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ORIGINAL PAPER

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Patterns of mental health service utilization in a general hospital and outpatient mental health facilities

Analysis of 365,262 psychiatric consultations

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Abstract *Purpose* Mental health is one of the priorities of the European Commission. Studies of the use and cost of mental health facilities are needed in order to improve the planning and efficiey of mental health resources. We analyze the patterns of mental health service use in multiple clinical settings to identify factors associated with high cost. *Subjects and methods* 22,859 patients received psychiatric care in the catchment area of a Spanish hospital (2000–2004). They had 365,262 psychiatric consultations in multiple settings. Two groups were selected that generated 80% of total costs: the medium cost group (N = 4,212; 50% of costs), and the high cost group (N = 236; 30% of costs). Statistical analyses were performed using univariate and multivariate techniques. Significant variables in univariate analyses were introduced as independent variables in a logistic regression analysis using "high cost" (>7,263$) as dependent variable. *Results* Costs were not evenly distributed throughout the sample. 19.4% of patients generated 80% of costs. The variables associated with high cost were: age group 1 (0–14 years) at the first evaluation, permanent disability, and ICD-10 diagnoses: Organic, including symptomatic, mental disorders; Mental and behavioural disorders due to psychoactive substance use; Schizophrenia, schizotypal and delusional disorders; Behavioural syndromes associated with physiological disturbances and physical factors; External causes of morbidity and mortality; and Factors influencing health status and contact with health services. *Discussion* Mental healthcare costs were not evenly distributed throughout the patient population. The highest costs are associated with early onset of the mental disorder, permanent disability, organic mental disorders, substance-related disorders, psychotic disorders, and external factors that influence the health status and contact with health services or cause morbidity and mortality. *Conclusion* Variables related to

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psychiatric diagnoses and sociodemographic factors have influence on the cost of mental healthcare.

Key words health care costs · health services research · mental health services · logistic models

Introduction

Psychiatric disorders are among the top causes worldwide of disease burden and disability both for the individuals suffering from them and their families. By 2020, it is projected that the burden of psychiatric disorders will have increased to 15% of the total Disability Adjusted Life Years lost due to all diseases and injuries [26].

As an example of the high costs of psychiatric disorders, a recent study has estimated that more than 500,000 community-dwelling adults spent $2.13 billion per year in direct medical expenses for schizophrenia in 2001–2002 [13], and the overall U.S. cost of schizophrenia was estimated to be $62.7 billion per year including direct health care cost, direct non-health care excess cost and indirect excess cost [27].

Psychiatric patients have longer lengths of hospital stay than patients without a psychiatric diagnosis [4]. A possible explanation is the fact that most psychiatric disorders are long processes that continue outside the hospital and depend on community and family support. Some authors have suggested that deinstitutionalization might have gone too far in some countries, where the reduction of mental hospital beds was accompanied by an increase in the number of suicides, acute admissions and bed occupancy in mental healthcare facilities [14]. Furthermore, there is increasing concern regarding the growing cost of healthcare [3, 8, 13, 27]. This has motivated health care policy changes worldwide, in an attempt to achieve a more rational distribution and use of health care resources.

Many studies have been carried out that aimed to gain understanding about the predictors and determinants of health service use [6, 8, 10, 18]. Most of them have consistently found that 10–30% of patients are identified as heavy users and utilize between 50% and 80% of the resources [8, 10].

Certain variables like male sex, younger age, being unmarried, unemployed, and nonwhite and diagnoses of schizophrenia, other psychotic disorders, personality disorders, and substance use disorders have traditionally been related to heavy mental health service use in western countries [8, 10, 23]. Nonetheless, it should be noted that there is no standard definition of heavy use [10].

The aim of the present study is to analyze the patterns of mental health service use in three clinical settings within the catchment area of a general hospital to try to identify the factors that are associated with a high cost of mental healthcare. All data were gathered prospectively. The following hypotheses will be tested: (1) Mental healthcare costs are not evenly distributed throughout the patient population; (2) Psychiatric diagnoses and sociodemographic factors have influence on the cost of mental healthcare.

Subjects and methods

Sample

27,027 patients received psychiatric care in the catchment area of Fundacion Jimenez Diaz Hospital (Madrid, Spain) from January 1, 2000 to December 31, 2004. 1,877 patients were excluded from the analyses because of missing data. 2,291 patients were excluded because they had started receiving psychiatric care at Fundacion Jimenez Diaz Hospital when they were under 18 years of age, and they had only received diagnoses within ICD-10 [24] F80-89 (Disorders of psychological development) or F90-98 (Behavioural and emotional disorders with onset usually occurring in childhood and adolescence).

