

Treatment and Adequacy of Treatment of Mental Disorders Among Respondents to the Mexico National Comorbidity Survey

Guilherme Borges, Sc.D.

Maria Elena Medina-Mora, Ph.D.

Philip S. Wang, M.D., Dr.P.H.

Carmen Lara, M.D.

Patricia Berglund, M.B.A.

Ellen Walters, M.Sc.

Objective: This study described the rate and adequacy of mental health service use among participants in the Mexico National Comorbidity Survey and the correlates of any 12-month treatment and of adequate treatment.

Method: The authors conducted face-to-face household surveys of a probability sample of individuals ages 18 to 65 years in the noninstitutionalized population living in urban areas of Mexico from 2001 to 2002. The use of mental health services and 12-month DSM-IV disorders was assessed with the World Mental Health version of the World Health Organization Composite International Diagnostic Interview. The rates and correlates of any service use and the adequacy of treatment were identified in logistic regression anal-

yses, taking into account the complex sample design and weighting process.

Results: The data reported here were based on 2,362 interviews. Fewer than one in five respondents with any psychiatric disorder during the last 12 months used any service during the prior year. The rates of service use by those with mood disorders were somewhat higher. About one in every two respondents who used services received minimally adequate care.

Conclusions: The authors found large unmet needs for mental health services among those with psychiatric disorders. Those with mental illness and those who deliver or seek to improve mental health care in Mexico face enormous challenges.

(*Am J Psychiatry* 2006; 163:1371–1378)

Worldwide, mental disorders are common, persistent, costly, and contribute substantially to the total burden from disease (1, 2). In spite of this, studies of developed Western societies have consistently documented that only a minority of people with psychiatric disorders receive some form of treatment (3–6). Although these estimates are disturbingly low, the rates of receiving treatment that conform with evidence-based recommendations (7–18) are even lower (19–23).

Few studies from developing countries are available regarding the use of services among persons with a mental disorder (24–27). The available data show that an even smaller percentage of persons in need may get help for their mental disorder. Mexico is no exception, with preliminary and more limited research (25–28) suggesting that the rates of mental health service use are low and that barriers, both psychological as well as limits in availability and access, abound. Also lacking have been up-to-date and rigorous data on the quality of treatments being received in Mexico.

Recent developments offer new hope that the problems of underuse and inadequate use of mental health services in Mexico can be better understood. In 2001–2002, the National Institute of Psychiatry in Mexico conducted the Mexico National Comorbidity Survey (27), which is part of the World Health Organization's (WHO) World Mental

Health Surveys Initiative (29, 30), devoted to evaluating the prevalence of psychiatric disorders in countries with varying degrees of development, determining the extent of unmet needs for mental health services, and directing public policy in this area.

The aims of the present report were the following:

1. To describe the rate of mental health service use in the prior year among participants with 12-month disorders, including use within specific service systems and use for types of mental disorders;
2. To describe the adequacy of 12-month treatments for mental disorders; and
3. To explore the potential determinants of service use and the adequacy of treatment.

Method

Sample

A general description of the Mexico National Comorbidity Survey has been presented elsewhere (27). The survey is based on a stratified, multistage area probability sample of persons ages 18 to 65 years in the noninstitutionalized population living in urban areas (population 2,500+) of Mexico. About 75% of the Mexican population lives in urban areas and meets this definition. Data collection took place in two phases from September 2001 through May 2002. The response rate was 76.6% (for a total of 5,826 interviews, well above the original targeted sample size of 5,000) and

TABLE 1. Proportion of 2,362 Respondents to the Mexico National Comorbidity Survey Being Treated by Health Care Professionals Among People With Mental Disorders Over 12 Months^a

