Acta Psychiatr Scand 2006: 114 (Suppl. 432): 12–18

ACTA PSYCHIATRICA SCANDINAVICA

Assessment of service use patterns in out-patients with schizophrenia: a Spanish study

Pezzimenti M, Haro JM, Ochoa S, González JL, Almenara J, Alonso J, Moreno B, Muñoz PE, Jáuregui VM, Salvador-Carulla L and the PSICOST Group. Assessment of service use patterns in out-patients with schizophrenia: a Spanish study.

Objective: The objective is to describe and characterize patterns of service use by out-patients with schizophrenia in Spain.
Method: A representative treated prevalence sample of cases with schizophrenia was selected from four Spanish health areas. The evaluation included health service use, clinical severity, functioning and disability. Statistical analysis was based on hierarchical clustering methods.
Results: A total of 356 patients were included in the analysis. Five patterns of health service use were defined: heavy out-patient mental health users; mental health and general health service users; heavy hospital service users; nursing service users; low users of mental health services. Patients in each group showed differences in clinical and disability status. Patterns of health service use showed consistency, but also variability, among the geographical areas.
Conclusion: Development and organization of mental health services should take into account the combinations of services patients most frequently use.

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Key words: schizophrenia; health services research; ambulatory care; physician's practice patterns; treatment; Spain

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Significant outcomes

- Service use in schizophrenia is heterogeneous, but most patients tend to use specific service combinations.
- Patterns of service use are related to patient severity and functional disability.
- In Spain, patterns of health service use vary greatly between areas, which may indicate equity problems.

Limitations

- The design of this study is cross-sectional.
- Patterns of use are based on 12-month use, which diminishes the ability to detect relapses or patterns of use that lasted < 1 year.
- Regional differences have only partially been analysed due to a small sample size.

Introduction

Patients with schizophrenia, given the severity and chronicity of the disorder, usually require long-term health care. Service use in these patients is heterogeneous and, while a few of them seldom receive care, many others are heavy users of mental health services (1–4).

With the change in the paradigm of the mental health service sector that came with the deinstitutionalization process, the way individuals with mental disorders are cared for has undergone enormous changes (5–7). In Europe, these changes have been accompanied by the establishment of state and interstate mental health policies which are based on the principles of accessibility and equity and tend to have very similar health objectives (8). These policies and the services created by them need to be evaluated. Systematic evaluation of services and service delivery has already been made (9). To date, service evaluation studies have provided information about the organization, model and delivery of mental health services (10, 11). Also, analyses of schizophrenia-generated costs in limited geographical areas (12–15) or comparisons among areas have been published (16). Finally, register studies can be used for health service research, albeit with limitations (17).

In Spain, several projects have contributed to the development of new methodologies that could allow a better and easier evaluation of mental health services. For example, some of them have focused on the establishment of criteria to classify the structure, the organization and the use of services or have described differences in the provision of services in various autonomous communities (9, 11, 18).

The next step in the evaluation of services is to analyse the use of services by patients. Some studies have analysed the sociodemographic characteristics of the individuals in a geographical area and their relationship with psychiatric morbidity and use of services (18). However, the classification of patients based on their psychopathology and how it determines or influences health service use is a matter of debate (3, 19–21). Also, patients with schizophrenia tend to use not just one but a combination of services. One study described patterns of health service use, which are defined by the association of use of different services by individual patients. The description and analysis of these service use patterns could help providers to define packs of services which could increase efficacy and optimize provision.

Aims of the study

The objective of this study is to describe patterns of service use by out-patients with schizophrenia in Spain and how they are associated with patients' sociodemographic, clinical and social functioning characteristics.

Material and methods

This study is part of a co-ordinated project to evaluate treatment patterns and costs, and how they relate to outcomes in patients with schizophrenia in Spain. Four health areas participated in the project, representing several socioeconomic environments which differ in healthcare service organisation and availability.

