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"THE SENSE OF AN ENDING: THE CLOSING OF A PSYCHIATRIC

HOSPITAL IN LISBON- HOSPITAL MIGUEL BOMBARDA"

COMPARATIVE STUDY OF LONG-STAY DISCHARGED
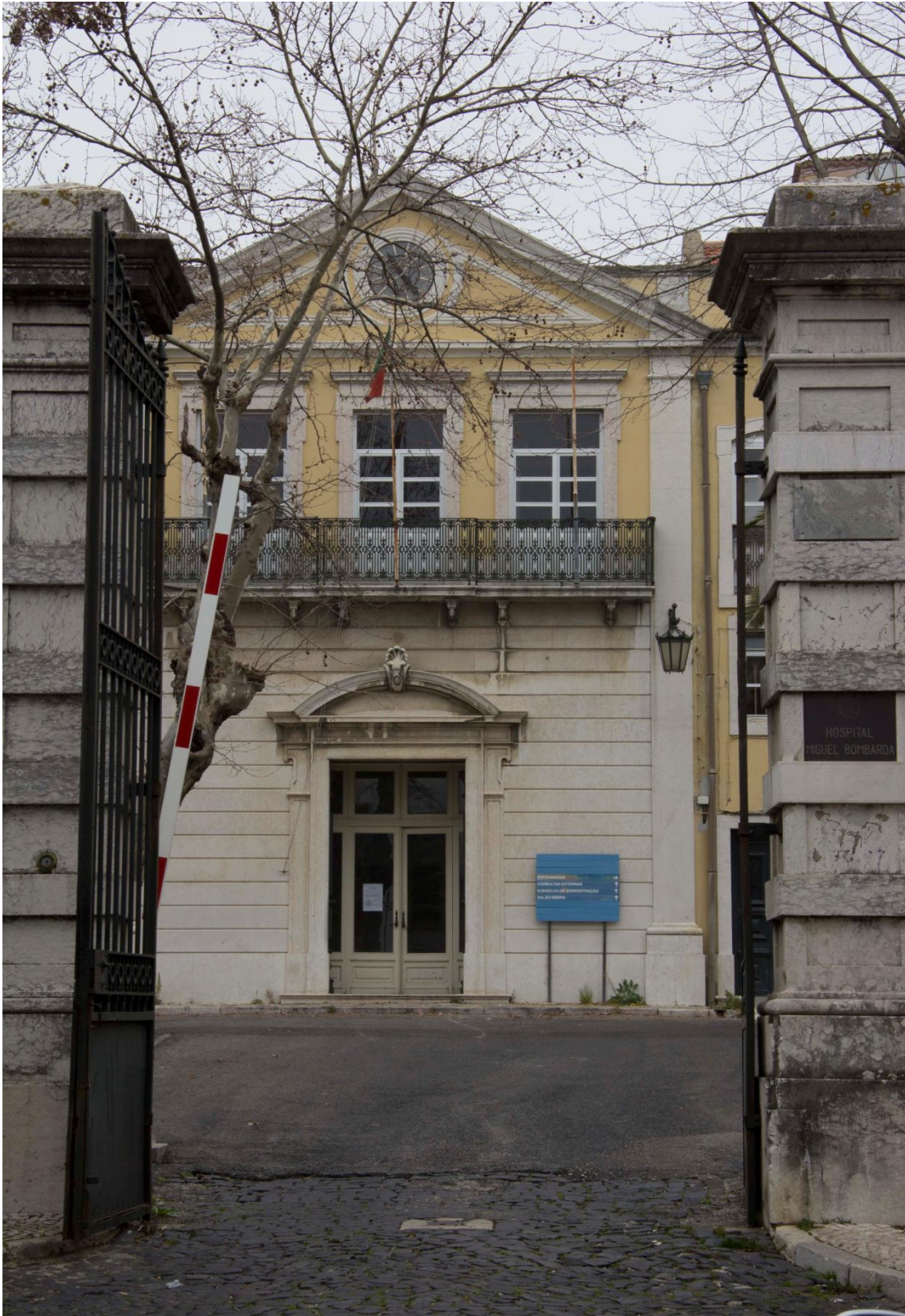
PSYCHIATRIC PATIENTS WITH THOSE STILL

INSTITUTIONALIZED

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"THE SENSE OF AN ENDING"

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ABSTRACT

This study was conducted to assess the effects of deinstitutionalization of "long-stay" patients during the process of closing Hospital Miguel Bombarda (2007-2011). This process included the fusion, in 2008, of the two main psychiatric hospitals in Lisbon-Hospital Miguel Bombarda (HMB) and Hospital Júlio de Matos (HJM), into Centro Psiquiátrico Hospitalar de Lisboa (CHPL). A control group of still institutionalized patients in CHPL (n=166) was used as a comparison with the deinstitutionalized population (n=146). Of this 312 initial sample only 142 (76 cases and 66 controls) were included, the main causes of exclusion being diagnoses (organic disease, dementia and mental retardation- as first diagnoses) and transference between hospitals. Deinstitutionalization is mainly evaluated in terms of psychopathology, use of services, satisfaction, crime, vagrancy and deaths. The results show that most long-stay patients can successfully leave psychiatric hospitals and be relocated in the community without an increase in psychopathology, crime or vagrancy. Satisfaction seems to be improved in those patients. On the other hand, mortality remains an issue of concern: Although there was no possibility of comparing it between cases and controls, the Standard Mortality Rate (SMR) in our study was found to be much higher than expected judging by other studies results. A longitudinal further study of this same population will be the matter for a future investigation, possibily compared with another similar population from a desinstitutionalization programme in another country.

Deinstitutionalization-Long-stay psychiatric patients- Community-Reinstitutionalization- Satisfaction- Mortality- Criminality

RESUMO

Este estudo foi realizado com o objectivo de conhecer os efeitos da desinstitucionalização dos doentes psiquiátricos crónicos durante o processo de encerramento do Hospital Miguel Bombarda (2007-2011). Este processo incluiu a fusão, em 2008, dos dois principais hospitais psiquiátricos de Lisboa- Hospital Miguel Bombarda (HMB) e Hospital Júlio de Matos (HJM), no Centro Psiquiátrico Hospitalar de Lisboa (CHPL). Foi criado um grupo controlo de pacientes ainda hospitalizados no CHPL (n=166) para comparação com o grupo de casos desinstitucionalizados (n=146). Desta amostra inicial (n=312) apenas 142 (76 casos e 66 controlos) foram incluídos, sendo as principais causas de exclusão: diagnóstico (patologia orgânica, demência ou debilidade mental, como diagnóstico primário) e transferência entre hospitais. A desinstitucionalização foi principalmente avaliada em termos de psicopatologia, utilização de serviços, satisfação, crime, condição de "sem abrigo" ou morte. Os resultados mostraram que a maioria dos doentes crónicos pode sair do hospital psiquiátrico para a comunidade sem agravamento da psicopatologia, aumento do crime ou da condição de "sem abrigo". A satisfação parece estar aumentada na população desinstitucionalizada. A mortalidade, por outro lado, revelou-se uma questão problemática: apesar de não ter sido possível estabelecer uma comparação entre casos e controlos, a Taxa de Mortalidade Standard encontrada neste estudo foi muito superior

ao esperado, de acordo com os resultados encontrados na literatura. Um estudo longitudinal da mesma população poderá ser objecto de futura investigação, possivelmente comparada com outra população similar de um programa de desinstitucionalização noutro país.

Desinstitucionalização- Doentes psiquiátricos crónicos- Comunidade- Reinstitucionalização- Satisfação- Mortalidade- Criminalidade

RÉSUMÉ

Cette étude a été menée afin de déterminer les effets de la désinstitutionnalisation des patients chroniques lors de la fermeture de l'hôpital Miguel Bombarda (2007-2011). Ce processus comprenait la fusion en 2008 de deux grands hôpitaux psychiatriques de Lisbonne: À savoir, Hôpital Miguel Bombarda (HMB) et Hôpital Julio de Matos (HJM), maintenant Centre de l'Hôpital Psychiatrique de Lisbonne (CHPL). Il a été créé un groupe contrôle des patients toujours hospitalisés à CHPL (n = 166) pour comparer avec les cas désinstitutionnalisés (n = 146). De cet échantillon initial (n= 312) à peine 142 (76 cas et 66 contrôles) ont été inclus, les principales raisons d'exclusion: diagnostique (maladie organique, démence ou d'arriération mentale comme diagnostic primaire) et les transferts entre hôpitaux. La désinstitutionnalisation a été principalement évaluée en termes de psychopathologie, de l'utilisation des services, la satisfaction, la criminalité, les "sans abri" et de la mort. Les résultats ont montré que la majorité des malades chroniques peuvent quitter l'hôpital psychiatrique et s´intégrer dans la communauté sans aggravation de la psychopathologie, augmentation de la criminalité ou du nombre de "sans-abri". La satisfaction semble être en hausse dans la population désinstitutionnalisée. Toutefois, la mortalité s'est avéré être une question problématique, même si il n´a pas été possible d'établir une comparaison entre les cas et les contrôles, le Taux de Mortalité Standard estimé dans cette étude fut beaucoup plus élevé que prévu, en tenant compte des résultats établis dans la littérature. Une étude longitudinale de la même population pourra faire l'objet de futures recherches, peut-être comparé à une population similaire d'un programme de désinstitutionnalisation dans un autre pays.

Désinstitutionnalisation- Patients psychiatriques chroniques- Communité- Réinstitutionnalisation- Satisfaction- Mortalité- Criminalité

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"THE SENSE OF AN ENDING: THE CLOSING OF A PSYCHIATRIC HOSPITAL IN LISBON- HOSPITAL MIGUEL BOMBARDA"

COMPARATIVE STUDY OF LONG-STAY DISCHARGED PSYCHIATRIC PATIENTS WITH THOSE STILL INSTITUTIONALIZED

1. Objectives and expected achievements

Portuguese psychiatry has been in a process of change with the government approval, in 2008, of a National Plan on the future of public mental health care. The Plan advocates the need for further integration of psychiatry into the regular health care and social service system through gradually dismantling the public psychiatric hospitals. In 2008, *Hospital Miguel Bombarda (HMB),* built in the nineteen century and located in the centre of Lisbon, had merged with *Hospital Julio de Matos* (HJM) into the *Centro Hospitalar Psiquiátrico de Lisboa" (CHPL).*That hospital restructuration had resulted in the progressive reallocation of patients in the community until the complete closure of *Hospital Miguel Bombarda (HMB).* This process of reorganization started in 2007, when the number of residents in HMB was 69 and finished with the complete close of residents ward in HMB, in December/2011, when the last 26 patients were transferred all together to a community facility. As a whole, CHPL had a progressive reduction in its number of beds, for both chronic and acute patients, except for the forensic Unit that remained intact when transferred from HMB to HJM setting in the CHPL. It was an eclectic process including the creation of a global information system, sectorization of geographic districts, decreasing of both, acute patients admissions and their length of stay, creating of a convalescence Unit and building multidisciplinary teams with the integration of social workers in every Service.

