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Brief report

In-patient care costs of patients with bipolar I disorder: A comparison between two European centers

A.M. Gonzalez-Pinto [a,*], R. Dardennes [b], M. de Zélicourt [d], P. López [a], R.G. Oliveros [a], E. Vieta [c], S. Barbeito [a], E. Echevarria [d], F. Fagnani [e]

[a] CIBERSAM, Santiago Apóstol Hospital, Vitoria, University of the Basque Country, Spain
[b] Clinique des Maladies Mentales et de l'Encéphale, Sainte-Anne Hospital, Paris, Cochin Faculty of Medicine, University Paris 5, Paris, France
[c] Bipolar Disorder Program, Institute of Neuroscience, Hospital Clinic, University of Barcelona, IDIBAPS, CIBERSAM, Barcelona, Spain
[d] University of Bask Country, Spain
[e] Cemka-Eval, Bourg-la-Reine, France

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ABSTRACT

Background: Bipolar disorder (BPD) is a disabling disease with high morbidity rates. An international (Spain, France) comparative study about hospitalizations and in-patient care costs associated with BPD I was performed. Centers were included if they had access to a database of computerized patient charts exhaustively covering a defined catchment area.
Methods: Economic evaluation was performed by multiplying the average cumulated annual length of stay (LOS) of hospitalized bipolar patients by a full cost per day of hospitalization in each center to obtain the corresponding annual costs.
Results: Hospitalization rates per annum and per 100,000 individuals (general population aged 15+) were similar between France (43.6) and Spain (43.1). There were only slight differences in relation to length of stay (LOS) per patient hospitalized with 18.1 days in Spain and 20.4 days in France. The overall estimated annual hospitalization costs were in the same order of magnitude after adjustment to an adult population of 100,000: €232,000 (Spain) and €226,500 (France). Mixed episodes had the longest LOS followed by depressive episodes, while manic episodes had the shortest ones. Mania was the most costly disorder representing 53.7% of annual BPD in-patient care costs.
Conclusions: BPD I care requires large resources and frequent hospitalizations, especially during manic episodes. Depressive and mixed episodes require longer hospital stays than manic episodes. Out-patient costs should now be evaluated.

1. Introduction

Bipolar disorder (BPD) is a chronic illness that may involve multiple recurrences and result in substantial psychosocial impairment (Gonzalez-Pinto et al., 1998, 2003; Suppes et al., 2000; de Leon et al., 2003; Tohen et al., 2007; Martinez-Arán et al., 2007). Despite the recurring and disabling nature of BPD, only a few cost-of-illness studies have been published: two in the US (Wyatt and Henter, 1995; Begley et al., 2001) including one based on a lifetime cost model, and one in the UK (Das Gupta and Guest, 2002). These studies suggested that in-patient care was an important cost driver as far as the direct costs of BPD are concerned (Bowden and Krishnan, 2004).The purpose of this study was to estimate the rate of hospitalizations in two European centers located in Spain and France, and the annual cost of hospitalizations of patients with bipolar I disorder. Secondary objectives were to estimate the costs according to the polarity of the episodes of mood disorder (depression and/or mania) that led to hospitalization in the Spanish center.

* Corresponding author. Division of Psychiatry Research, Santiago Apostol Hospital, Olaguibel 29, 01004 Vitoria-Gasteiz, Alava, Spain. Tel.: +34 945007770; fax: +34 945 007764.
E-mail address: ANAMARIA.GONZALEZPINTOARRILLAGA@osakidetza.net (A.M. Gonzalez-Pinto).

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2. Patients and methods

Each center was selected on a) having access to a database of computerized patient charts of bipolar patients with exhaustive data to allow estimation of annual hospitalization rates; and b) being able through its information system to relate the center's activity to a precisely defined catchment area or being the only psychiatric facility available for inpatient care of BPD patients in that area.

Economic evaluation was performed by multiplying the average cumulated annual length of stay (LOS) of hospitalized bipolar patients by a full cost per day of hospitalization in each center to obtain the corresponding annual costs. To ensure comparability between centers, these estimates were standardized on a reference adult population (15 and over) of 100,000 individuals living in each catchment area.