| Mental Disorder | Type of Service | | | | | | | | | |
|-------------------------------|-----------------|-----|------------------------------------|-----|---------------------------------|-----|--------------------------|-----|--------------------------|-----|
| | Psychiatrists | | Other Mental Health Care Providers | | Any Mental Health Care Provider | | General Medical Services | | Any Health Care Services | |
| | % | SE | % | SE | % | SE | % | SE | % | SE |
| Generalized anxiety disorder | 2.1 | 2.1 | 8.6 | 4.6 | 8.6 | 4.6 | 7.6 | 5.1 | 14.1 | 6.6 |
| Panic disorder | 10.6 | 3.7 | 9.5 | 5.3 | 18.1 | 6.0 | 14.8 | 6.2 | 25.1 | 7.0 |
| Agoraphobia without panic | 6.6 | 4.0 | 12.9 | 5.7 | 16.0 | 6.0 | 1.8 | 1.8 | 16.0 | 6.0 |
| Social phobia | 4.7 | 2.3 | 6.3 | 2.4 | 10.0 | 3.1 | 9.0 | 3.1 | 15.3 | 4.0 |
| Specific phobia | 3.0 | 1.3 | 5.4 | 1.3 | 7.8 | 2.0 | 4.4 | 1.3 | 11.3 | 2.4 |
| Separation anxiety disorder | — | — | — | — | — | — | — | — | — | — |
| Posttraumatic stress disorder | — | — | — | — | — | — | — | — | — | — |
| Any anxiety disorder | 3.8 | 1.2 | 5.7 | 1.3 | 8.5 | 1.9 | 6.0 | 1.5 | 13.2 | 2.4 |
| Major depressive disorder | 5.6 | 1.9 | 7.9 | 1.6 | 12.6 | 2.5 | 11.5 | 1.8 | 22.1 | 2.9 |
| Dysthymia | — | — | — | — | — | — | — | — | — | — |
| Bipolar I or II | 3.6 | 2.9 | 12.9 | 5.0 | 16.4 | 5.6 | 9.6 | 4.4 | 23.1 | 5.9 |
| Any mood disorder | 5.1 | 1.6 | 8.8 | 1.5 | 13.2 | 2.2 | 11.2 | 1.5 | 22.2 | 2.4 |
| Alcohol abuse or dependence | 8.6 | 4.7 | 8.1 | 3.5 | 16.2 | 5.5 | 3.2 | 1.9 | 18.8 | 5.3 |
| Alcohol dependence | 13.2 | 8.7 | 5.9 | 3.5 | 19.1 | 9.2 | 0.7 | 0.7 | 19.8 | 9.2 |
| Drug abuse or dependence | — | — | — | — | — | — | — | — | — | — |
| Drug dependence | — | — | — | — | — | — | — | — | — | — |
| Any substance | 8.2 | 4.2 | 7.1 | 3.1 | 14.8 | 4.9 | 2.8 | 1.6 | 17.1 | 4.7 |
| Any disorder | 4.4 | 1.0 | 6.4 | 1.2 | 10.2 | 1.5 | 6.5 | 1.0 | 15.8 | 1.7 |
| No disorder | 0.3 | 0.1 | 1.5 | 0.3 | 1.8 | 0.3 | 1.1 | 0.2 | 2.7 | 0.4 |
| Total part II respondents | 0.8 | 0.2 | 2.1 | 0.3 | 2.8 | 0.3 | 1.7 | 0.3 | 4.2 | 0.4 |

^a Missing cell entries indicate that the unweighted number of patients with disorder was less than 30; thus, no estimate was made.

within the scope of other surveys from the World Mental Health Initiatives (response rate range=50.6%–87.7%) (30). All respondents were administered the part I interview, and a selected subsample of 2,362 received a supplemental number of questions on risk factors and supplemental mental disorders. The sample was administered part II of the interview and consisted of all respondents who screened positive for any disorder that was found to be positive on part I of the interview, plus a probability subsample of other part I respondents. All interviews were conducted at the respondents' homes after a careful description of the study goals was given and informed consent was obtained. No financial incentive was given for the respondents' participation. All recruitment and consent procedures were approved by the ethics committee of the National Institute of Psychiatry.

Measures

The instrument used was the computer-assisted personal interview version of the WHO World Mental Health Survey Initiative version of the Composite International Diagnostic Interview (CIDI) (31, 32). This structured diagnostic interview was administered by an interviewer in face-to-face interviews, which yielded DSM-IV diagnoses.

The Spanish version of the World Mental Health CIDI used in Mexico was developed by using the standard WHO approach (i.e., translating, back-translating, and harmonization of modules), the Spanish versions of ICD-10 and DSM-IV, and previous Spanish versions of the Diagnostic Interview Schedule and CIDI. These instruments have shown good performance in validity studies in Mexico (33, 34) and other Spanish-speaking countries (35). The fieldwork was conducted by Berumen and Associates, an established survey research firm in Mexico, and employed a group of

interviewers who had received training in using the computer-assisted personal interview version of the CIDI.

Disorders

For this article, we reported on the 12-month rate of service use for the following categories of psychiatric disorders—affective disorders: major depressive episode, minor depressive episode, bipolar I and II disorder, and dysthymia with hierarchy; anxiety disorders: panic disorder, agoraphobia without panic disorder, social phobia, specific phobia, separation anxiety disorder, generalized anxiety disorder, and posttraumatic stress disorder; substance use disorders: alcohol and drug abuse and dependence.

Treatment Sectors

Information about the receipt of 12-month treatment for emotional, alcohol, or drug problems, the type and context of professionals visited, as well as the use of self-help or support groups and hotlines was obtained. The number of treatment visits made in the prior 12 months was also assessed. Respondents could select as many professionals and treatment options as they used in the previous 12 months.

Mental health care in the 12 months before the survey was performed was divided into the following five sectors: 1) psychiatrists; 2) other mental health specialists, consisting of psychologists, counselors, psychotherapists, mental health nurses, and social workers in a mental health specialty setting; and 3) general medical practitioners, consisting of family physicians, general practitioners, and other medical doctors, such as cardiologists, or gynecologists (for women) and urologists (for men), nurses, occupational therapists, or other health care professionals; 4) human services, including outpatient treatment with a religious or spiri-