The objective of this study is to find out what happened to the "long-stay" patients that were discharged from *Hospital Miguel Bombarda* and compare them with a control population of still institutionalized patients in *Centro Hospitalar Psiquiátrico de Lisboa (CHPL)-* since the beginning of *Hospital Miguel Bombarda* closure process (January/ 2007) until its complete closure (July/ 2011). The last 27 long-stay patients of HMB were only discharged to the community in the late summer of 2011. Those patients functioned as "controls" (institutionalized patients) of HMB chronic ward because they were the last ones to remain institutionalized and so, considered "difficult to place" patients as the controls still institutionalized in HJM. Just for interest, the final closure of HMB was in February/2012, with the transference of "Day-hospital" to HJM (but those were not long-stay institutionalized patients).

This study is motivated by an attempt to understand the deinstitutionalization with regard to the closure of psychiatric hospitals in Lisbon, Portugal. Here we will focus mainly on the individual-patient clinical outcomes and on the illness- treatment levels. It is intended to investigate if discharged patients, in the meanwhile, after deinstitutionalization and before observation in community settings, have became homeless, dead, in prison, or reinstitutionalized.

The deinstitutionalization is in itself, the intervention of this study. The outcome indicators are measured in terms of sociodemographic, clinical, use of services, forensic

data and satisfaction variables, at the time of the only interview made to each patient in this study.

A control population of still institutionalized patients regarding the same catchment area is used to compare the discharged patient population. In this control population we tried to match sociodemographic characteristics similar to the study population.

We consider the population of "long-stay" hospitalized patients, meaning they had been in the hospital for at least 1 year continuously, for the last time they were admitted before deinstitutionalization.

It was expected that we could find where those patients were placed; either in the community or in other institutions, and that we would be able to interview them. The target population was recruited by phone. The main setting for their interviews was the C.H.P.L. (Centro Psiquiátrico Hospitalar de Lisboa) at "Consulta Externa", ambulatory service. The control group was be recruited by direct contact with the CHPL services and interviewed in "loco" at the services for chronic patients where they are as in-patients.

Deinstitutionalization has been evaluated on several outcomes. Schizophrenia, as all types of mental disorders, is involved in the increasing of mortality risk (Meloni, 2006). The mortality gap between schizophrenic patients and the general population increased from the 1970s and peaked in the mid-1990s (Bush, Taylor, 2010). Also, deaths among schizophrenic patients are higher from unnatural causes namely suicides and accidents (Miller, Paschall, 2006; Talaslahti, Alanen, 2012). Mortality rate does not seem to be increased in deinstitutionalized patients compared to schizophrenic patients in general (Trieman, Leff, 1999). Besides, according to Craig and Lin (1981), deinstitutionalization may have a beneficial effect on the mortality of elderly patients who remained hospitalized. Deinstitutionalization reform does not seem to increase the prevalence of homeless people (Geddes, Newton, 1994, Leff, Trieman, 1996; Trieman, Leff, 1999). The underutilization of mental health services by ethnic minority' patients, consuming less ambulatory services can lead to increased rehospitalizations (Mohan, McCrone, 2006). Only a small percentage of deinstitutionalized patients engaged in crime (Leff, Trieman, 1996, Hobbs, Newton, 2001)- 2% to 4% according to Trieman, Leff, 1999 and Lesage, 2000, respectively; just a very small percentage become homeless after discharge (1% according to Trieman, Leff, 1999, and 4% according to Lesage, 2000); a continued need for acute hospitalizations for relapses of psychotic disorders will be present; resulting in a significant percentage of rehospitalizations as readmissions for acute psychiatric symptoms (Rothbard, Kuno, 1999; Trieman, Leff, 1999, Barbato, Avazo, 2004). The number of episodes of rehospitalization decreases over time despite the fact that the number of total days of hospitalization may increase (Rothbard, Kuno, 1999). Rehospitalization rate is positively related to number of prior hospitalizations (Gooch, Leff, 1996; Pokorny, Kaplan, 1983), and to cumulative months of prior hospitalizations and duration of illness (Pokorny, Kaplan, 1983; Olfson, 1999). Rehospitalization, was found in 15% of the deinstitutionalized population by Leff and Trieman, 1996. It is more frequent among patients with co-morbid alcohol use disorders and a history of multiple previous admissions (Olfson, 1999) and younger patients have more risk of readmission than older patients (Gooch, Leff, 1996; Leff, Trieman, 1996). The great majority of patients are content to remain in the community (Leff, Trieman, 1996; Hobbs, Newton, 2001).

In summary, according to the literature, there should be neither deterioration (except for cognitive deterioration especially in already demented patients) nor an improvement in patient's clinical state over the controls. Some authors even refer to an improvement in psychotic symptoms with reintegration in the community (Hobbs, Tennant, 2000). A high proportion of patients have been found that, in spite of having active psychotic symptoms- delusions and/or hallucinations- show ability to live in the community (Leff, Trieman, 2000; Hobbs, Tennant, 2000; Hobbs, Newton, 2001). The results are expected to confirm that most long-stay patients can successfully leave psychiatric hospitals (Leff, Trieman, 1996; Barbato, Avazo, 2004, Ryu, Mizuno, 2006).

2. State of art and innovative aspects of the study

For Thornicroft and Tansella, the recent history of mental health services can be divided in three periods: 1- the asylum period; 2- the declining of the asylum period and 3- the balancing mental health care period (Vidal, Bandeira, 2008). Deinstitutionalization, corresponding to the second period or the period of mental health reform, has been defined by Bachrach (1976, 1978) as the contraction of traditional institutional settings with expansion of community based services; however, a too rapid reduction in mental hospitals beds can cause problems such as repeated admissions, known as the "the revolving door" phenomena (Bachrach, 1986).

Historically, at an international level, deinstitutionalization started in 1955 in the United States of America (Talbott, 2004) mainly initiated by the introduction of the antipsychotic chlorpromazine in the formularies of state hospitals. However, it was only initiated, in many western countries, in the late sixties and early seventies of the last century, after the massive introduction of neuroleptics (Madianos, 2002). This revolution continued impelled by other new pharmacological agents like imipramine and lithium as well as the development of the field of psychiatric rehabilitation and the advocacy movements. Since then, lengths of stay have dropped dramatically, however, relapsing is a reality, and over 40% of persons suffering from schizophrenia will relapse in one year (Talbott, 2004).

Deinstitutionalization of mentally ill persons has three components: the release of these individuals from hospitals into the community, their diversion from hospital admission, and the development of alternative community services. The greatest problems have been in creating adequate and accessible community resources (Lamb, Bachrach, 2001).

Henderson and Thornicroft (1997) developed the idea of the manifest and latent functions of psychiatric hospitals in order to explain that treatment and care functions are not the only dimensions to consider in the understanding of the impact on patients of the closure of psychiatric hospitals (Lesage, 2000). According to the literature, long-term hospitalization does not add anything for those suffering from chronic mental illness (Talbott, 2004).

There are four recent series of deinstitutionalization studies (Lesage, 2000) conducted by four main authors and their teams: Leff in 1996 (Team for Assessment of Psychiatric Services-TAPS, United Kingdom), McGrew in 1999 (Central State Hospital-CSH, USA), Lesage in 1999 (Study of Montreal's largest psychiatric hospital-Mtl, Canada) and Rothbard & Kamis-Gould in 1999 (Philadelphia State Hospital- PSH, USA).

Deinstitutionalization was proven to be successful when there where strong ideological or humanitarian motives and when psychiatric reform was a priority (Madianos, 2002). To have acceptance by public opinion, the integration of Mental Health Services in the community have to be proved not only cost-effective but also evidence-based and to respect the Human Rights of the MHS users and the community itself.

In Portugal, the closing of psychiatric hospitals started not long ago and there have been no published studies on the outcomes of discharged patients. Portugal has low rates of chronic psychiatric hospitalization, the majority of psychiatric beds being located in religious institutions (Jara, 2007). But the important argument is that, despite the numbers, deinstitutionalization reform is a matter of Human Rights. Combating stigmatization, paternalism, incapacitation and lack of autonomy is implicit in this movement.

Hospital Miguel Bombarda, the oldest psychiatric hospital in Portugal, is in process of closing since the end of the year 2007. No data have been published on the subject. This study is innovative because it tries to find out, for the first time in this process, which are the outcomes of the deinstitutionalized patients, namely if they were reinstitutionalized and where are they actually living. It is a very simple study, comparing the target and the control populations, with objective measures. There is no other intervention evaluated beside deinstitutionalization. But, any study is also an i*ntervention*- the fact that we apply a clinical instrument and talk to the patients and careers is already a factor of impact on the patients' mental health and the carers' feelings of security. The dissemination of results of the study as useful information can itself be considered also part of the deinstitutionalization intervention.

As for *utility of this study*, it can be useful for planning and to influence public opinion and policy makers. It can also be a starting point for a future prospective study on the outcomes of deinstitutionalization for the same study sample and its extension to all long-stay patients that will be deinstitutionalized until the already announced closure of HJM. In a broader perspective, the purpose of this study can be considered to be the evaluation of the policy of closing psychiatric hospitals in Portugal.

3. Methods

A cross-sectional study was conducted with a sample of **312 psychiatric "long-stay" individuals:** 146 (46,8%) are deinstitutionalized patients- the study population- and 166 (53,2%) are "long-stay" still institutionalized patients- the control population. The assessments took place in *Centro Hospitalar Psiquiátrico de Lisboa* (CHPL).

Target population- "Long-stay" psychiatric patients discharged from *Centro Hospitalar Psiquiátrico de Lisboa* (CHPL), including *Hospital Miguel Bombarda* (HMB) and *Hospital Julio de Matos* (HJM), during the period of *2007-2011*. The study sample will be the whole of that population meeting the criteria above. Those patients will be divided into three groups according to the lengh of deinstitutionalization by the time of observation: deinstitutionalized for less than 3 months (Furlan, Zuffranieri, 2009), 6 to 12 months (Furlan, Zuffranieri, 2009) and more than one year. The dates of deinstitutionalization for cases vary between jan./2007 and Dec./2011. The dates of last admission (institutionalization) for cases vary between 09/03/1943 and 17/01/2010.

Inclusion criteria- "Long-stay" psychiatric patients having been discharged from CHPL from 2007 to 2011. Patients should have been hospitalized in this psychiatric institution for at least one year or more to be considered "long-stay" patients (Leff, Trieman, 2000).

