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The Impact of Creating an Inpatient Team in an Acute Psychiatric Ward

O Impacto da Criação de uma Equipa de Internamento num Serviço de Internamento Agudo de Psiquiatria

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ABSTRACT

Introduction: Acute inpatient services continue to be key components in psychiatric care for patients in crisis. In an economic crisis context, investment in Psychiatry is scarce and limited. Thus, optimizing hospital resources is much needed, allowing patients to receive the best treatment available and not remain in the hospital after resolution of the acute episode.

Objective: To evaluate the effectiveness of creating an Inpatient Team (IT), according to the most frequently used variables in published studies (length of stay and readmission rates).

Methods: Analysis of hospitalization records during two periods (P1 and P2), before and after IT's creation. Data analysis was performed using the Statistical Package for Social Sciences (SPSS, version 20.0).

Results: A statistically significant difference was confirmed in mean length of stay between the two periods, with a 21.47% reduction in P2 compared to P1. The difference in readmission rates was not statistically significant.

Conclusion: This study demonstrated that the creation of an IT was associated with a decrease in the duration of hospitalization, confirming the importance of the optimization of human resources, particularly when these are scarce, aiming to improve the quality of inpatient care.

Key-Words: Inpatient Unit; Psychiatric Hospital; Hospitalization; Length of Stay.

RESUMO

Introdução: *Os serviços de internamento de agudos continuam a ser uma componente fundamental nos departamentos de Psiquiatria para a estabilização psicopatológica de doentes em crise e em recidiva. Num contexto de crise económica, o investimento na área da Psiquiatria é parco e limitado. Há, portanto, uma grande necessidade de otimizar os recursos de internamento de modo a que os doentes recebam o melhor tratamento disponível e, sempre que*

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possível, não permaneçam no hospital após a resolução do episódio agudo.

Objetivo: *Avaliar a eficácia da criação de uma Equipa de Internamento (EI), de acordo com as variáveis mais frequentemente utilizadas nos estudos publicados (duração de internamento e taxa de reinternamento).*

Métodos: *Análise dos registos relativos aos internamentos durante dois períodos (P1 e P2), antes e depois da criação da EI. A análise de dados foi realizada com recurso ao* Statistical Package for Social Sciences (SPSS, version 20.0).

Resultados: *Foi confirmada uma diferença estatisticamente significativa na duração de internamento entre os dois períodos, com uma redução de 21,47% em P2 em comparação com P1. A diferença nas taxas de reinternamento não foi estatisticamente significativa.*

Conclusão: *Este estudo demonstrou que a criação de uma EI foi associada a uma diminuição da duração de internamento, confirmando a importância da otimização dos recursos humanos, particularmente quando estes são escassos, tendo em vista a melhoria dos cuidados prestados aos doentes psiquiátricos internados.*

Palavras-Chave: *Unidade de Internamento; Hospital Psiquiátrico; Hospitalização; Duração de Internamento.*

INTRODUCTION

Investment in mental illness community care is the current trend of Psychiatry, not only by the creation of psychiatric departments in general hospitals, instead of traditional psychiatric hospitals, but also by organizing community structures within these departments. Community Psychiatry can provide patients proper treatment, complementary support and rehabilitation, thereby reducing the needs for inpatient care.

Nonetheless, acute inpatient services continue to be one of the key components of psychiatric care, essential for psychopathological stabilization of some patients.

Along with these lines, the National Mental Health Plan 2007-2016 was created in Portugal, but, unfortunately, insufficient community structures have delayed its implementation.

As a consequence, the readmission rates in inpatient services remain high and emergency rooms are still the main point of entry (first contact) for many patients, a fact that has also been observed in other countries[1].

Most studies on acute psychiatric inpatient services focus on length of stay (LOS) and readmission rates, not only analysing patient characteristics, but also the services provided.

LOS is an important variable due to its financial impact and, more importantly, due to its impact on the patient's social and professional environment. Longer LOS can be associated with weakened social support and loss of employment and housing[2]. A review conducted in 2008[3], which included six relevant studies, concluded that patients with shorter LOS are more likely to be employed in the next two years. In addition, no significant difference was found in readmissions in the first year after admission, between the groups of

patients with smaller and longer duration of hospitalization.

