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Worldwide Use of Mental Health Services for Anxiety, Mood, and Substance Disorders: Results from 17 Countries in the WHO World Mental Health (WMH) Surveys

Philip S. Wang, M.D., Dr.PH.[1,13], **Sergio Aguilar-Gaxiola, M.D., Ph.D.**[2], **Jordi Alonso, M.D., Ph.D.**[3], **Matthias C. Angermeyer, M.D.**[4], **Guilherme Borges, Sc.D.**[5], **Evelyn J. Bromet, Ph.D.**[6], **Ronny Bruffaerts, Ph.D.**[7], **Giovanni de Girlolamo, Ph.D.**[8], **Ron de Graaf, Ph.D.**[9], **Oye Gureje, M.D., Ph.D., FRCPsych**[10], **Josep Maria Haro, M.D., Ph.D.**[11], **Elie G. Karam, M.D.**[12], **Ronald C. Kessler, Ph.D.**[13], **Viviane Kovess, M.D, Ph.D.**[14], **Michael C. Lane, M.S.**[13], **Sing Lee, M.B.**[15], **Daphna Levinson, Ph.D.**[16], **Yutaka Ono, M.D.**[17], **Maria Petukhova, Ph.D.**[13], **José Posada-Villa, M.D.**[18], **Soraya Seedat**[19], and **J. Elisabeth Wells, Ph.D.**[20]

[1]Division of Services and Intervention Research, National Institute of Mental Health, Rockville, MD [2] Center for Reduction in Health Disparities, University of California Davis, CA [3] Health Services Research Unit, Institut Municipal d'Investigació Mèdica (IMIM), Barcelona, Spain [4] Department of Psychiatry, University of Leipzig, Germany [5] Instituto Nacional de Psiquiatria, Universidad Autonoma Metropolitana, Mexico City, Mexico [6] Department of Psychiatry, State University of New York, Stony Brook, NY [7] Department of Neurosciences and Psychiatry, University Hospitals Gasthuisberg, Belgium [8] Department of Mental Health, AUSL di Bologna, Bologna, Italy [9] Netherlands Institute of Mental Health and Addiction, Utrecht, The Netherlands [10] Department of Psychiatry, University College Hospital, Ibadan, Nigeria [11] Sant Joan de Déu-SSM, Fundació Sant Joan de Déu, Sant Boi de Llobregat, Barcelona, Spain [12] Department of Psychiatry and Clinical Psychology, St. George Hospital University Medical Center, Faculty of Medicine, Balamand University, Beirut, Lebanon [13] Department of Health Care Policy, Harvard Medical School, Boston, MA [14] Fondation MGEN pour la Sante Publique, Paris, France [15] The Chinese University of Hong Kong, Hong Kong, China [16] Research & Planning, Ministry of Health, Mental Health Services, Jerusalem, Israel [17] Health Center, Keio University, Tokyo, Japan [18] Colegio Mayor de Cundinamarca University, Saldarriaga Concha Foundation, Bogota, Colombia [19] MRC Research Unit on Anxiety and Stress Disorders, Cape Town, South Africa [20] Department of Public Health and General Practice, Christchurch School of Medicine, Christchurch, New Zealand

Abstract

Background—Mental disorders are leading causes of disability worldwide, including in low- and middle-income countries least able to bear such burdens. To begin understanding and improving their treatment, we describe mental health care in 17 countries of the WHO World Mental Health (WMH) Survey Initiative.

Methods—Face-to-face household surveys were conducted among 84,848 community adult respondents in low- or middle- (Colombia, Lebanon, Mexico, Nigeria, China, South Africa, Ukraine) and high-income countries (Belgium, France, Germany, Israel, Italy, Japan, Netherlands,

Direct comments to P. Wang, Division of Services and Intervention Research, National Institute of Mental Health, 6001 Executive Boulevard, Rm. 7141. MSC 9629, Bethesda, MD 20892-9629, USA. Voice: 301-443-6233; Fax: 301-443-4045; wangphi@mail.nih.gov..

New Zealand, United States). 12-month DSM-IV disorders, their severity, and mental health service use were assessed with the WMH Composite International Diagnostic Interview.

Findings—Respondents using any 12-month mental health services (57 [1.6%; Nigeria] to 1477 [17.9%; US]) was generally lower in less-developed than developed countries and tended to track with countries' percentages of GDP spent on health care. Although disorder seriousness was related to service use, only 5 (11.0%; China) to 46 (62.1%; Belgium) of severe cases received any care in the prior year. General medical sectors were the largest sources of mental health services. Among respondents initiating treatments, 152 (70.2%; Germany) to 129 (94.5%; Italy) received any follow-up care and 1 (10.4%; Nigeria) to 113 (42.3%; France) received treatments meeting minimal standards for adequacy. Being male, married, less-educated, and in the extremes of age or income were associated with undertreatment.

Interpretation—Unmet needs for mental health treatment are pervasive and especially dire in less-developed countries. Alleviating these unmet needs will require expansion and optimal allocation of treatment resources.

Keywords

Mental disorders; mental health service use; WMH surveys

BACKGROUND

Neuropsychiatric conditions are the leading causes of disability worldwide, accounting for 37% of all healthy life years lost from disease; they are the most disabling conditions even in low- and middle-income countries, which may be least able to bear such burdens.[1] Although efficacious and tolerable treatments are increasingly available, even economically-advantaged societies experience competing priorities and budgetary constraints.[2] Knowing how to provide effective mental health care has become imperative worldwide.[3] Unfortunately, most countries suffer from a lack of data to guide decisions, absent or competing visions for resources, and near constant pressures to cut insurance and entitlements.[4]

How can countries redesign their mental health care systems and optimally allocate resources? A first step is documenting the services currently being used as well as the extent and nature of unmet needs for treatment. A second step may be conducting cross-national comparisons of service use and unmet needs in countries with different mental health care systems. Such comparisons can help uncover optimal financing, national policies, and delivery systems for mental health care. Unfortunately, few cross-national studies are available.[5,6]

For these reasons, WHO established the World Mental Health (WMH) Survey Initiative in 1998.[7] Coordinated surveys on mental disorders, their severity, impairments, and treatments have been implemented in 28 less-developed and developed countries. The current report describes the levels, types and adequacy of mental health service use in 17 countries where WMH surveys are complete. We also examine unmet needs for treatment among strata defined by the seriousness of mental disorders. Finally, we identify socio-demographic correlates of unmet needs for treatment to guide design and targeting of future resources, policies, and interventions.

METHODS

Respondent Samples

WMH surveys were carried out in the following regions (and countries): Africa (Nigeria; South Africa); the Americas (Colombia; Mexico; United States), Asia and the Pacific (Japan; New Zealand; Beijing and Shanghai in the Peoples Republic of China), Europe (Belgium; France; Germany; Italy; the Netherlands; Spain; Ukraine); and the Middle East (Israel; Lebanon). [7] Using World Bank criteria,[8] countries were classified as low-income (Nigeria), lower middle-income (China, Columbia, South Africa, Ukraine), higher middle-income (Lebanon, Mexico), and high-income (all others). Conventional multi-stage clustered area probability designs were generally employed (exceptions being countries with population registries, which were used to avoid within-household probability-of-selection weights) to select mainly nationally representative samples and the remainder focusing on major metropolitan areas (see Table 1). Trained lay interviewers conducted surveys face-to-face and returned to households up to 15 times when respondents were not available as well as used standardized refusal conversion procedures to improve response rates. The total sample size of those aged 18 and older was 84,848, with individual country samples ranging from 2372 in the Netherlands to 12,790 in New Zealand. The weighted average response rate across all countries was 71.1%, with individual country rates ranging from 45.9% (France) to 87.7% (Colombia). Non-respondent surveys have been carried out in many WMH surveys to learn about people who declined participation.

All respondents completed Part I which contained core diagnostic assessments. All Part I respondents who met criteria for any disorder and a sub-sample of approximately 25% of others were administered Part II which assessed correlates, service use, and disorders of secondary interest. Data were weighted to adjust for this differential sampling of Part II respondents, differential probabilities of selection within households, and to match samples to population socio-demographic distributions.