Exclusion criteria- The patients not found after discharge are excluded for obvious reasons. Patients from acute units or forensic units are also excluded. Patients that have been placed outside the CHPL catchment area are to be excluded too. Patients with main psychiatric diagnoses of dementia or mental retardation are to be excluded. Patients transferred from one psychiatric hospital to another within *Centro Hospitalar Psiquiátrico de Lisboa* (transferred from HMB to HJM) during the study period are also excluded because they were considered to have had another intervention besides deinstitutionalization: the transference between hospitals.

Control population- "Long-stay" psychiatric patients still institutionalized in *Centro Hospitalar Psiquiátrico de Lisboa* (CHPL), including *Hospital Miguel Bombarda* (HMB) and *Hospital Julio de Matos* (HJM), during the period of controls observation-March to September of 2011, placed in the chronic units. Those chronic units are one in HMB (Residentes) and three in HJM (Pav. 16-A, Pav. 21-C e Pav. 30). The dates of last admission (institutionalization) for controls vary between 08/06/1953 and 30/08/2010.

Univariate, Bivariate (parametric and non-parametric) and Multivariate Statistical methods were used.

3.1 Sampling and data collection

Participants were selected through the following method: the maximum number of the study population were contacted by telephone and invited to collaborate in the study. For the control group, the selection procedure has been to choose individuals as similar as possible as those in the study population regarding socio-demographic characteristics. The idea was to have two socio-demographically homogeneous groups. To take into account possible differences between hospitals, for the control group in each hospital (HBM and HJM) individuals as "similar" as possible were selected.

Data were collected between March and December 2011, through a questionnaire applied either in consultation, through direct observation of the individuals, or by telephone. So, some of the HMB controls became cases when they left the hospital but for this study were only considered controls.

The questionnaire comprised closed-ended questions on socio-demographical and clinical data, the occurrence and length of use of services, self-perception on satisfaction, criminality and main psychopathological symptoms.

Unfortunately, from the initial sample of 312 individuals, only 142 (76 from the study population and 66 from the control group) were followed until the end of the process (Appendix, Table A1). There was an exclusion of 70 cases (47,9%) and 100 controls (60,2%), the main reasons for that exclusion: being first diagnoses of mental retardation, epilepsy, organic psychoses or dementia (26 cases and 58 controls), transfer hospitals (37 controls), death (29 cases), no contact (7 cases) and duration of institutionalization less than 1 year (7 cases).

The study was approved by the Clinical Direction of the institution CHPL (see-Anexes).

3.2 Measures

Socio-demographic characteristics included sex, age (continuous variable), ethnicity ('white', 'others'), marital status ('single', 'married', 'other'), living situation ('alone', 'with relatives', 'others'), occupation ('employed/student', 'unemployed', 'pensioner'), accommodation ('domestic', 'hospital', 'others') and number of recent contacts with family members or relatives.

Other patient characteristics were also analyzed: Diagnoses ('schizophrenic disorders', 'affective disorders', 'personality disorders', 'alcohol abuse'), somatic pathology already recognized ('yes'/'no'), adherence to treatment ('yes'/'no'), type of treatment (oral, depot), drug use ('yes'/'no'), alcohol use ('yes'/'no'), tabagism ('yes'/'no'), continuity of care in ambulatory services and emergency care ('yes'/'no') and the number of previous admissions; continuous variables included length of stay and total number of years of institutionalization before deinstitutionalization discharge date, both measured in years. Self-perception of satisfaction, criminality, anxiety, depression, suicidality, suspiciousness, hallucinations and temporal orientation were measured using a dichotomous question ('yes'/'no').

3.3 Data analysis

Descriptive analysis was conducted for background characteristics of the patients; continuous variables are presented as mean ± standard deviation. The associations between socio-demographic characteristics and groups were analyzed using the Chi-Square test, Mann-Whitney U tests, t- test, Fisher test and Kruskal-Wallis test (depending on the specific situation). A logistic regression analysis was performed to identify factors associated with the probability of being rehospitalized. The following variables were included: age, sex, ethnicity and some clinical, behavior and pathological variables. The magnitude of the associations was estimated by means of odds ratios (OR). The software SPSS 18.0 was used for all the data analysis.

4. Results

The original sample was composed of **312 psychiatric "long-stay" individuals,** 146 (46,8%) deinstitutionalized- the study population (cases), and 166 (53,2%) still institutionalized- the control population (controls).

Only **142 patients** (76 from the study population and 66 from the control group) were **followed** until the end of the process, and so, considered the "valid" sample, of which 53,5% are cases (**76 cases**) and 46,5% are controls (**66 controls**).

Figure 1. Distribution of cases and controls diagram
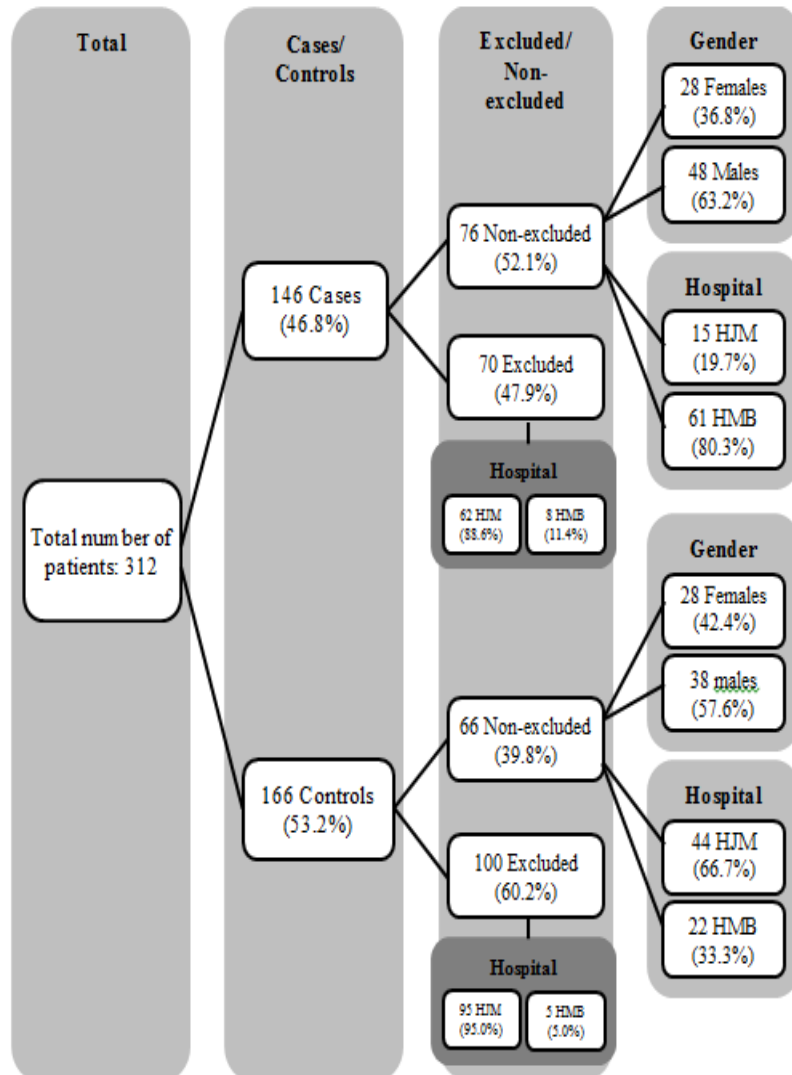
4.1 Characteristics of patients by cases and control groups

As can be seen in Table 1, of the total sample, **more than a half was male** (60,6%), single (78,2%), white (93%) and the **mean age is 61,5 years, the controls being a mean of 3 years older than the cases**. The proportion of patients who had **recent contact with family members or relatives is 60%.** For all these variables, there were no significant differences between study population and the control group.

Table 1. Socio-economic characteristics of the patients

		Total		Cases		Controls		*p-value*
		n	%	n	%	n	%	
Gender	Female	56	39,4	28	36,8	28	42,4	0,497[1]
	Male	86	60,6	48	63,2	38	57,6	
Marital Status	Single	111	78,2	56	73,7	55	83,3	0,165[a]
	Other	31	21,8	20	26,3	11	16,7	
Ethnicity	White	132	93,0	70	92,1	62	93,9	0,751[2]
	Other	10	7,0	6	7,9	4	6,1	
Recent contact family	N	57	40,1	32	42,1	25	37,9	0,608[a]
	Y	85	59,9	44	57,9	41	62,1	
Age (yrs)		Mean	SD	Mean cases	SD	Mean controls	SD	p-value
		61,5	14,3	60,0	14,8	63,0	13,6	0,202[3]

Regarding hospitals, most of the patients (74%) came from HJM: 58% of the cases and 42% of the controls came from HJM (see Appendixes, Table A2).

When analyzing clinical variables (Table 2), no significant differences were found across **diagnoses**, with **most of the patients having schizophrenic disorders**, both for cases (92%) and controls (89%), and across **adherence of the treatment** (95% for the cases and 97% for the controls)- see Appendix, Table A3). Although not significant, there is a difference between cases and controls concerning **type of treatment**-"depot" treatment was more frequent in the controls (62% vs 49%) and **satisfaction** was more frequent among deinstitutionalized patients or "cases" (92,6%) than among institutionalized patients or "controls" (76%) - Appendixes , Table A4 and A5. If we consider the whole sample, 55,6% of the patients had already been recognized with a **somatic pathology** (Table 2) and the difference between cases and controls is significant, with a **higher value obtained for the controls**.

The **average number of previous admissions is 4**, being significantly lower for the cases (3 vs. 5 for the controls) and the total number of **years of institutionalization** before deinstitutionalization discharge date has a **mean value around 20 years**, being also significantly lower for the cases (17 vs. 23 for the controls).

Table 2. Clinical characteristics of the patients

		Total		Cases		Controls		p-value
		n	%	n	%	n	%	
Diagnoses	Schizophrenic disorders	129	90,8	70	92,1	59	89,4	0,576[4]
	Affective disorders	12	8,5	5	6,6	7	10,6	0,39[a]
	Personality disorders	7	4,9	4	5,3	3	4,5	1,00[5]
	Alcohol abuse	6	4,2	4	5,3	2	3	0,686[b]
Somatic pathology	N	63	44,4	46	60,5	17	25,8	0,000[a]
	Y	79	55,6	30	39,5	49	74,2	
Adherence to treatment	N	6	4,2	4	5,3	2	3	0,686[b]
	Y	136	95,8	72	94,7	64	97	

Total number of years of institutionalization before deinstitutionalization discharge date	Mean	SD	Mean	SD	Mean	SD	p-value
	20,23	16,993	17,21	16,271	23,71	17,26	0,011[6]
Previous admissions	3,98	4,847	3,2	4,128	4,88	5,456	0,002[c]

Already recognized **somatic pathology**, was more frequent in controls (74%) than in cases (40%) and we found no significant difference between the groups: Cardiovascular, Respiratory, Gastro-intestinal, Urogenital, Locomotor, CNS, Endocrino-metabolic and Others, in both, cases and controls (Appendix, Table A6 and A7)- see Discussion. However, cardiovascular and endocrine-metabolic diseases (mainly Diabetes Mellitus) form the majority of somatic pathology in both, cases and controls.