A longer LOS has been shown to be associated with advanced age[4-8], lower scores on the *Global Assessment of Functioning* scale[4,9,10], organic comorbidity[8,11,12] and single marital status[9]. Regarding the influence of sex, results vary: some studies point to the association between male and a longer LOS[8,9,13], others to an association with a shorter LOS[6,14] or no association[5,12]. On the other hand, psychiatric diagnosis has been repeatedly correlated with LOS, with longer hospitalizations observed in schizophrenia and other psychotic disorders[4,6-8,10,13,15], mood disorders[7,14,15] and dementia[13]. Other relevant factors include disease's severity[12] and chronicity[14], response to treatment[5], aggressive behaviour and compulsory admissions[6,16,17].

A review of several studies, focused on the relationship between LOS and demographic characteristics, diagnosis and treatment, concluded that these factors might contribute to a variance of 10-37% in the duration of hospitalization[18].

On discharge, an important problem is the lack of appropriate community structures. About 24-58% of days spent in acute wards are not acute situations[19]. After solving the acute problem, many patients cannot be discharged because they don't have anywhere else to go. There are great difficulties in providing community support, rehabilitation facilities, long-term care or a suitable place for the patient to live[1,12,19-21]. Also concerning the quality of services provided, the number of professionals available in inpatient services has an important role[8,17], as well as time availability for patient care. A recent study in Germany found that the time available for the patient is below the minimum established[22].

In an economic crisis context, investment in Psychiatry is scarce and limited. Thus, optimizing hospital resources is much needed so that patients receive the best treatment available and, when possible, do not remain in the hospital after resolution of the acute episode.

The Department of Psychiatry and Mental Health (DPMH) of *Centro Hospitalar do Tâmega e Sousa (CHTS)* – constituted by the S. Gonçalo Unit (USG), in Amarante, and the Padre Américo Unit (UPA), in Penafiel – serves about 520,000 inhabitants. Following successive restructuring, and after a period of two attending psychiatric inpatient units (16 beds in USG and 28 beds in UPA), the DPMH's Inpatient Unit (IU) was created in May 2014, in Penafiel, with 41 beds. At the same time, a redistribution of the limited human resources took place, creating the Inpatient Team (IT). This team encompasses four psychiatrists (with more time available for inpatient care), one psychologist, a social services technician, eighteen nurses, an administrative technician and several operating technicians.

The IU's regulation has been redesigned, clearly defining admissions' criteria and procedures. An admission protocol was created, describing procedures applied to all patients and in specific pathologies (namely, diagnostic and therapeutic auxiliary tests). New activities were created, including a Group of Psychological Support for Inpatients and Relaxation Sessions. A daily IT meeting is held for clinical debate and newly admitted

patient's presentation. Discharge plans are also discussed within the team, a factor that has been associated with a better service and decreased LOS[23].

OBJECTIVE

To evaluate the effectiveness of an IT, according to the most frequently used variables in published studies (length of stay and readmission rate).

METHODS

Analysis of DPMH's hospitalization records during two periods, from June 2013 to May 2014 and from June 2014 to May 2015, respectively before and after the IU and IT's creation. Patients with hospitalization for less than 24 hours and greater than or equal to 100 days were considered outliers.

Data analysis was performed using the Statistical Package for Social Sciences (SPSS, version 20.0). Descriptive measures are presented for all variables under study. Statistical procedures were used for the analysis of associations and intergroup differences. The association analysis was performed using the chi-square test, Pearson correlation coefficient (continuous variables) and Point-biserial (continuous/dichotomous variables). T-tests were used for analysing differences between groups.

Diagnostic categories were established according to DSM-5.

RESULTS

P1 Period

During the period from June 2013 to May 2014 (P1), prior to the IT's creation, 379 patients were hospitalized in the DPMH.