To help ensure that valid estimates of the prevalences of mental disorders could be made across potentially different cultural settings, a standardized WHO protocol was employed to develop, pilot-test, review, translate, back-translate, and harmonize all WMH-CIDI interview schedules. Furthermore, standardized interviewer training procedures were followed and are described in more detail elsewhere.[7] Informed consent was required before beginning interviews in all countries. Procedures for obtaining informed consent and protecting human subjects were approved and monitored by the Institutional Review Boards of organizations coordinating surveys in each country.

12-Month Mental Disorders

The WMH-CIDI, a fully structured diagnostic interview, was used to assess the presence of 12-month mental disorders using the definitions and criteria of the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV). The disorders considered in this analysis include anxiety (agoraphobia; generalized anxiety disorder; panic disorder; post-traumatic stress disorder; social phobia; specific phobia), mood (bipolar disorder including bipolar I and II; dysthymia; major depressive disorder), and substance disorders (alcohol and drug abuse and dependence). All diagnoses were made with CIDI organic exclusion rules. WHO-CIDI Field Trials and clinical calibration studies provide evidence that the WMH-CIDI assesses the disorders considered here with generally acceptable reliability and validity.[9,10] Cross-national comparisons of the validity of WMH-CIDI diagnoses are currently underway.

Severity of Mental Disorders

Because the simple presence of a diagnosis may not indicate the level of need for services, we classified WMH-CIDI mental disorders as serious, moderate, or mild. Serious disorders were defined as: bipolar I disorder or substance dependence with a physiological dependence syndrome; making a suicide attempt in conjunction with any other disorder; reporting severe role impairment due to a mental disorder in at least two areas of functioning measured by disorder-specific Sheehan Disability Scales (SDS);[11] or having overall functional impairment from any disorder consistent with a Global Assessment of Functioning (GAF)[12] score of 50 or less. Disorders not classified as serious were classified as moderate if the respondent had: substance dependence without a physiological dependence syndrome; or at least moderate interference in any SDS domain. All other disorders were classified as mild. While the accuracy of this measure of disorder seriousness has not been firmly established, some evidence for its validity comes from statistically significant monotonic associations in all but two surveys between disorder severity and days in the prior year that respondents were totally unable to carry out normal daily activities because of disorders.[7]

12-Month Mental Health Service Use

Services received in the prior 12 months were assessed by asking respondents if they ever saw any of several types 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 (e.g., psychiatrist, psychologist), general medical professionals (e.g., general practitioner, occupational therapist), religious counselors (e.g., minister, sheikh), and traditional healers (e.g., herbalist, spiritualist). Examples of these types of providers were presented in a Respondent Booklet as a visual recall aid and varied somewhat across countries depending on local circumstances. Follow-up questions asked about age at first and most recent contacts as well as number and duration of visits in the past 12 months.

Reports of 12-month service use were classified into the following sectors: mental health specialty [MHS](psychiatrist, psychologist, other mental health professional in any setting, social worker or counselor in a mental health specialty setting, use of a mental health hotline); general medical [GM](primary care doctor, other general medical doctor, nurse, any other health professional not previously mentioned); human services [HS](religious or spiritual advisor, social worker or counselor in any setting other than a specialty mental health setting); and complementary and alternative medicine [CAM](any other type of healer such as chiropractors, participation in an internet support group, participation in a self-help group).

Continuity and Adequacy of Treatments

A definition of follow-up care—that could be applied in both low- as well as high-resource countries—consisted of receiving ≥2 visits to any service sector (1 visit for presumptive evaluation/diagnosis and ≥1 visit for treatment or monitoring). Because respondents who began treatments shortly before interview may not have had time to fulfill these requirements, anyone reporting being in ongoing treatment at interview was considered to have met this definition.

A second more rigorous definition identified those who potentially may have received minimally adequate treatment according to available evidence-based guidelines.[13-15] This definition consisted of receiving either pharmacotherapy (≥1 month of a medication plus ≥4 visits to any type of medical doctor) or psychotherapy (≥8 visits with any professional). The decision to require ≥4 physician visits for pharmacotherapy was based on the fact that ≥4 visits for medication evaluation, initiation and monitoring are generally recommended

during the acute and continuation phases of treatment.[13-15] At least eight sessions were required for psychotherapy based on the fact that clinical trials demonstrating effectiveness have generally included ≥8 visits.[13-15] Any respondent in ongoing treatment was considered to have met this definition.

Socio-demographic predictor variables

Socio-demographic variables included: cohort (defined by age at interview and categorized as <35, 35-49, 50-64, 65+); gender; completed years of education (four country-specific categories); marital status (married-cohabitating, separated-widowed-divorced, never married); and family income in relation to country medians (low, low average, high average, high).

Analysis Procedures

We first computed the proportions in treatment in any or specific sectors, and probabilities of service use meeting criteria for follow-up care or potentially minimally adequate care. We then examined how these basic patterns of service use differed across strata defined by the severity of disorders. Logistic regression analysis was used to study socio-demographic predictors of receiving any 12-month services. Standard errors were estimated using the Taylor series method as implemented in SUDAAN.[16] Two-sided significance tests at the .05 level were made in logistic regression analyses using Wald χ^2 tests based on coefficient variance–covariance matrices adjusted for design effects using the Taylor series method.

FINDINGS

12-Month Use of Mental Health Services

Respondents using any mental health services in the prior 12 months varied significantly (from 57 [1.6%] in Nigeria to 1477 [17.9%] in the US; X^2_{16}=764.6, p<.0001), with generally fewer in low- or middle-income vs. high-income countries (Table 2). The proportions receiving services also tended to correspond with countries' overall spending on health care (see proportions of health budgets to GDP in Table 1).[17] The largest proportions used GM followed by MHS sectors (with the exceptions of Mexico, Columbia, and Israel, where this was reversed); smaller proportions used HS and CAM sectors. The right hand columns of Table 2 present proportions using specific sectors among respondents receiving any 12-month services. With the exception of the two Latin American countries and Israel, the sectors used most frequently by treated respondents were GM followed by MHS; again, smaller proportions used HS and CAM.

Service Use by Severity of Mental Disorders

Significant, generally monotonic relationships existed between disorder severity and probability of service use in every country except China (Table 3). In spite of these dose-response relationships, only 5 (11.0%; China) to 46 (62.1%; Belgium) of serious cases received any service in the prior year. Lower proportions of moderate and mild cases generally received services in the prior year. Numerically small but still meaningful numbers of those apparently without disorders used treatments (ranging from 29 [1.0%; Nigeria] to 479 [9.7%; US]). Cross-national differences were significant in all severity categories, with generally less service use in low- and middle-income vs. high-income countries.

Mental Health Specialty Use by Severity of Disorders

Table 4 presents associations between disorder severity and use of the MHS sector among respondents receiving services. Statistical power was low in these analyses due to the small numbers of treated respondents. Nevertheless, significant relationships between severity and

use of MHS sectors existed in only 6 of 17 countries. Even in those countries where such a relationship exists, meaningful proportions of mild and non-cases consume MHS services.

Continuity and Adequacy of Treatments

Among respondents initiating treatments, those receiving any follow-up care varied significantly between 152 (70.2%; Germany) to 129 (94.5%; Italy)(Table 5). Although the proportions were generally smaller proportions in low- or middle- vs. high-income countries, there were notable exceptions to this pattern. Significant relationships between disorder severity and the probability of receiving follow-up care existed in only seven countries. As a result, receiving at least some follow-up care among treatment initiators was by no means universal among severe cases and it was quite common among apparent non-cases.

Among respondents using services, those that received treatments that were potentially minimally adequate varied significantly between 1 (10.4%; Nigeria) and 113 (42.3%; France)(see Table 6). Proportions were generally smaller in lower-income countries, with the low rate in the US (18.1%; n=302) being a notable exception. There were significant relationships between severity and receiving potentially minimally adequate treatment in only five countries; as a result, substantial fractions of severe cases using services failed to receive minimally adequate treatment while many non-cases did.