Sample

The four health areas that participated in the study were located in Baix Llobregat (Barcelona), Loja (Granada), Salamanca (Madrid), and Burlada (Navarra). The catchment area in Baix Llobregat was the Gavà Mental Health sector, which includes three towns (Castelldefels, Gavà and Viladecans) and two villages (Begues and Sant Climent de Llobregat) that belong to the Barcelona metropolitan area. They are located approximately 10 km from Barcelona city centre. Patients were selected from the computerized register of the Gavà Mental Health Care Centre. Loja area is a rural area in the province of Granada. Cases were selected from the schizophrenia case register of Granada-Sur. The catchment area in Madrid was the Salamanca District, a neighbourhood in the centre of the city. Patients were selected from the psychiatric case register of the Community of Madrid, which includes all people that at any time had received treatment in any of the psychiatric services of the Madrid Autonomous Community. The inclusion area in Navarra is Burlada health district, which contains several villages around Pamplona and a rural area north of Pamplona in the Autonomous Community of Navarra. The mental health care centre is located in Burlada, a village next to the city of Pamplona. Cases were selected from the Health Information System of Navarra, which includes all patients who have been in contact with any of the public mental health services.

In each of the centres, a representative treated prevalence sample of cases with schizophrenia was selected. Inclusion criteria were: diagnosis of schizophrenia (DSM-IV criteria), age between 18 and 65 years, contact with the mental health care centres of the catchment areas during the

6-month inclusion period. Exclusion criteria were: patients with a primary diagnosis of neurological disorder or mental retardation. The recruitment of patients in the study took place between September 1997 and December 1998. Sample size calculation determined that at least 80 subjects should be included in each centre. In Granada, Madrid and Navarra, all cases who fulfilled entry criteria were included. In Barcelona, due to the size of the area, a random sample of cases was selected. All patients gave oral informed consent to participate in the study.

Methods

The evaluation consisted of two interviews, one with the patient and one with a family member (main carer in most cases), and a review of clinical records. The interviews were conducted by clinicians trained in the administration of the instruments. Before the interview, in the case of patients still receiving treatment in the mental health care centre participating in the study, the psychiatrist who had treated him/her was informed that the patient was participating in the study. The duration of each interview was approximately 60 min.

The instruments that were administered during the interview were:

- The Positive and Negative Syndrome Scale (PANSS) (22), Spanish version (23).
- The Global Assessment of Functioning Scale (GAF) (24).
- The Disability Assessment Schedule, short version (DAS-SV, 25). The DAS-SV is the disability measure in the multiaxial classification of ICD-10. It assesses four areas of disability: personal care, family roles, work and social adaptation.
- The Schizophrenia Cost Evaluation Questionnaire. This instrument contains an inventory of health and social service use and information on indirect costs (13, 26).
- A sociodemographic and clinical history questionnaire.

Statistical analysis

The identification of patterns of health service use was obtained by hierarchical clustering methods, using an agglomerative algorithm with the Ward procedure and the Euclidean distance. The clusters were created based on the services used by patients. The variables included were visits to a psychiatrist, psychologist, nurse, social worker, group therapy, emergency room visits, visits to the primary care physician, in-patient admissions, day hospital and day care visits. In order to avoid biases arising from different availability, only services that were provided in the four catchment areas were included in the analysis.

Cluster analysis was initiated with no previous grouping, considering each individual patient as an initial cluster. At each stage, a pair of existing groups was amalgamated according to the algorithm until the number of final groups selected was obtained. The model was tested with three, four and five final groups. The analysis showed the existence of five clearly differentiated clusters of health service use. The mean values of the variables used in the creation of the clusters were employed to characterize the clusters and define the diverse patterns of health service use of out-patients with schizophrenia. The differences among the groups for each of the service variables were analysed by means of an ANOVA test.

To analyse the validity of the service use patterns obtained, the sociodemographic, clinical, functioning and disability characteristics of the patients in each cluster were compared. Comparison of the mean values among the clusters of the continuous variables was performed with an ANOVA test, and the relationship of the clusters with categorical variables was assessed with contingency tables and χ^2 tests. All these analyses were performed with SPSS 11.5.1 (27).

Results

Of the 356 patients who were initially included in the study, 333 (93%) provided health service use data and were included in the analyses. Of these, 68.5% were male, 86.2% did not have a spouse or partner and 14% achieved university studies. Mean age was 38.4 years (SD 10.3).

Identification of patterns of health service use

Table 1 shows the results of the cluster analysis. The five factors were: 1, heavy out-patient mental health users (high out-patient users); 2, mental health and general health service users; 3, heavy hospital service users (heavy hospital users); 4, nursing service users; and 5, low users of mental health services (low users).

