表 3.「ひきこもり」経験の有無と精神医学的診断の関連

	生涯においていずれかの精神医学的診断基準を満たしていたことのある人数（%）	生涯においていずれかの精神医学的診断基準を満たしていたことのない人数（%）
「ひきこもり」経験あり	12（63.2）	7（36.8）
「ひきこもり」経験なし	342（20.8）	1299（79.2）

$\chi^2 = 20.0,\quad p < .01$

表 4.「ひきこもり」経験者の精神医学的診断（N = 19）

	ひきこもり以前に発症・治癒した診断名	ひきこもり期間中にみられた診断名	ひきこもり後に発症した診断名
全般性不安障害		2	1
社会恐怖		3	
特定の恐怖症		2	
パニック障害	1		
アルコール関連障害	2		1
軽躁病エピソード			1
大うつ病エピソード		4	
気分変調性障害		1	
小うつ病エピソード		1	
間歇性爆発性障害		1	

表 5. 全「ひきこもり」経験者の生涯における精神医学的診断（N = 19）

	全般性不安障害	社会恐怖	特定の恐怖症	パニック障害	アルコール関連障害	軽躁病エピソード	大うつ病エピソード	気分変調性障害	小うつ病エピソード	間歇性爆発性障害
1		B		A			B	B		
2	A	B	B							
3	B		B		A					
4	B						B			
5							B			B
6							X	X		
7		B								
8									B	
9						C				
10							B			
11					A					
12					C					
13										
14										
15										
16										
17										
18										
19										

注：A：「ひきこもり」以前に発症、治癒した診断名

B：「ひきこもり」期間中にみられた診断名

C：「ひきこもり」後に発症した診断名

X：「ひきこもり」時期が不明のため、時期が特定できないもの

表 6.「ひきこもり」経験の有無によるこころの健康に関する受診・相談行動経験

	「ひきこもり」経験あり (19 人)		「ひきこもり」経験なし (1641 人)		
	受診者数	受診率	受診者数	受診率	χ^2 値
受診・相談先					
精神科医	5	26.3	84	5.1	16.6**
一般医	2	10.5	81	4.9	1.2
医師合計	6	31.6	147	9.0	11.5**
その他の専門家	1	5.3	39	2.4	0.7
その他の相談先	0	0	47	2.9	0.6
いずれかの相談先合計	7	36.8	195	11.9	10.9**
精神療法の経験	6	31.6	77	4.7	28.6**
薬物治療の経験	5	26.3	111	6.8	11.0**

** $p < .01$

注：受診・相談先は以下のとおり．精神科医＝精神科医．一般医＝一般開業医あるいはかかりつけ医、循環器医、産婦人科医、泌尿器科医など、その他の医者．医師合計＝精神科医あるいは一般医．その他の専門家＝心理士、ソーシャルワーカー、カウンセラー、心理療法家のようなその他のメンタルヘルスの専門家、看護婦、医療助手など（その他）の医療専門家．その他の相談先＝お坊さん、牧師などの宗教家、漢方医、整体師、心霊術師、霊ばい師などその他の治療家．いずれかの相談先合計＝以上のいずれかの受診・相談先．

表 7.「ひきこもり」の子どもがいる対象者の子どもの年齢（N = 23）

年齢（歳）	N	%
15-19	2	8.7
20-24	2	8.7
25-29	8	34.8
30-34	3	13.0
35-39	0	0
40-44	1	4.3
45-49	2	8.7
不明	5	21.7

III. 研究成果の刊行に関する一覧表

Ⅲ. 研究成果の刊行に関する一覧表

書籍

著者氏名	論文タイトル名	書籍全体の編集者名	書　籍　名	出版社名	出版地	出版年	ページ
該当なし							

雑誌

発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
Demyttenaere K, Bruffaerts R, Posada-Villa J, Gasquet I, Kovess V, Lepine JP, Angermeyer MC, Bernert S, de Girolamo G, Morosini P, Polidori G, Kikkawa T, Kawakami N, Ono Y, Takeshima T, Uda H, Karam EG, Fayyad JA, Karam AN, Mneimneh ZN, Medina-Mora ME, Borges G, Lara C, de Graaf R, Ormel J, Gureje O, Shen Y, Huang Y, Zhang M, Alonso J, Haro JM, Vilagut G, Bromet EJ, Gluzman S, Webb C, Kessler RC, Merikangas KR, Anthony JC, Von Korff MR, Wang PS, Brugha TS, Aguilar-Gaxiola S, Lee S, Heeringa S, Pennell BE, Zaslavsky AM, Ustun TB, Chatterji S; WHO World Mental Health Survey Consortium.	Prevalence, severity, and unmet need for treatment of mental disorders in the World Health Organization World Mental Health Surveys.	JAMA	291	2581-90	2004
Kawakami N, Takeshima T, Ono Y, Uda H, Hata Y, Nakane Y, Nakane H, Iwata N, Furukawa TA, Kikkawa T.	Twelve-month prevalence, severity, and treatment of common mental disorders in communities in Japan: preliminary finding from the World Mental Health Japan Survey 2002-2003.	Psychiatry Clin Neurosci.	59	441-52	2005
Naganuma Y, Tachimori H, Kawakami N, Takeshima T, Ono Y, Uda H, Hata Y, Nakane Y, Nakane H, Iwata N, Furukawa TA, Kikkawa T.	Twelve-month Use of Mental Health Services in Four Areas in Japan: Finding from the World Mental Health Japan Survey 2002-2003.	Psychiatry Clin Neurosci.	60	240-8	2006
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Scott KM, Von Korff M, Ormel J, Zhang MY, Bruffaerts R, Alonso J, Kessler RC, Tachimori H, Karam E, Levinson D, Bromet EJ, Posada-Villa J, Gasquet I, Angermeyer MC, Borges G, de Girolamo G, Herman A, Haro JM	Mental disorders among adults with asthma: results from the World Mental Health Survey.	Gen Hosp Psychiatry	29	123-33	2007
Scott KM, Bruffaerts R, Tsang A, Ormel J, Alonso J, Angermeyer MC, Benjet C, Bromet E, de Girolamo G, de Graaf R, Gasquet I, Gureye O, Haro JM, He Y, Kessler RC, Levinson D, Mneimneh ZN, Oakley Browne MA, Posada-Villa J, Stein DJ, Takeshima T, Von Korff M.	Depression-anxiety relationships with chronic physical conditions: Results from the World Mental Health surveys.	J Affect Disord.		[Epub ahead of print]	2007

IV. 研究成果の刊行物・別刷

Prevalence, Severity, and Unmet Need for Treatment of Mental Disorders in the World Health Organization World Mental Health Surveys

The WHO World Mental Health Survey Consortium*

Context Little is known about the extent or severity of untreated mental disorders, especially in less-developed countries.

Objective To estimate prevalence, severity, and treatment of *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)* mental disorders in 14 countries (6 less developed, 8 developed) in the World Health Organization (WHO) World Mental Health (WMH) Survey Initiative.

Design, Setting, and Participants Face-to-face household surveys of 60 463 community adults conducted from 2001-2003 in 14 countries in the Americas, Europe, the Middle East, Africa, and Asia.

Main Outcome Measures The *DSM-IV* disorders, severity, and treatment were assessed with the WMH version of the WHO Composite International Diagnostic Interview (WMH-CIDI), a fully structured, lay-administered psychiatric diagnostic interview.

Results The prevalence of having any WMH-CIDI/*DSM-IV* disorder in the prior year varied widely, from 4.3% in Shanghai to 26.4% in the United States, with an interquartile range (IQR) of 9.1%-16.9%. Between 33.1% (Colombia) and 80.9% (Nigeria) of 12-month cases were mild (IQR, 40.2%-53.3%). Serious disorders were associated with substantial role disability. Although disorder severity was correlated with probability of treatment in almost all countries, 35.5% to 50.3% of serious cases in developed countries and 76.3% to 85.4% in less-developed countries received no treatment in the 12 months before the interview. Due to the high prevalence of mild and subthreshold cases, the number of those who received treatment far exceeds the number of untreated serious cases in every country.

Conclusions Reallocation of treatment resources could substantially decrease the problem of unmet need for treatment of mental disorders among serious cases. Structural barriers exist to this reallocation. Careful consideration needs to be given to the value of treating some mild cases, especially those at risk for progressing to more serious disorders.

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ALTHOUGH SURVEYS OF MENtal disorders have been carried out since the end of World War II,[1-3] cross-national comparisons were hampered by inconsistencies in diagnostic methods. This situation changed in the 1980s with the development of the Diagnostic Interview Schedule (DIS), the first psychiatric diagnostic interview designed for use by lay interviewers.[4] The DIS was initially used in the US Epidemiologic Catchment Area (ECA) Study and subsequently in similar surveys carried out in other countries in the 1980s.[5-8] The results were brought together in the early 1990s in a series of important cross-national articles that showed mental disorders to be highly prevalent.[9-12] Indeed, prevalence of mental disorder was generally higher than that of any other class of chronic conditions.[13,14] This was striking in light of research documenting that mental disorders have greater effects on role functioning than many serious chronic physical illnesses.[13,15,16] A second generation of cross-national psychiatric surveys was carried out in the 1990s[17-24] using a more elaborate interview, the World Health Organization (WHO) Composite International Diagnostic Interview (CIDI).[25] Although prevalence varied widely, more than one third of respondents typically met criteria for a lifetime CIDI disorder.[26] Survey-specific treatment questions showed uniformly that most mental disorders were untreated.[27,28]

Before concluding that unmet need for treatment of mental disorders is a major problem, it is important to recognize that many mental disorders are mild and self-limiting. This was not a focus of the DIS or CIDI surveys, which were designed to estimate prevalence rather than severity. However, the high prevalence estimates in these surveys raised concerns that even the richest of countries could not afford to treat all the people with a mental disorder.[29,30] Motivated by this concern, investigators performed secondary analyses of 2 US surveys,[6,20] which concluded that up to half of 12-month mental disorders were mild.[31] Another secondary analysis of CIDI surveys in 5 developed countries found a similar proportion of mild cases[28] and showed that treatment was consistently correlated with severity. Between one third and two thirds of serious cases in these surveys nevertheless received no treatment.

*Author Information appears at the end of this article.
Corresponding Author: Ronald C. Kessler, PhD, Department of Health Care Policy, Harvard Medical School, 180 Longwood Ave, Boston, MA 02115 (kessler@hcp.med.harvard) or T. Bedirhan Ustun, MD, Global Programme on Evidence for Health Policy, World Health Organization, Avenue Appia 20, 1211 Geneva 27, Switzerland (ustunb@who.int).

The DIS and CIDI surveys had 3 limitations to analysis of severity and treatment. First, as they were designed to assess prevalence, not severity, the post hoc measures of severity used in secondary analyses of these surveys were weak. Second, the interviews did not include standardized treatment questions, thwarting valid cross-national comparisons of treatment. Third, the surveys were carried out mostly in developed countries, making it impossible to assess generalizability of results. WHO established the World Mental Health (WMH) Survey Consortium in 1998 to address such limitations.[32] The CIDI was expanded to include detailed questions about disorder severity, impairment, and treatment.[33] Coordinated WMH-CIDI surveys were then implemented in 28 countries around the world, including less-developed countries in each region of the world. The WMH surveys have now been completed in 14 countries, 6 of them less developed. This article is the first joint publication from these surveys. The focus is on aggregate estimates of 12-month prevalence, severity, and treatment.

METHODS

Samples

Fifteen surveys were carried out in 14 countries in the Americas (Colombia, Mexico, United States), Europe (Belgium, France, Germany, Italy, Netherlands, Spain, Ukraine), the Middle East and Africa (Lebanon, Nigeria), and Asia (Japan, separate surveys in Beijing and Shanghai in the People's Republic of China). Six countries are classified by the World Bank[34] as less developed (China, Colombia, Lebanon, Mexico, Nigeria, and Ukraine) and the others as developed. An effort was made to recruit as many countries as possible in the intiative. The final set was determined by availability of collaborators in the country who were able to obtain funding for the survey. All surveys were based on multistage household probability samples (TABLE 1). All interviews were carried out face-to-face by trained lay interviewers. The 6 Western European surveys were carried out jointly.[35] Sample sizes range from 1663 (Japan) to 9282 (United States), with a total of 60 463 participating adults. Response rates range from 45.9% (France) to 87.7% (Colombia), with a weighted average of 69.9%.

Internal subsampling was used to reduce respondent burden by dividing the interview into 2 parts. Part 1 included core diagnostic assessment. Part 2 included information about correlates and disorders of secondary interest. All respondents completed part 1. All part-1 respondents who met criteria for any disorder and a subsample of approximately 25% of others were administered part 2. The part-2 sample included 25 828 respondents. Noncertainty part-2 respondents were weighted by the inverse of their probability of selection to adjust for differential sampling. Analyses in this article are based on this weighted part-2 sample. Additional weights were used to adjust for differential probabilities of selection within households and to match the samples to population sociodemographic distributions. The samples show substantial cross-national differences in age structure (younger in less-developed countries) and educational status (lower in less-developed countries). (Demographic distributions available on request.)