22,859 patients 18 years and older were included in the analyses. These patients had 365,262 psychiatric consultations in multiple clinical settings, including visits to outpatient mental health centres (97.0% of consultations, $N = 354{,}304$), hospital emergency visits (2.5%, $N = 9{,}132$), and admissions to the psychiatric brief hospitalisation unit (0.5%, $N = 1{,}826$). Mental health centres are outpatient mental health facilities in the community. Psychiatrists at mental health centres treat patients who do not require inpatient treatment or assessment. Psychiatric emergency services are in-hospital facilities located at Fundacion Jimenez Diaz Hospital for the treatment of psychiatric emergencies. The psychiatric brief hospitalisation unit is a 19-bed short-stay unit for acute psychiatric patients who need inpatient treatment or assessment.

The study was approved by the Ethics Committee of Fundacion Jimenez Diaz Hospital and was performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

Fundacion Jimenez Diaz Hospital is part of the National Health Service and provides medical coverage to a catchment area of 280,000 people [1, 2]. The Spanish National Health Service healthcare is fully financed by taxes and provides free healthcare coverage for all Spanish citizens and legal immigrants.

Sociodemographic characteristics of the sample are presented in Table 1. Clinical diagnoses received by the subjects during the study period are presented in Table 2.

Diagnostic procedure

The diagnostic procedure has been described in detail elsewhere [1, 2].

Diagnostic procedure during ambulatory visits

Since 1986, all mental health centres within the province of Madrid have mandatory recording of all ambulatory visits in a regional registry (Registro Acumulativo de Casos de la Comunidad de Madrid). The psychiatrists at each mental health centre recorded one or two ICD-10 [24] diagnoses per patient during each ambulatory visit.

Diagnostic procedure during emergency visits

Emergency diagnoses were taken from emergency medical records. Emergency diagnoses were assigned by clinical psychiatrists after reviewing all available information, including data from clinical interviews with the patient and relatives.

Table 1 Sociodemographic characteristics of the sample (n = 22,859)

Variables		Mean (SD)
Age at first consultation (years)		39.9 (19.1)
Age at last consultation (years)		42.5 (19.6)
		%
Age groups at first consultation (years)	0–14	7.6
	15–64	73.8
	65–74	6.2
	>75	5.2
	Missing data	7.2
Age group at last consultation (years)	0-14	6.3
	15-64	72.7
	65-74	6.7
	>75	7.0
	Missing data	7.3
Gender	Male	41.0
	Female	59.0
Marital status	Single	49.5
	Married	24.8
	Divorced	10.7
	Widow	5.6
	Missing data	9.4
Education	Illiterate	0.8
	No education	4.0
	Primary school	18.8
	High school	34.5
	University	23.0
	Other education	0.4
	Missing data	18.5
Living	Alone	18.7
	With partner (with or without children and other family members)	30.3
	With parents	23.2
	With children	5.9
	With other family members	5.1
	In an institution	0.8
	Adopted	2.8
	With other people	0.2
	Missing data	13.0
Current working status	Employed	35.6
	Looking for first job	0.7
	Unemployed	14.4
	Retired	9.7
	Does not work for a living/on welfare	0.1
	Student	11.6
	Housewife	7.5
	Transient disability	2.6
	Permanent disability	1.1
	Missing data	16.7

Diagnostic procedure during admissions to the inpatient unit

Clinical diagnoses during admissions are the result of an intensive diagnostic and treatment process by physicians with specialty training in psychiatry, including data from medical records, research assessments, and clinical interviews. Emergency and inpatient diagnoses were included in a database specifically created for the study that was updated daily during the study period. The psychiatrists who assigned the clinical diagnoses were blind to the study procedures.

Cost of psychiatric care

Costs were calculated using the tables provided by the World Health Organization for the Global Burden of Disease EUR-A region (which includes all European Union countries) [25]. The unit cost (per day) was 148.1 current international dollars of 2000 for hospital stays, 73.8 for hospital emergency visits, and 33.4 for outpatient visits to mental health centres.

