Title:

MENTAL HEALTH SERVICES UTILIZATION AND COSTS OF PATIENTS WITH SCHIZOPHRENIA IN THREE AREAS OF SPAIN

Authors:
Josep Maria Haro[1], Luis Salvador[2], Juan Cabasés[3], Vicente Madoz[4], José Luis Vázquez-Barquero[5], Cristina Agustench[3] and the PSICOST Group*

*Cristina Agustench[3,] Adrián Argente[6], Juan Cabasés[3], Luis Gaite[5], Josep Maria Haro[1], Vicente Madoz[4], Alfredo Martínez[4], Cristina Romero[2], José Antonio Sacristán[7], Luis Salvador-Carulla[2], Francisco Torres[6], José Luis Vázquez Barquero[5].
The PSICOST Group is a multidisciplinary group that studies the costs of mental illness that includes the Spanish investigators participating in the European EPCAT project from the Biomed program (CT94-1304).

[1] Centro de Salud Mental de Gavà, Sant Joan de Déu-SSM
[2] Centro de Investigación en Minusvalías (CIM), Universidad de Cádiz
[3] Departamento de Economía, Universidad Pública de Navarra
[4] Fundación Argibide, Navarra
[5] Unidad de Investigación en Psiquiatría Social, Universidad de Cantabria
[6] Unidad de Investigación en Psiquiatría Social, Universidad de Granada
[7] Unidad de Farmacoeconomía, Lilly, Madrid

Corresponding author:
Josep Maria Haro
CSM Gavà
Sant Joan de Déu-SSM
Sarrià, 13-15
E-08850 - Gavà (Barcelona)
Spain
Tel: (343) 662.51.52
FAX: (343) 662.55.56
e-mail: 27652jha @ comb.es

SUMMARY

Background: The analysis of the costs of schizophrenia and its treatment under different mental health care structures will facilitate the improved allocation of the limited resources available for the treatment of schizophrenia. The research we present compares health services use and total health care costs of three cohorts of patients with schizophrenia which are representative of three areas of Spain (Burlada in Navarra, Cantabria and the Eixample of Barcelona). **Methods:** Cases selected were those first time contacts with any psychiatric service that received a diagnosis of schizophrenia. Patients were evaluated in the third year after onset. **Results:** The mean number of outpatient visits per patient per year was 10.7 and the mean inpatient days were 9.5. The mean direct costs per patient in the third year of treatment was 295.459 Spanish pesetas. **Conclusions:** Costs were greater in the two centers with larger community mental health development. Barcelona has the higher cost per patient (368.440 PTA) and Cantabria the lowest cost. We did not find that this cost difference turned into a better outcome. Costs of patients with better functional status were lower than costs of patients with a worse outcome. Some of the findings may be explained by service availability.

Key words:
Schizophrenia, costs, incidence, service utilization.

Resumen

Se compara la utilización de servicios sanitarios y los costes totales de atención de tres cohortes de pacientes con esquizofrenia en el tercer año trás el diagnóstico. Las tres cohortes son representativas de tres áreas de España (Burlada, en Navarra, Cantabria y El Eixample, en Barcelona), con características socioeconómicas y estructuras asistenciales muy diferentes. Los casos fueron seleccionados de entre los pacientes que contactaron por primera vez con los servicios de salud mental y fueron diagnosticados de esquizofrenia. El número de visitas ambulatorias por paciente y año fue de 10.7 y el tiempo de estancia hospitalaria media de 9.5 días. Los costes directos asistenciales por paciente en el tercer año de tratamiento fueron de 295.459 pts. **Conclusiones:** Los costes fueron más elevados en las dos áreas con mayor nivel de desarrollo de servicios comunitarios. Barcelona muestra el mayor coste por paciente (368.440 pts.) y Cantabria el menor. No se constata que la diferencia de costes suponga un mejor resultado. Los costes de los pacientes con mejor estado funcional fueron menores que los de peores resultados. La disponibilidad de servicios puede ser la variable explicativa de las diferencias encontradas.

Palabras clave:

Esquizofrenia, costes, incidencia, utilización de servicios.