As can be seen from Table 3, no significant differences exist for drug and alcohol use between cases and **controls**. However, the percentage of patients who **smoke** in the control group is significantly higher than in group of interest. For criminality, the percentage of patients involved in **criminality** is higher for the control group, although that difference is not significant.

Table 3. Behavior characteristics of the patients

		Total		Cases		Controls		p-value
		n	%	n	%	n	%	
Illegal drug use	N	139	97,9	74	97,4	65	98,5	1,00[7]
	Y	3	2,1	2	2,6	1	1,5	
Alcohol use/abuse	N	133	93,7	71	93,4	62	93,9	1,00[a]
	Y	9	6,3	5	6,6	4	6,1	
Tabagism	N	95	64,8	58	76,3	34	51,5	0,002[8]
	Y	50	35,2	18	23,7	32	48,5	

Criminality	**N**	122	85,9	69	90,8	53	80,3	0,073[b]
	Y	20	14,1	7	9,2	13	19,7	

The psychopathology was evaluated in almost all cases (26) and *controls* (56) (Appendix, Table A8a and A8b) by applying a validated scale *BPRS (Brief Psychiatric Rating scale)*. The mean inventory of *BPRS* items was the same in cases and controls (value of 46). Because the use of that scale did not seem very easy to apply to this kind of population (see Limitations) we decided to use also a 6 item questionnaire (see-anexes), improvised by us but with a simplicity of application that was found very useful. The 6 items concern the main psychopathologic symptoms found is this kind of population (mostly schizophrenic) and include: anxiety, depression, suicidality, suspiciousness, hallucinations and disorientation. In any case, and considering only the cases where BPRS could be applied (exclusion of patients who do not cooperate or are very demented) the results were found to be similar, in the mean values, between cases and controls. But, if we apply the 6 items improvised scale, and with regard to psychopathologies (Table 4), significant differences exist across the two groups of interest (cases and controls) for suspiciousness, hallucinations and disorientation. In the control group patients suffer significantly more from **suspiciousness, hallucinations and disorientation.**

Table 4. Psychopathology characteristics of the patients

		Total		Cases		Controls		p-value
		n	**%**	**n**	**%**	**n**	**%**	
Psicopathology	**Anxiety**	70	49,3	34	44,7	36	54,5	0,097[9]
	Depression	53	37,3	25	32,9	28	42,4	0,12[a]
	Suicidality	10	7,0	5	6,6	5	7,6	0,751[1]
	Suspiciousness	57	40,1	23	30,3	34	51,5	0,002[a]
	Hallucinations	36	25,4	12	15,8	24	36,4	0,001[a]
	Disorientation	73	51,4	25	32,9	48	72,7	0,000[a]

As a whole, taking both hospitals together, the main differences between the study group and the controls are related to: tobacco consumption, average number of previous admissions, total number of years of institutionalization before deinstitutionalization, suspiciousness, hallucinations and disorientation. Figure 2 illustrates the profile of deinstitutionalized patients when compared with control group.

Figure 2. Patients Profile for cases and controls
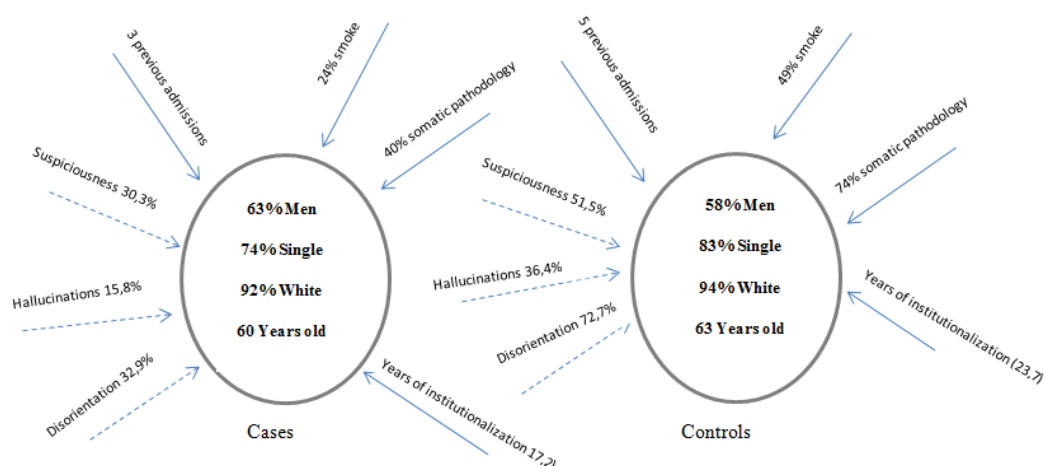
4.2 Characteristics of patients across hospitals and among groups

The distribution of patients across hospitals differs among the two groups (Table 5).

Table 5. Distribution of the cases and controls across hospitals (HMB and HJM)

		Total		Cases		Controls	
		N	%	n	%	n	%
Hospital	HJM	105	73,9	61	58,1	44	41,9
	HMB	37	26,1	15	40,5	22	59,5
	Total	142	100	76	53,5	66	46,5

Taking the sample of cases, and analyzing only the **differences between hospitals**, as can be seen in Table 6, the only socio-economic variables that are significantly associated with the local of observation (HJM or HMB) are: **age** (HMB cases are older), and recent **contact with family** (HMB cases have less).

Table 6. Socio-Economic Characteristics for the "Cases" across Hospitals

		Total		HJM		HMB		p-value
		n	%	n	%	n	%	
Gender	Female	28	36,8	21	34,4	7	46,7	0,379[11]
	Male	48	63,2	40	65,6	8	53,3	
Marital Status	Single	56	73,7	44	72,1	12	80,0	0,746[12]
	Other	20	26,3	17	27,9	3	20,0	
Ethnicity	White	70	92,1	56	91,8	14	93,3	1,000[b]
	Other	6	7,9	5	8,2	1	6,7	
Recent contact with family	N	32	42,1	19	31,1	13	86,7	0,000[a]
	Y	44	57,9	42	68,9	2	13,3	

Age (yrs)	Mean	SD	Mean	SD	Mean	SD	p-val
	59,99	14,809	57,9	15,137	68,47	9,841	0,002[13]

For the same population (cases), as shown in Tables 7 and 8, d**iagnoses** are homogeneously distributed between hospitals, in both hospitals: **schizophrenic disorders being more than 90%,** affective disorders almost 7% and alcohol abuse around 5%; only personality disorders show a difference, although not significantly in statistical terms, between hospitals (almost 7% in HMB and none in HJM).

Table 7. Clinical Variables for the "Cases" across Hospitals

		Total		HJM		HMB		p-value
		n	%	n	%	n	%	
Diagnoses	Schizophrenic disorders	70	92,1	56	91,8	14	93,3	1,000[14]
	Affective disorders	5	6,6	4	6,6	1	6,7	1,000[a]
	Personality disorders	4	5,3	4	6,6	0	0,0	0,58[a]
	Alcohol abuse	4	5,3	3	4,9	1	6,7	1,000[a]
Somatic pathology	N	46	60,5	37	60,7	9	60,0	0,963[15]
	Y	30	39,5	24	39,3	6	40,0	
Adherence to treatment	N	4	5,3	4	6,6	0	0,0	0,579[a]
	Y	72	94,7	57	93,4	15	100,0	
Total number of years of institutionalization before deinstitutionalization	Mean	SD	Mean	SD	Mean	SD	p-value
	17,21	16,271	13,33	16,571	20,8	14,977	0,172[16]
Previous admissions	3,2	4,128	3,64	4,483	1,4	0,91	0,003[c]

No significantly differences were found between hospitals on satisfaction, illegal drug/alcohol use, tabagism and criminality, although HJM was higher on those than HMB (Appendix, Table A9 and A10).

Table 8. Psychopathologies for the "Cases" across Hospitals

		Total		HJM		HMB		p-value
		n	%	n	%	n	%	
Psicopathology	Anxiety	34	44,7	30	49,2	4	26,7	0,116[17]
	Depression	25	32,9	24	39,3	1	6,7	0,016[18]
	Suicidality	5	6,6	5	8,2	0	0,0	0,576[b]
	Suspiciousness	23	30,3	19	31,1	4	26,7	1,000[b]

Hallucinations	12	15,8	8	13,1	4	26,7	0,238[b]
Disorientation	25	32,9	20	32,8	5	33,3	1,000[b]

Table 8 shows that, on psychopathology, no significant differences were found between cases of HMB and cases of HJM except for **depression that was higher in HJM** cases.

In summary, there are only **significant differences between the two hospitals** in **previous admissions (Table 7)** and **depression** as a symptom **(Table 8)** - (HMB cases have less of both). Hence the two populations were closely matched on almost all factors .

4.3 Factors associated with the Re-hospitalization

The logistic regression analysis allowed the identification of **adherence to the treatment, tabagism and number of years of institutionalization** as being significantly associated with having been re-hospitalized.

Table 9. Results from Logistic Regression (Y=1, if re-hospitalized)

Variable	Odds Ratio	p-value
Gender (Female=1)	20,8**	0,087
Adherence (No=1)	116,3*	0,046
Tabagism (Smoke=1)	26,9*	0,029
SomPath (Yes =1)	4,1	0,361
Years Institutionalized	0,66*	0,044
CareAmb (Yes=1)	0,54	0,713
Hallucinations(Yes=1)	21,1**	0,08
Age	0,92	0,181
Constant	11,8	0,602

* p-value<5% and ** p-value<10%

As can be seen in Table 9, after adjusting for potential confounding factors, having ever **been re-hospitalized is positively associated with discontinuity of the treatment (OR= 116) and tabagism (OR= 26) and, negatively associated, to** t**he number of years of institutionalization (OR= 0,66).**

Figure 3. Factors associated with the Probability of ever being re-hospitalized
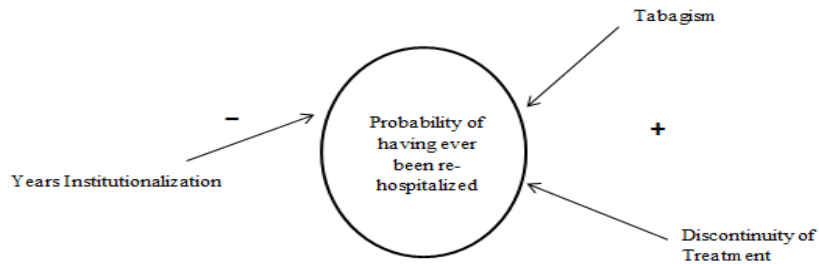
4.4 Factors associated with the number of Re-hospitalizations