Patients in the high out-patient users (HOU) cluster showed the highest use of psychologists, social workers, group therapy, day hospital and day care centre services. Patients in the mental and

Table 1. Health service use pattern clusters. Clusters are characterized by the mean values of the services used to define them

Health service use patterns	*n*	Psychiatrist**	Psychologist**	Nurse**	Social worker**	Group therapy**	Emergency room visits**	Primary care physician**	In-patient admissions**	Day hospital*	Day care visits**
HOU	82	2.93	0.43	1.60	1.49	0.29	0.32	0.21	0.15	0.45	0.59
MGHSU	46	3.07	0.07	1.24	1.28	0.20	0.96	3.28	0.41	0.07	0.04
HHSU	59	2.61	0.19	1.19	0.53	0.02	1.97	0.14	2.80	0.15	0.22
NSU	38	1.03	0.00	3.55	0.08	0.00	0.00	0.00	0.00	0.00	0.00
LU	108	1.59	0.03	0.71	0.14	0.00	0.12	0.42	0.14	0.12	0.00
Total	333	2.25	0.16	1.41	0.69	0.10	0.60	0.66	0.63	0.19	0.19

HOU, heavy mental health out-patient users; MGHSU, mental and general health service users; HHSU, heavy hospital service users; NSU, nursing service users; LU, low users of mental health services.
*$P < 0.05$; **$P < 0.001$. Source: PSICOST data set.

general health service users (MGHSU) cluster showed more frequent use of psychiatrists and general practitioner visits. Patients in the heavy hospital service users (HHSU) group showed the most frequent use of hospital and emergency services and quite a high use of out-patient services. The nursing service users (NSU) show a high use of nursing services and a very low use of other resources. Finally the low users (LU) showed a low use of most of the services.

Sociodemographic and clinical characteristics of patient in the clusters

Several differences were observed regarding age and academic achievement among the patients in the clusters. Patients in the NSU group were older ($P < 0.05$) and showed a lower educational level ($P < 0.001$), while patients in the HU and MGHSU group had the highest proportion of patients with university studies. No significant differences were found regarding gender and marital status (data not shown).

Table 2 shows the clinical, functioning and disability results of the patients in each of the clusters. Significant differences were found in these assessments. Patients in the HSU group showed significant higher ratings in the positive and negative PANSS scale, while patients in the LU group showed the lowest ratings. Patients in the HHSU cluster also showed the lowest level of functioning as measured with the GAF, while the other clusters showed similar ratings. Finally, differences among clusters were confirmed with the measures of disability. Again, patients in the HHSU group showed the highest level of disability, and patients in the LU group the lowest.

The clusters of patterns of health service use were not homogeneously distributed among the different areas participating in the study (Table 3). The proportion of patients in the HOU and MGHSU groups was higher in Barcelona, while the highest proportion of patients in the HHSU group was found in Madrid. Around 80% of the patients of the NSU group were from Pamplona and more than 50% of the patients in the LU group were from Granada.

Discussion

In this study, patterns of health service use in a representative prevalence sample of out-patients with schizophrenia have been described. The patterns differentiate patients in five groups: high users of out-patient mental health services, low users, users of hospital services, users of nursing

Table 2. Comparison of psychopathology, functioning and disability among the patients of the different health service use patterns

	PANSS				DAS-SV			
Patterns	Positive**	Negative	Total**	GAF*	Personal care**	Occupational*	Other activities*	Family**
HOU	13.50	20.15	67.01	47.12	1.13	3.55	2.67	1.96
MGHSU	14.42	20.27	68.69	45.57	1.29	3.37	2.72	2.11
HHSU	16.48	22.13	77.04	39.14	1.88	4.14	3.02	2.83
NSU	10.69	20.17	60.72	47.86	0.92	4.19	2.17	1.72
LU	13.43	18.36	62.16	47.57	0.68	4.01	2.23	1.76

HOU, heavy mental health out-patient users; MGHSU, mental and general health service users; HHSU, heavy hospital service users; NSU, nursing service users; LU, low users of mental health services.
*$P < 0.05$; **$P < 0.001$. Source: PSICOST data set.