| Types of Service | | | | | | | | Weighted Number of Respondents With a Mental Disorder |
|------------------|-----|--|-----|-----------------------------|-----|---------------|-----|---|
| Human Services | | Complementary-Alternative Medicine Providers | | Any Non-Health Care Service | | Any Treatment | | |
| % | SE | % | SE | % | SE | % | SE | |
| 0.0 | 0.0 | 2.1 | 2.1 | 2.1 | 2.1 | 14.1 | 6.6 | 33 |
| 4.9 | 4.7 | 4.7 | 4.7 | 9.6 | 6.5 | 29.9 | 8.1 | 44 |
| 0.0 | 0.0 | 2.4 | 1.8 | 2.4 | 1.8 | 17.5 | 6.2 | 52 |
| 0.4 | 0.4 | 1.0 | 0.7 | 1.0 | 0.7 | 16.3 | 4.1 | 112 |
| 0.0 | 0.0 | 3.8 | 2.2 | 3.8 | 2.2 | 13.6 | 3.1 | 224 |
| — | — | — | — | — | — | — | — | 11 |
| — | — | — | — | — | — | — | — | 29 |
| 0.4 | 0.3 | 3.6 | 1.6 | 3.9 | 1.6 | 15.4 | 2.6 | 357 |
| 1.7 | 0.8 | 4.1 | 1.6 | 5.4 | 1.8 | 26.1 | 3.3 | 240 |
| — | — | — | — | — | — | — | — | 27 |
| 0.0 | 0.0 | 3.9 | 2.6 | 3.9 | 2.6 | 26.4 | 5.8 | 59 |
| 1.3 | 0.6 | 4.0 | 1.3 | 5.0 | 1.5 | 26.0 | 2.6 | 305 |
| 0.0 | 0.0 | 2.4 | 1.5 | 2.4 | 1.5 | 20.7 | 5.4 | 67 |
| 0.0 | 0.0 | 3.5 | 2.6 | 3.5 | 2.6 | 23.4 | 9.4 | 31 |
| — | — | — | — | — | — | — | — | 16 |
| — | — | — | — | — | — | — | — | 8 |
| 0.0 | 0.0 | 3.0 | 1.6 | 3.0 | 1.6 | 19.6 | 4.8 | 77 |
| 0.7 | 0.3 | 3.3 | 1.1 | 3.9 | 1.1 | 18.6 | 1.8 | 595 |
| 0.3 | 0.1 | 0.7 | 0.2 | 0.9 | 0.2 | 3.4 | 0.4 | 1,767 |
| 0.3 | 0.1 | 1.0 | 0.2 | 1.2 | 0.2 | 5.1 | 0.5 | 2,362 |

tual advisor or a social worker or counselor in any setting other than a specialty mental health setting, or a religious or spiritual advisor, such as a minister, priest, or rabbi; 5) complementary-alternative medicinal Internet use, including self-help groups, any other healer, such as an herbalist, a chiropractor, or a spiritualist, and other alternative therapy.

We grouped the psychiatrists and mental health specialty providers under “any mental health care providers”; the psychiatrists, mental health specialists, and general medical care providers under “any health care services”; and the human services and complementary-alternative medicine professionals under “any non-health care service.”

Minimally Adequate Mental Health Care

With available evidence-based treatment guidelines for primary care (7) and specialty mental health providers (8–12), we defined minimally adequate treatment during the prior 12 months as receiving 1) minimally adequate psychotherapy, consisting of four or more outpatient visits to any provider (36, 37); 2) minimally adequate pharmacotherapy, consisting of two or more outpatient visits to any provider and treatment with any medication for any length of time (38), and 3) reporting still being “in treatment” at the time of the interview. Although this definition is broader than the one that we used previously (23), it allowed us to obtain conservative estimates of minimally adequate treatment across sectors. In sensitivity analyses, a more stringent definition of minimally adequate treatment was also used in which we required 1) eight or more visits to any service sector for psychotherapy or 2) four or more visits to any service sector and 30 or more days taking any medication for pharmacotherapy.

Analyses

The data for the part II respondents were weighted to adjust for differential probabilities of selection and nonresponse. The sample receiving part II of the survey was additionally weighted to adjust for the differential probability of selection. Poststratification to the urban Mexican population according to the 2000 census in the target age and sex range was also performed. Estimates of standard errors for proportions were obtained by the Taylor series linearization method with SUDAAN software (39). Logistic regression analysis (40) was performed to study demographic correlates. Two parallel analyses were performed, one for receiving any treatment among those with disorders and a second one for receiving minimally adequate treatment among those with disorders who received any treatment. Estimates of standard errors of odds ratios and corresponding standard errors from logistic regression coefficients were also obtained with SUDAAN, and 95% confidence intervals were adjusted for design effects. Statistical significance was evaluated with two-sided design-based tests with the 0.05 level of significance. The design effects varied from 3.25 for sex to 1.12 for any treatment among the entire sample.

Results

Among the 2,362 respondents to the Mexico National Mental Health Survey, the 12-month frequencies of any anxiety, affective, substance, or any of these three types of disorders were 6.8%, 4.8%, 2.5% (30), and 11.6%, respectively. As shown in Table 1, 5.1% of the total part II respondents reported using any service for the treatment of their emotional problems in the last 12 months. As expected,

TABLE 2. Proportion of 2,362 Respondents to the Mexico National Comorbidity Survey Receiving Minimally Adequate Treatment Among People Seeing Professionals Over 12 Months^a

| Mental Disorder | Type of Service | | | | | | | | | |
|----------------------------|-----------------|-----|------------------------------------|------|---------------------------------|------|--------------------------|------|--------------------------|-----|
| | Psychiatrists | | Other Mental Health Care Providers | | Any Mental Health Care Provider | | General Medical Services | | Any Health Care Services | |
| | % | SE | % | SE | % | SE | % | SE | % | SE |
| Any anxiety disorder | — | — | — | — | 57.9 | 11.7 | — | — | 55.4 | 7.7 |
| Any mood disorder | — | — | — | — | 59.5 | 7.8 | 48.4 | 9.0 | 54.1 | 6.6 |
| Any substance use disorder | — | — | — | — | — | — | — | — | — | — |
| Any disorder | — | — | 52.5 | 10.8 | 54.4 | 8.1 | 49.0 | 7.7 | 51.2 | 5.7 |
| No disorder | — | — | 50.7 | 10.4 | 54.6 | 9.7 | 41.0 | 10.4 | 48.7 | 8.4 |
| Total part II respondents | 67.7 | 8.9 | 51.3 | 7.2 | 54.5 | 6.2 | 44.6 | 6.8 | 49.8 | 5.1 |