Because the **number of patients that have been re-hospitalized is only 13**, we used non-parametric tests to access the extent to which, socio-economic, clinical, behavior and pathological factors are related to the number of re-hospitalizations. Results are presented in Appendix, Table A11. As can be seen, there are no **significant association between the number of re-hospitalizations and the covariates considered.**

Table 10. Number of rehospitalizations after deinstitutionalization discharge for cases

	Cases	
	Frequency	**Percent**
0	63	82,9
1	8	10,5
2	1	1,3
3	1	1,3
5	2	2,6
7	1	1,3
Total	76	100,0

Figure 4. Number of rehospitalizations after deinstitutionalization discharge
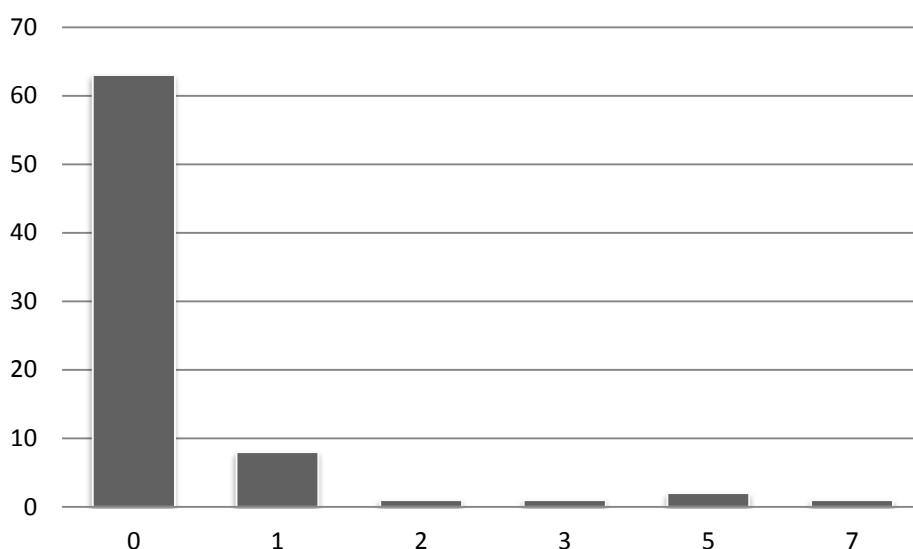
However (Table 11) there is a **significant association between** the **number of re-hospitalizations and the time since first admission** (< 10 years, >10 years), and also between the **duration of the rehospitalization (total number of days of reinstitutionalization) and the time since first admission**, meaning that there is a reduction in the number of rehospitalizations, as the number of years since the first admission increase. Furthermore, the total number of days of reinstitutionalization, after deinstitutionalization discharge date, increase with the number of years since the first admission.

Table 11. Relationship between time since first admission and number and duration of rehospitalization

		Total		< 10 years since first admission		≥ 10 years since first admission		p-value
Number of rehospitalizations after deinstitutionalization discharge		Mean	SD	Mean	SD	Mean	SD	
		0,39	1,2	0,85	1,53	0,23	1,03	0,002[1]
Total number of days of reinstitutionalization after deinstitutionalization discharge date		1035,33	426,76	899,8	412,96	1083,73	424,7	0,003[1]

[1] Mann–Whitney U test

Moreover, the **mean duration of the re-hospitalization after the deinstitutionalization is lower than before the deinstitutionalization** (Table 12).

Table 12. Number and Duration of the re-hospitalization

	Before deinstitutionalization discharge		After deinstitutionalization discharge		p-value
Number of hospitalizations	**Mean**	**SD**	**Mean**	**SD**	
	3,2	4,13	0,39	1,2	0,002[1]
Duration of hospitalization (days)	6461,8	5958,8	30,67	126,1	0,003[1]

[1] Wilcoxon signed-rank test

4.5 Factors associated with the date of deinstitutionalization

The deinstitutionalized patients were divided in three groups, according to the **date of deinstitutionalization**: less than 3 months, 6 to 12 months and more than 1 year (Table 13).

Table 13. Date of deinstitutionalization discharge

	Cases	
Duration	**Frequency**	**Percent**
< 3M	1	1,3
> 6M	4	5,3
> 1Y	71	93,4
Total	76	100,0

Figure 5. Date of deinstitutionalization discharge vs. number of rehospitalizations
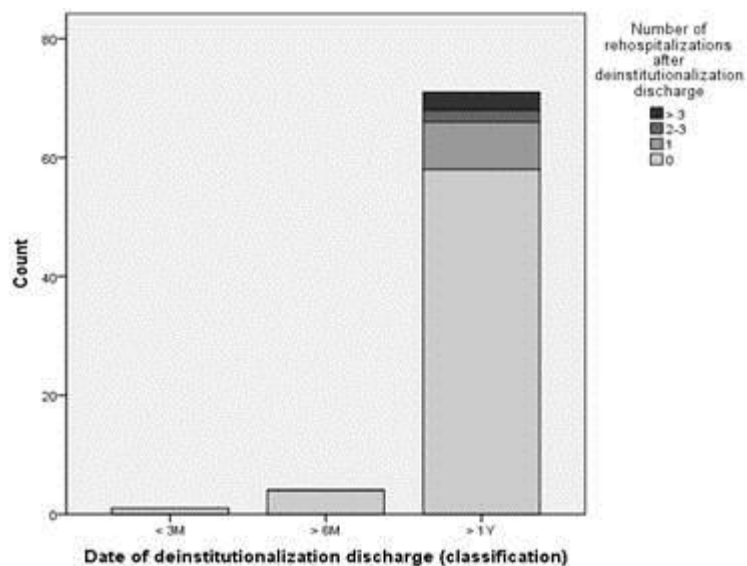
The date of deinstitutionalization discharge as a function of the number of rehospitalizations is shown in figure 5.

The date of deinstitutionalization discharge as a function of the local of discharge is shown in Table 14 and Figure 6.

From the 2 hospitals, since 2007 to 2011, approximately 146 of "long-stay" chronic patients were discharged from CHPL (HJM and HMB)- see diagram, Fig. 1, pag. 10. Hospitals have different distributions along time of discharged patients as we can see in Fig. 6. While HMB started and finished in a more condensed period of time, from 2008 to 2011 (when the last chronic ward was closed), HJM had a more gradual discharge pattern, being still open and having still chronic patients in it to be discharged. Of the 76 patients deinstitutionalized considered cases (not excluded), 71 cases (93%) have been discharged for more than 1 year at the observation time- see Table 14.

Figure 6. Date of deinstitutionalization discharge vs. local of discharge.
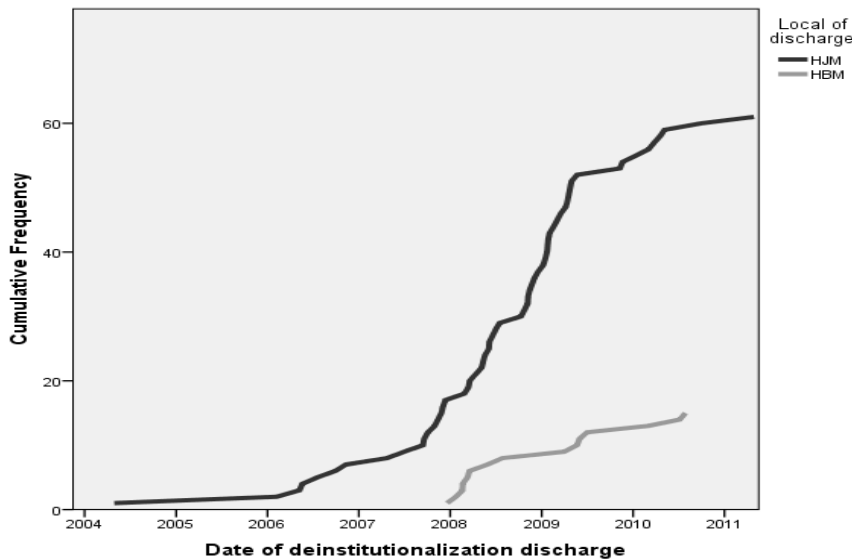
Table 14. Year of Discharge by Local of discharge

Year of Discharge	Local of discharge		Total
	HJM	HBM	
2004	1	0	1
2005	0	0	0
2006	6	0	6
2007	10	1	11
2008	20	7	27
2009	17	4	21
2010	6	3	9
2011	1	0	1
Total	61	15	76

25

Adherence to treatment, although not statistically analyzed in relation to deinstitutionalization, can be seen in Fig. 7 as an interesting feature.

Figure 7. Date of deinstitutionalization discharge vs. adherence to treatment
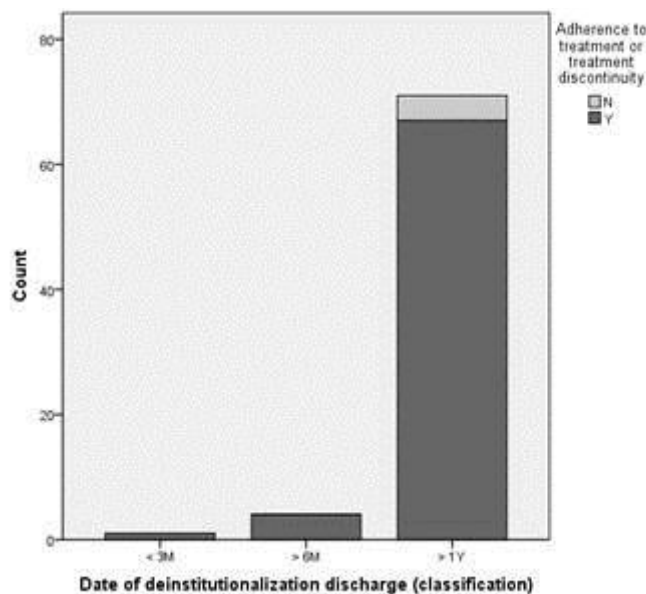
The **mean of years of deinstitutionalization is 2,83 (1035 days)-** (see Appendixes, Table A12 and A13).

4.6 Factors associated with death

Tables A14 and A15 in Appendixes, p. 45-46, show socio-demographic and clinical characteristics of alive cases vs deaths. There were 29 deaths among the cases (only one by suicide) which means a death rate in cases of 20%. Deaths in controls were not analyzed (see Limitations). There were no significant differences except for age, the population that died being older than the survivors, among deinstitutionalized patients (mean of 60 years old vs. mean of 65 years old). Table A16, p. 46, in Appendixes, shows the standard mortality rate (SMR) for cases- see discussion on comparison of SMR for cases with SMR found in other studies.

4.7 Factors associated with crime

Table A19a and A19b, p. 47, in Appendixes, shows the characteristics of patients engaged in crime. The numbers were so low (only 20 patients among cases and controls all together) that no statistical analyses could be done. Only one patient went to prison among the cases.