According to the previously described criteria, the selected centers in each country were the Psychiatric Department of Santiago General Hospital in Vitoria (Spain) and the Sainte Anne Psychiatric Hospital (Paris).

3. Classification

In Sainte Anne Hospital, the International Classification of Diseases, 10th Edition (ICD-10) was used to identify hospital stays with a main diagnosis of bipolar disorder. Hospitalizations for manic episodes were identified using the following codes (Organisation Mondiale de la Santé, 1993): F30 and F31. Therefore, it was not possible to identify the polarity of episodes. In Santiago Hospital, the database is based on the ICD-9 and the following codes were used to identify hospital stays: 296.0, 296.2, 296.3, and 296.4. In each country, the lifetime prevalence of the disease was estimated at 0.82% i.e. the average lifetime prevalence of BPD I in the adult population according to a recent meta-analysis (de Zelicourt et al., 2003).

3.1. Hospitalization unit costs

In Spain, the cost per day was calculated using the DRG system. Bipolar disorder is included in the DRG 430 (psychosis). There is an internal publication by the Central Social Security Office (Osakidetza) where the total cost per DRG is provided along with the corresponding mean LOS. This served to calculate a mean cost per day. The last values published for the year 2002 were used in this analysis. In France, we used the average full cost per day in psychiatry provided by the AP-HP (University Hospital in Paris) accounting system which was €246.97 in the year 1999 (Direction des Finances, département du contrôle de gestion de l'AP-HP, comptabilité analytique de l'année, 1999). This unit cost was then increased proportionately to 2003 using the inflation rate for medical services between 1999 and 2003.

4. Results

4.1. Annual hospitalization rates

Table 1 presents the hospitalization rates for bipolar type 1 patients observed in each area. All types of episodes together, the annual hospitalization rate for BPD type I in the adult population was similar in Paris and Vitoria (respectively 43.6 and 43.1/100,000 inhabitants). The annual hospitalization rate among prevalent cases in each area was consecutively the same in Paris and Vitoria (5.3%), assuming the equivalence of prevalence rates. BPD patients were more frequently hospitalized within the year in Paris than in Vitoria with a mean number of hospitalizations of 1.53 per patient per year in Paris versus 1.23 in Vitoria.

Table 1
Hospitalization rates for bipolar disorder type 1 in the different catchment areas.

Hospital	Santiago Hospital (2000)	Sainte Anne Hospital (2003)
Location	Alava Basque Country, Spain	South of Paris, France
Population >15 years of age in the catchment area (1)	255,000	550,000 [a]
Annual number of hospital stays (2)	110	240
Annual number of patients hospitalized at least once (3)	89	157
Mean annual number of hospitalizations per patient hospitalized (2)/(3)	1.23	1.53
Hospitalization rate/year/100,000 inhabitants (2).105/(1)	43.1	43.6
Estimated number of prevalent bipolar I patients (0.82% of adult population) (4)	2,091	4,510
Annual hospitalization rate among estimated prevalent patients (2)/(4)	5.3%	5.3%
% of patients hospitalized at least once among prevalent patients (3)/(4)	4.3%	3.5%

[a] Paris Districts 5, 6, 14, 15, 16.

4.2. Mean length of stay according to type of episode

The mean length of stay (LOS) per hospitalization according to the type of episode was 18.1 in Spain and 20.4 in France. The LOS showed some differences between type of episode in Spain, being 17.5, 18.4 and 21.9 days for manic, depressive and mixed episodes respectively. As shown in Table 1, a fraction of patients were hospitalized several times during the year of reference: there were 18.0% (16 out of 89) in Spain with at least 2 hospital stays within the same year. The corresponding episodes were almost all of the same polarity in the Spanish center (15 out of 16 or 93.7%).

4.3. Annual inpatient costs

The mean annual cumulated numbers of hospital days per 100,000 inhabitants appear relatively similar between the two areas (Table 2).The mean annual cost associated with hospitalizations for acute episodes of mood disorder in patients with bipolar I disorder, irrespective of their types, was estimated to be €231,976/100,000 and €226,467/100 000, respectively in Vitoria and in Paris. In Vitoria, manic episodes appeared to constitute about half of the total estimated costs (53.7% mania, 23% depression, 15.4% mixed episodes), probably owing to the lower frequency of hospitalization for depression