^a Missing cell entries indicate that the unweighted number of patients with a disorder who were treated in the sector was less than 30; thus, no estimate was made.

the proportion of any service use was lower among the respondents without any 12-month mental disorders (3.4%) and higher among respondents with any 12-month disorder (18.6%). Individuals with mood and substance disorders had the highest rate of service use. The sectors in which care was received differed among the three types of disorders; respondents with mood disorders made more use of general medical doctors, whereas respondents with substance disorders tended to use more mental health specialists. Among respondents with anxiety disorders, the mental health specialty and general medical sectors were most frequently used. The individual disorder with the highest use of any service was panic disorder, followed by bipolar I and II disorders. Unexpectedly, alcohol dependency had the highest rate of the use of psychiatrists. The combined use of both the health and non-health care sectors was relatively infrequent: among users of any service in the prior 12 months, 92 (76%) used only the health care sector, 21 (17%) used only the non-health care sector, and 8 (7%) used both.

Among the total sample of respondents, the mean number of visits for any treatment in the previous year was 4.2, and there were no differences in the mean number of visits among respondents with or without psychiatric disorders. The sector with the largest mean number of visits was the complementary-alternative medicine sector (44.7 visits), followed by other mental health care (5.9 visits), the general medical sector (3.5 visits), and the psychiatrist sector (2.8 visits). Patients with anxiety disorders had a slightly higher mean number of visits (5.0). (Results are not shown but are available upon request from the first author.)

Table 2 presents the adequacy of 12-month treatments. Overall, 57.0% of those receiving any services obtained treatment that could be considered minimally adequate. There were generally only minor differences across anxiety and mood disorders. Although we observed low rates of minimally adequate treatment among those with substance disorders, a small number of respondents in this category precluded us from making stable estimates. In

the total sample, the psychiatrist sector showed the highest levels of treatment adequacy (67.7%).

In sensitivity analyses with our more stringent definition, the proportion of respondents obtaining minimally adequate treatment among those with disorders receiving any services decreased to 19.2%; this proportion was 21.2% among respondents with anxiety disorders and 23.5% among those with mood disorders. (Results are not shown but are available upon request from the first author.)

Table 3 presents the sociodemographic predictors of any service use among respondents with 12-month disorders and minimally adequate treatment among respondents with any service use and a 12-month disorder identified in multiple logistic regression models with control for disorder profiles. Few sociodemographic variables considered here were significantly related to any treatment among people with a psychiatric disorder. In addition, we did not find significant correlates of adequate treatment among people with a psychiatric disorder that had any treatment. There was a tendency for people who never married to have higher probabilities of beginning treatment and, once in treatment, receiving minimally adequate treatment.

Discussion

The following three sets of limitations should be kept in mind when interpreting the results of this study. First, we may have underestimated the prevalence of mental disorders, both because the disorders assessed were only a subset of those in DSM-IV as well as because of potential non-response bias. In addition, we may have missed many of the most severely impaired individuals because the homeless and institutionalized were excluded. This set of limitations is likely to have caused us to underestimate the magnitude of unmet needs for any mental health treatment and minimally adequate treatment. Although previous versions of the CIDI have been validated in Mexico and other Spanish-speaking countries, the reliability and validity of the version used in this survey have not been established in Mexico. Finally, recent studies of the exclusion

| Human Services | | Type of Service | | | | Weighted Number of Respondents With a Mental Disorder | | |
|----------------|----|--|-----|-----------------------------|-----|---|---------------|-------|
| % | SE | Complementary-Alternative Medicine Providers | | Any Non-Health Care Service | | | Any Treatment | |
| | | % | SE | % | SE | % | SE | |
| — | | — | | — | | 59.7 | 7.6 | 357 |
| — | | — | | — | | 57.8 | 5.6 | 305 |
| — | | — | | — | | — | | 77 |
| — | | — | | — | | 56.0 | 5.5 | 595 |
| — | | — | | 97.7 | 1.7 | 57.8 | 7.0 | 1,767 |
| — | | 96.3 | 2.4 | 94.2 | 2.7 | 57.0 | 4.4 | 2,362 |

rules used within the alcohol and drug disorder modules suggested that our current prevalence figures may be underestimations (41). Indeed, the 12-month prevalence estimates of anxiety disorders, affective disorders, and substance use disorders reported for the Mexican survey appear low compared to estimates from other countries within the WHO World Mental Health Survey Consortium, especially from the region of the Americas (30), but previous cross-national comparisons on more limited surveys have also suggested that Mexico has a low prevalence of psychiatric disorders (28).