5. Discussion

In terms of **socio demographic** description, we found an "almost geriatric" population with a **mean age of 62 years**, a majority of males, white and single. For all these

variables, there were no significant differences between the study population and the control group. The mean age of the discharged patients in the TAPS study was 60 years.

When analyzing **clinical variables**, no significant differences were found across diagnoses between cases and controls, with 91% of the patients having **schizophrenic disorders** (similar to literature- Thornicroft, Bebbington, Leff, 2005).

If we consider already recognized **somatic pathology,** we found a higher proportion among the controls, which seems logical because it may function as a handicap to reintegration to community. In the literature, incontinence and problems of mobility are found to improve in deinstitutionalized patients. In the TAPS study they got worse as the patients aged. We could not find any significant differences between cases and controls, among the patients with somatic pathology (Tab. A6). However, cardiovascular and endocrinometabolic diseases (mainly Diabetes Mellitus) constituted the majority of somatic pathology in both cases and controls (Tab. A7).

In what concerns **clinical psychopathology,** patients in the **control group suffer** significantly more from psychopathology related to **suspiciousness hallucinations and disorientation**. (Table 8) although BPRS show no differences in global severity of symptoms (Appendixes , Table A8a and A8b).

Despite no significant differences across **adherence to the treatment**, we found a slightly higher percentage for the controls, meaning maybe that the fact of being in hospital increases adherence to treatment. **Type of treatment** includes more frequent "depot" treatment in the controls than in the cases which may be a point for reflection because deinstitutionalized patients would, in theory be better in terms of medication compliance if taking depot medication. Although not significant, there is a difference between cases and controls in what concerns **satisfaction** which is almost double in cases than in controls meaning that leaving hospital probably increases satisfaction.

The average **number of previous admissions** (mean number of 4) and the total number of **years of institutionalization before deinstitutionalization** discharge (mean value around 20 years), are both significantly **lower for the cases**. That could be a consequence of a negative effect of institutionalization or selection by staff of the better patients for discharge.

Mortality is, compared with the general population, very high in the cases: the numbers found in the cases were 29 for a population of 146 deinstitutionalized patients (19,9%). But, the death rates were subject of controversy. We had no possibility of accessing the dates of individual deaths so, it was not viable to calculate the annual death rate for the cases (see Limitations, on National C. of Data Protection). We could just calculate the global death cases rate for the 4 years (2007-11). In addition, informatics limitations did not permit us to identify the death rate among controls (see Limitations). If we compare our mortality rates with specific mortality rates for the general population (because we do not have those mortality rates for specific schizophrenic population) with the same sociodemographic characteristics of our study population we get the *standard mortality rates* (SMR). In this study we found a very high SMR meaning that an increase in mortality may be associated with deinstitutionalization. Compared with the general population death rate for the same age group (**mean age=60 years old**) there was a value of **28,3 (SMR)** in cases in the 4 years of 2007-2011- See Table A16, A17 and A18 in Appendixes, p.46-47.

There have been a number of studies examining this SMR for psychiatric patients, who always have a higher mortality rate then the general population. If we use the figures from these studies in the literature as a comparison with our study cases, we find alarming results: there is a much higher SMR in our study. According to literature, people with schizophrenia have 2,5 times the risk of dying compared with the general population (Saha, Chant, 2007) and for the **older schizophrenia patients the Standard Mortality Rate goes up to 2,69** (Talaslahti, Alanen, 2012). In our study we found a **28,3 SMR for the deinstitutionalized** patients. Why do our deinstitutionalized patients have a higher mortality rate when compared with other deinstitutionalized schizophrenic populations? Factors associated with life style and difficulty of access to medical care may be the cause of such a high SMR for the deinstitutionalized patients in Lisbon. This finding of high mortality in deinstitutionalized patients is a matter of concern in evaluating deinstitutionalization. Also, we could not find out if deinstitutionalization had a beneficial effect on the mortality of elderly patients who remained hospitalized- that can happen according to Craig, Lin, 1981. Still, we found no deaths among controls during the period between March and September/2011, the period we took for the only individual observation of each control.

No **homeless** cases were found because we only had the opportunity of observation of the cases that were contactable by phone. Anyway, only 7 cases were not reachable.

About **crime**, there were more patients with crime antecedents among controls than cases, which is natural because of the difficulties of acceptance by the community and the probable severity of symptomatology linked with those antecedents. The numbers were so low (only 20 patients among cases and controls all together) that no statistical analyses could be done. Only one patient went to prison among the cases, which is similar to the data found in literature (Leff, Trieman, 1996).

In summary, the **main differences between the study group and the controls** are that all of the following are **higher in the control group**: the percentage of patients who **smoke** is higher, the **number of previous admissions** is higher, the **psychotic** symptoms, the **somatic pathology** and the **medium number of institutionalizations** are higher (Fig. 2, p.15).

As this is a cross-sectional study, there was no way of following patients over time- we had only one observation for each patient. However, just to have an approach to the different features of evolution, the deinstitutionalized patients were divided in three groups, according to the date of deinstitutionalization: less than 3 months, 6 to 12 months and more than 1 year. Figures 5 and 7 show interesting features relating the date of deinstitutionalization discharge and the number of rehospitalizations, and the date of deinstitutionalization discharge and the adherence of the treatment, respectively. Figure 6 shows the date of deinstitutionalization discharge as a function of the location of discharge. Although no conclusions can be taken from that, it gives an idea about possible differences over time that can be found in a prospective study with this same population. For instance, we can predict that, after one year of discharge, finally some non adherence to treatment will be found that was not detectable before that time (Fig. 7), the same happening in relation to time after discharge with rehospitalization (Fig. 5).

On the factors associated with the **number of re-hospitalizations**, because the number of patients that have been re-hospitalized is only 13, the results are not conclusive (Table A11). However, patients that are employed or students when compared with

pensioners have a lower number of re-hospitalizations and patients suffering from depression have more re-hospitalizations than the others. Age, in this study, was not found to be significantly related to re-hospitalization, contrary to what was found in literature by other authors (Leff, Trieman, 1996) that observed that younger patients were more prone to rehospitalization. The finding that, in this study, the **number of years of institutionalization is negatively related to the probabilioy of being re-hospitalized**, contrary to what was found in literature (Rothbard, Kuno, 1999) may be due to the fact that the numbers are so low - we cannot draw any conclusion from it. Also, if we followed those patients across time, we could have different findings since the number of rehospitalizations varies over time after discharge. But we cannot compare a cross-sectional study of this kind, with longitudinal studies reported in the literature. We can also assume that the relationship between total number of years of institutionalization and rehospitalization can change over time – that will be the subject of a future longitudinal study with this population.

Re-hospitalization itself has been significantly positively associated with **discontinuation of treatment** and **tabagism**, and significantly negatively associated with the **number of years of hospitalization** (Table 9, Fig. 3). The other variables are not significantly associated with the outcome of interest, although being female and having hallucinations appear to be more frequent among rehospitalized patients.

The **variables** significantly **indirectly** related with **deinstitutionalization** are: **number of previous admissions, somatic pathology, tabagism,** all of those variables being higher in the institutionalized patients (controls). In fact, tabagism may be increased as an effect of neuroleptic treatment with higher dosages because nicotine has an antiparkinsonic effect and we found that institutionalized patients had more psychotic symptoms so it is logical that they take higher doses of neuroleptics (Winterer, 2010).

No conclusions can be drawn on the type of somatic pathology except that, similarly to the literature results, somatic pathology was found in a higher percentage among the controls.

In terms of comparison of our results with the literature review, we confirmed the expected results on sociodemographic and clinical characteristics. The differences between cases and controls give us a clue to the factors that can be associated with deinstitutionalization. On the other hand, the factors associated with reinstitutionalization can guide us through a prospective study on the outcomes of deinstitutionalization. Accordingly, the main objectives of a longitudinal study on a deinstitutionalized population should concentrate mainly on diagnoses and **clinical symptoms, mortality, criminality, vagrancy and rehospitalization.**

The main differences **between the two hospitals** are in the patients **age** (HMB are older), **recent contact with family members** (HMB patients have less contacts), **previous admissions** (HMB has less), **total number of years being institutionalized** (HMB has more) and psychopathology related with only **depression** (HJM has more). It was not possible to do a comparative evaluation of deaths between hospitals because of lack of information on HMB patients.

6. Study Limitations

The **small dimension** of the population is a study limitation, arriving from the exclusion of 48% of cases and 60% of the controls.

The **lack of data** about the previous admissions before the CHPL information system had been established (2008) is a limitation on the knowledge of patient's psychiatric antecedents.

Many variables are not considered, because of practical reasons such as time and financial resources. Scales considering quality of life, global function, social and economic variables should be applied but difficulties with an elderly, mentally handicapped population make it almost impossible (Gago, E., Coelho, P. 2010). The administration of a clinical scale like the **BPRS scale**, which was initially proposed, would be affected by the cognitive difficulties of most patients that are already demented and so results on the BPRS would be changed by that fact. In order to simplify the process we did not apply any clinical validated scale. To complement it, we used a 6 item psychopathology differentiation (see appendices). There was no access with other specific instruments, namely of satisfaction and use of services scales. Those instruments are complex and out of reach of this study for resources limitations.

There was a considerable **loss of data** not only by not finding discharged patients but also by deaths and other occurrences during the follow-up time. The difficulties in **accessing the death** causes and dates are another limitation; we tried to reach that information but a specific official authorization was needed from the *National Committee of Data Protection*, which would take a considerable amount of financial resources and time. **We could not study the deaths among the controls.** The period of observation of controls was cross-sectional, between March and September of 2011, so, it is natural that no deaths were found; also, between the 166 initial controls, only 66 remained included in the study because of diagnoses or transferences between hospitals/services in the same hospitals, maybe there were deaths among the controls that were not included. Deaths among still institutionalized patients were also difficult to analyze because of lack of data in the informatics system of CHPL- in fact, HMB deaths were not found in the year of 2007 and no access was permitted to the deaths information beside the total numbers by year. Also, the calculation of death rates in CHPL was not precise because the number of patients that died was not necessarily from the initial number of patients chosen as controls. The turn-over of patients between services has been very complex and difficult to follow.

We didn`t measure the daily individual doses of psychotropic medication, particularly, neuroleptics, among cases and controls. That variable can be related with the outcomes of deinstitutionalization, through for instance, the prevalence of metabolic syndrome.

We made no **distinction between "new long-stay" and "old long-stay"** patients but that information could be important- as found in the literature (Leff, Trieman, 1996), "new long-stay" deinstitutionalized patients are more often rehospitalized than "old long-stay" patients.