Table 3. Distribution of health service use patterns by centre

	n	Barcelona	Granada	Madrid	Pamplona
HOU	82	32 (39%)	3 (3.7%)	27 (32.9%)	20 (24.4%)
MGHSU	46	24 (52.2%)	1 (2.2%)	19 (41.3%)	2 (4.3%)
HHSU	59	13 (22%)	11 (18.6%)	26 (44.1%)	9 (15.3%)
NSU	38	5 (13.2%)	0 (0%)	2 (5.3)	31 (81.6%)
LU	108	12 (11.1%)	57 (52.8%)	9 (8.3%)	30 (27.8%)

HOU, heavy mental health out-patient users; MGHSU, mental and general health service users; HHSU, heavy hospital service users; NSU, nursing service users; LU, low users of mental health services.
Source: PSICOST data set.

care, and users of mental and general health services. These groups of patients have different clinical and functioning characteristics.

Patterns of health service use show consistency, but also variability, among geographical areas with different health service organization and provision. These differences may reflect equity problems in the delivery of mental health services, as the lack of some patterns in some areas may indicate that patients who could benefit from certain services may not be gaining access to them. Differences could also be related to sociodemographic and environmental differences (28, 29).

The statistical method, cluster analysis, used in this study allows the grouping of patients according to particular characteristics, in this case health service use (30). Very few studies have used this type of analysis to analyse service use, and the ones that have adopted a different rationale. Previous studies classified patients on the basis of clinical characteristics and the comparison of how service use varied among these groups of patients (2), while the approach presented here was to define the clusters based on the use of services and then compare the characteristics of patients in each cluster. For example, the EPSILON group compared out- and in-patients (10).

High users of out-patient mental health services, who receive help in community mental health services such as day care centres, day hospital services or social work facilities, show a high level of psychopathology, which is consistent with previous studies (13, 14). Patients in this group also present the highest educational level, which may also be related to higher perception of treatment needs. Previous studies have shown an inverse association between the effect of socioeconomic status and service use (28). Other authors have also found that higher educational level is associated with higher health service use (31). Also, patients in this group, as expected, were younger (32).

Another important group is the patients who use mental health and general health services for the care of their mental health problems. These patients require frequent medical out-patient care, also showing high clinical severity (33). They present high disability in personal care, which is associated with the need for general medical care services.

Two types of heavy users have been differentiated: heavy users of out-patient services and heavy users of in-patient services. In accordance with other studies, patients who use predominantly hospital services show the highest clinical severity and disability (34, 35). The severity of the disorder in these patients may lead to them not being able to access out-patient or continuity services, which leads to their care being taken by the hospital in case of worsening or relapse. In this case, hospital services, the most expensive of all mental health services, would be taking care of the most severe patients.

Patients who mostly use nursing services are older than patients in the other groups. Older patients have previously been found to be lower users of mental health services (36), which may be caused by the amelioration of relapses of schizophrenia with chronicity (37). The higher use of nursing services in older patients could also be caused by their higher level of chronic medical conditions.

Finally, the low user group, which are around one-third of the sample, have the best clinical status and the lowest level of disability. These patients present lower treatment needs and accordingly receive less intensive care, which reinforces the equity of the services provided.

Limitations

Some limitations should be considered. First, the design of this study is cross-sectional and no information about the effectiveness of the different use patterns can be obtained. Secondly, patterns of use have been defined based on the services the patients used during a whole year, which diminished the ability to detect relapses or patterns of use that lasted < 1 year. The definition of patterns is based on the mean level of use during 1 year. Thirdly, patient needs and how service use is related to these needs have not been analysed. Previous studies have found that patient needs is a very significant determinant of health service use (20–22). Fourthly, regional differences in the distribution of the clusters of the patterns of care were not fully analyzed because of the limited number of patients in each of the areas. Finally, only 1 year of patients' treatment was assessed and no information on the maintenance of the patterns over time has been gathered.

In conclusion, this study has differentiated five patterns of mental health service use by outpatients with schizophrenia. Services should adapt to these patterns as they indicate areas in which coordination between services may be more necessary. If the services a patient may need during a given period is defined, a system to coordinate them should be put in place. This should help to overcome the low guideline adherence in schizophrenia (38). Future work should analyse the stability in time of these patterns.

Acknowledgements

This study has been funded by the Instituto de Salud Carlos III (Project FIS 97/1298 and RETICS RIRAG Network G03-061). We want to thank Juan Tello (PhD), Alejandra Pinto Meza (PhD), and Ana Fernández for their comments in previous versions of the manuscript. Our thanks to the patients who participated in the study.

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