Statistics

Statistical analyses were performed using univariate and multivariate techniques. A logistic regression analysis using "high cost" (total cost per patient higher than 7,263$) as dependent variable was calculated. The analysis was based on two assumptions: (1) mental healthcare costs are not evenly distributed throughout the patient population; and (2) Psychiatric diagnoses and sociodemographic factors have influence on the cost of mental healthcare. Age group at the time of the first contact with psychiatric services in the catchment area of Fundación Jiménez Díaz Hospital (age group at the first consultation, group 1 = 0–14 years; group 2 = 15–64 years;

Table 2 Clinical diagnoses of the sample (n = 22,859)

Diagnoses	%
F00-09 Organic, including symptomatic, mental disorders	3.6
F10-19 Mental and behavioural disorders due to psychoactive substance use	9.7
F20-29 Schizophrenia, schizotypal and delusional disorders	11.2
F30-39 Mood [affective] disorders	33.9
F40-48 Neurotic, stress-related and somatoform disorders	51.1
F50-59 Behavioural syndromes associated with physiological disturbances and physical factors	4.6
F60-69 Disorders of adult personality and behaviour	9.5
F70-79 Mental retardation	0.8
X60-84 Intentional self-harm	2.8
V01-Y98 External causes of morbidity and mortality	0.6
Z00-99 Factors influencing health status and contact with health services	4.6

group 3 = 65–74 years; group 4 = 75 years and older), gender, marital status, education, living situation, current working status (all these variables are listed in Table 1), and the district where the patient lived (Arganzuela or Centro) and all the clinical diagnoses listed in Table 2 were included in the logistic regression model as independent variables.

Results

The diagnoses received throughout the study period are listed in Table 2.

Main outcome measures

Three groups were defined according to a Pareto rule: (1) low cost patients (80.5%, N = 18,411; total expenditure per patient during the study period under 435$): these patients generated 20% of the total psychiatric healthcare cost for the whole sample during the study period; (2) medium cost patients (18.4%, N = 4,212; total expenditure per patient between 435$ and 7,263$): they generated 50% of the total psychiatric healthcare cost; (3) high cost patients (1.0%, N = 236; total expenditure per patient higher than 7,263$): they generated 30% of the total psychiatric healthcare cost. The medium cost and high cost groups were selected for the analyses because they represented 80% of total costs during the study period. The low cost group was not included in the analyses because it represented the average cost of a punctual, time-limited psychiatric disorder. The total number of consultations in each setting, the mean number of consultations per patient in each setting, and the mean duration of follow-up for each of the three cost groups are presented in Table 3.

The logistic regression model had a good fit (Hosmer-Lemeshow Chi^2 = 13.0; df = 8; p = 0.114) and classified 92.1% cases with a sensitivity of 95.7% and a specificity of 38.4%. The significant variables included in the regression model are listed in Table 4. The following variables were associated with high cost of mental health care: male gender, age group 1 (0–14 years) at the time of the first evaluation, permanent disability, and the ICD-10 diagnoses Organic, including symptomatic, mental disorders; Mental and behavioural disorders due to psychoactive substance use; Schizophrenia, schizotypal and delusional disorders; Behavioural syndromes associated with physiological disturbances and physical factors; External causes of morbidity and mortality; and Factors influencing health status and contact with health services. The following variables were protective factors, associated with low cost of mental health care: female gender, age groups 4 (75 years or older),

Table 3 Number of consultations in each setting and duration of follow-up by cost group

Cost group		Total per group	Mean (SD)
Total cost <435$ (n = 18,411)	Consultations in all settings	64,917	3.5 (3.1)
	Visits to outpatient mental health centres	61,020	3.3 (3.2)
	Hospital emergency visits	3,879	0.2 (0.5)
	Admissions to the psychiatric brief hospitalisation unit	18	<0.1 (<0.1)
	Length of follow-up (in days)		234.6 (355.7)
Total cost 435–7,263$ (n = 4,212)	Consultations in all settings	122,109	29.0 (26.1)
	Visits to outpatient mental health centres	117,736	28.0 (26.3)
	Hospital emergency visits	3,492	0.8 (2.0)
	Admissions to the psychiatric brief hospitalisation unit	881	0.2 (0.5)
	Length of follow-up (in days)		988.5 (561.7)
Total cost >7,263$ (n = 236)	Consultations in all settings	28,329	120.6 (135.1)
	Visits to outpatient mental health centres	26,043	110.8 (135.8)
	Hospital emergency visits	1,602	6.8 (10.7)
	Admissions to the psychiatric brief hospitalisation unit	684	2.9 (2.8)
	Length of follow-up (in days)		1381.1 (523.4)