Training and Field Procedures

The central WMH staff trained bilingual supervisors in each country. Consistent interviewer training documents and procedures were used across surveys. The WHO translation protocol was used to translate instruments and training materials. Two surveys were carried out in bilingual form (Dutch and French in Belgium; Russian and Ukrainian in Ukraine). Others were carried out exclusively in the country's official language (or, in Nigeria, in the Yoruba language that dominates in the region where the survey was carried out). Persons who could not speak these languages were excluded. Standardized descriptions of the goals and procedures of the study, data uses and protection, and the rights of respondents were provided in both written and verbal form to all predesignated respondents before obtaining verbal informed consent for participation in the survey. Quality control protocols described in more detail elsewhere[36] were standardized across countries to check on interviewer accuracy and to specify data cleaning and coding procedures. The institutional review board of the organization that coordinated the survey in each country approved and monitored compliance with procedures for obtaining informed consent and protecting human subjects.

Measures

All surveys used the WMH-CIDI, a fully structured diagnostic interview, to assess disorders and treatment. Disorders considered herein include anxiety disorders (agoraphobia, generalized anxiety disorder, obsessive-compulsive disorder, panic disorder, posttraumatic stress disorder, social phobia, specific phobia), mood disorders (bipolar I and II disorders, dysthymia, major depressive disorder), disorders that share a feature of problems with impulse control (bulimia, intermittent explosive disorder, and adult persistence of 3 childhood-adolescent disorders—attention-deficit/hyperactivity disorder, conduct disorder, and oppositional-defiant disorder—among respondents in the 18- to 44-year age range), and substance disorders (alcohol and drug abuse and dependence). Disorders were assessed

Table 1. Sample Characteristics

Country	Survey	Sample Characteristics*	Field Dates	Age Range, y	Sample Size		Response Rate, %†
					Part 1	Part 2	
Belgium	ESEMeD	Stratified multistage clustered probability sample of individuals residing in households from the national register of Belgium residents, nationally representative	2001-2002	≥18	2419	1043	50.6
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	4544	2442	87.7
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, nationally representative	2001-2002	≥18	2894	1436	45.9
Germany	ESEMeD	Stratified multistage clustered probability sample of individuals from community resident registries, nationally representative	2002-2003	≥18	3555	1323	57.8
Italy	ESEMeD	Stratified multistage clustered probability sample of individuals from municipality resident registries, nationally representative	2001-2002	≥18	4712	1779	71.3
Japan	WMHJ2002-2003	Unclustered 2-stage probability sample of individuals residing in households in 4 metropolitan areas (Fukiage, Kushikino, Nagasaki, Oyayama)	2002-2003	≥20	1663	477	56.4
Lebanon	LNMHS	Stratified multistage clustered area probability sample of household residents, nationally representative	2002-2003	≥18	2856	1029	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)	2001-2002	18-65	5782	2362	76.6
Netherlands	ESEMeD	Stratified multistage clustered probability sample of individuals residing in households that are listed in municipal postal registries, nationally representative	2002-2003	≥18	2372	1094	56.4
Nigeria	NSMHW	Stratified multistage clustered area probability sample of household residents in the Yoruba-speaking Southwestern and North Central parts of the country (approximately 22% of the total national population)	2002	≥18	4985	1682	79.9
People's Republic of China							
Beijing	B-WMH	Stratified multistage clustered area probability sample of household residents in the Beijing metropolitan area	2002-2003	>18	2633	914	74.8
Shanghai	S-WMH	Stratified multistage clustered area probability sample of household residents in the Shanghai metropolitan area	2002-2003	≥18	2568	714	74.6
Spain	ESEMeD	Stratified multistage clustered area probability sample of household residents, nationally representative	2001-2002	>18	5473	2121	78.6
Ukraine	CMDPSD	Stratified multistage clustered area probability sample of household residents, nationally representative	2002	>18	4725	1720	78.3
United States	NCS-R	Stratified multistage clustered area probability sample of household residents, nationally representative	2002-2003	≥18	9282	5692	70.9

Abbreviations: B-WMH, the Beijing World Mental Health survey; CMDPSD, Comorbid Mental Disorders During Periods of Social Disruption; ESEMeD, the European Study of the Epidemiology of Mental Disorders; LNMHS, the Lebanese National Mental Health Survey; M-NCS, the Mexico National Comorbidity Survey; NCS-R, the US National Comorbidity Survey Replication; NSMH, the Colombian National Study of Mental Health; NSMHW, the Nigerian Survey of Mental Health and Wellbeing; S-WMH, the Shanghai World Mental Health Survey; WMHJ2002-2003, World Mental Health Japan Survey.

*Most World Mental Health (WMH) surveys are based on stratified multistage clustered area probability household samples in which samples of areas equivalent to counties or municipalities in the United States were selected in the first stage followed by 1 or more subsequent stages of geographic sampling (eg, 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 1 or 2 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 (for which 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 unclustered sample, with households randomly selected in each of the 4 sample areas and 1 random respondent selected in each sample household. Nine of the 15 surveys are based on nationally representative household samples, while 2 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.

using the definitions and criteria of the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)*.[37] CIDI organic exclusion rules were imposed in making all diagnoses. Methodological evidence collected in the WHO-CIDI Field Trials and later clinical calibration studies showed that all the disorders considered herein were assessed with acceptable reliability and validity both in the original CIDI[38] and in the original version of the WMH-CIDI.[39] Studies of cross-national comparability in the validity of the WMH-CIDI are currently underway.

WMH-CIDI/*DSM-IV* disorders were classified as serious, moderate, or mild. Serious disorders were defined as one of the following: meeting criteria for bipolar I disorder or substance dependence with a physiological dependence syndrome; making a suicide attempt in conjunction with any other WMH-CIDI/*DSM-IV* disorder; reporting at least 2 areas of role functioning with severe role impairment due to a mental disorder in the disorder-specific Sheehan Disability Scales[40]; or reporting overall functional impairment at a level consistent with a Global Assessment of Functioning[41] of 50 or less in conjunction with any other WMH-CIDI/*DSM-IV* disorder. Respondents not classified as having a serious disorder were classified as moderate if interference was rated as at least moderate in any Sheehan Disability Scales domain or if the respondent had substance dependence without a physiological dependence syndrome. All other disorders were classified as mild. In an effort to validate severity ratings, respondents were asked how many days out of 365 in the past 12 months they were totally unable to carry out their normal daily activities because of each disorder. These reports were combined by assigning respondents who had more than 1 disorder to the highest number of days out of role reported for any single disorder.

Twelve-month treatment was assessed by asking respondents if they ever saw any of a long list of professionals either as an outpatient or inpatient for problems with emotions, nerves, mental health, or use of alcohol or drugs. Included were mental health professionals (eg, psychiatrist, psychologist), general medical professionals (eg, general practitioner, occupational therapist), religious counselors (eg, minister, sheikh), and

Table 2. Twelve-Month Prevalence of World Mental Health Composite International Diagnostic Interview/*Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition**

Country	% (95% Confidence Interval)				
	Anxiety	Mood	Impulse-Control	Substance	Any
Americas					
Colombia	10.0 (8.4-11.7)	6.8 (6.0-7.7)	3.9 (3.2-4.7)	2.8 (2.0-3.7)	17.8 (16.1-19.5)
Mexico	6.8 (5.6-7.9)†	4.8 (4.0-5.6)	1.3 (0.9-1.8)‖	2.5 (1.8-3.3)	12.2 (10.5-13.80)
United States	18.2 (16.9-19.5)	9.6 (8.8-10.4)	6.8 (5.9-7.8)	3.8 (3.2-4.5)	26.4 (24.7-28.0)
Europe					
Belgium	6.9 (4.5-9.4)	6.2 (4.8-7.6)§	1.0 (0.3-1.8)‖	1.2 (0.6-1.9)‡‡	12.0 (9.6-14.3)
France	12.0 (9.8-14.2)	8.5 (6.4-10.6)§	1.4 (0.7-2.0)‖	0.7 (0.3-1.2)‡‡	18.4 (15.3-21.5)
Germany	6.2 (4.7-7.6)	3.6 (2.8-4.3)§	0.3 (0.1-0.6)‖	1.1 (0.4-1.7)‡‡	9.1 (7.3-10.8)
Italy	5.8 (4.5-7.1)	3.8 (3.1-4.5)§	0.3 (0.1-0.5)‖	0.1 (0.0-0.2)‡‡	8.2 (6.7-9.7)
Netherlands	8.8 (6.6-11.0)	6.9 (4.1-9.7)§	1.3 (0.4-2.2)‖	3.0 (0.7-5.2)‡‡	14.9 (12.2-17.6)
Spain	5.9 (4.5-7.3)	4.9 (4.0-5.8)§	0.5 (0.2-0.8)‖	0.3 (0.0-0.5)‡‡	9.2 (7.8-10.6)
Ukraine	7.1 (5.6-8.6)†‡	9.1 (7.3-10.9)§	3.2 (2.4-4.0)¶#**	6.4 (4.8-8.1)‡‡	20.5 (17.7-23.2)
Middle East and Africa					
Lebanon	11.2 (8.9-13.5)	6.6 (4.9-8.2)	1.7 (0.8-2.6)¶**	1.3 (0.0-2.8)	16.9 (13.6-20.2)
Nigeria	3.3 (2.4-4.2)	0.8 (0.5-1.0)	0.0 (0.0-0.1)¶#**	0.8 (0.3-1.2)	4.7 (3.6-5.8)
Asia					
Japan	5.3 (3.5-7.0)†	3.1 (2.2-4.1)	1.0 (0.4-1.5)¶#**††	1.7 (0.3-3.0)	8.8 (6.4-11.2)
People's Republic of China					
Beijing	3.2 (1.8-4.6)†	2.5 (1.5-3.4)	2.6 (1.3-3.9)¶#**	2.6 (1.2-3.9)	9.1 (6.0-12.1)
Shanghai	2.4 (0.9-3.9)†	1.7 (0.6-2.9)	0.7 (0.4-1.1)¶#**	0.5 (0.3-0.6)	4.3 (2.7-5.9)

*Anxiety disorders include agoraphobia, generalized anxiety disorder, obsessive-compulsive disorder, panic disorder, posttraumatic stress disorder, social phobia, and specific phobia. Mood disorders include bipolar I and II disorders, dysthymia, and major depressive disorder. Impulse-control disorders include bulimia, intermittent explosive disorder, and reported persistence in the past 12 months of symptoms of 3 child-adolescent disorders (attention-deficit hyperactivity disorder, conduct disorder, and oppositional-defiant disorder). Substance disorders include alcohol or drug abuse or dependence. In the case of substance dependence, respondents who met full criteria at some time in their life and who continue to have any symptoms are considered to have 12-month dependence even if they currently do not meet full criteria for the disorder. Organic exclusions were made as specified in the *Diagnostic and Statistical Manual of Mental Health Disorders, Fourth Edition*, but diagnostic hierarchy rules were not used.

†Obsessive-compulsive disorder was not assessed.

‡Specific phobia was not assessed.

§Bipolar disorders were not assessed.

‖Intermittent explosive disorder was not assessed.

¶Bulimia was not assessed.

#Attention-deficit hyperactivity disorder was not assessed.

**Oppositional-defiant disorder was not assessed.

††Conduct disorder was not assessed.

‡‡Only alcohol abuse and dependence were assessed. No assessment was made of other drug abuse or dependence.

traditional healers (eg, herbalist, spiritualist). The list varied across countries depending on local circumstances. We focus herein on 12-month treatment by either a mental health professional or general medical professional.

Analysis Methods

Data are reported on prevalence, severity, and associations of severity with days out of role and with treatment. Simple cross-tabulations were used to calculate prevalence and severity. Associations of severity with days out of role and treatment were examined using analysis of variance. Confidence intervals were estimated using the Taylor Series method[42] with SUDAAN software[43] to adjust for clustering and weighting. Multivariate tests were made using Wald χ^2 and F tests computed from design-adjusted coefficient variance–covariance matrices. Statistical significance was based on 2-sided tests evaluated at the .05 level of significance.

