0.7	.41		
χ ²		0.7			3.2			8.8							
p		.40			.07			.003							
Home disability															
Developed	2146	17.8	0.6	1608	21.3 ^{**†}	0.9	2011	19.9	0.7	0.6	.44	10.7	.001		
Developing	881	16.7 [†]	1.0	517	19.8*	1.4	795	20.5 [†]	1.0	8.5	.004	1.1	.30		
χ ²		2.0			5.0			0.1							
p		.16			.025			.72							
Social disability															
Developed	1168	8.9 [†]	0.4	887	10.7 [†]	0.6	2758	28.0*	0.8	393.6	<.001	187.2	<.0001		
Developing	513	10.3 [†]	0.7	324	13.7 [†]	1.1	775	21.8*	1.0	67.9	<.001	17.4	<.0001		
χ ²		0.0			0.1			27.5							
p		.92			.76			<.001							
Close relations															
Developed	850	6.5 [†]	0.4	630	7.8 [†]	0.6	2375	24.3*	0.7	428.0	<.001	213.2	<.0001		
Developing	495	9.0 [†]	0.7	305	11.7 [†]	1.0	785	21.3*	1.1	105.3	<.001	34.2	<.0001		
χ ²		2.8			2.2			7.9							
p		.10			.14			.005							

* Significant difference between developed and developing at the .05 level, two-sided test

† Significant difference between physical and mental disorders at the .05 level, two-sided test

‡ The χ^2 and p values were calculated based on a multivariate model that controlled for socio-demographics. These significance tests are sometimes different from those based on bivariate associations.

§ Number of cases rated severely disabled