Predictors of Any 12-Month Service Use

Gender was significantly related to any 12-month service use in 10 countries, with women being more likely than men in all 10 (results available upon request). Age was a significant predictor of receiving mental health services in eight countries; in these, respondents in the middle years of life were generally more likely to receive services than either those younger or older. There were significant positive relationships between education and service use in three countries. Marital status was significantly related to using services in five countries, with those married being less likely than those unmarried in all five. Income was significantly related to service use in four countries, positively so in three and negatively in one.

INTERPRETATION

These results should be interpreted with the following five sets of limitations in mind. First, response rates in the WMH surveys varied widely and included some below standards usually considered acceptable. We did attempt to control for differential response through post-stratification adjustments. However it remains possible that survey response was related to the presence and severity of mental disorders or treatment in ways that were not corrected, potentially leading to biased cross-national comparisons. Item-missing data is another potential limitation, especially if it was related to psychopathology or treatment.

Second, readers should keep in mind that some clinically important disorders such as schizophrenia were not assessed in WMH surveys because earlier validation studies have shown they are over-estimated in lay-administered interviews like the CIDI.[32] However these studies have also shown that even if disorders such as non-affective psychosis are not assessed, the vast majority of such cases would still meet criteria for comorbid anxiety, mood, or substance disorders and are therefore captured in our analyses. Another related limitation to keep in mind is that the exact disorders assessed also varied across surveys because some conditions were felt a priori to have low relevance in certain countries. Although we replicated analyses using only disorders assessed in all surveys and found little change in results (available on request), it remains possible that other findings are sensitive to differences in the disorders assessed.

A third potential limitation is that the reliability and validity of diagnoses made with the WMH CIDI may vary across countries. Although acceptable concordance has been observed between diagnoses made with the CIDI and those from blind clinical re-interviews, such studies have been conducted almost exclusively in developed Western countries. It remains possible that the accuracy of CIDI diagnoses could be worse in other countries. One distinct possibility is that there may be a lower relevance of CIDI symptom descriptions in non-Western cultures or greater reluctance to endorse emotional problems in countries with shorter traditions of free speech and anonymous public opinion surveying. In fact, much lower rates of CIDI alcohol disorders have been observed in the Ukraine than expected from administrative data.[18] Furthermore, countries with the lowest disorder prevalences in this report also had the highest proportions of treated respondents that were apparently sub-threshold cases, suggesting greater under-estimation of disorders. Clinical reappraisal studies are currently underway in both developed and less-developed WMH countries and will shed light on the magnitude and seriousness of concerns over differential diagnostic validity.

Fourth, without corroborating data on service use we cannot study the accuracy of self-reported treatment use or how this validity may differ across specific sectors or clinical, sociodemographic, and cultural groups. Earlier studies suggest that self-reports of service use may overestimate administrative records, especially among respondents with more distressing disorders.[19,20] WMH surveys did attempt to minimize such inaccuracies by using commitment probes (i.e., questions measuring a subject's commitment to the survey) and excluding respondents who failed to endorse that they would think carefully and answer honestly. Nevertheless, potentially biased recall of service use remains possible and may have led to underestimation of unmet need for treatment, especially among those with more serious disorders. Finally in spite of the unprecedented scope and size of the WHO WMH survey initiative, some analyses involved small numbers of respondents and may have rendered our conclusions less certain.

With these limitations in mind, these results reveal disturbingly high levels of unmet need for mental health treatment worldwide, even among cases with the most serious disorders. The situation appears to be most dire in less-developed nations, with only small fractions of severe cases receiving any form of care in the prior year; however even in more developed Western nations, roughly half of severe cases receive no services. Additionally, the study limitations described above that would lead to underestimation of unmet needs for treatment, especially in less-developed countries, compound these troubling findings.

Among the minority of cases receiving some services, even fewer are likely to have been *effectively* treated. Some received non-health care from CAM and human services sectors, despite growing questions over the efficacy and safety of such treatments.[21] In many countries, nearly one quarter of those initiating treatments failed to receive any follow-up care. Consistent with prior studies, only a minority of treatments were observed to meet minimal standards for adequacy.[13-15,22]

High levels of unmet need worldwide are not surprising, given WHO Project ATLAS' findings of much lower mental health expenditures than indicated by the magnitude of burdens from mental illnesses.[1,23] Generally greater unmet needs in low- and middle-income countries may be due to these nations spending smaller proportions (often <1%) of already diminished health budgets on mental health care and relying heavily on out-of-pocket spending by citizenry ill-equipped to do so.[23] Notable exceptions to the rule of greater unmet needs in developing vs. developed countries may be explained by levels of investment in health care. For example, South Africa's high rates of treatment may reflect its greater spending (8.6% of GDP) on health care than any low- or middle-income country

studied, and even some high-income countries; on the other hand, Japan's and Italy's smaller rates of treatment may reflect less spending (8.0% and 8.4% of GDP, respectively) than other high- and even some low-/middle-income countries.[17]

Additional research is needed to understand how the limited mental health resources that nations do possess can be optimally allocated. An overly simplistic view of our results could be that a meaningful number of services are going to those without apparent needs. Such potential diversion of limited treatment resources to individuals without apparent needs would be concerning in light of the magnitude of unmet needs among cases with clearly defined and serious disorders.[24] The weak or lack of relationship between use of specialty sectors and disorder severity could also be further evidence of poor prioritization of treatment for more severe cases. However, it is critical to first identify whether such services are being used appropriately for disorders not assessed in WMH surveys, subthreshold symptoms, secondary prevention of lifetime disorders, or even primary prevention.[25] Uncovering other factors, beyond clinical severity, disability, or distress, that may motivate use of mental health services will also be important in the future.[26]

The general medical sector is for most countries the largest source of mental health services. This may reflect conscious attempts by policy makers to broaden access to services, rather than concentrating resources on the relatively fewer patients with access to specialty sectors. [27] It may also reflect “gatekeeping” by primary care physicians employed in some countries to reserve specialty treatment for severe cases.[28] Whatever the rationale, future research is need to ensure that mental health care received in general medical sectors is not of low intensity and adequacy, as has been observed in other studies.[22]

Our results concerning predictors of service use are generally consistent with prior research. The young relative to middle-aged may be more dependent on others and therefore reluctant to access services;[29] on the other hand, the elderly may avoid seeking mental health care due to the greater perceived stigma of mental disorders and treatments among people in this age range.[30] Higher rates of treatment among women than men may be explained by women's diminished perceptions of stigma as well as their greater abilities to translate nonspecific feelings of distress into conscious recognition of having a mental health problem.[31]

Effects of greater income were variable, increasing service use in some countries and decreasing it in others. In countries where positive associations exist, this may reflect the formidable influences of financial barriers on seeking treatment.[32] On the other hand, negative associations may be explained by the fact that only the poor qualify for entitlements in some countries.[32] More educated respondents may also have greater resources; alternatively, their higher treatment rates may reflect that some modalities (e.g., psychotherapies) place an emphasis on knowledge and cognitive processes The generally greater use of mental health services among those not married may indicate the power of relationship loss, strife, or social impairments as motivators for seeking treatment.[30]

These results have implications in several areas. First, alleviating the problem of widespread undertreatment will almost certainly require expansion of treatment resources and governmental as well as private means of financing mental health services. Second, there is also a pressing need to devise rational, transparent, and ethical allocation rules. In many countries it is unclear whether to focus resources on those with the greatest needs vs. larger numbers with milder disorders (e.g., to prevent negative sequelae), deliver services through primary vs. specialty sectors or inpatient vs. community settings, and whether to provide mental health services on parity with those for general medical disorders.[33] Ideally these questions would be answered through formal analyses of the burdens from illnesses and the cost-effectiveness of treatments.[34] Unfortunately rigorous data to compare disease burdens

and weigh the costs and benefits of different regimens are largely lacking.[27] In the absence of such rational schemata, decisions regarding resource allocation are often made on the basis of simple cost-minimization and even attitudinal factors such as stigma and desire to punish persons perceived as being personally responsible for their problems.[35]