The overall average age of the sample was 46.85 years (SD=5.14, ranging between 18 and 85 years). The most frequent age groups were between 36 and 45 years (28.8%) and between 46 and 55 years (26.4%) and the less frequent age group was over 75 years (3.4%). The sample consisted of 161 males (42.5%) and 218 female (57.5%). There were no statistically significant differences ($t(313.82)=0.93$, $p=0.352$) between the age of men ($M=47.65$, $SD=15.23$) and women ($M=46.26$, $SD=11.13$). The mean LOS was 24.45 days, ranging between 1 and 94 days. The more common LOS was 7 days (mode=7). Men ($M=24.91$, $SD=17.89$) and women ($M=24.12$, $SD=18.13$) showed no statistically significant differences in LOS ($t(377)=0.42$, $p=0.674$). Age and LOS were positively correlated ($r=0.23$, $p<0.001$), with longer LOS in advanced ages.

Analysing diagnostic categories, the most frequent are depressive disorders (n=130, 34.30%) and schizophrenia and other psychotic disorders (n=73, 19.30%), shown in Table 1. There were no statistically significant associations between diagnostic and sex ($rsp=0.07$, $p=0.170$), age ($rpb=0.05$, $p=0.347$), or LOS ($rpb=-0.03$, $p=0.556$), presented in Table 2.

P2 Period

The population of inpatients admitted between June 2014 and May 2015 (P2), after the IT's creation, consisted mainly of women (61.8%, n=252), with average age of 48.18 years (SD

Table 1: Diagnostic categories and sex: descriptive measures (P1)

	Total		Sex			
			Male		Female	
	n	%	n	%	n	%
1- Schizophrenia and other psychotic disorders	73	19.3	51	69.9	22	30.1
2- Depressive disorders	130	34.3	36	27.7	94	72.3
3- Bipolar disorders	41	10.8	13	31.7	28	68.3
4- Neurodevelopmental disorders	13	3.4	5	38.5	8	61.5
5- Anxiety disorders, obsessive-compulsive	5	1.3	1	20.0	4	80.0
6- Dissociative and somatic disorders	35	9.2	11	31.4	24	68.6
7- Substance-related and addictive disorders	17	4.5	13	76.5	4	23.5
8- Neurocognitive disorders	18	4.7	11	61.1	7	38.9
9- Personality disorders	33	8.7	8	24.2	25	75.8
10- Other mental disorders	14	3.7	12	85.7	2	14.3

Table 2: Diagnostic categories and LOS: descriptive measures (P1)

	LOS (days)			
	Mean	DP	Minimum	Maximum
	n	%	n	%
1- Schizophrenia and other psychotic disorders	27.78	18.48	2	83
2- Depressive disorders	23.67	17.89	1	94
3- Bipolar disorders	25.61	19.12	1	72
4- Neurodevelopmental disorders	19.62	16.49	3	50
5- Anxiety disorders, obsessive-compulsive	11.60	9.24	2	24
6- Dissociative and somatic disorders	19.83	13.41	1	50
7- Substance-related and addictive disorders	23.12	17.40	4	76
8- Neurocognitive disorders	34.44	19.03	3	64
9- Personality disorders	22.85	19.65	1	68
10- Other mental disorders	24.21	18.12	2	56

= 15:52), ranging between 18 and 84 years. There was no statistically significant difference (t (406)=0.32, p=0.750) between the age of men (M=48.49, SD=15.40) and women (M=47.99, SD=15.62).

The mean LOS was 19.20 days, ranging from 1 to 75, with a 7 days mode. Regarding LOS, no statistically significant difference was found (t(406)=-1.50, p=0.135) between men (M=3.18, SD=12.97) and women (M=19.93,

SD=19.12). Age and LOS were positively correlated (r=0.25, p<0.001), with longer LOS in advanced ages.
The more frequent diagnostic categories were depressive disorders (n=121, 29.70%), schizophrenia and other psychotic disorders (n=80, 19.60%), exposed in Table 3. It was found a statistically significant correlation between sex and diagnostic category (rsp=0.118, p=0.017), detailed in Table 4. Age and diagnostic categories were not statistically correlated (rpb=-0.07, p=0.186).
It was found a statistically significant negative correlation between LOS and diagnostic category (rpb=-0.11, p=0.021).

P1 Period and P2 Period

A comparative analysis between both periods was held, and corresponding data is presented in Table 5.