Table 4 Significant variables included in the logistic regression model

Variables		Chi Wald	df	*p*	OR	95% CI
Gender	Female/male	8.1	1	0.004	0.645	0.476–0.872
Age groups at the first evaluation	Age at the first evaluation	444.6	3	<0.001		
	Group 2 (15-64/0-14)	421.3	1	<0.001	0.015	0.010–0.022
	Group 3 (65-74/0-14	118.0	1	<0.001	0.008	0.004–0.020
	Group 4 (>75/0-14)	54.4	1	<0.001	0.003	0.001–0.015
Working status	Permanent disability/no disability	6.9	1	0.009	2.271	1.232–4.188
	Active/not active	12.6	1	<0.001	0.501	0.342–0.734
ICD-10 Diagnoses (having the diagnosis at least at one evaluation)	F00-F09/No F00-F09[a]	14.6	1	<0.001	2.839	1.662–4.850
	F10-F19/No F10-F19[b]	10.6	1	0.001	1.741	1.248–2.429
	F20-F29/No F20-F29[c]	121.3	1	<0.001	7.346	5.151–10.475
	F50-F59/No F50-F59[d]	7.1	1	0.008	1.926	1.189–3.119
	V01-Y98/No V01-Y98[e]	50.5	1	<0.001	3.792	2.625–5.477
	Z00-Z99/No Z00-Z99[f]	38.3	1	<0.001	3.088	2.161–4.413

[a] F00-F09 = Organic, including symptomatic, mental disorders
[b] F10-F19 = Mental and behavioural disorders due to psychoactive substance use
[c] F20-F29 = Schizophrenia, schizotypal and delusional disorders
[d] F50-F59 = Behavioural syndromes associated with physiological disturbances and physical factors
[e] V01-Y98 = External causes of morbidity and mortality
[f] Z00-Z99 = Factors influencing health status and contact with health services

3 (65–74 years), and 2 (15–64 years) at the time of the first evaluation; and being active—currently working.

Discussion

First hypothesis Mental healthcare costs are not evenly distributed throughout the patient population.

Mental health care costs were not evenly distributed throughout the patient population. 19.4% of patients generated 80% of health care costs.

Second hypothesis Psychiatric diagnoses and sociodemographic factors have influence on the cost of mental healthcare.

The variable with the highest OR was age group 1 (0–14 years at the first evaluation) (OR against age group 2 = 66.6; OR against group 2 = 125.0; OR against group 3 = 33.3). These results agree with the findings of previous studies that suggest that young individuals have higher use of psychiatric health services and are more likely to be hospitalized than older individuals [8, 9, 11, 15, 17, 23]. However, other authors have not found any association between sociodemographic variables and service use or rehospitalization rates [7].

Gender also had a significant effect on service use, with males showing higher service use than females (OR for males = 1.6). This is consistent with the majority of previous studies [12, 17, 23], although some authors have reported higher rates of heavy use in females than in males [8].

The ICD-10 block "Schizophrenia, schizotypal and delusional disorders" (F20-F29) was the one with the highest OR (7.3). This is consistent with mounting evidence that suggests that individuals with psychotic disorders and more specifically with schizophrenia use more psychiatric resources and generate higher costs than any other group of psychiatric patients [5, 9, 10, 23].

It is worth pointing out that the ICD-10 blocks "External causes of morbidity and mortality" (V01-Y98), "Factors influencing health status and contact with health services" (Z00-Z99), and "Organic, including symptomatic, mental disorders" (F00-F09) had high ORs (3.792, 3.088, and 2.839, respectively). The ICD-10 block "External causes of morbidity and mortality" (V01-Y98) includes accidental injuries and intentional self-harm (X60-X84). The ICD-10 block "Factors influencing health status and contact with health services" (Z00-Z99) includes variables related to socioeconomic and psychosocial circumstances (Persons with potential health hazards related to socioeconomic and psychosocial circumstances, Z55-Z65), including: Problems related to employment and unemployment (Z56), Problems related to housing and economic circumstances (Z59), Problems related to social environment (Z60), Problems related to negative life events in childhood (Z61), Other problems related to primary support group, including family circumstances (Z63), and Problems related to certain psychosocial circumstances (Z64). All these factors have been traditionally associated with high service use [10].