Finally, when rational, transparent, and ethical priorities have been set, policy makers need specific designs they can implement to achieve their goals. Some techniques employed in managed care systems (e.g., gatekeeping, increased cost-sharing, utilization review, prior approval, etc.) could presumably be brought to bear on unnecessary use but not underuse—in fact, they may worsen unmet needs for treatment; furthermore, these elements from largely developed nations such as the U.S. may not be translatable to other countries and circumstances. The impacts of other policies, delivery system features, and means of financing that policy makers could implement, are essentially unknown. For these reasons, collection of detailed data on the mental health policies, delivery system features, and means of financing mental health care in different countries is a promising area for future research.[23] When merged with WMH surveys on the use and adequacy of treatments, such combined data could shed light on the impacts of policies, delivery system, and financing features and help policy makers choose ones that achieve their desired goals.[36]

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Appendix

Appendix table 1A

Sociodemographic predictors[†] of using services among respondents in the WMH surveys

	Gender					Age[‡]										
Country income level	**Female**		**Male**		**χ^2**	**(p-value)**	**≤34**		**35-49**		**50-64**		**≤65**		**χ^2**	**(p-value)**
Low																
Nigeria	1.1	(0.4-3.0)	1.0	-	0.1	(.786)	1.0	-	0.8	(0.3-2.6)	1.6	(0.5-5.5)	0.5	(0.1-2.7)	3.7	(.298)
Low-Middle																
China	1.4	(0.7-3.0)	1.0	-	0.9	(.355)	1.0	-	8.0*	(1.6-39.8)	12.5*	(3.1-51.3)	26.7*	(3.8-184.9)	15.6*	(.001)
Colombia	1.4*	(1.0-2.0)	1.0	-	3.8	(.052)	1.0	-	1.0	(0.7-1.7)	1.0	(0.5-1.9)	1.1	(0.4-2.9)	0.2	(.977)
South Africa	1.2	(1.0-1.6)	1.0	-	2.6	(.109)	1.0	-	1.3	(0.9-1.7)	1.4	(1.0-2.0)	1.0	(0.6-1.6)	5.4	(.146)
Ukraine	2.4*	(1.4-4.0)	1.0	-	12.2*	(<.001)	1.0	-	0.9	(0.5-1.7)	0.8	(0.5-1.3)	1.4	(0.7-3.0)	3.0	(.397)
High-Middle																
Lebanon	2.3*	(1.1-4.9)	1.0	-	5.3*	(.022)	1.0	-	0.9	(0.4-2.1)	0.5	(0.2-1.1)	0.6	(0.2-1.7)	8.1*	(.045)
Mexico	1.7*	(1.1-2.7)	1.0	-	5.4*	(.020)	1.0	-	1.0	(0.6-1.7)	1.1	(0.6-2.1)	1.2	(0.6-2.5)	0.3	(.956)
High																
Belgium	1.3	(0.8-2.2)	1.0	-	1.5	(.226)	1.0	-	1.5	(0.8-3.0)	1.3	(0.5-2.9)	0.7	(0.3-1.8)	6.8	(.079)
France	1.5	(0.8-2.8)	1.0	-	2.0	(.162)	1.0	-	1.4	(0.7-2.8)	1.9*	(1.2-2.9)	0.5*	(0.2-1.0)	22.8*	(<.001)
Germany	2.0*	(1.1-3.6)	1.0	-	5.8*	(.016)	1.0	-	2.9*	(1.6-5.3)	2.1*	(1.0-4.6)	1.7	(0.6-4.7)	17.8*	(<.001)
Israel	1.5*	(1.2-1.9)	1.0	-	11.1*	(.001)	1.0	-	1.6*	(1.1-2.2)	1.1	(0.8-1.6)	0.8	(0.5-1.2)	18.5*	(<.001)
Italy	2.5*	(1.3-4.9)	1.0	-	7.3*	(.007)	1.0	-	1.0	(0.5-2.1)	1.2	(0.5-2.9)	0.6	(0.2-1.9)	2.0	(.577)
Japan	1.5	(0.8-2.9)	1.0	-	1.6	(.205)	1.0	-	1.0	(0.4-2.7)	1.2	(0.5-2.9)	1.6	(0.4-5.8)	0.6	(.906)
Netherlands	2.2*	(1.1-4.7)	1.0	-	4.9*	(.027)	1.0	-	2.2	(1.0-5.1)	1.8	(0.7-4.4)	1.9	(0.5-8.1)	4.0	(.259)
New Zealand	1.6*	(1.3-1.9)	1.0	-	25.3*	(<.001)	1.0	-	1.5*	(1.1-1.9)	1.2	(0.9-1.7)	0.7	(0.4-1.0)	42.2*	(<.001)
Spain	1.9*	(1.2-3.1)	1.0	-	7.2*	(.008)	1.0	-	3.1*	(1.5-6.6)	4.2*	(2.3-7.6)	3.2*	(1.7-6.2)	23.1*	(<.001)
USA	1.7*	(1.5-1.9)	1.0	-	69.1*	(<.001)	1.0	-	1.3	(1.0-1.7)	1.3	(1.0-1.7)	0.7*	(0.5-1.0)	29.4*	(<.001)

*Significant at the .05 level, two-sided test.

†From a logistic regression model of any 12-month service use containing all covariates shown in tables 1A-D as well as severity.

‡Age starts at 21 in Israel; age categories for Colombia and Mexico are 18-29, 30-44, 45-54 and 55-65.

Appendix table 1B

Sociodemographic predictors[†] of using services among respondents in the WMH surveys

	Education[‡]										Marriage							
	Low		Low Average		High Average		High				Married		Sep/Wid/Div		Never Married			
Country income level	OR	CI	OR	CI	OR	CI	OR	CI	χ^2_3	(p-value)	OR	CI	OR	CI	OR	CI	χ^2_2	(p-value)
Low																		
Nigeria	1.0	-	1.4	(0.4-4.5)	1.7	(0.4-7.3)	1.7	(0.2-12.9)	0.6	(.902)	1.0	-	0.4	(0.1-2.2)	0.6	(0.2-1.5)	1.9	(.384)
Low-Middle																		
China	1.0	-	1.2	(0.3-4.3)	1.5	(0.4-6.3)	1.4	(0.3-5.8)	0.5	(.919)	1.0	-	0.6	(0.2-2.2)	1.9	(0.5-8.3)	2.1	(.352)
Colombia	1.0	-	0.7	(0.4-1.3)	0.7	(0.4-1.6)	0.9	(0.4-1.8)	1.1	(.777)	1.0	-	2.4*	(1.2-4.9)	1.1	(0.6-2.0)	6.5*	(.038)
South Africa	1.0	-	1.2	(0.8-1.7)	1.1	(0.7-1.6)	1.3	(0.8-2.0)	3.0	(.396)	1.0	-	1.0	(0.7-1.4)	0.8	(0.6-1.1)	2.2	(.335)
Ukraine	1.0	-	1.3	(0.6-2.9)	1.6	(0.7-3.7)	2.4	(0.8-7.4)	3.9	(.273)	1.0	-	1.2	(0.7-2.2)	0.8	(0.4-1.6)	1.0	(.592)
High-Middle																		
Lebanon	1.0	-	2.1	(0.8-5.8)	0.8	(0.2-2.8)	2.3	(1.0-5.7)	10.4*	(.015)	1.0	-	1.3	(0.5-3.4)	0.4	(0.1-1.1)	4.6	(.100)
Mexico	1.0	-	0.6	(0.3-1.2)	0.6	(0.3-1.1)	0.9	(0.5-1.9)	6.1	(.106)	1.0	-	1.0	(0.6-1.7)	1.3	(0.7-2.3)	0.9	(.644)
High																		
Belgium	1.0	-	1.9	(0.6-6.3)	1.4	(0.5-3.5)	1.9	(0.8-4.5)	3.1	(.373)	1.0	-	0.9	(0.6-1.3)	0.8	(0.3-1.7)	0.9	(.623)
France											1.0	-	1.3	(0.8-2.1)	1.0	(0.5-1.8)	1.4	(.507)
Germany	1.0	-	1.0	(0.6-1.6)	1.3	(0.7-2.5)	1.3	(0.5-3.8)	1.3	(.721)	1.0	-	0.6	(0.4-1.1)	2.0	(0.9-4.1)	9.1*	(.011)
Israel	1.0	-	0.9	(0.6-1.2)	0.7	(0.5-1.0)	0.9	(0.6-1.2)	3.8	(.285)	1.0	-	1.4*	(1.0-1.9)	1.4*	(1.0-2.0)	7.9*	(.019)
Italy	1.0	-	0.6	(0.3-1.3)	1.1	(0.6-2.1)	2.4*	(1.1-5.3)	15.4*	(.002)	1.0	-	2.4	(0.9-6.4)	1.1	(0.5-2.4)	3.2	(.205)
Japan	1.0	-	3.3	(1.0-10.4)	3.7	(1.0-13.7)	2.8	(0.9-9.1)	5.6	(.132)	1.0	-	1.6	(0.8-3.1)	1.6	(0.5-5.1)	2.3	(.317)
Netherlands	1.0	-	1.3	(0.4-3.8)	2.1	(0.5-8.4)	2.7	(1.1-6.8)	6.4	(.092)	1.0	-	1.6	(0.7-3.7)	1.1	(0.6-1.8)	1.6	(.460)
New Zealand	1.0	-	1.2	(0.9-1.6)	1.2	(0.9-1.5)	1.5	(1.1-1.9)	10.4*	(.016)	1.0	-	1.5	(1.2-2.0)	1.1	(0.9-1.4)	10.9*	(.004)
Spain	1.0	-	0.6	(0.3-1.0)	1.1	(0.6-1.9)	1.0	(0.5-1.8)	6.3	(.098)	1.0	-	1.4	(1.0-2.0)	1.4	(0.7-2.8)	5.6	(.061)
USA	1.0	-	1.0	(0.8-1.3)	1.2	(1.0-1.6)	1.3	(0.9-1.8)	4.8	(.190)	1.0	-	1.6*	(1.3-2.0)	1.1	(0.9-1.3)	17.0*	(<.001)