RESULTS

Prevalence

Overall prevalence varies widely (TABLE 2), from 4.3% in Shanghai to 26.4% in the United States, with a 9.1% to 16.9% inter-quartile range (IQR, the range after excluding the highest and lowest 4 surveys). Anxiety disorders are the most common disorders in all but 1 country (higher prevalence of mood disorders in Ukraine), with prevalence in the range 2.4% to 18.2% (IQR, 5.8%-8.8%). Mood disorders are next most common in all but 2 countries (equal or higher prevalence of substance disorders in Nigeria and Beijing), with prevalence in the range 0.8% to 9.6% (IQR, 3.6%-6.8%). Substance disorders (12-month prevalence, 0.1%-6.4%; IQR, 0.8%-2.6%) and impulse-control disorders (12-month prevalence, 0.0%-6.8%; IQR, 0.7%-1.7%) are consistently less prevalent across the surveys. If we use the terms *high* and *low* to refer to the 5 highest and 5 lowest prevalence estimates in each column of the table, the United States and Colombia have consistently high prevalence estimates across all classes of disorder, the Netherlands and Ukraine are high on 3 of 4, Nigeria and Shanghai are consistently low, and Italy is low on 3 of 4.

Severity

The proportions of the samples (TABLE 3) with either a serious disorder (0.4%-7.7%; IQR, 1.1%-3.7%) or a moderate disorder (0.5%-9.4%; IQR, 2.9%-6.1%) are generally smaller than the proportions with a mild disorder (1.8%-9.7%; IQR, 4.5%-6.4%). The proportion of disorders classified as mild is substantial: from 33.1% in Colombia to 80.9% in Nigeria (IQR, 40.2%-53.3%). The severity distribution among cases varies significantly across countries (χ^2_{2d}=193.9, P <.001), with severity not strongly related either to region or to development status. There are substantial positive associations, however, between overall prevalence of any disorder and both the proportion of cases classified as serious (Pearson r=0.56; P=.03) and the proportion of cases classified as either serious or moderate (Pearson r=0.51; P=.05).

Severity and Impairment

The severity classification was validated by documenting a statistically significant monotonic association between severity and days out of role in all but 2 surveys (TABLE 4). Respondents with serious disorders in most surveys reported at least 30 days in the past year when they were totally unable to carry out usual activities because of these disorders (IQR, 32.1-81.4 days). The mean days out of role for mild disorders, in comparison, is low in all surveys (0.1-3.6 days) while the mean for moderate disorders is intermediate between these extremes (4.1-33.7 days; IQR, 9.2-18.8 days). Even the means for moderate disorders are larger than those found in previous research to be associated with most serious chronic physical disorders.[13,44]

Severity and Treatment

The proportion of respondents who received health care treatment for emotional or substance-use problems during the 12 months before the WMH interview varies widely across surveys (TABLE 5), from a low of 0.8% in Nigeria to a high of 15.3% in the United States. Predictably, the proportion in treatment is much larger in developed than in less-developed countries. However, despite this wide variation, a meaningful association exists between disorder severity and probability of treatment in every survey. The proportion in treatment is much higher among serious cases (49.7%-64.5% in developed vs 14.6%-23.7% in less developed countries) than moderate cases (16.7%-50.0% in developed vs 9.7%-18.6% in less developed countries), and lower still among mild cases (11.2%-35.2% in developed vs 0.5%-10.2% in less developed countries). A small proportion of noncases also received treatment (2.4%-8.1% in developed countries and 0.3%-3.0% in less developed countries), presumably reflecting the joint effects of the WMH-CIDI not assessing all mental disorders, some true cases of the disorders being incorrectly classified as noncases, and some people in treatment not meeting criteria for a *DSM-IV* disorder.

Even though the proportion of noncases in treatment is small, the fact that noncases make up the vast majority of the population means that noncases constitute a meaningful fraction of all people in treatment. In fact, calculations based on Table 3 and Table 5 show that either the majority or a near ma-

Table 3. Prevalence of 12-Month World Mental Health–Composite International Diagnostic Interview/*Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* Disorders by Severity Across Countries*

Country	% (95% Confidence Interval)			
	Serious	Moderate	Mild	Any
Americas				
Colombia	5.2 (4.2-6.3)	6.6 (5.7-7.6)	5.9 (5.1-6.8)	17.8 (16.1-19.5)
Mexico	3.7 (2.8-4.6)	3.6 (2.9-4.2)	4.9 (4.0-5.8)	12.2 (10.5-13.8)
United States	7.7 (7.0-8.4)	9.4 (8.5-10.3)	9.2 (8.1-10.3)	26.3 (24.6-27.9)
Europe				
Belgium	2.4 (1.2-3.5)	3.3 (2.2-4.4)	6.4 (5.0-7.7)	12.0 (9.6-14.3)
France	2.7 (1.1-4.3)	6.1 (4.8-7.4)	9.7 (7.3-12.1)	18.4 (15.2-21.6)
Germany	1.2 (0.6-1.7)	3.3 (2.3-4.3)	4.5 (3.2-5.9)	9.1 (7.2-10.9)
Italy	1.0 (0.4-1.7)	2.9 (2.0-3.8)	4.3 (3.1-5.5)	8.2 (6.7-9.7)
Netherlands	2.3 (1.1-3.5)	3.7 (2.5-4.9)	8.8 (6.1-11.5)	14.8 (12.0-17.7)
Spain	1.0 (0.7-1.3)	2.9 (2.0-3.7)	5.3 (4.0-6.7)	9.2 (7.8-10.7)
Ukraine	4.8 (4.0-5.6)	7.4 (5.8-8.9)	8.2 (6.4-10.1)	20.4 (17.9-22.9)
Middle East and Africa				
Lebanon	4.6 (3.2-6.1)	6.2 (4.2-8.1)	6.1 (3.6-8.7)	16.9 (13.5-20.3)
Nigeria	0.4 (0.1-0.6)	0.5 (0.2-0.7)	3.8 (2.8-4.8)	4.7 (3.6-5.8)
Asia				
Japan	1.5 (0.7-2.2)	4.1 (2.7-5.5)	3.2 (1.7-4.7)	8.8 (6.2-11.4)
People's Republic of China				
Beijing	0.9 (0.5-1.2)	2.9 (1.3-4.5)	5.3 (3.2-7.3)	9.1 (5.9-12.2)
Shanghai	1.1 (0.0-2.2)	1.4 (0.4-2.5)	1.8 (0.6-3.0)	4.3 (2.6-6.0)

*See the "Methods" section text for a description of the coding rules used to define the severity levels.

Table 4. Association Between Severity of 12-Month World Mental Health–Composite International Diagnostic Interview/*Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* Disorders and Days Out of Role

Country	Mean (95% Confidence Interval)			$F_{2,n-3}$ Wald F
	Serious	Moderate	Mild	
Americas				
Colombia	28.0 (13.8-42.3)	6.0 (2.9-9.1)	0.2 (0.1-0.3)	17.5*
Mexico	26.6 (17.0-36.1)	7.4 (3.9-10.8)	1.8 (0.0-4.5)	13.4*
United States	66.9 (56.0-77.8)	10.6 (7.7-13.5)	0.7 (0.1-1.3)	74.9*
Europe				
Belgium	32.9 (7.8-58.0)	26.4 (5.3-47.5)	2.8 (0.0-8.1)	3.1
France	94.7 (46.5-142.9)	9.2 (4.6-13.7)	1.0 (0.0-3.0)	15.7*
Germany	84.6 (35.7-133.5)	13.4 (4.3-22.4)	0.3 (0.0-0.7)	10.1*
Italy	206.4 (114.9-297.9)	33.7 (13.0-54.4)	3.6 (1.8-5.5)	15.0*
Netherlands	123.2 (73.7-172.7)	13.4 (0.0-27.5)	1.3 (0.0-3.2)	13.9*
Spain	81.4 (33.5-129.2)	10.5 (4.8-16.1)	0.1 (0.0-0.3)	17.1*
Ukraine	38.1 (23.1-53.0)	18.8 (14.3-23.4)	0.7 (0.0-1.9)	42.0*
Middle East and Africa				
Lebanon	37.1 (19.7-54.6)	17.9 (7.5-28.3)	0.8 (0.0-1.9)	13.9*
Nigeria	15.2 (0.8-29.6)	18.8 (0.0-40.3)	0.6 (0.0-1.6)	3.0
Asia				
Japan	32.1 (0.0-65.6)	6.3 (1.6-11.0)	0.1 (0.0-0.2)	6.8*
People's Republic of China				
Beijing	25.9 (7.4-44.3)	23.1 (4.7-41.6)	0.4 (0.0-0.8)	7.2*
Shanghai	47.1 (13.6-80.7)	4.1 (0.0-10.3)	1.0 (0.0-2.5)	4.5*

*Significant association between severity and days out of role at the .05 level.

Table 5. Association of 12-Month World Mental Health–Composite International Diagnostic Interview/*Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* Disorder Severity With Health Care Treatment*

Country	% (95% Confidence Interval)					χ^2 Test
	Serious	Moderate	Mild	None	Total	
Americas						
Colombia	23.7 (15.2-32.3)	11.5 (6.6-16.5)	8.4 (4.5-12.4)	3.0 (1.9-4.0)	5.0 (3.8-6.1)	41.1†
Mexico	20.2 (12.7-27.8)	18.6 (12.5-24.8)	10.2 (5.5-14.9)	2.6 (1.9-3.4)	4.2 (3.3-5.1)	73.4†
United States	52.3 (48.5-56.1)	34.1 (30.9-37.4)	22.5 (19.0-26.1)	8.1 (7.1-9.2)	15.3 (14.1-16.5)	278.4†
Europe						
Belgium	53.9 (25.2-82.5)	50.0 (35.8-64.2)	28.2 (14.9-41.4)	7.2 (4.2-10.1)	11.0 (7.6-14.4)	68.0†
France	63.3 (38.6-88.1)	35.7 (21.4-49.9)	22.3 (15.8-28.9)	7.8 (5.7-10.0)	12.4 (10.2-14.6)	29.7†
Germany	49.7 (26.6-72.8)	30.5 (18.5-42.5)	27.9 (14.5-41.3)	5.4 (3.5-7.2)	7.8 (6.0-9.5)	37.9†
Italy	...	30.5 (19.3-41.7)	18.9 (11.3-26.6)	2.4 (1.6-3.2)	4.5 (3.6-5.5)	64.2†
Netherlands	50.2 (29.5-70.8)	35.0 (15.7-54.2)	26.5 (15.6-37.4)	6.9 (4.4-9.4)	10.7 (8.1-13.2)	46.6†
Spain	64.5 (49.2-79.7)	37.9 (26.8-49.0)	35.2 (23.8-46.6)	4.0 (3.1-5.0)	7.3 (6.2-8.4)	152.1†
Ukraine	19.7 (13.9-25.6)	17.1 (9.7-24.4)	7.1 (1.2-13.0)	2.6 (1.5-3.8)	4.9 (3.5-6.3)	42.8†
Middle East and Africa						
Lebanon	14.6 (5.8-23.4)	9.7 (2.6-16.7)	4.5 (0.6-8.5)	2.6 (1.3-3.9)	3.7 (2.4-5.0)	14.6†
Nigeria	...	...	10.3 (3.7-17.0)	0.3 (0.0-0.5)	0.8 (0.4-1.1)	11.3†
Asia						
Japan	...	16.7 (4.5-28.9)	11.2 (0.1-22.3)	4.7 (2.6-6.9)	5.7 (3.7-7.7)	21.3†
People's Republic of China						
Beijing	...	11.9 (0.0-26.2)	2.0 (0.0-4.8)	2.4 (1.0-3.8)	2.7 (1.3-4.2)	3.1
Shanghai	...	...	0.5 (0.0-1.7)	2.3 (0.6-4.1)	3.1 (1.1-5.0)	6.2

*Ellipses indicate that the results were not reported because of sparse data (<30 respondents at the severity level in the survey).
†Significant association between severity and probability of treatment at the .05 level.

jority of people in treatment in each country are either noncases or mild cases. (Results available on request.) These will be referred to for the remainder of this article as subthreshold cases. We also examined the associations of severity with 2 indicators of treatment intensity among people in health care treatment: being seen in the specialty mental health sector rather than exclusively in the general medical sector and number of visits in the 12 months before the interview. Statistical power was low in these analyses because of the small numbers of treated cases with serious conditions in most countries. Nevertheless, there was a clear trend in the vast majority of countries for severity to be positively related both to proportional treatment in the specialty sector and to number of visits, with the highest scores on each consistently found among serious cases. (Results available on request.)

Even though a dose-response relationship exists between severity and probability of treatment in virtually all countries, substantial proportions of serious cases receive no treatment. This is true even in developed countries, where 35.5% to 50.3% of serious cases were untreated in the health care sector in the year before the interview. The situation is even worse in less-developed countries, where 76.3% to 85.4% of serious cases received no treatment. This is especially striking in light of the fact that such a high proportion of treatment in all countries is devoted to subthreshold cases. It is interesting to note that the 3 surveys with the highest overall 12-month prevalence estimates (United States, Ukraine, and Colombia) also had 3 of the 4 lowest proportions of treatment devoted to subthreshold cases (52%-59%). In comparison, the 3 Asian surveys, all of which had quite low overall 12-month prevalence estimates, had the 3 highest proportions of treatment devoted to subthreshold cases (71%-85%).