Introduction

During the past decades a movement towards deinstitutionalization has taken place in Western psychiatry. In Spain, this shift from a hospital based care towards community oriented services started in the late seventies. From that moment, a wide range of community services have been created which include community mental health care centers, day centers, day hospitals and other tertiary care services. However, as in the rest of Europe, the changes are far from homogeneous, and the development of community services has evolved at a very different pace in different areas of the country.

Mental health reform was initiated greatly due to social and political pressures. However, in an era in which resources are scarce, information about costs, and its relation to outcomes, should be considered in order to pursue and determine the direction of future changes. Research should inform on the components of care that are more effective and efficient, in order to maximize patient benefit. This type of research, specially in countries as Spain, is scarce. We must then rely on results from a few studies, many of which are done in areas that differ in the political and cultural characteristics from the country where they should be applied. Since we know that health services and mental health services use vary among different countries and among areas (Sytema et al. ,1996; Sarrià and Sendra, 1991), the findings of the studies need to be replicated where the conclusions are to be applied.

Analyzing the costs of schizophrenia and its treatment under different mental health care structures will facilitate the improved allocation of the limited resources available for the treatment of schizophrenia. Costs can be examined at the 'macro' or at the 'micro' level. The macro level uses demographic, statistical and service use data recorded in a region to calculate global costs, while the micro o bottom-up method calculates costs based on individual characteristics and service use. Both approaches, albeit complementary, are appropriate for different purposes (Rice and Miller, 1996).

The research we present compares health services use and total health care costs of three cohorts of patients with schizophrenia in the third year after onset. These three cohorts are representative of three areas of Spain with very different sociodemographic characteristics and mental health services development (Burlada, a region of Navarra, the Autonomous Community of Cantabria and the Eixample, a district of Barcelona). We have used a 'micro level' approach to obtain health service use and cost since this method is more appropriate to compare services of small areas (Rice and Miller, 1996).

MATERIAL AND METHODS

Description of the three areas

Spain is a country with several auto
nomous regions. The health services of these regions are mostly administered by the autonomous governments, which has lead to the coexistence of different health policies in which public, not-for profit and private agencies have diverse roles.

The comparison of mental health services among areas is interfered by the fact that the heterogeneity in the development of mental health services has lead to the use of similar names for services with very different resources that offer different programs. For example, the term day hospital may be used to name a service that provides certain types of treatments (ECT) or a service with partial hospitalization whose objective is patient rehabilitation and whose mean length of stay is several months. Then, biases may appear if we rely in names to define services. The Service Mapping Schedule, Spanish Version (Salvador Carulla et al., 1998) has been designed to register all significant data that characterize services. We have used this instrument to compare the three areas, which ensures that services are compared not in relation to names but to human and material resources, patients served and services provided.

The area of Burlada includes a part of Pamplona, the capital of the autonomous region of Navarra, and a rural region nearby, with a population of 60.000 inhabitants. The area has a community network of psychiatric services: a mental health center for the treatment of people with mental disorders including drug abuse, uses several inpatient units (a unit for acute patients in a general hospital and units for acute and long stay patients in a mental hospital), a day hospital, a day care center and a sheltered work center. All the services are funded by the Government of Navarra, but the managing agencies of all the community centers are non for-profit agencies.

The epidemiologic catchment area in Cantabria covers the whole autonomous region with a population of 560.000 inhabitants. The capital of the region, Santander, has around 200.000 people, and the rest of the population lives in semi-urban and rural areas. Community mental health services are much less developed than in the other two areas. The area has several mental health care centers and an acute inpatient unit, a 24-hour emergency unit and an outpatient service located at a university hospital. There are no public tertiary mental health resources as day care centers and the mental hospital of the region does not admit new patients. All services are managed and funded by the Spanish central government. Psychiatric care of the cohort was given by the Psychiatric Department of the University Hospital (Vázquez-Barquero et al., 1995).

The third area is the Eixample, a district of Barcelona with 275.000 people. The area, located in the center of a city with almost two million inhabitants, has a wide range of public and private health services. Public mental health services include two primary mental health care centers, an acute inpatient unit in a university hospital, medium and long term inpatient units in a mental hospital (located outside the area), a day care center and a day hospital. Besides these services, the area has several public hospitals with psychiatric units and a number of private ambulatory offices. The area lacks sheltered work centers. The public mental health network is funded by the Catalan Autonomous Government, but its services are managed by public, private for-profit and non for-profit agencies.