The logistic regression model classified cases with fine sensitivity (95.7%) but only moderate specificity (38.4%). Therefore, it may not be used in the clinical setting to predict the patterns of service use of any given patient. However, the results of the logistic regression are valuable and confirm well-known facts regarding factors related to service use.

Strengths and weaknesses of the study

The main strengths of this study are the large, representative sample, the length of follow up (5 years), the high number of evaluations (365,262), and the assessment of patients in three different clinical settings. Moreover, although most previous studies were focused on patients with one psychiatric disorder assessed in one clinical setting, we assessed mental health service utilisation by patients with all psychiatric diagnoses naturally presenting in clinical practice in multiple settings. In Spain only some small studies have been performed, most of them focused on a specific group of disorders [19–22].

Clinicians who assigned the diagnoses were blind to the study procedures. Other work has used semi-structured interviews and other diagnostic instruments not used ordinarily in clinical practice. The results of our study may more accurately reflect the real use of psychiatric services by patients with psychiatric disorders.

Our study has limitations. We did not include in the analyses other variables that have been associated with heavy use, like symptomatic and functional impairment or treatment outcome. We did not include data regarding ethnicity in the logistic regression. However, in a previous study we analysed psychiatric emergency visits and admissions by immigrants of different ethnicities and natives in the same hospital (Fundacion Jimenez Diaz). We found that immigrant under-used psychiatric emergency and hospitalisation services in comparison with natives [16]. Another limitation is that the total cost was calculated for a given period. For example, some high cost patients could have been categorized as low or medium cost patients if they began consulting at the end of the study period or stopped consulting at the beginning of the period. Finally, there is a high percentage of missing data for some sociodemographic variables.

Conclusion

Mental health care costs were not evenly distributed throughout the patient population.

Psychiatric diagnoses and sociodemographic factors influenced the cost of mental healthcare.

In the near future it might be feasible to predict the patterns of service use of any given patient by studying his/her sociodemographic and clinical characteristics. However, so far the majority of the attempts to predict service use have been unsuccessful, and the results of the present study should be interpreted with caution.

The early detection of heavy users may allow better healthcare planning and more individualized mental health attention tailored to the patient's needs. Some examples in healthcare planning may be the estimation of the number of beds required in different facilities and the specific programmes that should be started according to the profiles of the potential users.

References

1. Baca-Garcia E, Perez-Rodriguez MM, Basurte-Villamor I, Fernandez del Moral AL, Jimenez-Arriero MA, Gonzalez de Rivera JL, Saiz-Ruiz J, Oquendo MA (2007) Diagnostic stability of psychiatric disorders in clinical practice. Br J Psychiatry 190:210–216
2. Baca-Garcia E, Perez-Rodriguez MM, Basurte-Villamor I, Lopez-Castroman J, Fernandez Del Moral AL, Jimenez-Arriero MA, Gonzalez de Rivera JL, Saiz-Ruiz J, Leiva-Murillo JM, de Prado-Cumplido M, Santiago-Mozos R, Artes-Rodriguez A, Oquendo MA, de Leon J (2007) Diagnostic stability and evolution of bipolar disorder in clinical practice: a prospective cohort study. Acta Psychiatr Scand 115:473–480
3. Becker T, Kilian R (2006) Psychiatric services for people with severe mental illness across Western Europe: what can be generalized from current knowledge about differences in provision, costs and outcomes of mental health care? Acta Psychiatr Scand Suppl 429:9–16
4. Bourgeois JA, Kremen WS, Servis ME, Wegelin JA, Hales RE (2005) The impact of psychiatric diagnosis on length of stay in a university medical center in the managed care era. Psychosomatics 46:431–439
5. Carr VJ, Johnston PJ, Lewin TJ, Rajkumar S, Carter GL, Issakidis C (2003) Patterns of service use among persons with schizophrenia and other psychotic disorders. Psychiatric Serv 54:226–235
6. Desai MM, Rosenheck RA (2003) Trends in discharge disposition, mortality, and service use among long-stay psychiatric patients in the 1990s. Psychiatr Serv 54:542–548
7. Hamalainen J, Isometsa E, Laukkala T, Kaprio J, Poikolainen K, Heikkinen M, Lindeman S, Aro H (2004) Use of health services for major depressive episode in Finland. J Affect Disord 79:105–112
8. Junghan UM, Brenner HD (2006) Heavy use of acute in-patient psychiatric services: the challenge to translate a utilization pattern into service provision. Acta Psychiatr Scand Suppl 429:24–32
9. Kastrup M (1987) Who became revolving door patients? Findings from a nation-wide cohort of first time admitted psychiatric patients. Acta Psychiatr Scand 76:80–88
10. Kent S, Yellowlees P (1995) The relationship between social factors and frequent use of psychiatric services. Aust N Z J Psychiatry 29:403–408
11. Lewis T, Joyce PR (1990) The new revolving-door patients: results from a national cohort of first admissions. Acta Psychiatr Scand 82:130–135
12. Mahendran R, Mythily, Chong SA, Chan YH (2005) Brief communication: factors affecting rehospitalisation in psychiatric patients in Singapore. Int J Soc Psychiatry 51:101–105
13. McDonald M, Hertz RP, Lustik MB, Unger AN (2005) Healthcare spending among community-dwelling adults with schizophrenia. Am J Manag Care 11(8 Suppl):S242–S247
14. Munk-Jørgensen P (1999) Has deinstitutionalization gone too far? Eur Arch Psychiatr Clin Neurosci 249:136–143
15. Oiesvold T, Saarento O, Sytema S, Vinding H, Gostas G, Lonnerberg O, Muus S, Sandlund M, Hansson L (2000) Predictors for readmission risk of new patients: the Nordic Comparative Study on Sectorized Psychiatry. Acta Psychiatr Scand 101:367–373
16. Perez-Rodriguez MM, Baca-Garcia E, Quintero-Gutierrez FJ, Gonzalez G, Saiz-Gonzalez D, Botillo C, Basurte-Villamor I, Sevilla J, Gonzalez de Rivera JL (2006) Demand for psychiatric emergency services and immigration. Findings in a Spanish hospital during the year 2003. Eur J Public Health 16:383–387