COMMENT

An important limitation of the WMH surveys is their wide variation in response rate. In addition, some of the surveys had response rates below normally accepted standards. We attempted to adjust for differential response to the extent possible by poststratification, but this only deals with a limited type of bias. If response is related to mental illness, severity, or treatment in ways that cannot be corrected by simple sociodemographic adjustment, cross-national comparisons will be distorted.

A related limitation is that the Western European surveys, which were fielded before any of the other WMH surveys, experienced a number of difficulties in survey implementation, largely skip logic errors, that subsequent surveys avoided because they were resolved while carrying out the Western European surveys. As a result, these early surveys had much more item-missing data than later surveys, which led to underestimation of severity of some disorders because the Sheehan Disability Scales were sometimes mistakenly skipped.

An added complication was that various of the WMH surveys deleted disorders that were thought to have low relevance in their countries, leading to inconsistency in completeness of coverage. We investigated the implications of this variation by replicating analyses using only the disorders that were assessed in all surveys. Although basic patterns of association remained stable in these revised analyses (results available on request), it is still possible that some findings were sensitive to differential exclusion of some disorders in particular countries.

Another limitation is that schizophrenia and other nonaffective psychoses, although important mental disorders, were not included in the core WMH assessment because previous validation studies showed they are dramatically overestimated in lay-administered interviews like the WMH-CIDI.[44-49] These same studies also showed, however, that the vast majority of respondents with clinician-diagnosed nonaffective psychoses meet criteria for CIDI anxiety, mood, or substance disorders and are consequently captured as cases even if nonaffective psychoses are not assessed.

A final noteworthy limitation is that the WMH-CIDI might vary in accuracy across countries. Although the previous methodological studies that were cited in the measurement section documented that earlier versions of the CIDI had acceptable concordance with blind clinical reinterviews, these studies were carried out largely in developed Western countries. Performance of the WMH-CIDI could be worse in other parts of the world either because the concepts and phrases used to describe mental syndromes are less consonant with cultural concepts than in developed Western countries or because absence of a tradition of free speech and anonymous public opinion surveying causes greater reluctance to admit emotional or substance-abuse problems than in developed Western countries.

Clinical reappraisal studies are currently underway in both developed and less developed WMH countries in all major regions of the world to evaluate the issue of cross-national differences in WMH-CIDI diagnostic validity. Even before completing these studies, though, some patterns in the data (eg, the much lower estimated rate of alcoholism in Ukraine than expected from administrative data documenting an important role of alcoholism in mortality in that country[50]) raise concerns about differential validity. The most striking such pattern is that countries with the lowest disorder prevalence estimates have the highest proportion of respondents in treatment who are subthreshold cases. This pattern could very well reflect greater underestimation of disorders in countries with the lowest prevalence estimates.

Within the context of these limitations, the WMH results are consistent with those of earlier surveys in showing that mental disorders are highly prevalent,[9-12] often are associated with serious role impairment,[15,16,51] and often go untreated.[27,28,52] We also found substantial cross-national variation in these results. Two broad patterns consistent with previous research are that

prevalence is low in Asian countries[9-12,53] and that treatment is low in less developed countries.[26] There are so many idiosyncratic substantive and methodological factors that might contribute to these and other cross-national differences that it is more profitable to focus on consistency rather than on differences, at least in this initial report of broad WMH findings. It is noteworthy in this regard that prevalence and severity estimates are likely to be conservative, for previous methodological studies have shown that survey nonrespondents tend to have significantly higher rates and severity of mental illness than respondents.[20,36,54,55] The estimates of proportional treatment, in comparison, are likely to be downwardly biased because hospitalized patients were excluded from the surveys.

We found that disorder severity is strongly related to treatment in all countries. This finding is consistent with 2 previous large-scale survey investigations of the relationship between severity and treatment.[28,52] Correction for response bias would likely strengthen this relationship. The most reasonable interpretation is that demand for treatment is related to severity, presumably mediated by distress and impairment. A question could be raised whether this is merely a matter of demand or whether the treatment system is also more receptive to more severe cases. Some indirect indication of system responsiveness can be gleaned from the findings (available on request) that treatment intensity, as indicated by proportional treatment in the specialty sector and number of visits, is greater for serious than for other treated cases in most WMH countries.

Despite this evidence of rationality in treatment resource allocation, we found that 35.5% to 50.3% of serious cases in developed countries and 76.3% to 85.4% in less developed countries received no treatment in the 12 months before the survey. Yet a majority of people in treatment in most of the countries were subthreshold cases. Correction for response bias would likely show that we underestimated the proportion of serious cases in treatment more than the proportion of subthreshold cases in treatment, leading to this pattern becoming even stronger. The fact that many people with subthreshold disorders are treated while many with serious disorders are not shows that unmet need for treatment among serious cases is not merely a matter of limited treatment resources but that misallocation of treatment resources is also involved.

A major practical difficulty in rationalizing allocation of treatment resources is that system barriers constrain reallocation options. This is especially true in a decentralized system like in the United States. For example, there is no obvious mechanism by which constraining access to psychotherapy among middle-class persons with mild mental disorders in the United States would result in an increase in treatment of low-income people with serious mental illness. Another complexity is that misallocation of treatment resources is partly due to differences in perceived need for treatment that are unrelated to objective severity and to differences in access associated with insurance coverage and financial resources.[28,52,56] A report comparing the mental health care delivery systems in the United States and Ontario showed that these 2 systems differ along exactly these lines.[56] A higher proportion of people with serious mental illness were treated in Ontario than were treated in the United States because of lower constraint on access among persons unable to pay in Ontario than were able to pay in the United States while a higher proportion of mild cases were treated in the United States than Ontario because of significantly higher perceived need for treatment among insured middle-class people with mild disorders in the United States than in Ontario. Although a number of structural possibilities exist to modify constraints on access, it is unclear how perceived need could be modified to align demand with true need for treatment.

A final complexity in reallocating treatment resources is that optimal allocation rules are not obvious. The simplistic strategy of not treating any mild disorders is almost certainly suboptimal[31] because we know that many people with mild disorders, especially young people, go on to develop serious mental disorders.[57] To the extent that early intervention can prevent progression, early treatment of mild cases might be cost effective.[58] It is difficult to act on this insight, however, because we lack good information either about the characteristics of mild cases that predict risk of progression to more serious disorders or about the effectiveness of interventions for mild cases in preventing this progression. A new focus on the development and evaluation of secondary prevention programs for the early treatment of mild cases is needed to guide rationalization of treatment resource allocation.

Authors: *Belgium*: Koen Demyttenaere, Ronny Bruffaerts; *Colombia*: Jose Posada-Villa; *France*: Isabelle Gasquet, Viviane Kovess, Jean Pierre Lepine; *Germany*: Matthias C. Angermeyer, Sebastian Bernert; *Italy*: Giovanni de Girolamo, Pierluigi Morosini, Gabriella Polidori; *Japan*: Takehiko Kikkawa, Norito Kawakami, Yutaka Ono, Tadashi Takeshima, Hidenori Uda; *Lebanon*: Elie G. Karam, John A. Fayyad, Aimee N. Karam, Zeina N. Mneimneh; *Mexico*: Maria Elena Medina-Mora, Guilherme Borges, Carmen Lara; the Netherlands: Ron de Graaf, Johan Ormel; *Nigeria*: Oye Gureje; *People's Republic of China Beijing*: Yucun Shen, Yueqin Huang; *People's Republic of China Shanghai*: Mingyuan Zhang; *Spain*: Jordi Alonso, Josep Maria Haro, Gemma Vilagut; *Ukraine*: Evelyn J. Bromet, Semyon Gluzman, Charles Webb; *United States*: Ronald C. Kessler, Kathleen R. Merikangas, James C. Anthony, Michael R. Von Korff, Philip S. Wang; *ESEMeD/MHEDEA 2000 Consortium in Belgium, France, Germany, Italy, the Netherlands, and Spain*: Jordi Alonso, Traolach S. Brugha; *PAHO WMH Consortium in Colombia and Mexico*: Sergio Aguilar-Gaxiola; *Asia-Pacific WMH Consortium in Japan and the People's Republic of China*: Sing Lee; *WMH Data Collection Coordinating Center*: Steven Heeringa, Beth-Ellen Pennell; *WMH Data Analysis Coordinating Center*: Alan M. Zaslavsky; *WHO*: T. Bedirhan Ustun, Somnath Chatterji. Drs Kessler and Ustun are coprincipal investigators of the overall WMH Survey Initiative.

Author Contributions: Dr Kessler, as principal investigator, had full access to all of the data in this study and takes responsibility for the integrity of the data, and the accuracy of the data analysis.

Study concept and design: Kessler, Demyttenaere, Bruffaerts, Kovess, de Girolamo, Morosini, Polidori, Kikkawa, Kawakami, Takeshima, E. Karam, A. Karam, Mneimneh, Gureje, Alonso, Haro, Gluzman, Merikangas, Anthony, Wang, Heeringa, Pennell, Ustun, Chatterji.

Acquisition of data: Kessler, Demyttenaere, Bruffaerts, Posada-Villa, Isabelle Gasquet, Kovess, Lepine, Angermeyer, Bemert, de Girolamo, Morosini, Polidori, Kawakami, Ono, Uda, E. Karam, Fayyd, A. Karam, Mneimneh, Medina-Mora, Borges, Lara, de Graaf, Ormel, Gureje, Shen, Huang, Alonso, Haro, Vilagut, Bromet, Gluzman, Webb, Aguilar-Gaxiola, Lee, Heeringa, Pennell, Ustun, Chatterji.

Analysis and interpretation of data: Kessler, Kovess, de Girolamo, Morosini, Polidori, E. Karam, Fayyd, Mneimneh, Medina-Mora, Borges, Ormel, Gureje, Shen, Huang, Zhang, Haro, Gluzman, Webb, Merikangas, Von Korff, Wang, Brugha, Aguilar-Gaxiola, Zaslavsky, Ustun, Chatterji.
Drafting of the manuscript: Kessler, Ono, Gluzman, Merikangas, Wang, Ustun, Chatterji.
Critical revision of the manuscript for important intellectual content: Kessler, Demyttenaere, Bruffaerts, Posada-Villa, Isabelle Gasquet, Kovess, Lepine, Angermeyer, Bernert, de Girolamo, Morosini, Polidori, Kikkawa, Kawakami, Takeshima, Uda, E. Karam, Fayyd, A. Karam, Mneimneh, Medina-Mora, Borges, Lara, de Graaf, Ormel, Gureje, Shen, Huang, Zhang, Alonso, Haro, Vilagut, Bromet, Gluzman, Webb, Anthony, Von Korff, Wang, Brugha, Aguilar-Gaxiola, Lee, Heeringa, Pennell, Zaslavsky, Ustun, Chatterji..
Statistical expertise: Kessler, Borges, Huang, Gluzman, Webb, Merikangas, Heeringa, Zaslavsky.
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PREVALENCE AND SEVERITY OF MENTAL DISORDERS

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Regular Article

Twelve-month prevalence, severity, and treatment of common mental disorders in communities in Japan: preliminary finding from the World Mental Health Japan Survey 2002–2003

NORITO KAWAKAMI, MD,[1] TADASHI TAKESHIMA, MD,[2] YUTAKA ONO, MD,[3] HIDENORI UDA, MD,[4] YUKIHIRO HATA, MD,[5] YOSHIBUMI NAKANE, MD,[6] HIDEYUKI NAKANE, MD,[7] NOBORU IWATA, PhD,[8] TOSHIAKI A. FURUKAWA, MD[9] AND TAKEHIKO KIKKAWA, MD[2]

[1]*Hygiene and Preventive Medicine, Okayama University Graduate School of Medicine and Dentistry, Okayama,* [2]*National Institute of Mental Health, National Center of Neurology and Psychiatry, Ichikawa, Chiba,* [3]*Health Center, Keio University, Yokohama,* [4]*Sensatsu Public Health Center, Kagoshima Prefecture, Kawauchi,* [5]*Oshima Hospital, Kagoshima Prefecture, Nase, Kagoshima,* [6]*Division of Human Sociology, Nagasaki International University Graduate School,* [7]*Division of Neuropsychiatry, Department of Translational Medical Sciences, Nagasaki University Graduate School of Biomedical Sciences, Nagasaki,* [8]*Faculty of Human and Social Environment, Hiroshima International University, Kurose, Hiroshima and* [9]*Department of Psychiatry, Nagoya City University Medical School, Nagoya, Japan*

Abstract To estimate the prevalence, severity, and treatment of *Diagnostic and Statistical Manual of Mental Disorders* (4th edn; DSM-IV) mental disorders in community populations in Japan, face-to-face household surveys were conducted in four community populations in Japan. A total of 1663 community adults responded (overall response rate, 56%). The DSM-IV disorders, severity, and treatment were assessed with the World Mental Health version of the World Health Organization (WHO) Composite International Diagnostic Interview (WMH-CIDI), a fully structured lay-administered psychiatric diagnostic interview. The prevalence of any WMH-CIDI/DSM-IV disorder in the prior year was 8.8%, of which 17% of cases were severe and 47% were moderate. Among specific disorders, major depression (2.9%), specific phobia (2.7%), and alcohol abuse/dependence (2.0%) were the most prevalent. Although disorder severity was correlated with probability of treatment, only 19% of the serious or moderate cases received medical treatment in the 12 months before the interview. Older and not currently married individuals had a greater risk of having more severe DSM-IV disorders if they had experienced any within the previous 12 months. Those who had completed high school or some college were more likely to seek medical treatment than those who had completed college. The study confirmed that the prevalence of DSM-IV mental disorders was equal to that observed in Asian countries but lower than that in Western countries. The percentage of those receiving medical treatment was low even for those who suffered severe or moderate disorders. Possible strategies are discussed.