Second, although some investigators (13–18) have shown that treatments that conform to recommendations in evidence-based treatment guidelines improve clinical outcomes, we are not aware of any studies that have validated our exact definition of minimally adequate treatment. The nonrandom use of treatments in our study population made it impossible to investigate whether receiving our definition of minimally adequate care was associated with improved health outcomes.

Third, we only examined the relationships between a small number of patient factors and the receipt, type, and adequacy of mental health treatments; we did not have the ability to investigate other potentially important variables, such as the characteristics of providers. Finally, we cannot conclude that factors associated with receiving any treatment or minimally adequate treatment are related causally because of the study's cross-sectional nature.

Within the context of these limitations, these results shed light on an enormous public health problem facing Mexico. We found large unmet needs among those with psychiatric disorders and extensive underutilization of mental health services. Fewer than one in five respondents with any psychiatric disorder in the last 12 months had used any service. Although the rates of service use by those with some disorders (e.g., mood disorders) are somewhat higher, in absolute terms, treatment rates remain quite low. These data confirm previous research in Mexico showing that the majority of people with a recent psychiatric disorder have not received recent treatment

(25, 42). A recent report contrasting 14 participants in the World Mental Health Survey Initiative (30) showed that Mexico scored the lowest in the rate of service use in the Americas but higher than other developing countries, such as Lebanon, Nigeria, and two major cities of China. In the United States (43), 40.9% of subjects with a mental disorder received some treatment over 12 months, more than two times higher than our results for Mexico. Our data do raise the concern that scarce resources for mental health care may be being misallocated. Although respondents with a DSM-IV disorder were 5.5 times more likely to receive treatment than respondents without a disorder, the latter comprised 58% of the population using services. However, some services may be used by respondents with lifetime histories of disorders, possibly for secondary prevention; other respondents without apparent disorders may also be using services appropriately for primary prevention, subthreshold symptoms that do not qualify as full-blown disorders, or for disorders not assessed by our survey (30). Given these possibilities, it may be premature to make recommendations for the health care system regarding delivering treatment to persons with no apparent disorders. Furthermore, it is not clear if and how reducing treatment among subthreshold cases would lead to increased use among diagnosed cases. Further research on how to optimally allocate mental health resources is needed to create rational future policies in this area.

Although results concerning the receipt of any treatment are troubling, the rates of receiving minimally adequate treatment for mental disorders were even lower because only 56% of those with a psychiatric disorder met our broad criteria. More stringent criteria showed that this proportion can be as low as 19.2%. There are many potential reasons for this failure to receive minimally adequate care. Individuals with mental disorders, especially those with the most serious and impairing forms, may lack the ability and resources to consistently access mental health treatments (44). Patients may also find prescribed treatments intolerable (45). Providers may lack the training to recognize and properly diagnose mental disorders or lack

TABLE 3. Sociodemographic and Disorder-Type Predictors of Any and Minimally Adequate Treatment Over 12 Months Among 2,362 Respondents to the Mexico National Comorbidity Survey

| Variable | Any Treatment Given for Any 12-Month Disorder | | Overall Test of Effect | | | Minimally Adequate Treatment Given for Any Treatment and for 12-Month Disorders | | Overall Test of Effect | | |
|---------------------------------|---|---------|------------------------|----|-------|---|----------|------------------------|----|------|
| | Odds Ratio | 95% CI | Wald χ^2 | df | p | Odds Ratio | 95% CI | Wald χ^2 | df | p |
| Age (years) | | | 2.6 | 3 | 0.46 | | | 1.0 | 3 | 0.80 |
| 18–29 | 0.4 | 0.1–1.5 | | | | 0.9 | 0.1–5.8 | | | |
| 30–44 | 0.6 | 0.2–2.0 | | | | 1.6 | 0.2–13.0 | | | |
| 45–59 | 0.5 | 0.2–1.7 | | | | 1.3 | 0.2–9.7 | | | |
| ≥60 | 1.0 | 1.0–1.0 | | | | 1.0 | 1.0–1.0 | | | |
| Education (years) | | | 0.8 | 3 | 0.86 | | | 1.3 | 3 | 0.72 |
| 0–5 | 0.8 | 0.3–2.1 | | | | 1.0 | 0.2–4.7 | | | |
| 6–8 | 0.8 | 0.4–1.8 | | | | 1.0 | 0.3–3.9 | | | |
| 9–11 | 0.7 | 0.3–1.5 | | | | 1.9 | 0.5–7.9 | | | |
| ≥12 | 1.0 | 1.0–1.0 | | | | 1.0 | 1.0–1.0 | | | |
| Income | | | 7.1 | 3 | <0.07 | | | 2.3 | 3 | 0.52 |
| Low | 1.7 | 0.8–3.6 | | | | 1.0 | 0.3–3.2 | | | |
| Low average | 0.7 | 0.4–1.5 | | | | 1.6 | 0.5–4.7 | | | |
| High average | 1.6 | 0.7–3.3 | | | | 1.9 | 0.5–6.7 | | | |
| High | 1.0 | 1.0–1.0 | | | | 1.0 | 1.0–1.0 | | | |
| Marital status | | | 3.7 | 2 | 0.16 | | | 4.4 | 2 | 0.11 |
| Never married | 1.8 | 0.9–3.5 | | | | 4.9 | 1.1–22.2 | | | |
| Separated, widowed, or divorced | 1.7 | 0.8–3.6 | | | | 1.6 | 0.5–4.8 | | | |
| Married or cohabitating | 1.0 | 1.0–1.0 | | | | 1.0 | 1.0–1.0 | | | |
| Sex | | | 0.1 | 1 | 0.80 | | | 0.0 | 1 | 0.96 |
| Male | 1.1 | 0.6–2.1 | | | | 1.0 | 0.3–3.4 | | | |
| Female | 1.0 | 1.0–1.0 | | | | 1.0 | 1.0–1.0 | | | |

