

The treatment gap in mental health care

Robert Kohn,¹ Shekhar Saxena,² Itzhak Levav,³ & Benedetto Saraceno²

Abstract Mental disorders are highly prevalent and cause considerable suffering and disease burden. To compound this public health problem, many individuals with psychiatric disorders remain untreated although effective treatments exist. We examine the extent of this treatment gap. We reviewed community-based psychiatric epidemiology studies that used standardized diagnostic instruments and included data on the percentage of individuals receiving care for schizophrenia and other non-affective psychotic disorders, major depression, dysthymia, bipolar disorder, generalized anxiety disorder (GAD), panic disorder, obsessive-compulsive disorder (OCD), and alcohol abuse or dependence. The median rates of untreated cases of these disorders were calculated across the studies. Examples of the estimation of the treatment gap for WHO regions are also presented. Thirty-seven studies had information on service utilization. The median treatment gap for schizophrenia, including other non-affective psychosis, was 32.2%. For other disorders the gap was: depression, 56.3%; dysthymia, 56.0%; bipolar disorder, 50.2%; panic disorder, 55.9%; GAD, 57.5%; and OCD, 57.3%. Alcohol abuse and dependence had the widest treatment gap at 78.1%. The treatment gap for mental disorders is universally large, though it varies across regions. It is likely that the gap reported here is an underestimate due to the unavailability of community-based data from developing countries where services are scarcer. To address this major public health challenge, WHO has adopted in 2002 a global action programme that has been endorsed by the Member States.

Keywords Mental health services/utilization; Health services accessibility; Schizophrenia/therapy; Anxiety disorders/therapy; Mood disorders/therapy; Compulsive personality disorder/therapy; Alcoholism/therapy; Epidemiologic studies; Cost of illness; Americas; Europe (source: MeSH, NLM).

Mots clés Service santé mentale/utilisation; Accessibilité service santé; Schizophrénie/thérapeutique; Etat anxieux/thérapeutique; Troubles humeur/thérapeutique; Personnalité compulsive/thérapeutique; Alcoolisme/thérapeutique; Etude analytique (Epidémiologie); Coût maladie; Amérique; Europe (source: MeSH, INSERM).

Palabras clave Servicios de salud mental/utilización; Accesibilidad a los servicios de salud; Esquizofrenia/terapia; Trastornos de ansiedad/terapia; Trastornos del humor/terapia; Trastorno de personalidad compulsiva/terapia; Alcoholismo/terapia; Estudios epidemiológicos; Costo de la enfermedad; Americas; Europa (fuente: DeCS, BIREME).

الكلمات المفتاحية: الاستفادة من خدمات الصحة النفسية؛ تيسر الحصول على الخدمات الصحية؛ معالجة الفصام؛ معالجة اضطرابات القلق؛ معالجة اضطرابات المزاج؛ معالجة اضطراب الشخصية القهرية؛ معالجة إدمان الكحوليات؛ الدراسات الوبائية؛ تكاليف المرض؛ القارة الأمريكية؛ أوروبا. (المصدر: رؤوس الموضوعات الطبية - المكتب الإقليمي لشرق المتوسط)

Bulletin of the World Health Organization 2004;82:858-866.

Voir page 864 le résumé en français. En la página 864 figura un resumen en español.

يمكن الاطلاع على الملخص بالعربية في صفحة 865.

Introduction

The care of people with mental and brain disorders is a growing public health concern. These disorders are highly prevalent and exact a high emotional toll on individuals, families, and society. Worldwide, community-based epidemiological studies have estimated rates of lifetime prevalence of mental disorders among adults ranging from 12.2% to 48.6% and 12-month prevalence rates ranging from 8.4% to 29.1% (1). These rates do not include neurological conditions affecting the brain (1). WHO (2) has estimated that approximately 450 million individuals worldwide suffer from neuropsychiatric disorders in their lifetime.

Mental disorders are not only highly prevalent medical conditions but they are also highly disabling. Measured by years lived with disability and by premature death in disability-

adjusted life years (DALYs), psychiatric and neurological conditions accounted for over 13% of the global disease burden in the year 2001 (3). When compared with 1990, the contribution of neuropsychiatric disorders is expected to increase to almost 15% by the year 2020 (4). Among individuals age 15–44, unipolar depression is the second leading contributor of DALYs, with alcohol-related disorders, schizophrenia, and bipolar disorder among the top 10 disorders. Approximately 33% of all years lived with disability (YLD) are imputed to neuropsychiatric conditions. Of the 10 leading causes of YLD in the world among individuals of all ages, four are psychiatric conditions, with unipolar depression being the leading cause (2). Among individuals between the ages of 15 and 44, panic disorder, drug use disorders, and obsessive-compulsive disorder (OCD) were included in the top 20 disorders.

¹ Brown University Department of Psychiatry and Human Behavior, Providence, RI, USA. Correspondence should be sent to Dr Kohn at Butler Hospital, 345 Blackstone Blvd, Providence, RI, USA, (email: Robert_Kohn@brown.edu).

² World Health Organization, Department of Mental Health and Substance Dependence, Geneva, Switzerland.

³ Ministry of Health, Jerusalem, Israel.

Ref No. 03-005736

(Submitted: 22 June 2003 – Final revised version received: 20 November 2003 – Accepted: 21 November 2003)

In part, the excess disability due to mental disorders is a result of their early age of onset (1). The magnitude of this burden also results from the fact that only a minority of individuals with these disorders ever receive treatment in the specialized mental health care system or in the general health care system (5); initial treatment is frequently delayed for many years (6). Numerous reasons have been imputed. These include: failing to seek help because the problem is not acknowledged, perceiving that treatment is not effective, believing that the problem will go away by itself, and desiring to deal with the problem without outside help (7, 8). In addition a lack of knowledge about mental disorders and stigma remain major barriers to care (9, 10). Factors that are direct barriers to care also preclude treatment, including financial considerations (11), issues of accessibility, as well as limited availability or lack of availability of services in many countries or for some populations (12).

If disability is to be reduced, a bridging of the "treatment gap" must occur. The treatment gap represents the absolute difference between the true prevalence of a disorder and the treated proportion of individuals affected by the disorder. Alternatively, the treatment gap may be expressed as the percentage of individuals who require care but do not receive treatment. Estimating the treatment gap in a population depends on the prevalence period of the disorder, the time frame of the examination of service utilization, and the demographic representativeness of the study sample with reference to the target population. The objective of this report is to examine the extent of the treatment gap for selected mental disorders.

Methods

To examine the worldwide extent of the treatment gap the following disorders were selected: schizophrenia and non-affective psychosis, major depressive disorder, dysthymia, bipolar disorder, OCD, panic disorder, generalized anxiety disorder (GAD), and alcohol abuse and dependence. The literature review was limited to community-based epidemiological surveys of adults age 15 and older that had been published since 1980 or provided by investigators or agencies. The literature search was conducted using the search engines of medical journals, Medline and LILACS (a database of Latin American and Caribbean literature), and using key words that included the terms "psychiatric epidemiology," "prevalence" and the name of a specific disorder, and the names of commonly used diagnostic instruments. The references of book chapters and review articles on psychiatric epidemiology or service utilization were examined. We also searched abstracts from proceedings of meetings of the World Psychiatric Association section on epidemiology and the annual meeting of the American Psychiatric Association.

The studies considered used standardized data collection instruments that generated a diagnosis linked to accepted classification systems. Surveys relying on diagnostic instruments designed specifically for use only in elderly populations were not included. Data on service utilization were obtained from community-based epidemiological studies of psychiatric disorders regardless of prevalence periods. Service utilization was defined as seeking assistance from any medical or professional service provider, specialized or not, public or private. By definition, traditional healers and non-professional providers were excluded. The category of service utilization included both somatic and psychotherapeutic treatment; however, most studies did not report utilization by treatment modality, thus limiting

the analysis to overall utilization. The treatment gap from each of the available studies was determined for each specific disorder.