*Significant at the .05 level, two-sided test.

†From a logistic regression model of any 12-month service use containing all covariates shown in tables 1A-D as well as severity.

‡Country-specific education categories are used.

Appendix table 1C

Sociodemographic predictors[†] of using services among respondents in the WMH surveys

	Income									
	Low		Low Avg		High Avg		High			
Country income level	OR	CI	OR	CI	OR	CI	OR	CI	χ^2_3	(p-value)
Low										
Nigeria	1.0	-	0.9	(0.3-3.2)	0.6	(0.2-1.6)	0.4	(0.2-1.2)	7.5	(.058)
Low-Middle										
China	1.0	-	0.4*	(0.2-0.8)	0.2*	(0.1-0.5)	0.1*	(0.0-0.6)	12.8*	(.005)
Colombia	1.0	-	1.0	(0.6-1.8)	1.0	(0.4-2.1)	2.0*	(1.0-3.8)	11.2*	(.010)
South Africa	1.0	-	1.0	(0.7-1.4)	1.0	(0.7-1.5)	0.7	(0.5-1.0)	5.9	(.116)
Ukraine	1.0	-	0.6	(0.3-1.3)	0.5	(0.3-1.0)	0.7	(0.3-1.6)	3.8	(.280)
High-Middle										
Lebanon	1.0	-	5.1*	(1.7-15.2)	7.8*	(2.9-21.2)	8.4*	(2.3-30.5)	18.0*	(<.001)
Mexico	1.0	-	0.8	(0.5-1.4)	1.0	(0.6-1.7)	0.7	(0.4-1.4)	1.8	(.608)
High										
Belgium	1.0	-	1.2	(0.5-3.0)	0.9	(0.4-2.2)	1.3	(0.6-3.2)	1.2	(.751)
France	1.0	-	1.7	(0.9-3.4)	1.9	(1.0-3.7)	1.3	(0.7-2.6)	5.5	(.140)
Germany	1.0	-	1.6	(0.7-3.6)	1.6	(0.7-3.5)	1.5	(0.7-3.3)	1.8	(.614)
Israel	1.0	-	1.0	(0.7-1.4)	1.1	(0.7-1.5)	2.0*	(1.4-2.9)	25.7*	(<.001)
Italy	1.0	-	0.6	(0.3-1.3)	0.5	(0.3-1.1)	0.5*	(0.3-1.0)	5.1	(.164)
Japan	1.0	-	3.7	(1.2-11.1)	2.2	(0.8-6.1)	4.1*	(1.1-15.2)	7.7	(.052)
Netherlands	1.0	-	0.8	(0.4-1.6)	0.8	(0.4-1.7)	0.7	(0.3-2.0)	0.6	(.887)
New Zealand	1.0	-	1.1	(0.9-1.3)	1.0	(0.8-1.3)	1.2	(0.9-1.6)	1.6	(.667)
Spain	1.0	-	0.5	(0.3-1.1)	0.7	(0.4-1.2)	1.2	(0.5-2.8)	6.8	(.078)
USA	1.0	-	1.0	(0.7-1.2)	1.0	(0.7-1.4)	1.1	(0.8-1.6)	3.0	(.389)

*Significant at the .05 level, two-sided test.

†From a logistic regression model of any 12-month service use containing all covariates shown in tables 1A-D as well as severity.

Appendix table 1D

Sociodemographic predictors[†] of using services among respondents in the WMH surveys

	Severity									
	Severe		Moderate		Mild		None			
Country income level	OR	CI	OR	CI	OR	CI	OR	CI	χ^2_3	(p-value)
Low										
Nigeria	28.7	(4.7-176.0)	16.8	(4.1-68.9)	11.5	(3.6-37.5)	1.0	-	25.7*	(<.001)
Low-Middle										
China	5.0*	(1.2-21.5)	15.6*	(3.6-68.4)	0.6	(0.1-2.8)	1.0	-	20.7*	(<.001)
Colombia	12.4*	(7.5-20.4)	3.4*	(1.8-6.4)	2.5*	(1.4-4.2)	1.0	-	104.7*	(<.001)
South Africa	2.3*	(1.6-3.3)	2.2*	(1.5-3.2)	2.0*	(1.4-2.9)	1.0	-	38.0*	(<.001)
Ukraine	9.9*	(6.0-16.4)	5.7*	(3.2-10.1)	2.2*	(1.0-4.9)	1.0	-	90.7*	(<.001)
High-Middle										
Lebanon	8.1*	(2.7-23.9)	4.5*	(1.8-11.3)	1.2	(0.3-4.4)	1.0	-	24.8*	(<.001)
Mexico	11.4*	(6.6-19.8)	6.2*	(3.9-9.8)	4.0*	(2.3-6.9)	1.0	-	116.7*	(<.001)
High										
Belgium	27.8*	(12.6-61.6)	9.1*	(3.9-21.3)	1.8	(0.7-4.7)	1.0	-	160.3*	(<.001)
France	12.9*	(6.5-25.7)	5.1*	(3.1-8.3)	3.8*	(2.1-6.7)	1.0	-	76.2*	(<.001)
Germany	14.0*	(6.3-31.3)	4.6*	(2.2-9.8)	4.3*	(1.9-9.9)	1.0	-	52.6*	(<.001)
Israel	18.7*	(12.9-27.0)	7.1*	(5.0-10.1)	2.6*	(1.6-4.3)	1.0	-	327.8*	(<.001)
Italy	54.2*	(28.0-105.0)	15.4*	(8.6-27.6)	8.7*	(4.0-19.3)	1.0	-	193.4*	(<.001)
Japan	17.3*	(7.4-40.3)	5.0*	(1.9-13.0)	2.9	(1.1-7.9)	1.0	-	59.1*	(<.001)
Netherlands	10.4*	(5.8-18.5)	5.0*	(2.4-10.4)	2.1*	(0.6-7.2)	1.0	-	74.5*	(<.001)
New Zealand	16.7*	(12.7-21.8)	7.9*	(6.3-9.9)	3.4*	(2.5-4.5)	1.0	-	532.6*	(<.001)
Spain	37.2*	(23.4-59.1)	15.9*	(9.8-25.8)	6.1*	(3.1-12.0)	1.0	-	387.7*	(<.001)
USA	13.4*	(10.6-16.9)	5.8*	(4.8-7.1)	3.2*	(2.6-3.9)	1.0	-	582.9*	(<.001)

*Significant at the .05 level, two-sided test.