Patient selection

We selected three incident representative samples of patients, one in each area. Cases selected were those first time contacts with any psychiatric service (either inpatient or outpatient) that received a diagnosis of schizophrenia (using DSM-IIIR Criteria; APA 1987), lived in the catchment area and whose age was between 16 and 45. Cases with a primary diagnosis of mental retardation or drug abuse or dependency were excluded.

Since health information systems and population in each area were different we used different methodologies and time periods to assure representativeness of the selected samples.The Cantabrian cohort included all patients suffering from a first episode of schizophrenia who, over a one year period established a first contact with any of the Cantabria public mental health services. This sample has been shown to be representative of the incident cases of schizophrenia in the area (Vázquez-Barquero et al., 1995).

Burlada has a cumulative psychiatric case register that started in 1987. The register includes all people that have been in contact with any public psychiatric service in the area. Patients selected were those that during a four year period (1989-1992) fulfilled the inclusion criteria. We had to use a longer recruitment period since this area has the lowest population of the three.

Barcelona has no psychiatric case register. Cases were selected from a data base created for a wider project (Haro and Cabrero, 1995) that included all patients who had contacted with any service of the public mental health network during a five year period. Patients selected were those first time contacts with any public mental health service during the period 1990-1992 who fulfilled the inclusion criteria.

The total number of cases selected were 112, 42 in Burlada, 40 in Cantabria and 30 in Barcelona. Four cases were excluded from the analysis: two patients from Burlada moved away from the province, one in Cantabria committed suicide, the three in the first year of followup, and in Barcelona a patient refused to participate. A total of 108 cases were included in the analysis (participation rate of 96.4%)

Methods

Assessment

Patients were evaluated in the third year after onset. Information about service use, informal care, indirect costs and outcome measures were obtained for each patient. Since comprehensiveness of data is important in the measurement of service use and costs, information in each case was obtained from all available sources (clinical charts, health care data bases and patient and family interviews). In case of discrepancy of service use, which we think was mainly due to recall biases from patients and families, the data in the clinical charts and data bases was used. All patients and family members interviewed were informed about the objectives of the study and accepted to participate. The evaluation included:

- A standardized psychiatric interview to confirm the diagnosis of schizophrenia. The Spanish version of the Present State Examination (PSE-9) was used in Cantabria (Wing et al., 1974; Vázquez-Barquero et al., 1987) and the Schedules of Clinical Assessment in Neuropsychiatry (SCAN) (Wing et al., 1990; Vázquez Barquero, 1993) in Barcelona. Patients in Burlada were evaluated using a standardized psychiatric interview that included the BPRS.

- The Questionnaire for Cost Evaluation in Schizophrenia: This instrument is an adaptation of the Client Service Receipt Interview (CSRI) (Beecham, 1995) to the Spanish health system. The CSRI records health service use and indirect costs and has been widely used in studies of cost in mental disorders (Beecham, 1995).

- Measurements of outcome: Disability Assessment Schedule, Short Form (DAS-sv) (Janca et al., 1996), Global Assessment of Functioning Scale (GAF) (APA, 1995) and Social and Occupational Functioning Scale (SOFAS) (Goldman et al., 1992).

Cost calculation

The calculation of direct costs was based in health service use related to schizophrenia. Service use not related to schizophrenia was excluded. Charges were used to measure direct costs. Despite the fact that the identification of the long run marginal opportunity cost is the optimum method for cost calculation (Netten and Beecham, 1993), the diversity of services used by our population made charges the only available measure.

Statistical analysis

Statistical analysis were performed with SPSS for Windows 6.0.1. Chi-square test and one-way analysis of variance were used to calculate statistical differences for categoric and continuous variables, respectively. The relationship of costs with the independent variables was analyzed with one-way analysis of variance and correlation coefficients. Since costs have a very skewed distribution with a long tail, a logarithmic transformation was used to verify the findings. As the results with this transformation were similar to the crude measure, we have not reported it.