The median and average rates of service utilization across the studies were calculated for each disorder. Using the median rate prevents outliers from having an undue influence. Adequate data were not available for all WHO regions, but examples of regional treatment gap rates were calculated. Regional treatment gap (G) calculations take into account the service utilization rate (S_c), the prevalence rate (R_c), and the population size (P_c) of each of the countries:

$$G = \frac{\sum [(1 - S_c) R_c P_c]}{\sum [R_c P_c]}$$

We estimated the population in each country of individuals age 15 and older. The latest census data by age distribution were obtained from the United Nations demographic yearbook (13). Since the last census year varied from country to country, the estimates prepared by WHO for the year 1999 were used (14). These estimates provided data only on an individual Member country's total population. To estimate the proportion of individuals aged 15 and older, data from the last census was applied to the 1999 total population estimate to obtain an approximation of each country's population as well as of regional populations.

Results

A description of the 37 studies with data on service utilization is included in Appendix 1. The references are available in Appendix 2 (Appendix 1 and Appendix 2, web version only, available at: <http://www.who.int/bulletin>). The treatment gap is shown as percentage and the median and average treatment gap for each disorder is shown in Table 1. Where available, the rates of use of specialized mental health services are presented.

The median untreated rate, or treatment gap, for schizophrenia including other non-affective psychoses was 32.2%. For other disorders the gap was: major depression, 56.3%; dysthymia, 56.0%; bipolar disorder, 50.2%; panic disorder, 55.9%; GAD, 57.5%; and OCD, 59.5%. Alcohol abuse and dependence had the largest treatment gap at 78.1%. The treatment gap varied widely between countries. As an illustration, for schizophrenia the gap among young adult Jews in Israel was only 5.9%, while the rate in New Zealand in a population of 21-year-olds was 61.5%. The treatment gap in Italy was 15.9% for major depression, while studies in the United Kingdom gave an estimate of 83.9%. The treatment gap for alcohol abuse and dependence was high across all studies: Jewish-Israeli young adults had the lowest gap (49.4%) but in Mexico City among the general adult population few were in treatment (96.0%).

Service-related information from psychiatric epidemiological studies for many regions of the world was not available, so regional estimates of the treatment gap were not possible. As a result, examples of the treatment gap for major depression are presented for the Americas and the European Regions of WHO, since there is a good representation of studies across the countries in these two regions. The 12-month prevalence, or if not available, the current prevalence, were applied. When more than one study was available for a country, the most representative ones were used (those that referred to the entire sample studied). For the United States, the Epidemiological Catchment Area (ECA) and National Comorbidity Survey (NCS) prevalence and service utilization rates were averaged, as

Table 1. Percentage difference between number of people needing treatment for mental illness and number of people receiving treatment (treatment gap) found using studies of service utilization rates for selected psychiatric disorders in community-based surveys

Place or name of study ^a	Prevalence period for help-seeking (months)	Mental disorder							
		Schizophrenia and non-affective psychoses	Major depression	Dysthymia	Bipolar disorder	Panic disorder	Generalized anxiety disorder	Obsessive-compulsive disorder	Alcohol abuse or dependence
Australia ^b (1–3)	12		45.0						72.0
São Paulo, Brazil (4)	1	58.0	49.4	43.8	46.0	47.8	41.1		53.3
Edmonton, Canada (5, 6)	12		43.3			39.8	64.0		84.0
Ontario, Canada ^c (7–9)	12		44.5	40.6	62.3	47.0	40.0		78.1
Chile (10)	6	33.4	39.2	32.4	50.2	22.7	44.2	27.6	83.8
12 areas, China (11)	Lifetime	20.3							
14 towns, China (12)	Lifetime	50.2							
Czech Republic ^b (13, 14)	Lifetime		54.8						
Mini survey, Finland (15, 16)	1	14.3	66.7						
FINHCS, Finland (17, 18)	12		73.0						
Paris, France (19)	Lifetime		26.6						
Munich, Germany (20)	Lifetime		60.0	54.0	65.0	65.3	42.0	59.0	
Madras, India (21)	Lifetime	28.7							
Israel (22)	Lifetime	5.9	46.3		31.4	34.2	57.5	36.4	49.4
Florence, Italy (23, 24)	12		15.9	14.3	0.0	7.0		0.0	
Lebanon (25)	Lifetime		70.2						
Mexico City, Mexico ^{b,c} (26–28)	Lifetime		73.5	78.5	74.1	70.0		92.1	93.8
Rural areas, Mexico (29)	Lifetime		66.3	58.0					
LASA, Netherlands (30)	6		21.1						
NEMESIS, Netherlands ^b (31, 32)	12	53.3	36.2						82.5
Christchurch, New Zealand ^{b,c} (33, 34)	12		60.0						79.0
Dunedin, New Zealand (35)	12	61.5	62.7	50.0	52.6	66.7	55.6	62.7	61.3
Norway (36)	Lifetime		30.0				33.0		
Zurich, Switzerland (37)	Lifetime		51.0	67.0	38.0				

(Table 1, cont.)

Place or name of study ^a	Prevalence period for help-seeking (months)	Mental disorder							
		Schizophrenia and non-affective psychoses	Major depression	Dysthymia	Bipolar disorder	Panic disorder	Generalized anxiety disorder	Obsessive-compulsive disorder	Alcohol abuse or dependence
Taiwan, China (38, 39)	Lifetime								79.6
Turkey (40)	12		62.6	71.1		65.5	74.0	67.6	89.8
ONS, United Kingdom ^{b, c} (41)	12	15.0	56.0			64.0	67.0	60.0	96.0
OPCS, United Kingdom ^b (42, 43)	12	18.0	65.0			72.0	70.0	68.0	
Sleep Eval, United Kingdom (44)	Current		83.9						
ECA, USA (45, 46)	12	35.7	46.1	57.9	39.1	41.2		54.9	78.0
Mexican-Americans in CA, USA ^{b, c} (47, 48)	12		56.6						75.2
NCS, USA (49, 50)	12	46.9	72.3	74.0	78.9	64.8	68.2		80.6
New Haven, CT, USA (51, 52)	1		69.2						69.2
NLAES, USA (53, 54)	12								67.0
Puerto Rico, USA ^{b, c} (55–57)	12	9.7	70.0						76.0
Utah, USA (58)	Lifetime		40.7						
Harare, Zimbabwe (59)	12		67.0						
Median rate untreated		32.2	56.3	56.0	50.2	55.9	57.5	59.5	78.1
Mean rate untreated		31.1	53.9	53.5	48.9	50.6	56.1	52.8	76.2

^a Information in parentheses is the reference number. References for these studies can be found in Appendix 2 (web version only, available at: <http://www.who.int/bulletin>).

^b In these studies, mood disorder was not necessarily limited to major depression.

^c In these studies, substance use disorder was not necessarily limited to alcohol.

were the rates for studies done by the United Kingdom Office for National Statistics (ONS) and the Office of Population Censuses and Surveys (OPCS). For Finland and the Netherlands, studies based on the Composite International Diagnostic Interview (CIDI) were used.

The treatment gap for major depression in the WHO European Region was 45.4%, and for the Americas it was 56.9%. The average 12-month prevalence for major depression, weighting for the proportion of the population over the age of 15 were: 4.7% for the WHO European Region and 6.2% for the Americas. This suggests that in these regions there are about 31 million people and 35 million people, respectively, with major depression during a 12-month period. Of those, about 14 million in the European Region are untreated and

about 20 million in the Americas are untreated. Estimates for other disorders and WHO regions are presented in Table 2.

Discussion

Admittedly, the sources of data that we present are limited. Yet they seem to indicate that the treatment gap across all the psychiatric disorders examined is wide. Even for the most severe mental disorder, schizophrenia, at least one-third of individuals remain untreated.