the knowledge concerning optimal treatment regimens (46–48). It is difficult to contrast our results regarding the adequacy of treatment with previous research that used even more stringent criteria, but limited evidence suggests that the low mean number of visits is a key factor. For example, in our sample, the median number of visits among all respondents was 4.2, but it was 14.8 in similar research in the United States (43). This U.S. research also discovered a large difference in the mean number of visits between respondents with a disorder (17.0 visits) and without a disorder (11.6), but in Mexico, both types of respondents had exactly the same mean number of visits (4.2).

These results may not be surprising, given the dearth of mental health resources in Mexico. For a population of about 100 million inhabitants in 2000, the WHO estimated only 6,000 psychiatric beds nationally; 2,500 psychiatrists graduated as of 2000, of which only 890 are certified, and the majority are concentrated in Mexico City; 1,500 psychiatric nurses and fewer than 400 psychiatric social workers have graduated. Although almost 46,000 psychologists had graduated nationally as of 1990, only 73% were working as such. According to the WHO Atlas on Mental Health Resources in the World (49), the number of psychiatrists per capita in Mexico ranks in the second lowest tier among the nations of the world (with a median ranging between 1.01 and 5.00 per 100,000 individuals). Mexico's rating is only just above the rating for countries in the African region and Southeast Asia and considerably lower than the rates observed in Europe (median range=9.0),

Canada, and the United States (median per 100,000 inhabitants was greater than 10).

No sociodemographic characteristic predicted the use of mental health services among subjects with psychiatric disorders nor the adequacy of services. The lack of differences in service use among men and women was unexpected because earlier research suggested that women have a greater ability to translate nonspecific feelings of distress into conscious recognition that they have emotional problems and are therefore more likely to seek and accept treatment (50–51). Never-married persons may tend to use more services and receive more adequate treatment in Mexico because difficulties forming or maintaining relationships may lead those who are not married to seek out mental health treatment; alternatively, dysfunction from psychiatric disorders may lead to both difficulties in relationships and the use of treatment (52, 53). Although Mexico is a country with a low socioeconomic status, and the lack of financial resources may help explain the low rate of service use, we did not find an association between education and income upon receiving any treatment or minimally adequate treatment in our survey.

This study provides evidence of the enormous challenges faced by those with mental illness and those who deliver or seek to improve mental health care in Mexico. In spite of the existence of effective treatments, few with mental disorders received any form of care. Even those that ultimately access treatment do so only after experiencing considerable delays. Compounding these challenges are the enormous tasks of improving the quality of

providers' treatments and improving patients' adherence to treatments, tasks made more difficult by the severe limits on current health care resources. Future studies will need to focus on increasing our understanding of modifiable reasons for these enormous unmet needs (54). Such information will be crucial in designing and targeting public policy and cost-effective interventions to improve treatment access, treatment quality, and, ultimately, the health outcomes of those with mental illness in Mexico.

Received March 26, 2004; revisions received Aug. 31, 2004, Feb. 14, April 14, and June 3, 2005; accepted July 18, 2005. From the Instituto Nacional de Psiquiatría Ramón de la Fuente and the Universidad Autónoma Metropolitana-Xochimilco, Mexico City; Harvard Medical School, Boston; and the Department of Epidemiology and Biostatistics, University of Michigan, Ann Arbor. Address correspondence and reprint requests to Dr. Borges, Instituto Nacional de Psiquiatría and Universidad Autónoma Metropolitana-Xochimilco, Calzada Mexico Xochimilco No. 101, Col. San Lorenzo Huipulco, Mexico D.F. C.P.14370, Mexico; guibor@imp.edu.mx (e-mail).

Support for survey data collection came from the National Institute of Psychiatry Ramon de la Fuente (grant INPRFM-DIES 4280) and from the National Council on Science and Technology (grant CONACYT-G30544-H), with supplemental support from the Pan American Health Organization and Pfizer-Mexico. The Mexico National Comorbidity Survey is carried out in conjunction with the World Health Organization's World Mental Health Survey Initiative. Instrumentation, fieldwork, and data analysis were supported by an NIMH grant (R01MH070884), the John D. and Catherine T. MacArthur Foundation, the Pfizer Foundation, the U.S. Public Health Service (grants R13-MH066849, R01-MH069864, and R01-DA016558), the Fogarty International Center (FIRCA R01-TW006481), the Pan American Health Organization, Eli Lilly and Company, Ortho-McNeil Pharmaceutical, Inc., GlaxoSmithKline, and Bristol-Myers Squibb. A complete list of World Mental Health publications can be found at <http://www.hcp.med.harvard.edu/wmh/>.

The authors thank the staff of the World Health Organization's World Mental Health Survey Initiative for assistance with instrumentation, fieldwork, and data analysis.