†From a logistic regression model of any 12-month service use containing all covariates shown in tables 1A-D as well as severity.

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Table 1

Sample Characteristics

Country	Percent of Health budget to GDP*	Survey[1]	Sample Characteristics[2]	Field Dates	Age Range	Sample Size			Response Rate
						Part I	Part II	Part II and Age ≤ 44[4]	
Low									
Nigeria	3.4	NSMHW	Stratified multistage clustered area probability sample of households in 21 of the 36 states in the country, representing 57% of the national population. The surveys were conducted in Yoruba, Igbo, Hausa and Efik languages.	2002-3	18+	6752	2143	1203	79.3
Low-Middle									
PRC[6] Beijing	5.5	B-WMH	Stratified multistage clustered area probability sample of household residents in the Beijing metropolitan area.	2002-3	18+	2633	914	307	74.8
PRC[6] Shanghai	5.5	S-WMH	Stratified multistage clustered area probability sample of household residents in the Shanghai metropolitan area.	2002-3	18+	2568	714	263	74.6
Colombia	5.5	NSMH	Stratified multistage clustered area probability sample of household residents in all urban areas of the country (approximately 73% of the total national population)	2003	18-65	4426	2381	1731	87.7
South Africa	8.6	SASH	Stratified multistage clustered area probability sample of household residents. NR	2003-4	18+	4315	--	--	87.1
Ukraine	4.3	CMDPSD	Stratified multistage clustered area probability sample of household residents. NR	2002	18+	4725	1720	541	78.3
High-Middle									
Lebanon	12.2	LEBANON	Stratified multistage clustered area probability sample of household residents. NR	2002-3	18+	2857	1031	595	70.0
Mexico	6.1	M-NCS	Stratified multistage clustered area probability sample of household residents in all urban areas of the country (approximately 75% of the total national population).	2001-2	18-65	5782	2362	1736	76.6
High									
Belgium	8.9	ESEMeD	Stratified multistage clustered probability sample of individuals residing in households from the national register of Belgium residents. NR	2001-2	18+	2419	1043	486	50.6
France	9.6	ESEMeD	Stratified multistage clustered sample of working telephone numbers merged with a reverse directory (for listed numbers). Initial recruitment was by telephone, with supplemental in-person recruitment in households with listed numbers. NR	2001-2	18+	2894	1436	727	45.9

Country	Percent of Health budget to GDP*	Survey[1]	Sample Characteristics[2]	Field Dates	Age Range	Sample Size			Response Rate
						Part I	Part II	Part II and Age ≤ 44[4]	
Germany	10.8	ESEMeD	Stratified multistage clustered probability sample of individuals from community resident registries. NR	2002-3	18+	3555	1323	621	57.8
Italy	8.4	ESEMeD	Stratified multistage clustered probability sample of individuals from municipality resident registries. NR	2001-2	18+	4712	1779	853	71.3
Israel	8.7	NHS	Stratified multistage clustered area probability sample of household residents. NR	2002-4	21+	4859	--	--	72.6
Japan	8.0	WMHJ2002-2003	Un-clustered two-stage probability sample of individuals residing in households in four metropolitan areas (Fukiage, Kushikino, Nagasaki, Oyayama)	2002-3	20+	2436	887	282	56.4
Netherlands	8.9	ESEMeD	Stratified multistage clustered probability sample of individuals residing in households that are listed in municipal postal registries. NR	2002-3	18+	2372	1094	516	56.4
New Zealand[5]	8.3	NZMHS	Stratified multistage clustered area probability sample of household residents. NR	2004-5	16+	12992	7435	4242	73.3
Spain	7.5	ESEMeD	Stratified multistage clustered area probability sample of household residents. NR	2001-2	18+	5473	2121	960	78.6
United States	13.9	NCS-R	Stratified multistage clustered area probability sample of household residents. NR	2002-3	18+	9282	5692	3197	70.9

[3]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.

*World Health Organization. Project Atlas: Resources for Mental Health and Neurological Disorders. Available at: www.who.int/globalatlas/dataQuery/default.asp.

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

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

[4] All countries, with the exception of Nigeria, PRC Beijing, PRC Shanghai, and Ukraine (which were age restricted to ≤ 39) were age restricted to ≤ 44.

[5] For purposes of cross-national analysis the New Zealand sample was restricted to ≤ 18 years of age for a total n of 12790.

[6] People's Republic of China

Table 2

Twelve-month service use by sectors in the WMH surveys

Country income level	Among Respondents*															Among Respondents Using Services†											
	Any Treatment			Mental Health Specialty			General Medical			Human Services			CAM‡			Mental Health Specialty			General Medical			Human Services			CAM‡		
	N	%	se	N	%	se	N	%	se	N	%	se	N	%	se	N	%	se	N	%	se	N	%	se	N	%	se
Low																											
Nigeria	57	1.6	0.3	5	0.1	0.1	42	1.1	0.2	14	0.5	0.2	1	0.0	0.0	5	8.3	3.7	42	66.6	10.1	14	30.9	10.2	1	1.1	1.1
Low-Middle																											
China	74	3.4	0.6	19	0.6	0.2	41	2.3	0.5	6	0.3	0.1	18	0.7	0.3	19	18.0	5.9	41	68.5	6.8	6	7.4	3.8	18	21.2	7.3
Colombia	217	5.5	0.6	126	3.0	0.4	82	2.3	0.4	19	0.5	0.2	10	0.2	0.1	126	53.4	4.8	82	41.7	5.1	19	9.2	2.8	10	3.7	1.4
South Africa	675	15.4	1.0	108	2.5	0.4	440	10.2	0.8	169	3.7	0.4	161	3.7	0.3	108	16.3	2.2	440	66.4	2.5	169	24.0	1.9	161	23.8	2.1
Ukraine	212	7.2	0.8	39	1.2	0.3	135	4.0	0.7	47	1.7	0.4	29	1.0	0.3	39	17.2	3.8	135	55.4	7.1	47	24.1	5.1	29	14.4	4.0
High-Middle																											
Lebanon	77	4.4	0.6	18	1.0	0.3	53	2.9	0.5	11	0.8	0.3	0	0.0	0.0	18	22.3	5.7	53	66.6	7.4	11	17.5	6.1	0	0.0	0.0
Mexico	240	5.1	0.5	121	2.8	0.3	92	1.7	0.3	15	0.3	0.1	45	1.0	0.2	121	53.6	4.2	92	33.1	4.0	15	6.2	2.0	45	20.0	3.4
High																											
Belgium	187	10.9	1.4	96	5.2	0.7	147	8.2	1.3	6	0.4	0.2	12	0.7	0.3	96	47.9	4.4	147	75.5	3.8	6	3.7	1.8	12	6.5	2.9
France	272	11.3	1.0	111	4.4	0.5	214	8.8	0.9	10	0.4	0.2	9	0.5	0.3	111	39.4	3.6	214	78.4	3.3	10	3.4	1.2	9	4.3	2.1
Germany	183	8.1	0.8	100	3.9	0.6	102	4.2	0.6	16	1.0	0.4	15	0.6	0.2	100	48.5	4.8	102	51.7	5.1	16	12.2	4.5	15	7.4	2.5
Israel	421	8.8	0.4	215	4.4	0.3	169	3.6	0.3	71	1.6	0.2	42	0.8	0.1	215	50.5	2.6	169	40.4	2.6	71	18.0	2.0	42	9.6	1.5
Italy	141	4.3	0.4	55	2.0	0.3	107	3.0	0.3	15	0.4	0.1	4	0.1	0.0	55	47.1	5.1	107	70.9	4.8	15	9.1	2.4	4	1.5	0.7
Japan	92	5.6	0.9	43	2.4	0.5	47	2.8	0.5	8	0.8	0.5	13	0.6	0.2	43	42.5	5.5	47	50.2	8.2	8	15.0	6.7	13	11.1	4.7
Netherlands	202	10.9	1.2	105	5.5	1.0	141	7.7	1.1	14	0.6	0.2	27	1.5	0.4	105	51.0	6.0	141	71.2	6.1	14	5.4	1.6	27	13.5	3.8
New Zealand	1592	13.8	0.5	585	5.2	0.3	1122	9.2	0.4	203	1.6	0.2	265	2.6	0.3	585	37.6	1.8	1122	66.5	1.8	203	11.5	1.1	265	19.0	1.7
Spain	375	6.8	0.5	200	3.6	0.4	249	4.4	0.4	11	0.1	0.1	20	0.2	0.1	200	52.2	3.6	249	64.9	3.4	11	2.1	0.8	20	3.5	1.0
USA	1477	17.9	0.7	738	8.8	0.5	773	9.3	0.4	266	3.4	0.3	247	2.8	0.2	738	48.8	1.7	773	51.8	1.3	266	18.8	1.1	247	15.6	1.0
χ^2_{16}	764.6 (<.001)			679.6 (<.001)			732.2 (<.001)			262.9 (<.001)			388.0 (<.001)			232.4 (<.001)			207.3 (<.001)			201.8 (<.001)			223.1 (<.001)		