Clearly, the rates presented here are an underestimation. There are few studies of developing countries, where services are scarce, and the studies that are available are of highly selected regions. Thus, the treatment gap for the Americas would have

Table 2. Estimates of the median treatment gap (%) by WHO region

Mental disorder	WHO region					
	Africa	Americas	Eastern Mediterranean	Europe	South-East Asia	Western Pacific
Schizophrenia	NA ^a	56.8	NA	17.8	28.7	35.9
Major depression	67.0	56.9	70.2	45.4	NA	48.1
Dysthymia	NA	48.6	NA	43.9	NA	50.0
Bipolar disorder	NA	60.2	NA	39.9	NA	52.6
Panic disorder	NA	55.4	NA	47.2	NA	66.7
Generalized anxiety	NA	49.6	NA	62.3	NA	55.6
Obsessive compulsive	NA	82.0	NA	24.6	NA	62.7
Alcohol abuse/dependence	NA	72.6	NA	92.4	NA	71.6

^a Not available.

been higher if all of the Latin American and Caribbean countries had been represented. As an illustration, in Belize a study of the prevalence of treatment that was based on a review of each record of all health-care providers who treated mental disorders found that about 63% of individuals with schizophrenia were untreated; 89% of those with affective disorders had not been treated; and 99% of those with an anxiety disorder also had not been treated (15). The scarcity of services in much of the world where epidemiological studies are not available is highlighted by the results of the Atlas study (12). Furthermore, common psychopharmacological agents used to treat psychosis, mania, depression and anxiety are not uniformly available (Table 3). Essential psychiatric medications at the primary care level are not available in 25% of countries (12). For 70% of the world's population there is access to less than one psychiatrist per 100 000 people (12).

This review did not examine the extent to which the skills of traditional healers and non-professional providers are utilized. Unfortunately, only a small number of studies have examined this issue. The Chilean epidemiological survey, however, suggested that contrary to popular belief, traditional healers were rarely utilized for mental health problems (16). Evidence-based data are needed on the efficacy of treatment by traditional healers and non-professional providers to help us understand their role in reducing the treatment gap.

There are few epidemiological studies that provide data on service utilization based on interviews with community respondents, and in general the method of elucidating service utilization is ill-defined and not uniform. The treatment gap for specific disorders also may be underestimated because comorbidity is not accounted for in studies of service utilization protocols that do not examine disorder-specific treatment. The treatment-gap estimates do not include childhood disorders or dementia and its effects on caregivers. In addition, some of the studies were regionally based and did not account for differences in socioeconomic status and its effects on service utilization, did not include members of indigenous populations, or did not account for regional inequities within a country. Moreover, reporting that services were sought does not imply that the treatment was adequately provided or provided at all. The studies reviewed did not measure the adequacy of treatment, and therefore, may greatly overestimate the number of people who received appropriate and adequate treatment. The primary care literature illustrates the inability of general physicians to

accurately identify mental disorders and their failure to provide appropriate care (17). A study conducted in the United States among hospitalized individuals with schizophrenia revealed that over half had periods of 30 days or more off medication with an average time off medication of over seven months (18). Additionally, prevalence studies that reported on treatment utilization included individuals who are in treatment but have no current psychiatric diagnosis (19). These studies may refer to people with subclinical illness or to individuals who have benefited from treatment but no longer meet diagnostic criteria for one-year prevalence. Also, there are subclinical cases that merit treatment as they are evolving (20). If this were true, these service utilization studies might be underestimating the number of individuals with a specific diagnosis who have a past-year diagnosis and who receive treatment. Conversely, perhaps not everyone who meets diagnostic criteria needs treatment.

With regard to major depression there is some evidence that the advent of antidepressants that are better tolerated has played a part in reducing the treatment gap in countries that can afford their higher costs (21). It has also increased awareness of the disorder among primary care physicians (22). As noted in our analysis, the treatment gap was lower in the WHO European Region than in the Americas; in part this may be due to the wider availability of health coverage in western European countries. In the United States, treatment for depression increased between 1987 and 1997, despite a decline in the use of psychotherapy; this has been partially credited to expanded third-party payment for medication visits (22). This example from the United States may illustrate the role financial barriers have in contributing to the treatment gap. An alternative argument is that the increased rate of antidepressant use reflects the cohort effect of major depression and the increasing prevalence of the disorder among younger individuals (21).

Failing to reduce the treatment gap has implications beyond the impact on YLD and DALYs. An increased treatment gap has indirect economic costs. In the United States absenteeism and lost productivity at work as a result of affective disorders alone cost the nation US\$ 23 billion annually and there is an additional cost of US\$ 8 billion associated with premature death (23). Similarly, three-quarters of the cost of alcoholism in Germany is due to indirect factors (24). Improvements in antidepressant treatment and access to care has been credited with reducing suicide rates (25). Mental illness may result in

Table 3. Availability of common psychopharmacological agents in primary care in WHO regions by country (12)

Drug name	Availability by country ^a						Availability by population ^b					
	Africa	Americas	Eastern Mediterranean	Europe	South-East Asia	Western Pacific	Africa	Americas	Eastern Mediterranean	Europe	South-East Asia	Western Pacific
Haloperidol	84.8	100.0	84.2	97.8	66.7	92.6	89.8	100.0	90.0	100.0	97.0	100.0
Fluphenazine	60.9	64.3	68.4	84.8	80.0	63.0	68.5	49.3	56.7	75.6	98.6	95.6
Chlorpromazine	97.8	93.3	89.5	84.8	90.0	96.3	99.9	92.9	93.7	95.8	99.9	100.0
Amitriptyline	71.7	93.3	84.2	100.0	88.9	96.3	81.7	98.3	60.7	100.0	99.9	100.0
Sodium valproate	50.0	67.9	73.7	87.0	77.8	63.0	59.9	86.3	52.3	74.1	98.3	94.7
Lithium	36.4	83.3	52.6	95.6	55.6	70.4	48.1	95.3	46.5	98.3	82.9	98.7
Diazepam	97.8	100.0	94.7	95.7	100.0	100.0	99.8	100.0	93.8	79.6	100.0	100.0

^a Proportion of countries in each region where primary care physicians have access to the drug.

^b Proportion of population in each region for whom primary care physicians have access to the drug.

an increased risk of living in poverty, having a lower socioeconomic status, and having lower educational attainment (26). Major depression, as well as other psychiatric disorders, has been shown to impair family function (27), increase the risk of teenage childbearing (28), and increase the risk of domestic violence (29). The impact of major depression on quality of life is as great or greater than the impact of chronic medical conditions (30). Individuals who do not seek treatment may be less clinically impaired, but there is little to suggest that treated and untreated individuals differ with regard to other psychosocial factors (31). The pervasive and chronic disability associated with major depression disappears when individuals become asymptomatic (32). Schizophrenia, major depression, and alcohol use disorders also result in an increased risk of early mortality other than suicide (33).

One factor that may diminish concern about addressing the treatment gap in health-care planning is that at least some of these disorders, such as major depression and alcohol abuse and dependence, may remit without treatment. Randomized controlled studies suggest that more than 20% of individuals with major depression who are untreated achieve remission within 20 weeks (34). However, longitudinal studies on the course of major depression, in which treatment of identified patients was not controlled, point to a more pessimistic outcome. A WHO cross-national study of 439 patients with major depression followed for 10 years found that 36% were readmitted to hospital; 11% committed suicide; and more than 18% had a poor clinical outcome (35). A 15-year follow-up study of 380 individuals who had recovered from major depression noted that 85% had a relapse (36).

The outcome is less clear for alcohol abuse and dependence. Sustained periods of abstinence without treatment are not uncommon (37). Individuals who need treatment are more likely to have significant social impairment and psychiatric comorbidity (38); therefore, accessibility and availability of care for a sizeable proportion of individuals with alcoholism is always necessary. Naturalistic studies of panic disorder have found low probabilities of remission and high rates of relapse among those who remit (39); a similar finding was noted for OCD (40). People with schizophrenia who remain untreated are often more

symptomatic; stay ill longer; and are more disabled than those who receive treatment (41).

The long-term psychosocial complications of psychiatric disorders suggest not only that the treatment gap must be bridged but also that the treatment lag (the time from onset of a disorder to obtaining care) must be shortened. Of those individuals who seek help for affective disorder and anxiety disorder, 40% do so in the year of onset. In contrast, the remaining 60% have a median delay of eight years (42). Absenteeism and poor family functioning may be present, among other consequences, when a current disorder is untreated. It has been shown for individuals with panic disorder that the longer the duration of illness prior to treatment, the poorer the social outcome (43) and the more protracted the course (39). The duration of untreated psychosis (DUP) varies widely across studies: in an Australian study the average DUP was 6 months (44), while in Nigeria it was 2.1 years for women (45). Some investigators have suggested that the longer treatment lag in schizophrenia may have a neurotoxic affect on the brain (46), although more recent research has brought this finding into question (47).