Key words CIDI, descriptive epidemiology, mental disorders, WMH surveys.

Correspondence address: Dr Norito Kawakami, Okayama University Graduate School of Medicine and Dentistry, Hygiene and Preventive Medicine, 2-5-1 Shikata-cho, Okayama 700-8558, Japan. Email: norito@md.okayama-u.ac.jp

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INTRODUCTION

Cross-national psychiatric epidemiology has consistently revealed a lower prevalence of mood and anxiety disorders among East-Asian countries, such as South Korea,[1] Taiwan[2] and China (Hong Kong),[3] compared with Western countries.[2–15] A similar pattern was observed for alcohol abuse/dependence,[4–6] with an exception for South Korea, in which a high prevalence was reported.[1]

In a community-based survey in Japan with an original diagnostic instrument, Kitamura *et al.* reported a high lifetime prevalence of *Diagnostic and Statistical Manual of Mental Disorders* (3rd edn, revised; DSM-III-R) major depression (14%) but modest lifetime prevalences for other mood and anxiety disorders (1–2%).[16] Another community-based survey of mental disorders was conducted using the University of Michigan version of the Composite International Diagnostic Interview (CIDI)[6] in an urban population in Japan. The findings showed that the prevalences of mood and anxiety disorders and alcohol abuse/dependence were intermediate between those in East Asia (Taiwan and Hong Kong) and those in the USA and Europe.[2,3,15] For medical treatment rates among those who suffered mental disorders, Kitamura *et al.* reported that only 10% of those who received a diagnosis of mental disorders visited a doctor for medical treatment.[16] This rate was far lower than those reported in previous surveys in the USA.[13,17] The other survey did not report the medical treatment rate.[15] In addition, one dimension that has been lacking in previous psychiatric epidemiologic surveys in relation to the assessment of unmet needs is the severity of mental disorders.[18] Many mental disorders are mild and do not require treatment. No previous study in Japan has considered the severity of mental disorders in the epidemiology of mental disorders and medical treatment. Needs and unmet needs relevant to mental disorders are still not clear for the Japanese population.

The World Health Organization (WHO) established the World Mental Health (WMH) Survey Consortium in 1998 to address unmet needs considering the severity of the disorders across developed and developing countries.[19] The WMH collaborators expanded the CIDI to include detailed questions about disorder severity, impairment, and treatment and then carried out a coordinated series of WMH-CIDI surveys in 28 countries around the world, including Japan. The first paper from the cross-national collaborative study reported 12-month prevalence, severity, impairment, treatment, and sociodemographic correlates in 14 countries, indicating a large difference in these indicators among countries, particularly, between Western and Asian countries.[18] The survey revealed that the medical treatment rate was still lower among people who suffered mental disorders with a severe or moderate impairment, almost in every country.

An objective of the present paper was to describe the 12-month prevalence, severity, and treatment of mental disorders and their demographic correlates based on data specific to Japan that were collected between 2002 and 2003 (WMH Japan 2002–03 Survey) as a part of the WMH surveys.[18] Based on the findings, the specific needs, unmet needs, and possible treatment options are presented and discussed in relationship to a proposal for a plan to provide mental health care in Japan.

METHODS

Survey populations and subjects

Four community populations in Japan were selected as study sites in 2002–03. The sites included two urban cities (Okayama, population 660 000; and Nagasaki, population 450 000) and two rural municipalities (Kushikino, population 25 000) and Fukiage, population 8500, in Kagoshima prefecture). These sites were selected in consideration of geographic variation and the availability of site investigators. Mainly due to the latter factor, all survey sites were located on the west coast of Japan for the 2002–03 WMH Japan surveys. The proportion of those aged ≥65 years old ranged from 17% (Okayama) to 36% (Fukiage); the proportion of those who engaged in agricultural or fishery occupations to the total employed population ranged from 2% to 3% (Nagasaki and Okayama) to 16% (Fukiage). A random sample was selected from residents aged ≥20 years old in each survey site, based on a voter registration list or a resident registry. After a letter of invitation was sent, trained interviewers contacted the subjects and interviewed those who agreed to participate in the survey using the standardized instrument. We excluded subjects who did not meet eligible criteria: those who had died, moved, or were institutionalized. A completed interview was defined as one in which, at least, the pharmacoepidemiology (PH) section of the instrument had been completed. A total of 1664 interviews were obtained. One respondent from the Okayama site was eliminated from the analysis presented in the previous WMH collaboration paper[18] because of a coding error. Thus, we eliminated this respondent from further analysis to maintain consistency with the previous study.[18] The response rate was calculated as the number of completed interviews divided by the number of eligible subjects (excluding ineligible subjects who were deceased, had moved, or had been institutionalized). The overall response rate was 56% (Table 1). Unfortunately, the response rate at the Nagasaki site was very low (26%) because a different survey method had been used, while the

Table 1. Survey site details: WHO WMH Japan 2002–2003 survey

Disposition	Okayama		Nagasaki		Kagoshima Prefecture				Total	
					Kushikino		Fukiage			
	n	(%)	*n*	(%)	*n*	(%)	*n*	(%)	*n*	(%)
Total initial sample	1607	100	800	100	587	100	230	100	3224	100
Completed interview	925	57.6	208	26.0	354	60.3	177	77.0	1664	51.6
Incomplete interview	6	0.4	3	0.4	–		–		9	0.3
No contact	80	5.0	296	37.0	–		–		376	11.7
Refused	397	24.7	280	35.0	185	31.5	40	17.4	902	28.0
Ineligible[†]	199	12.4	13	1.6	48	8.2	13	5.7	273	8.5
Response rate[‡]		65.7		26.4		65.7		81.6		56.4

WHO WMH, World Health Organization World Mental Health.

[†]Ineligible subjects include those who were deceased, had moved, or had been institutionalized. Ineligible subjects also include a small number ($n = 15$) of those who had impaired cognitive functions in the Okayama site.

[‡]Response rate = (no. completed interviews)/(no. total initial sample–no. ineligible).

response rates were fairly high (66–81%) at the other three sites. Excluding data from the Nagasaki site did not greatly alter the findings. Thus we included the data in the analysis, together with data from other three sites.

An internal sampling strategy was used in all surveys to reduce respondent burden by dividing the interview into two parts. Part I included the diagnostic assessment, and part II included information about correlates of a disorder. All respondents completed part I. All part I respondents who met the criteria for any mental disorder and a probability subsample of approximately 10% of other respondents were then given part II ($n = 477$). The interviews for the respondents who were not selected into part II were terminated after part I. The part I sample was used to estimate the 12-month prevalence, severity, and treatment for most disorders; the part II sample, that is, a subsample of the part I sample, was used to estimate the 12-month prevalence of some disorders and to examine the association between demographic variables and the 12-month prevalence, severity and treatment. The part II respondents were weighted by the inverse of their probability of selection to adjust for the differential sampling of cases and non-cases. In addition to this part II weight, all samples were weighted to adjust for differential probabilities of selection and post-stratified to match the population distributions on the cross-classification for sex and age,[20] for which the non-response weight in a given group for sex and age was the inverse of the response rate in this category (Appendix I). The unweighted and weighted distributions of the subjects in part I and part II are shown in Appendix II.

Training and field procedures

The fieldwork for the WMH Japan Survey was carried out by a survey center at each survey site in connection with the headquarters at the National Institute of Mental Health (NIMH), Japan. The centers include Okayama University Graduate School of Medicine and Dentistry, Ijuin Public Health Center, Kagoshima Prefecture, and Nagasaki University Graduate School of Biomedical Sciences. The development of the instrument, training of the interviewers, and preparation of data analysis were supported by the technical support center at Okayama University Graduate School of Medicine and Dentistry (NK).

Before the survey, interviewers received a 5-day standardized instrument-specific training. The training included didactic sessions of general interview skills and reviews of the instrument sections, mock interviews and role-playing exercises. Two official trainers (NK, NI) and other assistants who were previously trained in the instrument provided 5-day training to the interviewers at each survey site.

At the Okayama site, an invitation letter was sent to each subject and then an interviewer visited the homes of the subjects to seek permission to participate in the survey. In the two Kagosima prefecture sites, community volunteers first contacted the subjects in their homes to recruit them into the survey. If the subject agreed, the interviewer conducted a face-to-face interview in the home or at the survey center if the participant preferred. At the Nagasaki site, an invitation letter was sent to each subject, and an interviewer conducted the face-to-face interview with those who replied positively. When an invitation letter was mailed

twice and no response was received within a month, no further effort was made to contact the individuals. Written consent was obtained from each respondent at each site. The Research Ethics Committees of Okayama University (for the Okayama site), Japan NIMH (for the Kagoshima site), and Nagasaki University (for the Nagasaki site) approved the recruitment, consent, and field procedures.

Survey instrument

The survey used the Japanese computer-assisted personal interview (CAPI) version of the WMH Initiative version of the WHO Composite International Diagnostic Interview (WMH-CIDI),[21] a fully structured diagnostic interview, to assess disorders and treatment. The original English version of WMH-CIDI was translated into Japanese by a team under the supervision of the investigators (NK, NI, TF). Key questions of the final draft of the Japanese version were translated back into English and sent to the WMH Coordinating Center at the Harvard Medical School for a review to check for cross-national consistency. Methodological evidence collected in the WHO-CIDI Field Trials and later clinical calibration studies showed that all disorders were assessed with acceptable reliability and validity both in the original CIDI[22] and in the original version of the WMH-CIDI. A pilot study using the Japanese version of WMH-CIDI with a small number of clinical patients showed good concordance between clinical diagnosis and WMH-CIDI diagnosis of major depression and alcohol abuse/dependence.[23]

Twelve-month diagnosis, severity and treatment

Disorders assessed in the survey were (i) anxiety disorders [agoraphobia, generalized anxiety disorder (GAD), panic disorder, post-traumatic stress disorder (PTSD), social phobia, specific phobia], (ii) mood disorders (bipolar I and II disorders, dysthymia, major depressive disorder), (iii) disorders that share a feature of problems with impulse control [intermittent explosive disorder (IED)], and (iv) substance disorders (alcohol and drug abuse and dependence). Disorders were assessed using the definitions and criteria of the *Diagnostic and Statistical Manual of Mental Disorders* (4th edn, DSM-IV). The CIDI organic exclusion rules were imposed on all diagnoses.

The WMH-CIDI/DSM-IV disorders were classified as serious, moderate, or mild. Serious disorders were defined as either those meeting the criteria for bipolar I disorder or substance dependence with a physiological dependence syndrome; a suicide attempt in conjunction with any other WMH-CIDI/DSM-IV disorder; reporting at least two areas of role functioning with severe role impairment due to a mental disorder in the disorder-specific Sheehan Disability Scales (SDS);[24] or reporting overall functional impairment at a level consistent with a Global Assessment of Functioning (GAF)[25] of ≤50 in conjunction with any other WMH-CIDI/DSM-IV disorder.[18] Respondents not classified as having a serious disorder were classified as moderate if interference was rated at least moderate in any SDS domain or if the respondent had substance dependence without a physiological dependence syndrome. All other disorders were classified as mild.

Twelve-month treatment was assessed by asking respondents if they ever saw any of a list of professionals either as an outpatient or inpatient for problems with emotions, nerves, mental health, or use of alcohol or drugs. Professionals were classified into the following categories: (i) psychiatrist or mental health specialist, (ii) general medical (other MD or nurse), and (iii) human services (religious provider, social worker or counselor in a non-mental health setting) and complementary and alternative (Internet group, self-help group, or alternative provider). Further, health-care service was defined as psychiatrist, mental health specialist, or general medical. The subjects who had used any of these services in the previous 12 months were placed in a category labeled 'any treatment', and those who did not seek treatment were categorized as 'no treatment.