RESULTS

Table 1 shows the main sociodemographic characteristics of the three cohorts. Around 60% of the patients are male and the mean age is approximately 28 years. Mean age and sex distribution is similar to the results of other European incidence studies (Häfner et al., 1993; Eaton et al., 1992). Most of the patients live with their parents, which is frequent in people with schizophrenia in Spain. The rate of employment is between 25 and 40% and the rate of unemployment between 22 and 50%. There are no significant differences in these sociodemographic variables among the three samples.

Table 2 presents health service use in the third year after onset. The mean number of outpatient visits per patient per year was 10.7 (SD 11.5). This number was significantly different in the three centers: 11.2 (SD 7.8) in Burlada, 5.8 (SD 3.9) in Cantabria and 16.4 (SD 18.2) in Barcelona (p value<0.001). This difference is accounted by the greater number of nurse visits in Burlada and private outpatient visits in Barcelona.

The mean number of inpatient days for the cohort is 9.5 (SD 40.8). Although there are no significant differences in total length of stay for the three cohorts, type of hospital used differs greatly: while all admissions in Cantabria were at a general hospital, in the other centers they mostly correspond to psychiatric hospitals. The higher number of inpatient days in Burlada is due to a patient that had been admitted to a long stay psychiatric unit and who remained at the hospital for the whole year.

Since Cantabria has neither residential nor tertiary or rehabilitation centers, no patient used those facilities. The mean number of day care center visits for Burlada and Barcelona were 9.4 (SD 42.9) and 35.2 (SD 96.9) respectively (p<0.05).

Table 3 shows the clinical and outcome characteristics of the three cohorts. Comorbidity was much lower in Cantabria. Substance abuse, mostly alcohol abuse, is the most frequent comorbid disorder. No significant differences were found in outcome measures. Although Cantabria has the lowest relapse rate, the difference does not reach statistical significance.

The mean direct cost per patient in the third year of treatment was 295.459 Spanish pesetas (PTA) (Table 4). Barcelona has the highest cost per patient (368.440 PTA) and Cantabria the lowest cost. The distribution of costs is very different in the three centers: while in Cantabria 76% of the costs belong to inpatient hospital services, the number in Barcelona is 31% and in Burlada 49%.

Relation of costs with sociodemographic and outcome measures

In order to study the relationship of costs with the sociodemographic characteristics of the patients and the outcome measures we grouped the three samples. Although there was a tendency of costs to decrease with age, single patients had a much higher cost (337.000 PTA per patient) than married (129.000 PTA) and patients working, studying or house keeping (between 140.000 and 194.000 PTA) had a lower cost than unemployed (338.000 PTA), none of these differences reached statistical significance. The high variability of costs and the few number of cases in some strata may explain this lack of findings. Obviously, we find a strong and significant relationship between costs and number of relapses and place of residency (patients in long stay units or psychiatric residencies had a very high cost and patients living alone lower that patients living with their parents). More interesting is the relationship of costs and clinical and disability measures (table 5). The table shows that a better functional status correlates with a lower cost (in the interpretation of the table we must take into account that higher values of DAS-SV and lower of GAF correspond to a poorer outcome).

DISCUSSION

This study is one of the first attempts to calculate the health care and social costs of people with schizophrenia in Spain. Spain is a heterogeneous country that has several autonomous regions with different historical, cultural and sociodemographic characteristics. We tried to take this into account including in the research three centers of different autonomous regions.

Direct costs of care were found to be much lower that the ones found in other european countries. Mean costs in Spain were 295.459 PTA (around 2.100 US Dollars), compared to 18.377 US Dollars found in a study in Manheim, Germany (Salize and Rössler, 1996), to the 18.564 UK Pounds found in West Lambeth, England (Beecham et al., 1995) or to the findings of Moscarelli in Italy (Moscarelli et al., 1991). These differences are big enough not to be accounted for per capita income differences.