Box 1. Ten recommendations to address the treatment gap made in the 2001 World health report (2)

1. Mental health treatment should be accessible in primary care
2. Psychotropic drugs need to be readily available
3. Care should be shifted away from institutions and towards community facilities
4. The public should be educated about mental health
5. Families, communities and consumers should be involved in advocacy, policy-making and forming self-help groups
6. National mental health programmes should be established
7. The training of mental health professionals should be increased and improved
8. Links with other governmental and nongovernmental institutions should be increased
9. Mental health systems should be monitored using quality indicators
10. More support should be provided for research.

To address the treatment gap, the 2001 *World health report* (2) has laid out 10 recommendations (Box 1). WHO has created various scenarios that begin to address these recommendations taking into account the fact that resources vary widely among nations. Following the report, WHO adopted the Mental Health Global Action Programme (mhGAP), which intends to modify the current world situation (48) with the endorsement of all Member States (49). Although the treatment

gap remains wide for mental disorders, appropriate policies, programmes and service developments may allow this divide to be bridged for the benefit of those in need, their families and communities. ■

Funding: This paper was supported by WHO.

Conflicts of interest: none declared.

Résumé

Le défaut de traitement en santé mentale

Les troubles mentaux ont une prévalence élevée et représentent une charge considérable en termes de souffrance et de maladie. De plus, de nombreuses personnes atteintes de troubles psychiques restent sans traitement alors qu'il en existe d'efficaces. Dans le présent article, nous examinons l'étendue de ce défaut de traitement. Nous avons effectué une revue des études épidémiologiques psychiatriques en population utilisant des outils de diagnostic standard et comportant des données sur le pourcentage de sujets traités pour schizophrénie et autres troubles psychotiques non affectifs, dépression majeure, dysthymie, trouble bipolaire, anxiété généralisée, trouble panique, troubles obsessionnels-compulsifs (TOC) et abus d'alcool ou dépendance alcoolique. Les taux médians d'absence de traitement de ces affections ont été calculés pour l'ensemble de ces études. L'article présente également des exemples d'estimations du défaut de

traitement dans les Régions OMS. Le taux médian de défaut de traitement pour la schizophrénie, y compris les autres psychoses non affectives, était de 32,2 %. Pour les autres affections il était de : dépression 56,3 %, dysthymie 56,0 %, trouble bipolaire 50,2 %, trouble panique 55,9 %, anxiété généralisée 57,5 % et TOC 57,3 %. Il était maximal pour l'abus d'alcool et la dépendance alcoolique avec 78,1 %. Le taux de défaut de traitement des troubles mentaux est élevé partout, même s'il varie d'une région à l'autre. Il est probable que les taux rapportés ici sont en-deçà de la réalité, du fait de l'absence de données concernant les pays en développement, où les services de santé mentale sont plus rares. Pour répondre à cet important problème de santé publique, l'OMS a adopté en 2002 un programme mondial d'action, qui a été approuvé par les Etats Membres.

Resumen

La brecha terapéutica en la atención de salud mental

Los trastornos mentales, cuya prevalencia es muy alta, son una causa destacada de sufrimiento y morbilidad. Este problema de salud pública se ve agravado por el hecho de que muchos individuos aquejados de trastornos psiquiátricos no reciben tratamiento alguno pese a que existen intervenciones eficaces. Hemos analizado la magnitud de esa brecha terapéutica, para lo cual se han examinado estudios comunitarios de epidemiología psiquiátrica que habían usado instrumentos diagnósticos normalizados e incluían datos sobre el porcentaje de individuos que recibían atención por padecer esquizofrenia y otros trastornos psicóticos no afectivos, depresión grave, distimia, trastorno bipolar, trastorno de ansiedad generalizado, trastorno de pánico, trastorno obsesivo-compulsivo (TOC) y abuso o dependencia del alcohol. Se calcularon las tasas medianas de casos sin tratar de esos trastornos en el conjunto de todos los estudios. Se presentan asimismo ejemplos de estimaciones de la brecha terapéutica para

las Regiones de la OMS. En 37 estudios se facilitaba información sobre la utilización de los servicios. La brecha terapéutica mediana para la esquizofrenia, incluidas otras psicosis no afectivas, fue del 32,2%. Las brechas medidas para los otros trastornos fueron las siguientes: depresión, 56,3%; distimia, 56,0%; trastorno bipolar, 50,2%; trastorno de pánico, 55,9%; ansiedad generalizada, 57,5%, y TOC, 57,3%. La brecha más importante fue la correspondiente al abuso y la dependencia del alcohol, 78,1%. La brecha terapéutica de los trastornos mentales es muy amplia en general, aunque varía entre las regiones. Es probable que los valores aquí presentados subestimen la realidad, debido a la falta de datos comunitarios de los países en desarrollo donde más escasean los servicios. Para afrontar este importante reto de salud pública, la OMS ha adoptado en 2002 un programa mundial de acción que ha sido respaldado por los Estados Miembros.

ملخص

الفجوة العلاجية في الرعاية الصحية النفسية

الصحة العالمية. وقد احتوت ٣٧ دراسة على معلومات حول مدى الاستفادة من الخدمات العلاجية. وقد بلغ وسطي الفجوة العلاجية للفصام، بما في ذلك الدهان غير العاطفي، ٣٢,٢٪. أما بالنسبة لسائر الاضطرابات فكانت الفجوة كما يلي: ٥٦,٣٪ للاكتئاب؛ ٥٦٪ للاكتئاب الجزئي؛ ٥٠,٢٪ للاضطراب ذي الاتجاهين؛ ٥٥,٩٪ للاضطراب الملغ؛ ٥٧,٥٪ للاضطراب الملغ المعمم؛ ٥٧,٣٪ للاضطراب الوسواسي القهري. وكانت الفجوة العلاجية أشد اتساعاً في حالة معاقرة الكحوليات والاعتماد عليها، إذ بلغت ٧٨,١٪. ولوحظ أيضاً اتساع الفجوة العلاجية للاضطرابات النفسية على الصعيد العالمي، مع تفاوت في مدى اتساعها من إقليم لآخر. والأرجح أن تقدير اتساع الفجوة الملغ عنه في هذه الدراسة كان أقل من الواقع نتيجة لعدم توفر معطيات مجتمعية من البلدان النامية الأشد معاناة من ندرة الخدمات. وللتصدي لهذا التحدي الرئيسي الذي يواجه الصحة العمومية، تبنت منظمة الصحة العالمية في عام ٢٠٠٢ برنامجاً عالمياً للعمل تم التصديق عليه من الدول الأعضاء.

الغرض: تنتشر الاضطرابات النفسية انتشاراً واسعاً وتسبب قدراً لا يُستهان به من المعاناة والأعباء المرضية. ومما يفاقم هذه المشكلة الصحية هو أن العديد من الأفراد المصابين بالاضطرابات النفسية لا يحصلون على المعالجة بالرغم من توفر سبل المعالجة الفعالة. وقد قمنا في هذه الدراسة باستطلاع مدى اتساع هذه الفجوة العلاجية. وفي إطار هذا الغرض قمنا بمراجعة الدراسات الإبيدميولوجية (الوبائية) المعنية بالطلب النفسي التي أجريت في المجتمعات، والتي اعتمدت على سبل التشخيص المعيارية وشملت معطيات حول النسبة المئوية للأفراد الذين يحصلون على الرعاية بسبب الإصابة بالفصام وغيره من الاضطرابات الذهانية غير العاطفية، وبالاعتماد الشديد، والاعتماد الجزئي، والاضطراب ذي الاتجاهين، واضطراب القلق المعمم، واضطراب الملغ، والاضطراب الوسواسي القهري، ومعاقرة الكحوليات أو الاعتماد عليها. وتم حساب المعدلات الوسطية للحالات غير المعالجة من هذه الاضطرابات في الدراسات التي أجريت. وتعرض هذه الدراسة أيضاً لتقديرات للفجوة العلاجية في أقاليم منظمة