*Percentages among respondents are based on entire part II samples.

†Percentages are based on respondents using any 12-month services.

‡CAM: Complementary and alternative medicine.

Table 3

Percentages using 12-month services by severity of mental disorders in the WMH surveys[†]

Country income level	Country	Severe			Moderate			Mild			None			Test of Difference in Probability of Treatment By Severity	
		N	%‡	se	N	%‡	se	N	%‡	se	N	%‡	se	χ^2_3	(p-value)
Low															
	Nigeria	8	21.3	11.9	6	13.8	7.4	14	10.0	3.0	29	1.0	0.3	27.7*	(<.001)
Low-Middle															
	China	5	11.0	5.4	11	23.5	10.9	3	1.7	1.2	55	2.9	0.6	16.1*	(.001)
	Colombia	54	27.8	4.8	47	10.3	2.0	30	7.8	1.6	86	3.4	0.6	96.1*	(<.001)
	South Africa	45	26.2	3.6	66	26.6	3.9	67	23.1	3.2	497	13.4	0.9	41.0*	(<.001)
	Ukraine	49	25.7	3.2	68	21.2	3.6	19	7.6	2.6	76	4.4	0.8	81.2*	(<.001)
High-Middle															
	Lebanon	22	20.1	5.2	19	11.6	3.1	7	4.0	1.6	29	3.0	0.7	34.9*	(<.001)
	Mexico	52	25.8	4.3	53	17.9	2.9	33	11.9	2.3	102	3.2	0.4	132.9*	(<.001)
High															
	Belgium	46	62.1	9.2	30	38.4	8.3	13	12.7	4.6	98	6.8	1.1	227.1*	(<.001)
	France	56	48.0	6.4	70	29.4	4.0	43	22.4	3.4	103	7.0	1.1	82.6*	(<.001)
	Israel	81	53.9	4.0	54	32.6	3.7	19	14.4	3.2	267	6.0	0.4	368.1*	(<.001)
	Germany	30	40.6	8.9	39	23.9	4.7	27	20.5	5.2	87	5.9	0.9	54.5*	(<.001)
	Italy	29	51.6	6.5	38	25.9	4.2	21	17.8	4.5	53	2.2	0.4	192.7*	(<.001)
	Japan§	10	24.2	5.0	16	24.2	5.0	9	12.8	4.4	57	4.5	0.9	44.5*§	(<.001)
	Netherlands	57	49.2	6.6	36	31.3	7.2	15	16.1	6.0	94	7.7	1.3	66.8*	(<.001)
	New Zealand	458	56.6	2.2	421	39.8	1.9	184	22.2	1.9	529	7.3	0.5	644.8*	(<.001)
	Spain	79	58.7	4.9	93	37.4	5.0	35	17.3	4.3	168	3.9	0.5	446.1*	(<.001)
	USA	385	59.7	2.4	394	39.9	1.3	219	26.2	1.7	479	9.7	0.6	668.5*	(<.001)
	χ^2_{16} //	186.9* (<.001)			145.6* (<.001)			104.1* (<.001)			330.0* (<.001)				

*Significant at the .05 level, two-sided test.

[†] Percents based on entire part II samples.

[‡] Percents are based on respondents using any services within each level of severity.

[§] Severe and moderate cases were combined into 1 category for Japan and the percent using services was displayed in both columns. The χ^2 test was two degrees of freedom for this country.

[‖] χ^2_{16} is from a model predicting any 12-month service use among respondents within each level of severity.

Table 4

Percentages using mental health specialty sectors among respondents using any services in the WMH surveys[†]

Country income level	Country	Severe			Moderate			Mild			None			Test of Difference in Probability of Treatment By Severity	
		N	%‡	se	N	%‡	se	N	%‡	se	N	%‡	se	χ^2 (1 or 3 df)#	(p-value)
Low															
	Nigeria	1	_§	_§	0	_§	_§	3	9.5	4.5	1	9.5	4.5	1.4	(.235)
Low Middle															
	China	3	_§	_§	2	_§	_§	3	16.7	6.8	11	16.7	6.8	0.2	(.644)
	Colombia	30	62.9	8.3	28	47.1	8.0	19	62.2	10.3	49	48.8	8.3	1.9	(.599)
	South Africa	14	35.9	7.6	13	19.7	5.9	12	15.5	5.6	69	14.1	2.0	15.4*	(.002)
	Ukraine	15	34.8	6.8	9	16.2	8.2	3	_§	_§	12	12.5	5.3	8.6*	(.035)
High-Middle															
	Lebanon	7	35.6	9.2	5	35.6	9.2	1	14.0	7.3	5	14.0	7.3	3.1	(.077)
	Mexico	26	60.3	8.0	30	59.1	6.8	15	51.0	11.2	50	50.4	7.0	1.1	(.778)
High															
	Belgium	25	58.6	9.8	17	48.6	10.9	6	_§	_§	48	43.4	7.0	1.5	(.677)
	France	27	49.7	8.6	26	33.8	8.3	13	34.1	7.0	45	40.1	6.9	2.4	(.502)
	Germany	17	46.4	12.1	27	68.9	8.9	12	_§	_§	44	47.4	6.2	9.8*	(.020)
	Israel	39	47.4	5.7	31	55.7	7.1	10	_§	_§	135	50.0	3.3	1.1	(.765)
	Italy	10	_§	_§	11	33.8	10.6	7	_§	_§	27	63.6	7.5	7.0	(.071)
	Japan	7	_§	_§	13	_§	_§	5	34.2	6.0	18	34.2	6.0	12.0*	(<.001)
	Netherlands	34	66.9	7.3	22	45.2	15.5	7	_§	_§	42	47.5	9.2	2.5	(.483)
	New Zealand	232	57.4	2.9	140	34.7	3.4	49	26.3	4.3	164	32.0	2.9	63.1*	(<.001)
	Spain	52	65.4	7.3	55	61.3	5.5	19	41.2	10.4	74	45.8	6.5	5.6	(.131)
	USA	250	66.0	2.4	182	45.0	3.3	91	41.5	3.1	215	43.8	2.6	59.6*	(<.001)

Three degree of freedom tests were performed for all other countries.

*Significant at the .05 level, two-sided test.

†Percents based on entire part II samples.

[‡] Percents are those in any mental health treatment among respondents using any services within each level of severity.

[§] Percents not reported if the number of respondents using any services in a level of severity < 30.

[//] One degree of freedom χ^2 tests were performed for Nigeria, Lebanon, Japan and China, where combined Severe and Moderate was compared against combined Mild and None category.