A limitation of this study concerns the fact that we studied the **outcomes** only at the **individual level**. In fact, CHPL has a multidisciplinary team in charge of

rehabilitation and consequently, other areas such as social impact and process should be considered as part of the deinstitutionalization success (Lesage, 2004).

There was no independence between the CHPL staff and the study investigators- the only investigator was part of the CHPL clinical board and that can be a limitation according to Hobb and Tennant, 2000.

7. Conclusions

Despite the small dimension of this study population, we can still conclude that it is possible to deinstitutionalize "long-stay" psychiatric patients without any increase in psychopathology severity, vagrancy or criminality after replacement in the community, when compared with institutionalized patients.

The same cannot be said about mortality: much higher values of mortality were found in the deinstitutionalized patients when compared with other studies results, even if those are crude calculations. Findings related with mortality should be studied in a more profound way, because, so far, they are alarming, although comprehensive. In fact, it is natural that patients with a mean institutionalization of 20 years, most of them having become ill before the *antipsychotic age*, would not be prepared to be discharged into the community. From an economic perspective these results are ambivalent because they indicate that the closing of a psychiatric hospital can result in a quick reduction of the number of "old long-stay" psychiatric patients although through the shortening of their lives.

Mental health policies should change to adapt to the new needs of mental health care that accompany the closing of psychiatric hospitals and the consequent reduction of the number of psychiatric beds.

Besides, the differences found between the two hospital populations in this study can guide us through the planning of the next psychiatric hospital closure in CHPL- the closure of "Hospital Julio de Matos", which has been already announced. The results of the closing of HMB, in July/2011, can help in the establishment of criteria for a more rational selective discharge of "long stay" psychiatric patients for better results in the future closing of HJM.

Evidence in this area is extremely hard to obtain and despite our emphasis on evidence-based medicine, research in most of the MH interventions is complex and it is difficult to distinguish between a number of potentially confounding factors (Burns, 2009).

8. Future Perspectives

A longitudinal follow-up of this study population and a **comparison with another psychiatric hospital deinstitutionalized population for the same period of time** could guide us in the construction of selective discharge criteria to the planning of other psychiatric hospitals closing in Portugal. By comparing this with similar studies we can try to achieve a state of knowledge on deinstitutionalization that allows us to construct a **mathematic model** to predict the success of deinstitutionalization.

A study on the increase in mortality associated with deinstitutionalization seems pertinent according to this study results.

9. Referencies

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10. Appendixes

Table A1. Causes of Exclusion

		Group (case/control)		Total
		Control	Case	
Cause of exclusion	Mental retardation	53	16	69
	Transferred from HMB	30	0	30
	Death	0	29	29
	Deteriorated	1	0	1
	Transfered to Pav.21C 1° (HJM)	4	0	4
	Deafh	1	0	1
	Transferred to AIPS	3	0	3
	Epilepsy+Oligofreny	1	3	4
	Doesn´t speak	3	0	3
	Epilepsy	3	2	5
	Doesn`t contact	0	7	7
	Organic psychoses	0	1	1
	Dementia	1	2	3
	Epilepsy+ Organic Psychoses	0	2	2
	Institutionalized< 1year	0	7	7
	Missing institutionalized dates	0	1	1
Total		100	70	170

Table A2. Distribution of the cases and controls across hospitals (HMB and HJM)

		Total		Cases		Controls	
		N	%	n	%	n	%
Hospital	HJM	105	73,9	61	58,1	44	41,9
	HMB	37	26,1	15	40,5	22	59,5
	Total	142	100	76	53,5	66	46,5

Table A3. Adherence to treatment

		Cases		Controls		p-value
		Frequency	Percent	Frequency	Percent	
Adherence	N	4	5,3	2	3,0	0,6861

		Frequency	Percent	Frequency	Percent	
to treatment	**Y**	72	94,7	64	97,0	
	Total	76	100,0	66	100,0	

Table A4. Satisfaction between Cases and Controls

		Cases		**Controls**		**p-value**
		Frequency	**Percent**	**Frequency**	**Percent**	
Satisfaction	**N**	5	7,4	12	24,0	0,11[19]
	Y	63	92,6	38	76,0	
	Total	68	100,0	50	100,0	

Table A5. Type of treatment

		Cases		**Controls**		**p-value**
		Frequency	**Percent**	**Frequency**	**Percent**	
Type of treatment	**Oral**	38	50,0	25	37,9	0,228
	Depot	1	1,3	0	0,0	
	Oral+BCT	1	1,3	0	0,0	
	Oral+Depot	36	47,4	41	62,1	
	Total	76	100,0	66	100,0	

Table A6. Somatic Pathology

		Cases		**Controls**		**p-value**
		Frequency	**Percent**	**Frequency**	**Percent**	
Somatic pathology (already recognized)	**N**	46	60,5	17	25,8	0,0001
	Y	30	39,5	49	74,2	
	Total	76	100,0	66	100,0	

Table A7. Specified somatic pathology

		Cases		**Controls**		**p-value**
		Frequency	**Percent**	**Frequency**	**Percent**	
Somatic pathology (already recognized)	**Cardiovascular**	11	14,5	12	18,2	0,551
	Respiratory	6	7,9	3	4,5	0,5042
	Gastro-intestinal	3	3,95	4	6,1	0,7052
	Urogenital	1	1,3	5	7,6	0,0972

Locomotor	5	6,6	6	9,1	0,5771
CNS	4	5,3	4	6,1	1,0002
Endocrino metabolic	6	7,9	18	27,3	0,0021
Others	7	9,2	12	18,2	0,1171

Table A8a. Psychopathology- BPRS

		Cases (n=26)				Controls (n=56)			
		Mean	Std Dev	Min	Max	Mean	Std Dev	Min	Max
BPRS	**1-Somatic concern**	2,0	1,17	1	5	1,6	,965	1	5
	2- Anxiety	3,0	1,58	1	6	2,4	1,37	1	6
	3 - Depression	2,5	1,34	1	6	2,0	1,18	1	5
	4 - Suicidality	1,2	,813	1	4	1,0	,184	1	2
	5 - Guilt	1,2	,984	1	6	1,0	,000	1	1
	6 - Hostility	1,8	1,19	1	6	1,9	1,58	1	6
	7 - Elated mood	1,6	1,00	1	5	1,4	,863	1	4
	8 - Grandiosity	1,3	,884	1	4	1,4	1,04	1	6
	9 - Suspiciousness	2,3	1,33	1	5	2,0	1,69	1	6
	10- Hallucinations	1,4	1,12	1	6	1,8	1,33	1	6
	11-Unus. thought	1,8	1,11	1	5	2,2	1,32	1	6
	12-Bizarre behave.	1,8	1,25	1	5	2,1	1,52	1	6
	13 - Self-neglet	1,6	1,24	1	6	1,6	1,14	1	7
	14- Disorientation	2,0	1,59	1	6	2,8	1,91	1	7
	15-Concep. disorg.	1,9	1,29	1	5	2,0	1,49	1	6
	16 - Blunted affect	2,3	1,66	1	7	2,3	1,72	1	7
	17-Emotional with.	2,1	1,46	1	7	2,3	1,72	1	7
	18-Motor Retard	2,2	1,73	1	7	2,1	1,43	1	6
	19 - Tension	2,3	1,36	1	5	1,8	1,22	1	6
	20- Uncooperativen	1,6	1,21	1	6	1,9	1,51	1	7
	21 - Excitement	1,5	,753	1	3	1,5	1,11	1	6
	22 -	2,5	1,60	1	6	2,2	1,55	1	6

Distractibility								
23-Motor hyperac.	1,3	,846	1	5	1,2	,670	1	5
24-Mannerisms	1,9	1,440	1	6	1,69	1,173	1	6

Table A8b. Psychopathology- BPRS

		Cases (n=26)	Controls (n=56)
BPRS (sum)	**Mean**	46	45,32
	Stand. Dev.	16,097	18,75
	Minimum	24	24
	Maximum	80	94

Table A9. Satisfaction for the "Cases" across Hospitals

		HJM		HBM		p-value
		Frequency	Percent	Frequency	Percent	
Satisfaction	**N**	15	17,2	2	6,5	0,232[2]
	Y	72	82,8	29	93,5	
	Total	87	100,0	31	100,0	

Table A10. Behavior Characteristics for the "Cases" across Hospitals

		Total		HJM		HMB		p-value
		n	%	n	%	n	%	
Illegal drug use	N	74	97,4	59	96,7	15	100,0	1,000[21]
	Y	2	2,6	2	3,3	0	0,0	
Alcohol use/abuse	N	71	93,4	56	91,8	15	100,0	0,58[a]
	Y	5	6,6	5	8,2	0	0,0	
Tabagism	N	58	76,3	44	72,1	14	93,3	0,102[a]
	Y	18	23,7	17	27,9	1	6,7	
Criminality	N	69	90,8	54	88,5	15	100,0	0,333[a]
	Y	7	9,2	7	11,5	0	0,0	

Table A11. Tests for the Number of rehospitalizations (n=13)

Variable	Type of Test	p-value	Decision
Gender	Independent-Samples Mann-Whitney U Test	0.428	The distribution of *Number of rehospitalizations after deinstitutionalization discharge* is the

Variable	Type of Test	*p-value*	Decision
			same across categories of *Gender*
Marital Status	Independent-Samples Kruskal-Wallis Test	0.601	The distribution of *Number of rehospitalizations after deinstitutionalization discharge* is the same across categories of *Marital Status*
Ethnicity	Independent-Samples Mann-Whitney U Test	0.652	The distribution of *Number of rehospitalizations after deinstitutionalization discharge* is the same across categories of *Ethnicity*
Occupation	Independent-Samples Mann-Whitney U Test	0.053 **	The distribution of *Number of rehospitalizations after deinstitutionalization discharge* is not the same across categories of *Occupation*
Accommodation	Independent-Samples Mann-Whitney U Test	0.923	The distribution of *Number of rehospitalizations after deinstitutionalization discharge* is the same across categories of *Accomodation*
Living Situation	Independent-Samples Kruskal-Wallis Test	0.522	The distribution of *Number of rehospitalizations after deinstitutionalization discharge* is the same across categories of *Living situation*
Recent Contact with Family	Independent-Samples Mann-Whitney U Test	0.260	The distribution of *Number of rehospitalizations after deinstitutionalization discharge* is the same across categories of *Recent contact with family members or relatives*
Somathic Pathology (Y/N)	Independent-Samples Mann-Whitney U Test	1	The distribution of *Number of rehospitalizations after deinstitutionalization discharge* is the same across categories of *Somatic pathology (already recognized)– Y/N*
Adherence	Independent-Samples Mann-Whitney U Test	0.562	The distribution of *Number of rehospitalizations after deinstitutionalization discharge* is the same across categories of *Adherence to treatment or treatment discontinuity*
Type of Treatm.	Independent-Samples Kruskal-Wallis Test	0.621	The distribution of *Number of rehospitalizations after deinstitutionalization discharge* is the same across categories of *Type of treatment*
DrugUse	Independent-Samples Mann-Whitney U Test	0.652	The distribution of *Number of rehospitalizations after deinstitutionalization discharge* is the same across categories of *Illegal drug use after deinstitutionalization date*
AlcoholUse	Independent-Samples Mann-	0.923	The distribution of *Number of rehospitalizations after*