References

- WHO International Consortium in Psychiatric Epidemiology. Cross-national comparisons of the prevalences and correlates of mental disorders. *Bulletin of the World Health Organization* 2000;78:413-25.
- World Health Organization. *The world health report 2001. Mental health: new understanding, new hope*. Geneva: World Health Organization; 2001. Available from <http://www.who.int/whr2001/>.
- World Health Organization. *The world health report 2002: reducing risks, promoting healthy life*. Geneva: World Health Organization; 2002. Available from <http://www.who.int/whr/2002>
- Murray CJL, Lopez AD, editors. *The global burden of disease*. Cambridge (MA): Harvard School of Public Health; 1996.
- Alegria M, Kessler RC, Bijl R, Lin E, Heeringa SG, Takeuchi DT, et al. Comparing mental health service use data across countries. In: Andrews G, editor. *Unmet need in mental health service delivery*. Cambridge: Cambridge University Press; 2000. p. 97-118.
- Olfson M, Kessler RC, Berglund PA, Lin E. Psychiatric disorder onset and first treatment contact in the United States and Ontario. *American Journal of Psychiatry* 1998;155:1415-22.
- Frank RG, McGuire TG. A review of studies of the impact of insurance on the demand and utilization of specialty mental health services. *Health Services Research* 1986;21:241-65.
- Kessler RC, Berglund PA, Bruce ML, Koch JR, Laska EM, Leaf PJ, et al. The prevalence and correlates of untreated serious mental illness. *Health Service Research* 2001;36:987-1007.
- Jorm AF. Mental health literacy: public knowledge and beliefs about mental disorders. *British Journal of Psychiatry* 2000;177:396-401.
- Link BG, Struening EL, Rahav M, Phelan JC, Nuttbrock L. On stigma and its consequences: evidence from a longitudinal study of men with dual diagnoses of mental illness and substance abuse. *Journal of Health and Social Behavior* 1997;38:177-90.
- Kessler RC, Frank RG, Edlund M, Katz SJ, Lin E, Leaf P. Differences in the use of psychiatric outpatient services between the United States and Ontario. *New England Journal of Medicine* 1997;336:551-7.
- World Health Organization. *Atlas: mental health resources in the world 2001*. Geneva: World Health Organization; 2001.
- United Nations. *Demographic yearbook historical supplement 1948-1997*. New York: United Nations; 2000.
- World Health Organization. *The world health report 2000. Health systems: improving performance*. Geneva: World Health Organization; 2000.
- Bonander J, Kohn R, Arana B, Levav I. An anthropological and epidemiological overview of mental health in Belize. *Transcultural Psychiatry* 2000;37:57-72.
- Saldivia S, Vicente B, Kohn R, Rioseco P, Torres S. Use of mental health services in Chile. *Psychiatric Services* 2004;55:71-6.
- Üstün TB, Sartorius N, editors. *Mental illness in general health care: an international study*. Chichester (England): John Wiley; 1995.
- Mojtabai R, Lavelle J, Gibson PJ, Sohler NL, Craig TJ, Carlson GA, et al. Gaps in use of antipsychotics after discharge by first-admission patients with schizophrenia, 1989 to 1996. *Psychiatric Services* 2002;53:337-9.
- Lin E, Goering PN, Lesage A, Streiner DL. Epidemiologic assessment of overmet need in mental health care. *Social Psychiatry and Psychiatric Epidemiology* 1997;32:355-62.
- Kessler RC, Merikangas KR, Berglund P, Eaton WW, Koretz D, Walters EE. Mild disorders should not be eliminated from the DSM-V. *Archives of General Psychiatry* 2003;60:1117-22.
- Middleton N, Gunnell D, Whitley E, Dorling D, Frankel S. Secular trends in antidepressant prescribing in the UK, 1975-1998. *Journal of Public Health Medicine* 2001;23:262-7.
- Harman JS, Mulsant BH, Kellerher KJ, Schulberg HC, Kupfer DJ, Reynolds CF. Narrowing the gap in treatment of depression. *International Journal of Psychiatry in Medicine* 2001;31:239-53.
- Hirschfeld RM, Panico S, Arons BS, Barlow D, Davidoff F, et al. The National Depressive and Manic-Depressive Association consensus statement on the undertreatment of depression. *JAMA* 1997;277:333-40.
- Brecht JG, Poldrugo F, Schadlich PK. Alcoholism: the cost of illness in the Federal Republic of Germany. *Pharmacoeconomics* 1996;10:484-93.
- Rihmer Z. Can better recognition and treatment of depression reduce suicide rates? A brief review. *European Psychiatry* 2001;16:406-9.
- Kohn R, Dohrenwend BP, Mirotnik J. Epidemiologic findings on selected psychiatric disorders in the general population. In: Dohrenwend BP, editor. *Adversity, stress, and psychopathology*. New York: Oxford University Press; 1998. p. 235-84.
- Keitner GI, Ryan CE, Miller IW, Kohn R, Bishop DS, Epstein NB. Role of the family in recovery and major depression. *American Journal of Psychiatry* 1995;152:1002-8.
- Kessler RC, Berglund PA, Foster CL, Saunders WB, Stang PE, Walters EE. Social consequences of psychiatric disorders. II: Teenage parenthood. *American Journal of Psychiatry* 1997;154:1405-11.
- Zlotnick C, Kohn R, Peterson J, Pearlstein T. Partner physical victimization in a national sample of American families: relationship to psychological functioning, psychosocial factors and gender. *Journal of Interpersonal Violence* 1998;13:156-65.
- Wells KB, Stewart A, Hays RD, Burnam MA, Rogers W, Daniels M, et al. The functioning and well-being of depressed patients. Results from the Medical Outcomes Study. *JAMA* 1989;262:914-9.
- Coryell W, Endicott J, Winokur G, Akiskal H, Solomon D, Leon A, et al. Characteristics and significance of untreated major depressive disorder. *American Journal of Psychiatry* 1995;152:1124-9.
- Judd LL, Akiskal HS, Zeller PJ, Paulus M, Leon AC, Maser JD, et al. Psychosocial disability during the long-term course of unipolar major depressive disorder. *Archives of General Psychiatry* 2000;57:375-80.

33. Bruce ML, Leaf PJ, Rozal GP, Florio L, Hoff RA. Psychiatric status and 9-year mortality data in the New Haven Epidemiologic Catchment Area study. *American Journal of Psychiatry* 1994;151:716-21.
34. Posternak MA, Miller I. Untreated short-term course of major depression: a meta-analysis of outcomes from studies using wait-list control groups. *Journal of Affective Disorders* 2001; 66:139-46.
35. Thornicroft G, Sartorius N. The course and outcome of depression in different cultures: 10-year follow-up of the WHO Collaborative Study on the Assessment of Depressive Disorders. *Psychological Medicine* 1993;23:1023-32.
36. Mueller TI, Leon AC, Keller MB, Solomon DA, Endicott J, Coryell W, et al. Recurrence after recovery from major depressive disorder during 15 years of observational follow-up. *American Journal of Psychiatry* 1999;156:1000-6.
37. Schuckit MA, Tipp JE, Smith TL, Bucholz KK. Periods of abstinence following the onset of alcohol dependence in 1,853 men and women. *Journal of Studies on Alcohol* 1997;58:581-9.
38. Raimo EB, Daeppen JB, Smith TL, Danko GP, Schuckit MA. Clinical characteristics of alcoholism in alcohol-dependent subjects with and without a history of alcohol treatment. *Alcoholism: Clinical and Experimental Research* 1999;23:1605-13.
39. Faravelli C, Paterniti S, Scarpato A. 5-year prospective, naturalistic follow-up study of panic disorder. *Comprehensive Psychiatry* 1995;36:271-7.
40. Eisen JL, Goodman WK, Keller MB, Warshaw MG, DeMarco LM, Luce DD, et al. Patterns of remission and relapse in obsessive-compulsive disorder: a 2-year prospective study. *Journal of Clinical Psychiatry* 1999;60:346-51.
41. Padmavathi R, Rajkumar S, Srinivasan N. Schizophrenia patients who were never treated – a study in an Indian urban community. *Psychological Medicine* 1998;28:1113-7.
42. Christiana JM, Gilman SE, Guardino M, Mickelson K, Morselli PL, Olfson M, et al. Duration between onset and time of obtaining initial treatment among people with anxiety and mood disorders: an international survey of members of mental health patient advocate groups. *Psychological Medicine* 2000;30:693-703.
43. Shinoda N, Kodama K, Sakamoto T, Yamanouchi N, Takahashi T, Okada S, et al. Predictors of 1-year outcome for patients with panic disorder. *Comprehensive Psychiatry* 1999;40:39-43.
44. Bell RC, Dudgeon P, McGorry PD, Jackson HJ. The dimensionality of schizophrenia concepts in first-episode psychosis. *Acta Psychiatrica Scandinavica* 1998;97:334-42.
45. Gureje O. Gender and schizophrenia: age at onset and sociodemographic attributes. *Acta Psychiatrica Scandinavica* 1991;83:402-5.
46. Amminger GP, Edwards J, Brewer WJ, Harrigan S, McGorry PD. Duration of untreated psychosis and cognitive deterioration in first-episode schizophrenia. *Schizophrenia Research* 2002;54:223-30.
47. Ho BC, Alicata D, Ward J, Moser DJ, O'Leary DS, Arndt S, et al. Untreated initial psychosis: relation to cognitive deficits and brain morphology in first-episode schizophrenia. *American Journal of Psychiatry* 2003;160:142-8.
48. World Health Organization. *Mental Health Global Action Programme: mhGAP*. Geneva: World Health Organization; 2002. Available from http://www5.who.int/mental_health/
49. World Health Organization. *Mental Health: a call for action by world ministers*. Geneva: World Health Organization; 2001. Available from http://www5.who.int/mental_health/