References

- Ustun TB: Mainstreaming mental health. *Bull World Health Organ* 2000; 78:412
- Ustun TB: The global burden of mental disorders. *Am J Public Health* 1999; 89:1315-1318
- Regier DA, Shapiro S, Kessler LG, Taube CA: Epidemiology and health service resource allocation policy for alcohol, drug abuse, and mental disorders. *Public Health Rep* 1984; 99:483-492
- Kessler RC, McGonagle KA, Zhao S, Nelson CB, Hughes M, Eshleman S, Wittchen HU, Kendler KS: Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: results from the National Comorbidity Survey. *Arch Gen Psychiatry* 1994; 51:8-19
- Kessler RC, Zhao S, Katz SJ, Kouzis AC, Frank RG, Edlund M, Leaf P: Past-year use of outpatient services for psychiatric problems in the National Comorbidity Survey. *Am J Psychiatry* 1999; 156: 115-123
- Cooper B, Morgan HG: *Epidemiological Psychiatry*. Springfield, Ill, Thomas, 1973
- Agency for Health Care Policy and Research: *Depression in primary care, vol. 2*. Rockville, Md, US Dept of Health and Human Services, 1993
- Lehman AF, Steinwachs DM: Translating research into practice: the Schizophrenia Patient Outcomes Research Team (PORT) treatment recommendations. *Schizophr Bull* 1998; 24:1-10
- American Psychiatric Association: *Practice Guideline for the Treatment of Patients With Major Depressive Disorder*, 2nd ed. Washington, DC, American Psychiatric Association, 2000
- American Psychiatric Association: *Practice Guideline for the Treatment of Patients With Bipolar Disorder*. Washington, DC, American Psychiatric Association, 1994
- American Psychiatric Association: *Practice Guideline for the Treatment of Patients With Schizophrenia*. Washington, DC, American Psychiatric Association, 1997
- American Psychiatric Association: *Practice Guideline for the Treatment of Patients With Panic Disorder*. Washington, DC, American Psychiatric Association, 1998
- Katon WJ, Roy-Byrne P, Russon J, Cowley D: Cost-effectiveness and cost offset of a collaborative care intervention for primary care patients with panic disorder. *Arch Gen Psychiatry* 2002; 59:1098-1104
- Katon W, Von Korff M, Lin E, Walker E, Simon GE, Bush T, Robinson P, Russo J: Collaborative management to achieve treatment guidelines: impact on depression in primary care. *JAMA* 1995; 273:1026-1031
- Katon W, Robinson P, Von Korff M, Lin E, Bush T, Ludman E, Simon G, Walker E: A multifaceted intervention to improve treatment of depression in primary care. *Arch Gen Psychiatry* 1996; 53:924-932
- Katon W, Von Korff M, Lin E, Simon G, Walker E, Unutzer J, Bush T, Russo J, Ludman E: Stepped collaborative care for primary care patients with persistent symptoms of depression: a randomized trial. *Arch Gen Psychiatry* 1999; 56:1109-1115
- Wells KB, Sherbourne C, Schoenbaum M, Duan N, Meredith L, Unutzer J, Miranda J, Carney MF, Rubenstein LV: Impact of disseminating quality improvement programs for depression in managed primary care: a randomized controlled trial. *JAMA* 2000; 283:212-220; correction, 283:3204
- Melfi CA, Chawla AJ, Croghan TW, Hanna MP, Kennedy S, Sredl K: The effects of adherence to antidepressant treatment guidelines on relapse and recurrence of depression. *Arch Gen Psychiatry* 1998; 55:1128-1132
- Katz SJ, Kessler RC, Lin E, Wells KB: Medication management of depression in the United States and Ontario. *J Gen Intern Med* 1998; 13:77-85
- Lehman AF, Steinwachs DM: Patterns of usual care for schizophrenia: Initial results from the Schizophrenia Patient Outcomes Research Team (PORT) client survey. *Schizophr Bull* 1998; 24:11-20
- Wang PS, Berglund PA, Kessler RC: Recent care of common mental disorders in the US: prevalence and conformance with evidence-based recommendations. *J Gen Intern Med* 2000; 15: 284-292
- Wang PS, Demler O, Kessler RC: Adequacy of treatment for serious mental illness in the United States. *Am J Public Health* 2002; 92:92-98
- Kessler RC, Berglund P, Demler O, Jin R, Koretz D, Merikangas KR, Rush AJ, Walters EE, Wang PS: National Comorbidity Survey Replication: the epidemiology of major depressive disorder: results from the National Comorbidity Survey Replication (NCS-R). *JAMA* 2003; 289:3095-3105
- Bijl RV, de Graaf R, Hiripi E, Kessler RC, Kohn R, Offord DR, Ustun TB, Vicente B, Vollebergh WA, Walters EE, Wittchen HU: The prevalence of treated and untreated mental disorders in five countries. *Health Aff (Millwood)* 2003; 22:122-133
- Caraveo J, Martínez Na, Rivera E, Polo A: Prevalencia en a vida de episodios depresivos y utilización de servicios especializados. *Salud Mental* 1997; 20:15-23
- Berenzon SG, Medina-Mora ME, Lara MA: Mental health services: twenty-five years of research. *Salud Mental* 2003; 26:61-72