Patient variables

The demographic characteristics used in the analysis were age, gender, education, marital status, and income. Income was dichotomized based on the median income per family member. Demographic characteristics of the study sample after sampling weighting were: for gender and age (Appendix II); for education, none or some primary, 30.9%; completed secondary, 34.1%; some post-secondary, 18.8%; and college graduate, 16.5%; for marital status, married, 62.8%; and not married, 37.2% (previously married, 15.1%; and never married, 22.1%); for income, below average, 50%; and above average, 50%.

Analysis methods

Data are reported on prevalence, severity, and associations of severity with treatment. Simple cross-tabulations were used to calculate prevalence and severity. Logistic regression analysis was used to study sociodemographic correlates. Standard errors of descriptive statistics were estimated using the Taylor

series method implemented in the SUDAAN software system (Research Triangle Park, NC, USA) to adjust for the weighting of cases.[26] The logistic regression coefficients were transformed to odds ratios (OR) and are reported here with design-adjusted 95% confidence intervals (CI). Multivariate tests were based on Wald χ^2 tests computed from design-adjusted coefficient variance–covariance matrices. Statistical significance was based on two-sided design-based tests evaluated at the 0.05 level of significance.

RESULTS

Twelve-month prevalence and disorder severity

Approximately 9% of community residents had experienced any WMH/CIDI DSM-IV disorder in the previous 12 months (Table 2): 5% had experienced any anxiety disorder; 3%, any mood disorder; 1%, an impulse-control disorder (i.e. IED); and 1.7%, any substance use disorder. Among the specific disorders assessed in the survey, the 12-month prevalence was greater for major depressive disorder (2.9%), specific phobia (2.7%), and then GAD (1.2%).

Among those who had experienced a disorder in the previous 12 months, one of six (1.5% of the total population) had experienced a severe disorder, and approximately one half (4.1% of the total population) had experienced a moderate disorder in the previous 12 months. More severe cases were in the categories of PTSD, bipolar I–II disorders (as defined), alcohol dependence, and drug abuse and dependence.

Table 2. Prevalence of 12-month WMH-CIDI/DSM-IV disorders and disorder severity

Disorder	12-month prevalence %	(95%CI)	Severity of the disorder: Serious %	(95%CI)	Moderate %	(95%CI)	Mild %	(95%CI)
Anxiety disorders								
Panic disorder	0.5	(0.0–1.1)	24.8	(0.0–58.3)	69.1	(32.8–100.0)	6.1	(0.0–18.6)
GAD	1.2	(0.6–1.8)	29.2	(8.0–50.4)	70.8	(49.6–92.0)	–	NA
Specific phobia	2.7	(1.5–3.9)	10.9	(0.0–24)	46.9	(27.9–65.9)	42.2	(26.1–58.3)
Social phobia	0.8	(0.2–1.4)	31.6	(0.0–66.7)	68.4	(33.3–100.0)	–	NA
Agoraphobia without panic	0.3	(0.1–0.5)	33.7	(0.0–79.6)	66.3	(20.4–100.0)	–	NA
PTSD[†]	0.4	(0.0–0.8)	65.6	(37.4–93.8)	5.9	(0.0–16.3)	28.5	(0.0–59.7)
Any anxiety disorder[‡]	4.8	(3.0–6.6)	15.4	(4.8–26.0)	59	(46.1–71.9)	25.6	(14.8–36.4)
Mood disorders								
Major depressive disorder	2.9	(2.1–3.7)	22.1	(10.7–33.5)	60.4	(44.9–75.9)	17.5	(5.3–29.7)
Dysthymia	0.7	(0.3–1.1)	41.2	(0.0–83.3)	43.7	(0.0–93.1)	15.1	(0.0–32.7)
Bipolar I-II disorders	0.1	(0.0–0.3)	100	NA	–	NA	–	NA
Any mood disorder	3.1	(2.1–4.1)	25.8	(13.6–38.0)	56.4	(39.5–73.3)	17.8	(6.2–29.4)
Impulse-control disorders								
IED	1.0	(0.4–1.6)	15.3	(0.0–40.6)	33	(0.0–71.4)	51.7	(20.1–83.3)
Substance use disorders								
Alcohol abuse or dependence[†]	1.6	(0.2–3.0)	26.7	(1.2–52.2)	10.6	(0.0–24.7)	62.7	(30.6–94.8)
Alcohol dependence[†]	0.4	(0.0–0.8)	81.7	(44.1–100.0)	18.3	(0.0–55.9)	–	NA
Drug abuse or dependence[†]	0.1	(0.0–0.3)	100.0	NA	–	NA	–	NA
Drug dependence[†]	0.1	(0.0–0.3)	100.0	NA	–	NA	–	NA
Any substance use disorder[†]	1.7	(0.3–3.1)	29.7	(3.2–56.2)	10.2	(0.0–23.7)	60.1	(27.8–92.4)
Any disorder								
Any[‡]	8.8	(6.4–11.2)	16.7	(9.8–23.6)	46.6	(35.6–57.6)	36.7	(26.3–47.1)
Total sample	–	–	1.5	(0.7–2.3)	4.1	(2.7–5.5)	3.2	(1.8–4.6)

CI, confidence interval; GAD, generalized anxiety disorder; IED, intermittent explosive disorder; NA, 95% confidence intervals could not be calculated; PTSD, post-traumatic stress disorder; WMH-CIDI/DSM-IV, World Mental Health version of the World Health Organization Composite International Diagnostic Interview/*Diagnostic and Statistical Manual of Mental Disorders* 4th edn.

[†]Part II sample.

[‡]Part II sample. No adjustment was made for the fact that one or more disorders in the category were not assessed for all part II respondents.

–, no cases.

The 12-month prevalence of any DSM-IV disorder was significantly different among the four survey sites after controlling for gender and age groups (data not shown, d.f. = 3, $P = 0.038$): The estimated OR of having any DSM-IV disorder in the previous 12 months were 1.63 (95%CI, 1.00–2.66) in Nagasaki-city, 0.92 (95%CI, 0.56–1.50) in Kushikino, and 0.47 (95%CI, 0.20–1.10) in Fukiage, compared with Okayama as a reference. Similar tendencies were observed for any mood disorder and any anxiety disorder, although the difference was not significant for any of the four disorder categories (d.f. = 3, $P > 0.05$).

Association of 12-month disorder severity with treatment

A severe disorder and a moderate disorder were combined into one category because <30 cases had a serious disorder. Those who had a severe/moderate disorder were more likely to receive health care and medical treatment ($P < 0.05$), particularly among the mental health specialties (Table 3). However, only 19% of those who had a severe/moderate disorder sought medical treatment.

Sociodemographic correlates of 12-month prevalence, severity, and health-care treatment

None of the sociodemographic predictors (i.e. sex, age, family income, marital status and education) was significantly associated with the 12-month prevalence of any disorder ($P > 0.05$, Table 4). The severity of any disorder experienced was significantly greater among older individuals and those who were not currently married ($P < 0.05$). The probability of seeking medical treatment was greater among those who had completed high school than among those who had received less education and those who had graduated from college ($P = 0.001$).

Sociodemographic correlates of WMH-CIDI/DSM-IV disorder types

Any mood disorders experienced in the previous 12 months were more prevalent in those who were never married (Table 5). Substance use disorders in the previous 12 months were more prevalent among men, those aged 35–49 years old, and among those who had higher-than-average income ($P < 0.05$). None of the sociodemographic predictors was significantly associated with 12-month prevalence of any anxiety disorder or impulse control disorder ($P > 0.05$).

DISCUSSION

The present study has confirmed that the prevalence of mental disorders was lower in Japan than that in Western countries.[15,18,27,28] The 12-month prevalences of any DSM-IV disorder, four broad categories of mental disorders, and specific mental disorders were almost equal to those in WMH surveys in Beijing, and some European Union (EU) countries (Spain, Italy, and Germany), greater than those in Shanghai and Nigeria, and lower than those reported in the USA, Colombia, and most EU countries.[6,12,14,18,29]

The present survey added new information on the prevalence of PTSD, IED and drug abuse/dependence in Japan. The 12-month prevalence of PTSD in the

Table 3. Association of 12-month WMH-CIDI/DSM-IV disorder severity with treatment

Treatment	Any disorder: Serious or moderate[†] %	(95%CI)	Mild %	(95%CI)	No disorder %	(95%CI)	Total respondents %	(95%CI)
Any treatment	22.7	(10.7–34.7)	12.0	(1.4–22.6)	6.2	(3.1–9.3)	7.3	(4.4–10.2)
Mental health specialty	17.5	(7.1–27.9)	6.0	(0.0–14.4)	1.3	(0.0–2.7)	2.5	(1.3–3.7)
General medical	6.6	(0.9–12.3)	5.1	(0.0–11.4)	3.5	(1.7–5.3)	3.7	(2.1–5.3)
Any health care	18.8	(8.4–29.2)	4.8	(2.8–6.8)	5.8	(3.8–7.8)	5.8	(3.8–7.8)
Non-health care (Human services or CAM)	8.6	(1.3–15.9)	0.9	(0.0–2.9)	1.5	(0.0–3.1)	1.9	(0.5–3.3)
No treatment	77.3	(65.3–89.3)	88.0	(77.4–98.6)	93.8	(90.7–96.9)	92.7	(89.8–95.6)

CAM, complementary and alternative; WMH-CIDI/DSM-IV, World Mental Health version of the World Health Organization Composite International Diagnostic Interview/*Diagnostic and Statistical Manual of Mental Disorders* 4th edn.

[†]The categories were combined because fewer than 30 individuals had a serious disorder. Significant differences in a proportion for any treatment, mental health specialty, health care, absence of health care, and proportion of no treatment between the two severity categories of a disorder (d.f. = 1, all $P < 0.05$).

Table 4. Predictors of WMH-CIDI/DSM-IV 12-month prevalence, severity, and health-care treatment (part II sample, $n = 477$)

	Any 12-month disorder		Severity/Disorder†		Treatment‡	
	OR	95% CI	OR	95% CI	OR	95% CI
Sex						
Male	1.00	–	1.00	–	1.00	–
Female	0.89	(0.48–1.64)	1.18	(0.27–5.13)	0.91	(0.40–2.06)
		$\chi^2_1 = 0.2$		$\chi^2_1 = 0.1$		$\chi^2_1 = 0.1$
Age (years)						
20–34	1.58	(0.67–3.75)	0.13	(0.01–2.72)	0.60	(0.16–2.21)
35–49	1.76	(0.64–4.86)	0.12	(0.01–2.25)	0.64	(0.14–2.88)
50–64	1.40	(0.63–3.09)	0.53	(0.03–8.46)	0.57	(0.12–2.78)
65+	1.0	–	1.00	–	1.00	–
		$\chi^2_3 = 1.7$		$\chi^2_3 = 11.0$*		$\chi^2_3 = 0.7$
Family income						
Low	0.72	(0.26–2.05)	2.71	(0.70–10.54)	1.18	(0.44–3.17)
High	1.00	–	1.00	–	1.00	–
		$\chi^2_1 = 0.4$		$\chi^2_1 = 2.4$		$\chi^2_1 = 0.1$
Marital status						
Currently married	1.00	–	1.00	–	1.00	–
Never married/separated/widowed/divorced	1.50	(0.55–4.10)	4.30	(1.17–15.82)	0.75	(0.24–2.33)
		$\chi^2_1 = 0.7$		$\chi^2_1 = 5.5$*		$\chi^2_1 = 0.3$
Education						
Middle school or less	0.85	(0.29–2.54)	0.28	(0.03–2.54)	0.65	(0.12–3.63)
High school	1.45	(0.54–3.92)	0.54	(0.13–2.17)	1.88	(0.51–6.95)
Some college	1.88	(0.60–5.93)	0.53	(0.11–2.50)	1.05	(0.35–3.21)
College or higher	1.00	—	1.00	—	1.0	–
		$\chi^2_3 = 3.1$		$\chi^2_3 = 1.6$		$\chi^2_3 = 20.4$*

CI, confidence interval; OR, odds ratio; WMH-CIDI/DSM-IV, World Mental Health version of the World Health Organization Composite International Diagnostic Interview/*Diagnostic and Statistical Manual of Mental Disorders* 4th edn.

†Serious or moderate (coded 1) vs mild (coded 0) among those who experienced any 12-month disorder.

‡Controlling for disorder severity.

*Significant at the 0.05 level, two-sided test.

present study was 0.4%, which is much lower than that recently reported in the USA.[30] One of 100 respondents experienced IED in the previous 12 months, which is characterized by discrete episodes of failure to resist aggressive impulses, resulting in serious assaults or destruction of property. However, the estimated figure should be interpreted with caution because the diagnosis of IED should be made only after a thorough medical work-up.[31] The 12-month prevalence of drug abuse/dependence was much lower than that previously reported in the USA and other Western countries.[6,32] This is consistent with the fact that the Japanese government has a strong policy for controlling the use of illicit and other psychotropic drugs.[33]

The WMH surveys found that mild cases met diagnostic criteria but involved almost no impairment of functioning.[18] However, 5.6% of the total population experienced a severe or moderate disorder in the past 12 months; 2.4% of the total population experienced a severe or moderate form of major depression in the previous 12 months. These severe or moderate cases should be a primary target of mental health care.