We found remarkable differences in the distribution of costs among the three areas studied. Costs were greater in the two centers with larger community mental health development. This increased cost represented a shift from hospital costs to community services. Total costs were greater in Barcelona which is consistent with the finding that the provision of mental health services in large cities is more difficult and costly than in less densely populated areas (Goldman et al., 1992; Dikey and Cohen, 1993). The increased cost was due to a larger use of outpatient and community residential and rehabilitation services. Service availability may explain this fact, since the Eixample in Barcelona has many public and private services, available to its middle class population. For example, the number of day care center places is 12 per 500.000 people in Burlada, 20 per 275.000 in Barcelona and 0 in Santander. Other studies have also found that service development is one of the main determinants of service use (Sytema et al., 1996).

We did not find that this cost shift and difference turned into a better outcome. To our surprise, no statistical significant differences were found in relapse rate, GAF or WHO Disability Assessment Schedule (DAS-sv) measures among the three cohorts. This lack of evidence could be due to the sociodemographic characteristics of the areas, that the development of community services is not big enough to determine a change in outcome or that our instruments are not sensitive to detect existing differences. Another explanation to this finding appears when we take into account the relationship of costs and outcome, since a better outcome correlates with lower costs. It seems that our mental health system does not cure or recover patients, but rather takes care of them. Patients who do poorly have more needs and need more services. Since the outcome of schizophrenia is worse in more developed areas (Leff et al., 1992), patients in a big city like Barcelona will need more attention. If we had measured met and unmet needs, it could have happened that the patients in the areas with lower costs would have more unmet needs.

Besides the direct costs reported, we made an attempt to calculate indirect costs, in which we included loss of productivity of the patient and the informal care of family members. We used a conservative approach for the calculation, since only those patients who had been actively working at some time were included. For the informal care of family members, time of care was traduced into monetary value using the mean salary in Spain. Great differences appeared between Cantabria and the other two centers: while indirect costs in the first was 1.471 PTA per patient, in Barcelona the number was 97.041 and in Burlada 92.496. Although this could be a true difference, we believe the most plausible explanation is that the interviewer in Cantabria was very conservative in the evaluation of the informal care by family members: he only registered the extra care provided by the family member that would not be considered usual for someone living at home, without considering that the patients were adults who were supposed to be able to have

an independent living. Thus, we believe that the real costs are much nearer to the higher figures. These methodological difficulties in the calculation of indirect costs seem to be present in other studies, as reported figures are very different: Hu et al. (1996) found them to be less than 1% of total costs, Rice and Miller (1996) less than 10%; but Davies and Drummond (1994) and Wyatt et al.(1995) found them to be much higher than direct costs.

Several limitations must be taken into account to evaluate the findings. One aspect that may explain some of the differences among centers, is that, while in Burlada and Barcelona the study was naturalistic, patients from the Cantabrian cohort were included in a follow-up study of incident cases of schizophrenia (Vázquez Barquero et al., 1995). Every effort was done to avoid including any cost that could be attributable to the cohort study (computer tomography, evaluation interviews). However, the inverse could also be true: regular followup can interfere with psychiatric treatment and the Hawthorne effect may have decreased service use and improved outcome.

Another important consideration is that costs were measured as service charges. Although this represents public and private costs of treatment, charges commonly include a share of the cost of uncompensated care for other patients, can reflect the cost shifting between different departments in a hospital or a clinic and may incorporate profits of private sector providers. However, the identification of the long run marginal opportunity cost increased the complexity of the analysis most studies use charges for the calculation of direct costs (Rice and Miller, 1996).

The costs estimates reported should be considered as a lower approximation to the real value, since some costs were not included in the results. Criminal justice costs, indirect costs due to increased mortality and intangible costs (pain and suffering) can become an important share of total costs. It could be possible that if we would measure these costs, the center with less developed community services would have a higher increase in costs than the other centers. For example, we did not include any costs from the death by suicide of a patient in Cantabria, as it occurred in the first year after onset, and costs should be computed in that year.

Our study opens many questions on the costs of schizophrenia. The high dependency of costs on the development of mental health services indicates that costs studies should be repeated periodically as psychiatric care systems evolve. For example, the appearance of the new atypical anti-psychotics is increasing the medication cost in schizophrenia. Another important aspect is the relationship of costs and outcome. As discussed above, the negative relationship found poses a question on the effectiveness of mental health services. We need more naturalistic research about the results of psychiatric treatment, since the findings from clinical trials can be influenced by the condidtions of the experimental studies.