27. Medina-Mora ME, Borges G, Lara C, Benjet C, Blanco J, Fleiz C, Villatoro J, Rojas E, Zambrano J, Casanova L, Aguilar-Gaxiola S: Prevalence of mental disorders and use of services: results from the Mexican Nacional Survey of Psychiatric Epidemiology. *Salud Mental* 2003; 26:1–16
28. World Health Organization (WHO) International Consortium in Psychiatric Epidemiology: Cross-national comparisons of the prevalences and correlates of mental disorders. *Bull WHO* 2000; 78:413–426
29. Kessler RC, Ustun TB: The World Health Organization World Mental Health 2000 Initiative. *Hosp Management Int* 2000; pp 195–196
30. 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* 2004; 291:2581–2590
31. Robins LN, Wing J, Wittchen HU, Helzer JE, Babor TF, Burke J, Farmer A, Jablenski A, Pickens R, Regier DA, Sartorius N, Towle LH: The Composite International Diagnostic Interview: an epidemiologic instrument suitable for use in conjunction with different diagnostic systems and in different cultures. *Arch Gen Psychiatry* 1988; 45:1069–1077
32. Kessler RC, Ustun TB: The World Mental Health (WMH) Survey Initiative Version of the World Health Organization (WHO) Composite International Diagnostic Interview (CIDI). *Int J Methods Psychiatr Res* 2004; 13:93–121
33. Caraveo J, González C, Ramos L: The concurrent validity of the DIS: experience with psychiatric patients in Mexico City. *Hisp J Behav Sci* 1991; 13:63–77
34. Caraveo AJ, Martínez N, Rivera E: Un modelo para estudios epidemiológicos sobre la salud mental y la morbilidad psiquiátrica. *Salud Ment* 1998; 21:48–57
35. Wittchen HU: Reliability and validity studies of the WHO—Composite International Diagnostic Interview (CIDI): a critical review. *J Psychiatr Res* 1994; 28:57–84
36. Sturm R, Wells KB: How can care for depression become more cost-effective? *JAMA* 1995; 273:51–58
37. Young AS, Klap R, Sherbourne CD, Wells KB: The quality of care for depressive and anxiety disorders in the United States. *Arch Gen Psychiatry* 2001; 58:55–61
38. National Committee for Quality Assurance: HEDIS 2000: Technical Specifications, vol 2. Washington, DC, National Committee for Quality Assurance, 1999, pp 105–110
39. Sudaan Release 8.0.1—Research Triangle Park, NC, Research Triangle Institute, 2002
40. Hosmer DW, Lemeshow S: *Applied Logistic Regression*, 2nd ed. New York, John Wiley & Sons, 2000
41. Hasin DS, Grant BF: The co-occurrence of DSM-IV alcohol abuse in DSM-IV alcohol dependence: results of the National Epidemiologic Survey on Alcohol and Related Conditions on heterogeneity that differ by population subgroup. *Arch Gen Psychiatry* 2004; 61:891–896
42. Medina-Mora ME, Berenson S, López Lugo E, Solís L, Caballero MA, González J: El uso de los servicios de salud por los pacientes con trastornos mentales: resultados de una encuesta de una población de escasos recursos. *Suplemento de la Revista Salud Mental* 1997; 20:32–38
43. Wang PS, Lane M, Olfson M, Pincus HA, Wells KB, Kessler RC: Twelve-month use of mental health services in the United States: results from the National Comorbidity Survey Replication (NCS-R). *Arch Gen Psychiatry* 2005; 62:629–640
44. Interagency Council on Homelessness: *Outcasts on Main Street: Report of the Federal Task Force on Homelessness and Severe Mental Illness*. Washington, DC, Department of Health and Human Services, 1992
45. Cramer JA, Rosenheck R: Compliance with medication regimens for psychiatric and medical disorders. *Psychiatr Serv* 1998; 49:196–210
46. Wells KB, Katon W, Rogers B, Camp P: Use of minor tranquilizers and antidepressant medications by depressed outpatients: results from the Medical Outcomes Study. *Am J Psychiatry* 1994; 151:694–700
47. Schwenk TL, Coyne JC, Fechner-Bates S: Differences between detected and undetected patients in primary care and depressed psychiatric patients. *Gen Hosp Psychiatry* 1996; 18:407–415
48. Eisenberg L: Treating depression and anxiety in primary care. *N Engl J Med* 1992; 326:1080–1084
49. World Health Organization (WHO) *Atlas: Mental Health Resources in the World 2001*. Geneva, World Health Organization, 2001
50. Williams JBW, Spitzer RL, Linzer M, Kroenke K, Hahn SR, deGruy FV, Lavee A: Gender differences in depression in primary care. *Am J Obstet Gynecol* 1995; 173:654–659
51. Kessler RC, Brown RL, Broman CL: Sex differences in psychiatric help-seeking: evidence from four large-scale surveys. *J Health Soc Behav* 1981; 22:49–64
52. Gallo JJ, Marino S, Ford D, Anthony JC: Filters on the pathway to mental health care, II: sociodemographic factors. *Psychol Med* 1995; 25:1149–1160
53. Leaf PJ, Bruce ML, Tischler GL, Freeman DH Jr, Weissman MM, Myers JK: Factors affecting the utilization of specialty and general medical mental health services. *Med Care* 1988; 26:9–26
54. Kohn R, Saxena S, Levav I, Saraceno B: The treatment gap in mental health care. *Bull World Health Organ* 2004; 82:858–866