People were more likely to have sought medical treatment if they had experienced a severe or moderate disorder within the previous 12 months. However, only one of five who had a severe disorder sought medical treatment. The medical treatment rate was lower than that in the WMH surveys in most developed countries, such as the USA and Europe, while it was slightly greater than that in China, Columbia and Lebanon.[18] It is somewhat unexpected that those who had completed high school or attended some college were significantly more likely to seek medical treatment than others. Individuals at each end of the educational spectrum may be reluctant to seek medical treatment for mental disorders. Those with the least education may lack knowledge of mental disorders and their treatments,

Table 5. Predictors of WMH-CIDI/DSM-IV disorder types (part II sample, $n = 477$)

	Any mood		Any anxiety		Any impulse		Any substance	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Sex								
Male	1.00	–	1.00	–	1.00	–	1.00	–
Female	1.60	(0.67–3.82)	1.18	(0.44–3.14)	0.50	(0.08–3.27)	0.07	(0.01–0.92)
		$\chi^2_1 = 1.3$		$\chi^2_1 = 0.1$		$\chi^2_1 = 0.6$		$\chi^2_1 = 4.7$*
Age (years)								
20–34	2.25	(0.29–17.22)	2.43	(0.57–10.31)	0.35	(0.03–4.91)	2.66	(0.35–20.00)
35–49	2.71	(0.35–21.18)	1.94	(0.45–8.30)	1.17	(0.05–25.36)	4.33	(0.95–19.80)
50–64	4.58	(0.71–29.69)	2.43	(0.68–8.68)	0.79	(0.03–18.33)	0.27	(0.02–3.85)
65+	1.00	–	1.00	–	1.00	–	1.00	–
		$\chi^2_3 = 3.5$		$\chi^2_3 = 2.9$		$\chi^2_3 = 1.3$		$\chi^2_3 = 10.7$*
Family income								
Low	1.06	(0.39–2.91)	0.97	(0.33–2.90)	1.86	(0.07–52.03)	0.04	(0.00–0.61)
High	1.00	–	1.00	–	1.0	–	1.00	–
		$\chi^2_1 = 0.0$		$\chi^2_1 = 0.0$		$\chi^2_1 = 0.2$		$\chi^2_1 = 6.1$*
Marital status								
Currently married	1.00	–	1.0	–	1.00	–	1.00	–
Never married/separated/ widowed/divorced	3.00	(0.94–9.53)	1.46	(0.59–3.63)	0.12	(0.01–1.71)	3.65	(0.25–53.03)
		$\chi^2_1 = 3.9$*		$\chi^2_1 = 0.8$		$\chi^2_1 = 2.8$		$\chi^2_1 = 1.0$
Education								
Middle school or less	0.25	(0.03–2.43)	1.00	(0.26–3.88)	1.52	(0.04–52.69)	10.20	(0.37–278.16)
High school	1.04	(0.24–4.54)	1.90	(0.62–5.82)	3.45	(0.13–92.09)	1.65	(0.0–38.93)
Some college	0.73	(0.17–3.17)	2.78	(0.92–8.41)	1.90	(0.09–41.39)	6.26	(0.20–194.00)
College or higher	1.00	–	1.00	–	1.00	–	1.00	–
		$\chi^2_3 = 2.8$		$\chi^2_3 = 6.9$		$\chi^2_3 = 0.9$		$\chi^2_3 = 5.0$

CI, confidence interval; OR, odds ratio; WMH-CIDI/DSM-IV, World Mental Health version of the World Health Organization Composite International Diagnostic Interview/*Diagnostic and Statistical Manual of Mental Disorders* 4th edn.

*Significant at the 0.05 level, two-sided test.

and the more educated may face psychological barriers, such as fear of losing social status, a threat to job security, or humiliation, which might prevent them from seeking care.

As observed in previous studies in Japan and many other countries, women had a greater risk of mood disorder and anxiety disorders and a lower risk of substance use and impulse-control disorders, although the association was not always significant, likely due to a small number of the part-II sample respondents.[4,6,15,16,18,34] Greater prevalence of any substance use disorder among younger groups is also in concordance with previous studies.[4] Although not significant, the present study supports a previous observation that mood disorders were more prevalent among the middle-aged in Japan.[15] A greater risk of suicide has been observed among men in the same age range in Japan.[35] The most likely factor underlying the phenomenon is economic recession but others should be considered, such as rapid changes in family and society as well as the possible burden of caring for elderly relatives. The middle-aged population may be a primary important target for mental health care in Japan. In addition, older respondents had a significantly greater risk of having a severe form of a mental disorder after they became affected with one. This may be attributable to a greater risk of recurrence of mental disorders and comorbidity with a somatic disorder among older patients.[36,37] A greater risk of mood and anxiety disorders among those not currently married is also in concordance with previous observations.[29,34] However, in contrast to previous observations in other countries,[18,27,29] income showed almost no association with mood or anxiety disorders; substance use disorder was rather more prevalent in the group with high income. First, this may be attributable to a possible selection bias in that people with low income who suffered from these disorders may be in poor living conditions and were not likely to participate in the study. Another possibility included confounding by employment status: if those who were currently employed (and earned some income) suffered from stress at work and were more likely to develop mental disorders, the deteriorating effect of low income could be diminished or even

reversed. However, a previous study in Japan has reported an inconsistent association between income and depressive episode.[27] Income may thus not be a strong correlate of common mental disorders in Japan, meaning that future research in Japan will be needed to address this point.

Among 102 million adults aged 20 years or over in Japan (Japan Statistics Bureau, 2002), 5.7 million (5.6%) may have experienced a severe or moderate mental disorder in the previous 12 months. The majority of them did not seek medical treatment. A primary objective of a future mental health policy in Japan should be to increase medical treatment rates for those experiencing severe or moderate mental disorders. Impaired functioning in several life domains is anticipated in such cases. Awareness of these cases by family, friends, supervisors/coworkers, and neighbors, possibly enhanced through education/training and the dissemination of information, may be useful to facilitate medical treatment, in addition to the increased awareness of such cases. A fairly large portion of those who had experienced mental disorders already received medical treatment from non-psychiatrists. Training non-psychiatrist physicians to treat mental disorders and establishing a liaison between non-psychiatrists and psychiatrists might help bridge the gap.

The survey sites were selected from western Japan, and they did not include a metropolitan city with a population of >1 million. The lower response rate (57%) may also limit the interpretation of the findings, which may lead to either underestimation or overestimation of prevalence. In the Nagasaki site, the response rate was particularly low and the prevalence of mental disorders was several times greater than those at the other three sites, suggesting that those who had a disorder may have been more willing to participate at this site. If this is true, the lower response rate may inflate the overall prevalence. The response rate was lower among younger age groups, which may result in a distorted association between age and the prevalence of mental disorders.

The Japanese version of the WMH-CIDI was not fully validated against clinical diagnoses, although it was developed by an expert group and checked though an expert review and a back-translation procedure. The validity of the instrument should be checked against clinical diagnosis. The observed prevalences may have been over- or under-estimated in the present study because of the use of this instrument.[13] The prevalence of substance use disorders and PTSD, which was estimated based on the part II sample ($n = 477$), might be unstable. For the relevant analyses based on these respondents, the number of respondents may have been insufficient to provide for the detection of a true association. The on-going WMH Japan survey will replicate and expand the present findings.

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APPENDIX I: WEIGHT CALCULATION FOR PART I AND PART II SAMPLES

Part I: weight creation

1. Post-stratification (PS) weight

- Purpose: To compensate for differences between the sample and population characteristics due to frame under-coverage, non-response and sampling variability.
- Five age groups and two gender groups were used in this case. This indicates that we have 10 subgroups within each of four survey sites.

$$\text{Let } \{PS_{Wi} = \text{The post-stratification weight}\}, \text{ where } i = 1, \ldots, 1663.$$

$$PS_{Wi} = \frac{\text{Percentage of your Census population in subgroup (k,m)}}{\text{Percentage of your sample in subgroup (k,m)}}, \text{where } k = 1, \ldots, 10 \text{ and } m = 1, \ldots, 4.$$

2. Normalize the PS weight

$$\text{Let} \begin{Bmatrix} N_{PSi} = \text{Normalized PS weight} \\ S_{PS} = \sum_{i=1}^{1663} PS_{Wi} = \text{The sum of the PS weight} \\ n = \text{The total number of observation in your sample (i.e. 1663)} \end{Bmatrix}, \text{where } i = 1, \ldots, 1663.$$

$$N_{PSi} = PS_{Wi} * \frac{n}{S_{PS}}$$

Part II: weight creation

1. The part II (PII) weight

$$\text{Let} \begin{Bmatrix} PII_{Si} = \text{The Part II selection weight} \\ PII_{Wi} = \text{The Part II adjusted selection weight} \end{Bmatrix}, \text{where } i = 1, \ldots, 477.$$

$$PII_{Si} = \begin{Bmatrix} 1.0 & \text{for diagnostic threshold group} \\ \frac{1}{p_1} & \text{for diagnostic subthreshold group} \\ \frac{1}{p_2} & \text{for disorder symptom negative group} \end{Bmatrix}$$

- p_1 and p_2 calculated as empiric probability of selection into Part II sample for each subgroup. Empirical probabilities obtained using data weighted with Part I weight (N_{PSi}).

$$PII_{Wi} = N_{PSi} * PII_{Si}$$

2. Post-stratification (PS) weight

- Post-stratification procedure carried out on Part II sample ($n = 477$). See Part I description.

3. Normalize the PS weight

- Normalization procedure carried out on Part II sample ($n = 477$). See Part I description.

APPENDIX II

Sociodemographic distribution (%) of the survey sample in the WHO WMH Japan 2002–03 survey compared to population†

	Part I unweighted	Part II unweighted	Part I weighted	Part II weighted	Population census‡
Sex					
Male	44.4	39.2	46.3	46.5	46.5
Female	55.6	60.8	53.7	53.5	53.5
Age (years)					
20–39	25.0	27.3	32.1	34.3	34.3
40–49	17.4	18.9	16.1	16.6	16.6
50–59	21.6	22.2	18.5	18.5	18.5
60–69	17.7	17.2	15.1	14.6	14.6
70+	18.3	14.5	18.1	16.1	16.1

WHO WMH, World Health Organization World Mental Health.
†Survey site, gender and age groups were used in the post-stratification of weight.
‡Average distributions based on population statistics of four survey sites in 2002.

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Regular Article

Twelve-month use of mental health services in four areas in Japan: Findings from the World Mental Health Japan Survey 2002–2003

YOICHI NAGANUMA, PSW, MSc,[1] HISATERU TACHIMORI, PhD,[1] NORITO KAWAKAMI, MD,[2] TADASHI TAKESHIMA, MD,[1] YUTAKA ONO, MD,[3] HIDENORI UDA, MD,[4] YUKIHIRO HATA, MD,[5] YOSHIBUMI NAKANE, MD,[6] HIDEYUKI NAKANE, MD,[7] NOBORU IWATA, PhD,[8] TOSHIAKI A. FURUKAWA, MD[9] AND TAKEHIKO KIKKAWA, MD[10]

[1]*National Institute of Mental Health, National Center of Neurology and Psychiatry, Tokyo,* [3]*Health Center, Keio University, Kanagawa,* [2]*Hygiene and Preventive Medicine, Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Science, Okayama,* [4]*Sensatsu Public Health Center,* [5]*Oshima Hospital, Kagoshima,* [6]*Division of Human Sociology, Nagasaki International University Graduate School,* [7]*Division of Neuropsychiatry, Department of Translational Medical Sciences, Nagasaki University Graduate School of Biomedical Sciences, Nagasaki,* [8]*Faculty of Human and Social Environment, Hiroshima International University, Hiroshima,* [9]*Department of Psychiatry, Nagoya City University Medical School, Aichi and* [10]*Chubu Gakuin University, Gifu, Japan*

Abstract The aim of the present study was to provide basic descriptive data regarding utilization of 12-month mental health services in the Japanese community population. Face-to-face household surveys were carried out in four areas (two urban cities and two rural municipalities), and a total of 1663 persons participated (overall response rate: 56.4%). For data collection, the structured psychiatric interview, World Mental Health version of the World Health Organization Composite International Diagnostic Interview (WMH-CIDI) was used, allowing DSM-IV diagnoses, severity, and service utilization. It was found that 7.3% of total respondents had received any service, either professional or non-professional, in the past 12 months, including 20.0% of those with 12-month DSM-IV disorders and 6.2% of those without. Thirty-three percent of those with any mood disorder used any service, and 26.8% of those used some type of health care. The probability of people with 13–15 years of education receiving mental health treatment was fourfold higher than those with ≥16 years of education. Gender, age, or income were not found to contribute to utilization of mental health services. The results confirm that the majority of people with a recent psychiatric disorder have not used mental health care or other support systems. The mental health care system in Japan has improved over the past decade, but not enough for people suffering from mental disturbances.