17. Roick C, Heider D, Kilian R, Matschinger H, Toumi M, Angermeyer MC (2004) Factors contributing to frequent use of psychiatric inpatient services by schizophrenia patients. Soc Psychiatry Psychiatr Epidemiol 39:744–751
18. Saarento O, Nieminen P, Hakko H, Isohanni M, Vaisanen E (1997) Utilization of psychiatric in-patient care among new patients in a comprehensive community-care system: a 3-year follow-up study. Acta Psychiatr Scand 95:132–139
19. Salize H, Moreno-Küstner B, Torres-González F (1999) Needs for care and effectiveness of mental health care provision for schizophrenic patients: a comparison between Granada (Spain) and Mannheim (Germany). Acta Psychiatr Scand 100:328–334
20. Salvador-Carulla L, Salas D, Romero C, Magallanes, PSICOST/EPCAT group (2002) Análisis de costes y servicios psiquiátricos para pacientes esquizofrénicos. El modelo EPCAT. Informaciones Psiquiatricas 169, Accessed online on March 9th 2006; http://www.revistahospitalarias.org/info_2002/03_169_06.htm
21. Salvador-Carulla L, Tibaldi G, Johnson S, Scala E, Romero C, Munizza C, CSRP group, RIRAG group (2005) Patterns of mental health service utilisation in Italy and Spain—an investigation using the European Service Mapping Schedule. Soc Psychiatry Psychiatr Epidemiol 40:149–159
22. Seva A (2002) El coste de las patologías psiquiátricas en España. Un seguimiento de 26 años y 10.974 ingresos en una Unidad Psiquiátrica de Corta Estancia de un hospital general. Eur J Psychiatry 16:57–67
23. Sullivan PF, Bulik CM, Forman SD, Mezzich JE (1993) Characteristics of repeat users of a psychiatric emergency service. Hosp Community Psychiatry 44:376–380
24. World Health Organization (1992) Tenth revision of the International Classification of Diseases and related health problems (ICD-10). World Health Organization, Geneva
25. World Health Organization (2000) World Health Organization CHOosing Interventions that are Cost Effective (WHO-CHOICE). Accessed online on March 9th 2006; http://www.who.int/choice/costs/en/
26. World Health Organization (2001) The World Health Report 2001. Mental health: new understanding, new hope. World Health Organization, Geneva
27. Wu EQ, Birnbaum HG, Shi L, Ball DE, Kessler RC, Moulis M, Aggarwal J (2005) The economic burden of schizophrenia in the United States in 2002. J Clin Psychiatry 66:1122–1129