Appendix 1

Appendix 1. Information on prevalence studies published since 1980 that provide data on service utilization

Place of study (reference number)	Sample characteristics	Field dates	Sample size	Age of participants	Diagnostic instrument ^b	Diagnostic criteria ^c
Australia (1–3)	Multistage sample of Australian population	1997	10 641	18+	CIDI-A	ICD-10
São Paulo, Brazil (4)	Stratified probability sample of a middle and upper socioeconomic catchment area of the University of São Paulo Medical Center. Ages 18–24 and >59 were over-sampled. Authors provided additional data used in subsequent tables	1994–96	1 464	18+	CIDI 1.1	DSM-III-R
Edmonton, Canada (5, 6)	Multistage sample	1983–86	3 258	18+	DIS	DSM-III
Ontario, Canada (7–9)	Multistage sample of population of Ontario Province	1990–91	6 261	15–64	UM-CIDI	DSM-III-R
Chile (10)	Multistage sample of households conducted in four catchment areas in Chile, representing each of the major geographic regions. Authors provided additional data used in subsequent tables	1992–99	1 534	15+	CIDI 1.1	DSM-III-R
12 areas, China (11)	Twelve areas of China were surveyed with 500 urban and 500 rural families selected in each area. Psychosis and neurosis screening interviews were administered. All positives and 10% of negatives underwent the PSE	1982	38 136	15+	PSE	NPESM
14 towns, China (12)	Fourteen towns in one county in rural China were surveyed using a screening tool developed by Cooper et al. (1996). All positives underwent the PSE; 510 persons with schizophrenia identified	NA ^a	123 572	15+	PSE	NPESM
Czech Republic (13, 14)	National probability sample	1999	2 479	18–79	CIDI 2.1	ICD-10
Mini survey, Finland (15, 16)	Random population sample of 40 areas in the country. Two phase design with the GHQ used for screening followed by a shortened PSE	1978–80	8 000	30+	GHQ/PSE	ICD-9
FINHCS, Finland (17, 18)	One-stage cluster sample. Used the UM-CIDI short form	1996	5 993	15–75	UM-CIDI	DSM-III-R
Paris, France (19)	Took place in Signvey, a city near Paris. Sample based on telephone listings. Used a modified DIS-CIDI	1987–88	1 746	18+	DIS/CIDI	DSM-III-R
Munich, Germany (20)	Stratified sample taken from the population registry of greater Munich	1995	4 263	14–24	M-CIDI	DSM-IV
Madras, India (21)	Each head of household was screened for schizophrenia using the Indian Psychiatric Survey Schedule (IPSS). Screened positives were interviewed by a psychiatrist with the PSE	1985–86	66 281	15+	IPSS/PSE	ICD-9
Israel (22)	Ten-year birth cohort (1949–58) of Israel-born offspring of European and North African immigrants. Screening done with the Psychiatric Epidemiology Research Interview (PERI). All positives and one-fifth of negatives interviewed with SADS by psychiatrists. Authors provided additional data used in subsequent tables	1988	2 741	24–33	PERI/SADS-I	RDC
Florence, Italy (23, 24)	Randomly selected from lists of persons registered with seven general practitioners in three districts of Florence. Study used a structured interview by physicians including questions derived from the DSM-III flow chart for affective disorders and included items from SADS-L	1984	1 000	15+	DIS/SADS-L	DSM-III

(Appendix 1, cont.)

Place of study (reference number)	Sample characteristics	Field dates	Sample size	Age of participants	Diagnostic instrument ^b	Diagnostic criteria ^c
Beirut, Lebanon (25)	Four communities with differential exposure to acts of war were sampled: two communities within Beirut city and two communities outside the capital. Each adult member of the household was eligible to be interviewed	1989	658	18+	DIS	DSM-III
Mexico City, Mexico (26–28)	Multistage sample of households in 16 political divisions of Mexico City	1995	1937	18–64	CIDI 1.1	DSM-III-R
Rural areas of Mexico (29)	Stratified multistage sample of 33 communities in two Mexican states	1996–97	945	15–89	CIDI 1.1	ICD-10
LASA, the Netherlands (30)	Two stage interview with over-sampling of the most elderly. In stage 1, 3056 participants interviewed with a screen for anxiety disorders using the CES-D and the Anxiety Subscale of the Hospital Anxiety and Depression Scale (HADS-A).	NA	659	55–85	DIS	DSM-III
NEMESIS, Netherlands (31, 32)	Multistage sample of 90 Dutch municipalities	1998	7076	18–64	CIDI 1.1	DSM-III-R
Christchurch, New Zealand (33, 34)	Multistage sample of residents of Christchurch.	1983	1498	18–64	DIS	DSM-III
Dunedin, New Zealand (35)	Unselected birth cohort born between 1972–73.	1993–94	957	21	DIS	DSM-III-R
Norway (36)	Two random populations (1879 participants), in Norway given the self-administered HSCL-25. All screened positives and a proportion of negatives were given the CIDI	1989–91	617	18+	CIDI 1.0	ICD-10
Zurich, Switzerland (37)	Representative sample in Zurich of 19- and 20-year-olds screened with the SCL-90 and given a diagnostic semi-structured interview (SPIKE), followed for 10 years and re-evaluated	1989–91	591	20–30	SPIKE	DSM-III
Taiwan, China (38, 39)	Multistage sample of metropolitan Taipei: two small towns and six rural villages	1981–86	11 104	18+	DIS-CM	DSM-III
Turkey (40)	Nationally representative multistage sample of households	1993–94	6095	18–54	CIDI 1.1	ICD-10
ONS, United Kingdom (41)	Sample of 200 postal sectors stratified by regional health authority. Those positive on a psychosis screen were administered the SCAN	2000	8800	16-74	CIS-R/SCAN	ICD-10
OPCS, United Kingdom (42, 43)	Sample of 438 sectors stratified by regional health authority. Those positive on a psychosis screen were administered the SCAN and those positive for alcohol were given the AUDIT	1993	10 108	16–64	CIS-R/SCAN	ICD-10
Sleep Eval , United Kingdom (44)	Stratified probability sample of the United Kingdom using artificial intelligence programme in telephone interviews	1994	4972	15+	Sleep-Eval	DSM-IV
ECA, USA (45, 46)	Five catchment areas: New Haven, CT; Baltimore, MD; St. Louis, MO; Durham, NC; and Los Angeles, CA. In Los Angeles Hispanics were over-sampled; in St. Louis African-Americans were over-sampled; and the other three sites over-sampled the elderly using multistage sampling	1980–84	17 803	18+	DIS	DSM-III
Mexican- Americans in CA, USA (47, 48)	Multistage sample of Fresno County, California using census tracts to select individuals of Mexican origin	1996	3012	18–59	CIDI 1.1	DSM-III-R
NCS, USA (49, 50)	National, representative, stratified, multistage probability sample, with a supplemental sample of students living in campus group housing. Those with psychotic symptoms were re-interviewed with the SCID	1990–92	8098	15–54	UM-CIDI	DSM-III-R

(Appendix 1, cont.)