Key words CIDI, descriptive epidemiology, mental disorders, service use, WMH surveys.

Correspondence address: Yoichi Naganuma, PSW, MSc, Department of Mental Health Administration, National Institute of Mental Health, National Center of Neurology and Psychiatry, 4-1-1 Ogawa-Higashi, Kodaira, Tokyo 187-8553, Japan.
Email: naganuma@ncnp-k.go.jp

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INTRODUCTION

Mental disorders are widespread and contribute substantially to the total burden of disease in the general population.[1] The provision of adequate care as early as possible for people suffering from mental disorders or other emotional problems is one of the most pressing issues in Japan, as well as in other countries.

There is an increasing trend in the proportion of those seeking treatment. In the US Epidemiologic Catchments Area (ECA) Survey in 1980–1982, a proportion of those who used health services for mental health reasons (either general physicians or mental health specialists) in the past 6 months was 2–4% for mental health specialists and 3–4% for general physicians in a total population; and 8–12% for mental health specialists and 7–8% for general physicians among those who experienced any DSM-III[2] disorder.[3] According to the US National Comorbidity Survey Replication (NCS-R) conducted in 2001–2002, 14% of a total population visited mental health services and 10% visited general physicians in the past 12 months; 25% of those who experienced any DSM-IV disorder visited mental health services and 17% visited general physicians in the past 12 months.[4] Similarly, according to the European Study of the Epidemiology of Mental Disorders/Mental Health Disability: a European Assessment in the year 2000 (ESEMeD/MHEDEA 2000) across six European countries, 6.4% of a total population visited any type of formal health services (e.g. psychiatrist, psychologist, nurse, medical doctor etc.) in the past 12 months and 25.7% of those who experienced any mental disorder visited any type of formal health services in the past 12 months.[5] The proportion of those seeking treatment also varies among countries. The World Health Organization (WHO) established the World Mental Health (WMH) Survey Consortium in 1998 to address the current status of mental disorders and mental health service use across many countries.[6] In the first report from the survey using data from 14 countries, the proportion of those who sought medical treatment for mental health reasons was lower among Asian countries and Nigeria compared with the USA and Europe both in total population and those with mental disorders.[6]

In Japan there were few data available to estimate the proportion of those receiving medical treatment in a general population or among those who suffered from mental disorders until recently. The most recent national patient survey in 2002 based on reports from medical service institutions estimated that a total of 2.3 million people received treatment for mental disorders in Japan, which was 1.8% of the total population in Japan.[7] However, the figure may be underestimated because people may visit physicians for mental health reasons but not receive a diagnosis of mental disorder. In a community-based survey that was conducted in a town in Japan in 1992, 7% of respondents had received some type of treatment for mental disorders in their lifetime.[8] However, this was a small-sized study and the findings may not be generalized to other parts of Japan. As a part of the aforementioned WMH Survey, the WMH Japan (WMHJ) Survey was conducted in four community populations in Japan in 2002–2003. The study reported that 3% of the total population visited a mental health specialty and 4% visited general physicians; 6–18% of those who experienced any DSM-IV disorder visited a mental health specialty and 5–7% visited general physicians in the past 12 months, depending on the disorder severity.[9] The findings suggest that the proportion of medical treatment is certainly greater from that estimated from the National Patient Survey, but still much lower than those reported in the US NCS-R[4] and in Western countries.[6]

It seems that there still remain many barriers to making mental health services widely accessible in Japan, despite new policies aiming to reduce the stigma of mental disorders having been recently introduced in Japan.[10] To understand factors associated with the low proportion of medical treatment for mental disorders in Japan, the analysis should be done by specific disorder. In addition, services provided by non-psychiatrists have emerged worldwide, such as clinical psychologists, general practices, non-medical counseling services, or alternative therapies such as chiropractice, aroma therapy, healing, or megavitamins.[11] The utilization of these services for mental health reasons should be examined. Furthermore, previous studies have not examined the proportion of those who received adequate treatment among those who visited mental health services.

The aim of the present study was to provide basic descriptive data from WMHJ 2002–2003, and to address the more detailed states of utilization of the mental health services in the Japanese community, using the same data set as a previous study.[9]

We first examined the proportion of those who had obtained any treatment in the 12 months before the survey, by disorder and by service provider sector. Second, we examined the average number of visits and proportions of patients receiving minimally adequate treatment. Finally, we examined the association of sociodemographic and diagnostic variables with treatment.

METHODS

Sample

Four community populations in Japan were selected as study sites in 2002–2003. The sites included two urban cities (Okayama and Nagasaki) and two rural municipalities (Kushikino and Fukiage in Kagoshima prefecture). These sites were selected in consideration of both geographic variation and the availability of site investigators.[9] From a voter registration list or a resident registry, a random sample was selected from residents aged ≥20 years at each survey site. Trained

interviewers carried out structured face-to-face interviews with those who agreed to participate in the survey using the standardized instrument. We excluded subjects who had died, moved, or had been institutionalized. A total of 1663 interviews was obtained. The Composite International Diagnostic Interview (CIDI) questionnaire was divided into two parts. Part I, which included basic sociodemographic data, a core diagnostic assessment, and service use was administered to all respondents. Part II assessed risk factors, correlates, additional disorders (post-traumatic stress disorder and substance disorders). Part II was then administered to all part I respondents who met the criteria for any mental disorder and to a probability subsample of other respondents ($n = 477$).

The response rate was 56.4%. The part II respondents were weighted by the inverse of their probability of selection to adjust for the differential sampling of cases and non-cases. In addition, all samples were weighted to adjust for differential probabilities of selection and post-stratified to match the population distributions on the cross-classification for sex and age.[12] The Human Subjects Committees of Okayama University (for the Okayama site), National Institute of Mental Health in Japan (for the Kagoshima site), and Nagasaki University (for the Nagasaki site) approved the recruitment, consent, and field procedures. (For details see the previous paper.[9])

Measures

Diagnostic assessment of 12-month mental disorders

The DSM-IV diagnoses were made using the computer-assisted personal interview (CAPI) Japanese version of the WMH-CIDI,[13] a fully structured diagnostic interview that generates DSM-IV[14] diagnoses. The 12-month DSM-IV disorders considered here include anxiety (panic disorder, agoraphobia, specific phobia, social phobia, generalized anxiety disorder, post-traumatic stress disorder), mood (bipolar I and II disorders, major depressive disorder, dysthymia), and substance disorders (alcohol and drug abuse and dependence). All diagnoses are considered with organic exclusions and with diagnostic hierarchy rules, with the exception of the substance disorders, for which abuse is defined with or without dependence.

Twelve-month use of mental health services

All part II respondents were asked whether they ever received treatment for 'problems with your emotions or nerves or your use of alcohol or drugs'. A list of types of treatment providers was presented in a respondent booklet to provide a visual recall aid. Separate assessments were made for different types of professionals, support groups, self-help groups, mental health crisis hotlines (assumed to be visits with non-psychiatrist mental health specialists), complementary and alternative (CAM) therapies, and use of other treatment settings. Other treatment settings included admissions to hospitals and other facilities (each day of admission was assumed to include a visit with a psychiatrist). Follow-up questions were first asked about age and the most recent contacts as well as the number and duration of visits in the past 12 months.

Types of 12-month service use were classified into the following categories: psychiatrist; non-psychiatrist mental health specialist (psychologist or other non-psychiatrist mental health professional in any setting, a social worker or counselor in a mental health specialty setting, use of a mental health hotline); general medical provider (general medical doctor, nurse, any other health professional not previously mentioned); human services professional (religious or spiritual advisor, social worker or counselor in a non-mental health setting); and CAM professional (any other type of healer such as chiropractors, participation in an internet support group, participation in a self-help group). The subjects who had used psychiatrist or non-psychiatrist specialist services in the previous 12 months were placed in a category labeled 'any mental health specialty'. The subjects who had used any mental health specialty or general medical services in the previous 12 months were placed in a category labeled 'any health care'. The subjects who had used human services or CAM services in the previous 12 months were placed in a category labeled 'any non-health care'. The subjects who had used any of these services in the previous 12 months were placed in a category labeled 'any treatment'. The subjects who had used any service of two or more categories in the previous 12 months were placed in each category.

Minimally adequate treatment

Minimally adequate treatment was defined as: (i) at least four visits in the prior year to any type of provider (general medical, human services, CAM etc.); or (ii) at least two visits and any type of medication (i.e. this includes medications that are known to be inappropriate for the assessed disorder); or (iii) respondent still in treatment at the time of interview.

Sociodemographic predictor variables

Sociodemographic variables included age (defined by age at interview and categorized as 20–29 years, 30–44 years, 45–59 years, 60+ years); gender; completed years of education (0–11 years, 12 years, 13–15 years, and 16+ years); marital status (married-cohabitating, previously married, never married); family income in relation to the federal poverty line[15] (categorized as low, <1.5-fold below the poverty line; low average, 1.5+ –3-fold; high average, 3+ –6-fold; and high, 6+–fold higher).

Analysis procedures

Our data were weighted to adjust for differences in the probabilities of selection, differential non-response, residual differences between the sample and the site population, and over-sampling in the part II sample. Basic patterns of service use were examined by computing the proportions in treatment, mean numbers of visits among those in treatment, and proportion of treatments meeting criteria for minimal adequacy. Logistic regression analysis was used to study sociodemographic predictors for receiving any 12-month treatment in the total sample.[16] Standard errors were estimated using the Taylor series method as implemented in SUDAAN (Research Triangle Institute, NC, USA). Multivariate significance tests in the logistic regression analyses were made using Wald χ^2 tests based on coefficient variance–covariance matrices that were adjusted for design effects using the Taylor series method. Statistical significance was evaluated using two-sided design-based tests and the 5% level of significance.

RESULTS

Proportion of 12-month service use

It was found that 7.3% of total respondents used any services in the past 12 months, including 20.0% of those with 12-month DSM-IV disorders and 6.2% of those without any of the assessed disorders (Table 1). The majority of treatments occurred in the health care sectors (5.8% of respondents, representing 79.4% of those in treatment) and, within the health care sectors, the general medical sector (3.7% of respondents, representing 50.8% of those in treatment).

Similarly for those with 12-month DSM-IV disorders, the majority of treatments occurred in the health-care sectors (16.9% of those with disorders, representing 84.6% of those in treatment) and, within the health-care sectors, any mental health care (14.0% of those with disorders, representing 69.9% of those in treatment), including psychiatrists (7.9% of those with disorders, representing 39.3% of those in treatment).

Those with major depressive disorder (MDD) were found to use relatively less general medical treatment (8.9% of those with MDD, representing 26.4% of those in treatment), and more than in any non-health-care sector (14.6% of those with MDD, representing 43.3% of those in treatment).

Number of visits

The mean number of 12-month visits among those receiving any treatment in total part II samples was 6.6 (SE = 1.1, $n = 67$).

Minimally adequate treatment

The data showed that 64.7% (SE = 8.0%, $n = 477$) of treated patients could be classified as receiving at least minimally adequate treatment.

Sociodemographic predictors of treatment

Receiving any 12-month mental health treatment was significantly associated with only education. The probability of people with 13–15 years of education receiving mental health treatment was fourfold higher [odds ratio (OR): 4.4, 95% confidence interval (CI): 1.4–13.9) than those with ≥16 years of education (Table 2). Gender, age, or income were not significant.

Some interesting associations were found, but they were not statistically significant ($P < 0.05$). It may be because of the low statistical power due to the low treatment rate. More people with any mood disorder were more likely to receive treatment than those without (Wald $\chi^2 = 4.2$, d.f. = 1, $P = 0.041$), and more people who were separated, widowed, or divorced were more likely to receive treatment than those who were married or cohabiting (Wald $\chi^2 = 5.4$, d.f. = 2, $P = 0.067$).

DISCUSSION

The present study has the following limitations. The first is a sampling bias. The survey excluded people who were institutionalized, and the sampling was done in several rural and urban areas but not in metropolitan areas, so the results do not reflect the specific features of metropolitan areas. In addition, the WMH-CIDI did not assess all the DSM-IV disorders such as schizophrenia, eating disorder, and antisocial behavior. Therefore, some respondents in treatment without a DSM-IV diagnosis considered in the present study may actually have met criteria for another type of DSM-IV disorder. And the low response rate may cause another bias. People who were treated for mental disorders may be more likely to agree to participate in this survey than those who did not use any service for their