Table 5

Percentages receiving follow-up treatment[†] among respondents using services in the WMH surveys

Country income level	Country	Any Severity			Severe			Moderate			Mild			None			Test of Difference in Probability of Follow-up Treatment By Severity
																	χ^2 (p-value)
		N	%[‡]	se	N	%[§]	se	N	%[§]	se	N	%[§]	se	N	%[§]	se	(1 or 3 df)[¶]
Low																	
	Nigeria	47	76.3	8.7	6	-//	-//	6	-//	-//	13	74.6	9.2	22	74.6	9.2	0.4 (.512)
Low-Middle																	
	China	56	77.6	6.0	4	-//	-//	6	-//	-//	3	80.8	6.8	43	80.8	6.8	1.0 (.328)
	Colombia	158	72.0	4.3	49	92.6	3.5	31	73.1	7.9	20	61.7	11.3	58	63.6	7.9	12.3* (.006)
	South Africa	601	89.1	1.7	42	93.9	3.9	63	95.7	3.0	58	87.4	3.7	438	88.0	2.2	3.0 (.394)
	Ukraine	167	79.1	3.8	44	92.3	3.6	51	82.3	4.5	14	-//	-//	58	71.8	7.0	12.5* (.006)
High-Middle																	
	Lebanon	62	78.9	6.9	17	84.1	4.4	15	84.1	4.4	7	75.7	10.2	23	75.7	10.2	0.8 (.367)
	Mexico	180	74.5	4.4	40	85.5	4.2	41	76.6	6.7	25	84.3	6.9	74	67.8	7.7	6.0 (.110)
High																	
	Belgium	165	84.3	3.9	42	84.4	9.5	27	84.3	10.4	12	-//	-//	84	83.1	5.1	3.1 (.376)
	France	235	86.0	3.9	49	87.5	4.7	65	97.3	1.6	35	89.7	4.4	86	80.0	6.9	7.8 (.051)
	Germany	152	70.2	5.1	28	89.2	8.5	37	97.1	0.7	23	-//	-//	64	61.1	7.4	66.4* (<.001)
	Israel	364	86.1	1.8	73	90.7	3.2	48	89.2	4.2	17	-//	-//	226	83.6	2.4	3.3 (.344)
	Italy	129	94.5	1.5	28	-//	-//	34	93.1	3.7	19	-//	-//	48	94.4	2.4	1.3 (.728)
	Japan	83	89.8	2.6	9	-//	-//	13	-//	-//	9	91.2	3.3	52	91.2	3.3	0.9 (.332)
	Netherlands	183	85.9	4.3	53	96.4	2.1	35	98.9	1.2	15	-//	-//	80	78.5	7.2	10.0* (.007)
	New Zealand	1394	85.7	1.3	421	92.5	1.4	368	88.7	1.8	151	83.5	3.2	454	81.0	2.8	15.1* (.002)
	Spain	341	88.8	2.6	73	95.3	1.9	86	92.6	3.0	33	90.8	6.2	149	84.7	4.7	5.8 (.121)
	USA	1313	86.8	1.4	362	93.2	1.7	354	88.4	2.0	187	83.0	2.9	410	83.3	2.6	17.2* (.001)
	χ^2_{16} #	67.1 (<.001)			25.4 (.062)			71.5 (<.001)			21.3 (.129)			47.9 (<.001)			

*Significant at the .05 level, two-sided test.

[†] Follow-up treatment was defined as receiving 2 or more visits to any service sector, or being in ongoing treatment at interview.

[‡] Percents based on entire part II samples.

[§] Percents are those receiving follow-up treatment among those in treatment within each level of severity.

[//] Percents not reported if the number of cases with any treatment in a level of severity < 30.

[¶] One degree of freedom Chi-Square tests were performed for Nigeria, Lebanon, Japan and China, where combined Severe and Moderate was compared against combined Mild and None category. Three degree of freedom tests were performed for all other countries.

[#] χ^2_{13} is from a model predicting follow-up treatment among respondents in each level of severity that used any 12-month services.

Table 6

Percentages receiving minimally adequate treatment[†] among respondents using services in the WMH surveys

Country income level	Country	Any Severity			Severe			Moderate			Mild			None			Test of Difference in Probability of Minimally Adequate Treatment By Severity
																	χ^2 (p-value)
		N	%[‡]	se	N	%[§]	se	N	%[§]	se	N	%[§]	se	N	%[§]	se	(1, 2, or 3 df)[¶]
Low																	
	Nigeria	1	10.4	9.8	0	-//	-//	0	-//	-//	0	12.4	11.8	1	12.4	11.8	
Low-Middle																	
	China	19	24.1	7.0	0	-//	-//	3	-//	-//	2	20.1	5.9	14	20.1	5.9	0.8 (.364)
	Colombia	33	14.7	3.4	11	23.1	8.5	7	21.7	10.5	3	6.3	4.6	12	10.1	3.5	4.7 (.195)
	South Africa	0	-**	-**	0	-**	-**	0	-**	-**	0	-**	-**	0	-**	-**	
	Ukraine	0	-**	-**	0	-**	-**	0	-**	-**	0	-**	-**	0	-**	-**	
High-Middle																	
	Lebanon	18	24.5	7.1	5	24.0	6.2	3	24.0	6.2	3	24.8	10.7	7	24.8	10.7	0.0 (.949)
	Mexico	42	15.2	2.7	8	11.3	4.5	13	28.6	6.3	6	19.8	5.8	15	11.3	4.0	10.5* (.014)
High																	
	Belgium	78	33.6	5.2	23	42.5	8.5	12	35.5	12.6	5	-//	-//	38	29.4	6.2	1.7 (.626)
	France	113	42.3	5.4	29	57.9	8.5	28	36.5	6.6	15	41.5	9.7	41	40.2	8.3	3.4 (.335)
	Germany	91	42.0	6.1	21	67.3	10.7	21	53.3	8.4	14	-//	-//	35	35.4	8.8	6.1 (.108)
	Israel	148	35.1	2.5	28	34.4	5.4	21	40.3	6.8	6	-//	-//	93	34.3	3.1	0.7 (.867)
	Italy	45	33.0	5.1	12	-//	-//	11	35.7	9.4	6	-//	-//	16	29.9	7.4	3.5 (.325)
	Japan	35	31.8	6.8	6	-//	-//	6	-//	-//	5	27.9	7.0	18	27.9	7.0	4.4* (.037)
	Netherlands	98	34.4	5.0	37	65.7	9.2	19	34.1	10.2	10	-//	-//	32	21.9	5.2	23.2* (<.001)
	New Zealand	0	-**	-**	0	-**	-**	0	-**	-**	0	-**	-**	0	-**	-**	
	Spain	152	37.3	3.3	41	47.5	7.5	37	43.6	5.6	20	44.8	9.9	54	30.1	4.4	8.5* (.037)
	USA	302	18.1	1.1	160	41.8	3.2	101	24.8	2.1	41	4.9	0.8	-	-	-	114.0* (<.001)
	χ^2_{12} #	117.0 (<.001)			41.0 (<.001)			31.2 (.002)			25.9 (.011)			96.7 (<.001)			

*Significant at the .05 level, two-sided test.

[†] Minimally adequate treatment was defined as receiving 8 or more visits to any service sector, or 4 or more visits and at least 1 month of medication, or being in ongoing treatment at interview.

[‡] Percents based on entire part II samples.

[§] Percents are those receiving minimally adequate treatment among those in treatment within each level of severity.

[//] Percents not reported if the number of cases with any treatment in a level of severity < 30.

[¶] The test was not performed for Nigeria because there was only one (unweighted) case with adequate treatment. One degree of freedom chi-square tests were performed for Lebanon, Japan and China, where combined Severe and Moderate was compared against combined Mild and None category. Two degree of freedom test was performed for the USA, where the Mild and None categories were collapsed. Three degree of freedom tests were performed for all other countries.

[#] χ^2_{13} is from a model predicting minimally adequate treatment among respondents in each level of severity that used any 12-month services.

[**] The questions on pharmacoepidemiology were not asked in Ukraine, South Africa, or New Zealand.