Place of study (reference number)	Sample characteristics	Field dates	Sample size	Age of participants	Diagnostic instrument ^b	Diagnostic criteria ^c
New Haven, CT, USA (51, 52)	Re-interview of an earlier household sample	1975–76	511	26+	SADS	RDC
NLAES, USA (53, 54)	National, representative, stratified, multistage probability sample, with over-sampling of participants age 28–39	1992	42 862	18+	AUDADIS	DSM-IV
Puerto Rico, USA (55–57)	Multistage sample of households in Puerto Rico. The sample does include 17 year-olds in some reports	1984	1513	18–64	DIS	DSM-III
Utah, USA (58)	Sample selected from Medicare records in Cache County	1995–96	4559	65+	DIS	DSM-IV
Harare, Zimbabwe (59)	Randomly selected women were screened using the Shona Screen for Mental Disorders. Those above the cut-off were given the PSE. Depression was diagnosed based on Bedford College Criteria. Only women included in the study	1991–92	172	18–65	PSE	Bedford

^a Not applicable.^b Diagnostic interview schedules included: AUDADIS, Alcohol Use Disorder and Associated Disabilities Interview Schedule; AUDIT, Alcohol-Use Identification Test; CES-D, Center for Epidemiological Study Depression scale; CIDI, Composite International Diagnostic Interview; CIS-R, Revised Clinical Interview Schedule; DIS, Diagnostic Interview Schedule; GHQ, General Health Questionnaire; HADS-A, Anxiety Subscale of the Hospital Anxiety and Depression Scale; HSCL, Hopkins Symptom Checklist; IPSS, Indian Psychiatric Survey Schedule; M-CIDI, Munich CIDI; PERI, Psychiatric Epidemiology Research Interview; PSE, Present State Examination; SADS, Schedule of Affective Disorders and Schizophrenia; SADS-I, SADS Israel; SADS-L, SADS lifetime; SCAN, Schedule for the Clinical Assessment of Neuropsychiatry; UM-CIDI, University of Michigan CIDI; SCL, Symptom Checklist; SPIKE, Structured Psychopathological Interview and Rating of the Social Consequences for Epidemiology.^c Diagnostic criteria included: DSM, Diagnostic and Statistical Manual of Mental Disorders; ICD, International Classification of Diseases; CCMD, Chinese Classification and Diagnostic Criteria of Mental Disorder; RDC, Research Diagnostic Criteria.

Appendix 2

References for prevalence studies published since 1980 that provide data on service utilization

1. Andrews G, Hall W, Teesson M, Henderson S. *The mental health of Australians*. Australia: Mental Health Branch, Commonwealth Department of Health and Aged Care; 1999.
2. Henderson S, Andrews G, Hall W. Australia's mental health: an overview of the general population survey. *Australian and New Zealand Journal of Psychiatry* 2000;34:197-205.
3. Teesson M, Hall W, Lynskey M, Degenhardt L. Alcohol- and drug-use disorders in Australia: implications of the National Survey of Mental Health and Wellbeing. *Australian and New Zealand Journal of Psychiatry* 2000;34:206-13.
4. Andrade LH, Lolio CA, Gentil V, Laurenti R. Epidemiologia dos transtornos mentais em uma área definida de captação da cidade de São Paulo, Brasil. [Epidemiology of mental illness in a catchment area in São Paulo, Brasil.] *Revista de Psiquiatria Clínica* 1999;26. In Portuguese.
5. Bland RC, Orn H, Newman SC. Lifetime prevalence of psychiatric disorders in Edmonton. *Acta Psychiatrica Scandinavica* 1988;77 Suppl:338:24-32.
6. Bland RC, Newman SC, Orn H. Help-seeking for psychiatric disorders. *Canadian Journal of Psychiatry* 1997;42:935-42.
7. Offord DR, Boyle MH, Campbell D, Goering P, Lin E, Wong M, et al. One-year prevalence of psychiatric disorder in Ontarians 15 to 64 years of age. *Canadian Journal of Psychiatry* 1996;41:559-63.
8. Katz SJ, Kessler RC, Frank RG, Leaf P, Lin E, Edlund M. The use of outpatient mental health services in the United States and Ontario: the impact of mental morbidity and perceived need for care. *American Journal of Public Health* 1997;87:1136-43.
9. Parikh SV, Lin E, Lesage AD. Mental health treatment in Ontario: selected comparisons between the primary care and specialty sectors. *Canadian Journal of Psychiatry* 1997;42:929-34.
10. Vicente B, Rioseco P, Saldivia S, Kohn R, Torres S. Estudio Chileno de prevalencia de patología psiquiátrica (DSM-III-R/CIDI) (ECPPI). [Prevalence of psychiatric disorder in Chile.] *Revista Médica de Chile* 2002;130:527-36. In Spanish.
11. Cooper JE, Sartorius N. *Mental disorders in China: results of the National Epidemiological Survey in 12 Areas*. London: Gaskell; 1996.
12. Ran M, Xiang M, Huang M, Shan Y. Natural course of schizophrenia: 2-year follow-up study in a rural Chinese community. *British Journal of Psychiatry* 2001;178:154-8.
13. Džurová D, Smolová E, Dragomirecká E. *Mental health in the sociodemographic context: results of a sample survey in the Czech Republic*. Prague, Czech Republic: Univerzita Karlova; 2000. In Czechoslovakian.
14. Dragomirecká E, Baudis P, Smolová E, Džurová D, Holub J. Psychiatric morbidity of the population in the Czech Republic. *Ceska a Slovenska Psychiatrie* 2002;98:72-80. In Czechoslovakian.
15. Lehtinen V, Joukamaa M, Lahtela K, Raitasalo R, Jyrkinen E, Maatela J, et al. Prevalence of mental disorders among adults in Finland: basic results from the Mini Finland Health Survey. *Acta Psychiatrica Scandinavica* 1990;81:418-25.
16. Lehtinen V, Joukamaa M, Jyrkinen E, Lahtela K, Raitasalo R, Maatela J, et al. Need for mental health services of the adult population in Finland: results from the Mini Finland Health Survey. *Acta Psychiatrica Scandinavica* 1990;81:426-31.
17. Lindeman S, Hämäläinen J, Isometsä E, Kaprio J, Poikolainen K, Heikkinen M, et al. The 12-month prevalence and risk factors for major depressive episode in Finland: representative sample of 5993 adults. *Acta Psychiatrica Scandinavica* 2000;102:178-84.
18. Laukkala T, Isometsä E, Hämäläinen J, Heikkinen M, Lindeman S, Aro H. Antidepressant treatment of depression in the Finnish general population. *American Journal of Psychiatry* 2001;158:2077-9.
19. Lepine JP, Lellouch J, Lovell A, Teherani M, Ha C, Verdier-Taillefer MH, et al. Anxiety and depressive disorders in a French population: methodology and preliminary results. *Psychiatry and Psychobiology* 1989;4:267-74.
20. Wittchen HU, Nelson CB, Lachner G. Prevalence of mental disorders and psychosocial impairments in adolescents and young adults. *Psychological Medicine* 1998;28:109-26.
21. Padmavathi R, Rajkumar S, Srinivasan N. Schizophrenia patients who were never treated – a study in an Indian urban community. *Psychological Medicine* 1998;28:1113-7.
22. Levav I, Kohn R, Dohrenwend BP, Shrout PE, Skodol AD, Schwartz S, et al. An epidemiological study of mental disorders in a 10-year cohort of young adults in Israel. *Psychological Medicine* 1993;23:691-707.
23. Faravelli C, Guerrini Degl'Innocenti B, Aiazzi L, Incerpi G, Pallanti S. Epidemiology of mood disorders: a community survey in Florence. *Journal of Affective Disorders* 1990;20:135-41.
24. Faravelli C, Guerrini Degl'Innocenti B, Giardinelli L. Epidemiology of anxiety disorders in Florence. *Acta Psychiatrica Scandinavica* 1989;79:308-12.
25. Karam EG. The nosological status of bereavement-related depressions. *British Journal of Psychiatry* 1994;165:48-52.
26. Caraveo-Anduaga JJ. *Epidemiología de la morbilidad psiquiátrica en la Ciudad de México*. [Epidemiology of Psychiatric Morbidity in Mexico City.] Mexico City: Instituto Mexicano de Psiquiatria; 1995. In Spanish.
27. Carvaeo-Anduaga JJ, Martínez Vélez NA, Rivera Guevara BE, Dayan AP. Prevalencia en la vida de episodios depresivos y utilización de servicios especializados. [Lifetime prevalence of depressive episode and utilization of specialized services.] *Salud Mental* 1997;20 Suppl:15-23. In Spanish.
28. Caraveo-Anduaga JJ, Colmenares E, Saldívar GJ. Morbilidad psiquiátrica en la ciudad de México: prevalencia y comorbilidad a lo largo de la vida. [Psychiatric morbidity in Mexico City: lifetime prevalence and comorbidity.] *Salud Mental* 1999;22:62-7. In Spanish.
29. Salgado de Snyder VN, Díaz-Pérez M. Los trastornos afectivos en la población rural. [Depressive disorders in a rural population.] *Salud Mental* 1999;22:68-74. In Spanish.
30. Beekman ATF, Deeg DJH, Braam AW, Smit JH, van Tilburg W. Consequences of major and minor depression in later life: a study of disability, well-being and service utilization. *Psychological Medicine* 1997;27:1397-409.
31. Bijl RV, Ravelli A, van Zessen G. Prevalence of psychiatric disorder in the general population: results of the Netherlands Mental Health Survey and Incidence Study (NEMESIS). *Social Psychiatry and Psychiatric Epidemiology* 1998;33:587-95.
32. Bijl RV, Ravelli A. Psychiatric morbidity, service use, and need for care in the general population: results of the Netherlands Mental Health Survey and Incidence Study. *American Journal of Public Health* 2000;90:602-7.
33. Well JE, Bushnell JA, Hornblow AR, Joyce PR, Oakley-Browne MA. Christchurch psychiatric epidemiology study, part I: methodology and lifetime prevalence for specific psychiatric disorders. *Australian and New Zealand Journal of Psychiatry* 1989;23:315-26.
34. Hornblow AR, Bushnell JA, Wells JE, Joyce PR, Oakley-Browne MA. Christchurch psychiatric epidemiology study: use of mental health services. *New Zealand Medical Journal* 1990;103:415-7.
35. Newman DL, Moffitt TE, Caspi A, Magdol L, Silva PA, Stanton WR. Psychiatric disorder in a birth cohort of young adults: prevalence, comorbidity, clinical significance, and new case incidence from ages 11 to 21. *Journal of Consulting and Clinical Psychology* 1996;64:552-62.
36. Sandanger I, Nygård JF, Ingebrigsten G, Sørensen T, Dalgard OS. Prevalence, incidence and age at onset of psychiatric disorders in Norway. *Social Psychiatry and Psychiatric Epidemiology* 1999;34:570-9.
37. Angst J. Epidemiology of depression. *Psychopharmacology* 1992;106 Suppl:71-45.
38. Hwu HG, Yeh EK, Chang LY. Prevalence of psychiatric disorders in Taiwan defined by the Chinese Diagnostic Interview Schedule. *Acta Psychiatrica Scandinavica* 1989;79:136-47.
39. Hwu HG, Yeh EK, Yeh YL, Chang LY. Alcoholism by Chinese diagnostic interview schedule: a prevalence and validity study. *Acta Psychiatrica Scandinavica* 1988;77:7-13.
40. Kilç C. *Mental health profile of Turkey: main report*. Ankara, Turkey: Ministry of Health; 1998. In Turkish.