Table 1. Sociodemographic characteristics of the three cohorts.

	Burlada (N=40)	Cantabria (N=39)	Barcelona (N=29)
Male (%)	26 (65.0)	22 (56.4)	18 (62.1)
Mean age (sd)	27.9 (5.8)	28.4 (7.3)	27.3 (6.2)
Single (%)	36 (90.0)	26 (67.7)	24 (82.8)
Accommodation type			
Living with parents or siblings	33 (82.5)	26 (66.7)	19 (65.5)
Living with spouse or children	4 (10.0)	10 (25.6)	3 (10.3)
Living alone	1 (2.5)	1 (2.6)	3 (10.3)
Living in a community psychiatric residence	1 (2.5)	0	0
Living in a mental hospital	1 (2.5)	0	1 (3.4)
Other	0	2 (5.1)	3 (10.3)
Occupation			
Employed	15 (37.5)	11 (28.2)	11 (37.9)
Students	3 (7.5)	6 (15.4)	1 (3.4)
Housekeeper	3 (7.5)	7 (17.9)	1 (3.4)
Unemployed	9 (22.5)	11 (28.2)	15 (51.7)
Other	10 (25.0)	4 (10.3)	1 (3.4)

Table 2. Health service use in the third year after onset for the three cohorts (numbers refer to total number of visits or total length of stay for each cohort).

	Burlada (N=40)	Cantabria (N=39)	Barcelona (N=29)	Total (N=108)
Hospital services				
General hospital	86	321	26	433
Psychiatric hospital	365	0	228	593
Community outpatient services				
Public sector				
Psychiatrist	207	166	143	516
Psycologist	46	4	18	68
Social worker	9	3	8	20
Psychiatric nurse	124	27	0	151
Group therapy	6	0	24	30
Hospital emergency services	3	9	19	31
Family practioner	27	0	56	83
Private sector				
Psychiatrist	24	18	60	102
Psicologist	0	0	146	146
Alternative medicine	4	0	2	6
Total number of outpatient visits*	450	227	476	1153
Residential and tertiary or rehabilitation centers				
Psychiatric residency	365	0	365	730
Day hospital	46	0	180	226
Day care center+	374	0	1020	1394

* $p<0.001$
+ $p<0.05$

Table 3. Clinical and outcome data for the three cohorts at the third year after onset.

	Burlada (N=40)	Cantabria (N=39)	Barcelona (N=29)
Substance abuse (%)[*]	9 (22.5)	1 (2.6)	12 (41.4)
Other psychiatric disorders (%) [*]	11 (27.5)	0	2 (6.9)
Relapse (%)	14 (35.0)	9 (23.1)	14 (48.3)
Mean GAF (sd)	67.0 (9.9)	61.5 (15.1)	61.0 (19.1)
Mean SOFAS (sd)	64.7 (10.9)	61.8 (15.2)	61.7 (19.5)
Mean DAS-sv (sd)			
Personal	0.7 (0.9)	0.8 (0.7)	0.5 (0.6)
Family	1.5 (0.9)	1.5 (0.9)	1.6 (1.4)
Occupational	1.8 (1.1)	2.1 (1.1)	2.6 (1.9)
Other activities	1.8 (0.9)	1.7 (1.1)	1.4 (1.2)

[*] p<0.001

Table 4. Direct costs per patient in Spanish pesetas for the three cohorts at the third year after onset.

	Burlada	Cantabria	Barcelona
DIRECT COSTS			
Community outpatient services	41.575	24.353	91.094
Inpatient services	154.615	187.316	121.175
Residential and tertiary services	60.451	0	109.622
Drugs	32.843	31.836	43.657
Laboratory and other medical exams	1.264	2.421	2.892
TOTAL DIRECT COSTS	290.784	245.925	368.440

Table 5. Correlation coefficients (p values) between direct costs and the outcome measures.

	Correlation coefficient (p value)
GAF	-0.24 (0.01)
SOFAS	-0.28 (0.003)
DAS-sv	
Personal	0.31 (0.001)
Family	0.24 (0.01)
Occupational	0.29 (0.002)
Other activities	0.19 (0.04)

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