Variable	Type of Test	p-value	Decision
	Whitney U Test		*deinstitutionalization discharge is the same across categories of Illegal alcohol use/abuse after deinstitutionalization date*
Tabagism	Independent-Samples Mann-Whitney U Test	0.683	The distribution of *Number of rehospitalizations after deinstitutionalization discharge* is the same across categories of *Tabagism*
Anxiety	Independent-Samples Mann-Whitney U Test	0.143	The distribution of *Number of rehospitalizations after deinstitutionalization discharge* is the same across categories of *Anxiety*
Depression	Independent-Samples Mann-Whitney U Test	0.078	The distribution of *Number of rehospitalizations after deinstitutionalization discharge* is the same across categories of *Depression*
Suicidality	Independent-Samples Mann-Whitney U Test	0.802	The distribution of *Number of rehospitalizations after deinstitutionalization discharge* is the same across categories of *Suicidality*
Suspiciousness	Independent-Samples Mann-Whitney U Test	0.802	The distribution of *Number of rehospitalizations after deinstitutionalization discharge* is the same across categories of *Suspiciousness*
Hallucinations	Independent-Samples Mann-Whitney U Test	0.676	The distribution of *Number of rehospitalizations after deinstitutionalization discharge* is the same across categories of *Hallucinations*
Orientation	Independent-Samples Mann-Whitney U Test	0.430	The distribution of *Number of rehospitalizations after deinstitutionalization discharge* is the same across categories of *Temporal Orientation*

Table A12. Total number of years of institutionalization before deinstitutionalization discharge date

	Cases	Controls
Mean	17,21	23,71
Standard Deviation	16,271	17,26
Minimum	1	1
Maximum	62	57

Table A13. Total number of days after deinstitutionalization discharge date for cases

	Cases
Mean	**1035**,33
Standard Deviation	426,76
Minimum	32
Maximum	2512

Table A14. Socio-demographic characteristics of alive cases vs. deaths

		Total		Cases		Deaths		p-value
		n	%	n	%	n	%	
Gender	**Female**	56	39,4	28	36,8	14	48,3	0,285[a]
	Male	86	60,6	48	63,2	15	51,7	
Marital Status	**Single**	111	78,2	56	73,7	21	84,0	0,293[a]
	Other	31	21,8	20	26,3	4	16,0	
Ethnicity	**White**	132	93,0	70	92,1	14	100,0	0,585[b]
	Other	10	7,0	6	7,9	0	0,0	
Recent contact family	**N**	57	40,1	32	42,1	7	63,6	0,209[b]
	Y	85	59,9	44	57,9	4	36,4	
Age (yrs)		Mean	SD	Mean	SD	Mean	SD	p-value
		61,42	14,296	59,99	14,809	65,21	21,697	0,018[c]

[a] Pearson's chi-squared test

[b] Fisher's exact test

[c] Mann–Whitney U test

Table A15. Clinical characteristics of alive cases vs deaths

		Total		Cases		Deaths		p-value
		n	%	n	%	n	%	
Diagnoses	**Schizophrenic disorders**	129	90,8	70	92,1	23	88,5	0,69[a]
	Affective disorders	12	8,5	5	6,6	2	7,7	1,00[4]
	Personality disorders	7	4,9	4	5,3	2	7,7	0,643[a]
	Alcohol abuse	6	4,2	4	5,3	0	0,0	0,570[a]
Total number of years of institutionalization before deinstitutionalization discharge date		Mean	SD	Mean	SD	Mean	SD	p-value
		20,23	16,993	17,21	16,271	16,59	17,365	0,916[5]
Previous admissions		3,98	4,847	3,2	4,128	1,89	1,502	0,117[b]

Table A16. Standard Mortality Rate – Cases

Gender	Age (yrs)	Deaths	Patients	Death rate - general population	Expected Number of deaths in cases	Standard Mortality Ratio (Observed/Expected)
Male	15 - 24	0	1	0,06%	0,00001	
	25 - 34	1	2	0,09%	0,00002	
	35 - 44	0	10	0,21%	0,00021	
	45 - 54	3	17	0,51%	0,00087	
	55 - 64	2	13	1,01%	0,00131	
	65 - 74	7	16	2,33%	0,00373	
	75 +	2	8	8,90%	0,00712	
Female	15 - 24	0	0	0,02%	0,00000	1069,84
	25 - 34	0	1	0,04%	0,00000	
	35 - 44	0	2	0,10%	0,00002	
	45 - 54	0	1	0,22%	0,00002	
	55 - 64	2	10	0,43%	0,00043	
	65 - 74	5	15	1,16%	0,00173	
	75 +	6	15	7,13%	0,01069	
Total		**28**			**0,0262**	

Table A17. Death rate – Cases

Years	Deaths	Patients	Death rate
2007-2011	29	146	199‰

Table A18. Death rate for Cases compared with Population

Years	Mean Age	Death Rate for Population	Death rate for Cases	Death Rate Population/Death Rate Cases
2007-2011	60	7,024‰	199‰	199/7,024=28,3

Table A19a. Criminality

		Cases		Controls		p-value
		Frequency	Percent	Frequency	Percent	
Criminality	N	69	90,8	53	80,3	0,073[1]
	Y	7	9,2	13	19,7	
	Total	76	100,0	66	100,0	

Table A19b. Criminality Type

		Cases		Controls	
		Frequency	Percent	Frequency	Percent
Criminality type	Victim	1	14,3	0	0,0
	Perpetrator	2	28,6	3	23,1
	Informal	4	57,1	10	76,9
	Total	7	100,0	13	100,0

ANEXES

ANEXE 1

Letter to the CHPL Administration Board (Director- Dr. Ricardo França Jardim):

Ao Concelho de Administracão do CHPL,

Venho por este meio solicitar autorização para entrevistar os doentes residentes integrados na comunidade desde 2006, durante o processo de encerramento do Hospital Miguel Bombarda, no contexto de tese de mestrado: Mestrado Internacional em Política de Saúde Mental da Universidade Nova de Lisboa (Director: Prof. Doutor J.M. Caldas de Almeida).

Cordialmente,

Lisboa, 7 de Janeiro de 2011

Marisa Real Taron

(Serviço de Reabilitação)

ANEXE 2

LIST OF VARIABLES

Date of observation:

 Name:

 Local of observation:

HJM- Pav. 30/ Pav.t6

HMB- Cons. Ext./ Community-

1-Age/ Date of Birth

2- Gender: Female/ Male

3-Marital status: Single/ Married/ Others

4-Ethnicity: White/ European/ Others

5-Living sítuation: Alone/ With relatives/ With others

6- Accomodation*: Domestic Shelter/ Hospital/ Others (institutions)

7-Occupation*: Employed/ Student/ Sheltered work/ Unemployed/ Pensioner

8- Recent contact with family members or relatives (Y/N)

9-Total nº years of institutionalization before deinstitutionalization discharge date (yrs)*#-

10-Previous admissions before deinstitutionaIization discharge date*(includes last admission date): Nº#- Dates-

l1-Date of deinstitututionalization discharge (>3M; >6M; >1Y)*:

 l2- Local of discharge: HJM/HMB

13-Total nº of days after deinstitutionalization discharge date #-

14-Continuity of care in ambulatory services* (Y/N)

15-Emergency services use*: Y/N

l6- Ambulatory consultations* :Y/N

17- Rehospitalization after deinstitutionalization discharge*#: Nº / Dates:

18- Total lifetime nº of admissions (until present date)#:

19- Total nº of days of reinstitutionalization after deinstitutionalization discharge date*#:

20- Total nº of years of hospitalization until present date#:

21- Diagnoses (Clinical/ ICD-9): schizoprenic dísorders/ affective disorders/ persona lity disorders/ alcohol abuse/ others, including neurotic disorders and drugs abuse (specify and identify ICD-9 code)

22- BPRS score# (total and for each item):

23- Drug use in the last year: (Y/N)

24- Alcohol use/abuse in last year: (Y/N)

25- Suicide attempts in the last year *: (Y/N)

26- Somatic pathology (Y/N): l-.Cardiovascular/2. Respiratory/3.Gastro-

intestinal/4. Urogenital/5. Locomotor/6. CNS/7. Endocrino-metabolic

27-Adherence to treatment : (Y/N)

28-Mortality (Y/N)

29-CriminaIity: (Y/N)- victim /perpretator/ informal

 30- Satisfaction single question: (Y/N)- specify why

31-Type of treatment (oral/depot)

32-Tabagism in the last year (Y/N; Ns cig. day)

*Só para doentes desinstitucionalizados(consulta externa)

**Only for death cases

Statistical calculation

ANEXE 3

BPRS (items):

I. Somatic concern

2. Anxiety

3. Depression

4. Suicidality

5. Guilt

6. Hostility

7. Elated Mood

8. Grandiosity

9. Suspiciousness

l0. Hallucinations

11. Unusual thought content

12. Bizarre behaviour

l3. Self-neglect

l4. Disorientation

15. Conceptual disorganization

l6. Blunted affect

17. Emotional withdrawal

18. Motor retardation

19. Tension

20. Uncooperativeness

2l. Excitement

22. Distractibility

23. Motor hyperactivity   24. Mannerisms and posturing

PSYCHOPATHOLOGY SCALE*

(Anxiety, depression, suicidality, suspiciousness, hallucinations and temporal orientation- quantified in yes/ no- Last week)

PSICOPATOLOGIA (EM VEZ DO BPRS)*

1. ANSIEDADE- SENTE-SE NERVOSO?

2. HUMOR DEPRESSIVO- SENTE-SE TRISTE?

3. IDEAÇÃO SUICIDA- SENTE QUE NÃO VALE A PENA VIVER OU TEM PLANOS PARA ACABAR COM A SUA VIDA EM BREVE?

4. IDEACÃO DELIRANTE- SENTE-SE PERSEGUIDO OU ACHA QUE LHE QUEREM FAZER MAL?

5. ALUCINAÇÕES- ACHA QUE VÊ OU SENTE OU OUVE COISAS QUE AS OUTRAS PESSOAS NÃO ?

6. DESORIENTAÇÃO- SABE QUE DIA É HOJE, E MÊS, E ANO?

*INTERVIEWS BY PHONE/ DIFICULTIES OF COMMUNICATION

*ENTREVISTAS PELO TELEFONE/ CASOS DIFICILMENTE ENTREVISTÁVEIS (a responder pelo próprio ou por um cuidador conhecedor)