41. Singleton N, Bumpstead R, O'Brien M, Lee A, Meltzer H. *Psychiatric morbidity among adults living in private households, 2000: the report of a survey carried out by Social Survey Division of the Office for National Statistics on behalf of the Department of Health, the Scottish Executive and the National Assembly for Wales*. London: Stationery Office; 2001.
42. Meltzer H, Gill B, Petticrew M, Hinds K. *OPCS surveys of psychiatric morbidity in Great Britain. Report 1: the prevalence of psychiatric morbidity among adults living in private households*. London: HMSO; 1995.
43. Meltzer H, Gill B, Petticrew M, Hinds K. *OPCS surveys of psychiatric morbidity in Great Britain. Report 2: physical complaints, service use and treatment of adults with psychiatric disorders*. London: HMSO; 1995.
44. Ohayon MM, Priest RG, Guilleminault C, Caulet M. The prevalence of depressive disorders in the United Kingdom. *Biological Psychiatry* 1999;45:300-7.
45. Robins LN, Regier DA, editors. *Psychiatric disorders in America: the Epidemiologic Catchment Area Study*. New York: Free Press; 1991.
46. Regier DA, Narrow WE, Rae DS, Manderscheid RW, Locke BZ, Goodwin FK. The de facto US mental and addictive disorders service system. Epidemiologic catchment area prospective 1-year prevalence rates of disorders and services. *Archives of General Psychiatry* 1993;50:85-94.
47. Vega WA, Kolody B, Aguilar-Gaxiola S, Alderete E, Catalano R, Caraveo-Anduaga J. Lifetime prevalence of DSM-III-R psychiatric disorders among urban and rural Mexican Americans in California. *Archives of General Psychiatry* 1998;55:771-8.
48. Vega WA, Kolody B, Aguilar-Gaxiola S, Catalano R. Gaps in service utilization by Mexican Americans with mental health problems. *American Journal of Psychiatry* 1999;156:928-34.
49. Kessler RC, McGonagle KA, Zhao S, Nelson CB, Hughes M, Eshleman S, et al. Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States. *Archives of General Psychiatry* 1994;51:8-19.
50. Kessler RC, Zhao S, Katz SJ, Kouzis AC, Frank RG, Edlund M, et al. Past-year use of outpatient services for psychiatric problems in the National Comorbidity Survey. *American Journal of Psychiatry* 1999;156:115-23.
51. Weissman MM, Myers JK, Harding PS. Psychiatric disorders in a U.S. urban community: 1975-1976. *American Journal of Psychiatry* 1978;135:459-62.
52. Weissman MM, Myers JK, Harding PS. Prevalence and psychiatric heterogeneity of alcoholism in a United States urban community. *Journal of Studies on Alcohol* 1980;41:672-81.
53. Grant BF, Harford TC. Comorbidity between DSM-IV alcohol use disorders and major depression: results of a national survey. *Drug and Alcohol Dependence* 1995;39:197-206.
54. Dawson DA. Correlates of past-year status among treated and untreated persons with former alcohol dependence: United States, 1992. *Alcoholism: Clinical and Experimental Research* 1996;20:771-9.
55. Alegria M, Kessler RC, Bijl R, Lin E, Heeringa SG, Takeuchi DT, et al. *Comparing mental health service use data across countries*. In: Andrews G, editor. *Unmet need in mental health service delivery*. Cambridge: Cambridge University Press; 2000. p. 97-118.
56. Canino GJ, Bird HR, Shrout PE, Rubio-Stipec M, Bravo M, Martinez R, et al. The prevalence of specific psychiatric disorders in Puerto Rico. *Archives of General Psychiatry* 1987;44:727-5.
57. Rubio-Stipec M, Stipec B, Canino G. Costs of schizophrenia in Puerto Rico. *Journal of Mental Health Administration* 1994;21:136-44.
58. Steffens DC, Skoog I, Norton MC, Hart AD, Tschanz JT, Plassman BL, et al. Prevalence of depression and its treatment in an elderly population: the Cache County study. *Archives of General Psychiatry* 2000;57:601-7.
59. Abas MA, Broadhead JC. Depression and anxiety among women in an urban setting in Zimbabwe. *Psychological Medicine* 1997;27:59-71.