It was not found any association or statistically significant differences between P1 and P2 periods regarding inpatients sex ($\chi^2(1)$=1:47, p=0.127) or age (t(785)=-1.26, p=0.208).
In both periods, the most common disorders were depressive disorders, and schizophrenia and other psychotic disorders.
It was confirmed a statistically significant difference in mean LOS (t(668)=4.72, p<0.001) between period P1 (M=24.45, SD=18.01) and P2 (M=19.20, SD=12.51). It emphasizes the 21.47% reduction of days of hospitalization in P2 compared to P1.
The readmission rates at thirty days were 16% in P1 and 18% in P2, but this difference was not statistically significant ($\chi^2(1)$=0.75, p=0.386).

Table 3: Diagnostic categories and sex: descriptive measures (P2)

	Total		Sex			
			Male		Female	
	n	%	n	%	n	%
1- Schizophrenia and other psychotic disorders	80	19.6	52	65.0	28	35.0
2- Depressive disorders	121	29.7	26	21.5	95	78.5
3- Bipolar disorders	61	15.0	23	37.7	38	62.3
4- Neurodevelopmental disorders	16	3.9	7	43.8	9	56.2
5- Anxiety disorders, obsessive-compulsive	3	0.7	0	0.0	3	100.0
6- Dissociative and somatic disorders	43	10.5	20	46.5	23	53.5
7- Substance-related and addictive disorders	19	4.7	11	57.9	8	42.1
8- Neurocognitive disorders	13	3.2	5	38.5	8	61.7
9- Personality disorders	43	10.5	5	11.6	38	88.4
10- Other mental disorders	9	2.2	7	77.8	2	22.2

Table 4: Diagnostic categories and LOS: descriptive measures (P2)

	LOS (days)			
	Mean	**DP**	**Minimum**	**Maximum**
	n	%	n	%
1- Schizophrenia and other psychotic disorders	21.03	13.31	2	59
2- Depressive disorders	19.17	12.89	2	61
3- Bipolar disorders	22.64	12.84	3	62
4- Neurodevelopmental disorders	14.81	10.44	4	38
5- Anxiety disorders, obsessive-compulsive	13.33	5.69	7	18
6- Dissociative and somatic disorders	16.16	8.38	0	37
7- Substance-related and addictive disorders	16.95	9.61	2	41
8- Neurocognitive disorders	30.31	18.30	13	75
9- Personality disorders	13.40	7.04	1	30
10- Other mental disorders	20.78	17.89	4	58

Table 5		P1 n = 379		P2 n = 408			
		n	%	n	%		
Sex	Male (n = 317)	161	42.5	156	38.2	$\chi 2(1) =$ 1.47.00	$p = .127$
	Female (n = 470)	218	57.5	252	61.8		
Age	(M, DP)	46.85	14.05	48.18	15.52	$t(785) =$ -1.26	$p = .208$
	Median	46.00	48.00				
	Mode	48.00	52.00				
	Min-Max	18-85	18-84				
Age Groups	<=25	21	5.5	27	6.6		
	26-35	59	15.6	66	16.2		
	36-45	109	28.8	97	23.8		
	46-55	100	26.4	87	21.3		
	56-65	49	12.9	72	17.6		
	66-75	28	7.4	34	8.3		
	>75	13	3.4	25	6.1		
LOS	(M, DP)	24.45	18.01	19.20	12.51	$t(668) =$ 4.72[1]	$p<.001$
	Median	20.00	17.00				
	Mode	7.00	7.00				
	Min-Max	1-94	1-75				
Diagnostic categories	1- Schizophrenia and other psychotic disorders	73	19.3	80	19.60		
	2- Depressive disorders	130	34.3	121	29.70		
	3- Bipolar disorders	41	10.8	61	15.00		
	4- Neurodevelopmental disorders	13	3.4	16	3.90		
	5- Anxiety disorders, obsessive-compulsive	5	1.3	3	0.70		
	6- Dissociative and somatic disorders	35	9.2	43	10.5		
	7- Substance-related and addictive disorders	17	4.5	19	4.70		
	8- Neurocognitive disorders	18	4.7	13	3.20		
	9- Personality disorders	33	8.7	43	10.50		
	10- Other mental disorders	14	3.7	9	2.20		

[1] Equal variances are not assumed

DISCUSSION

This study aimed to evaluate the impact of the creation of an IT on inpatients' LOS. A decrease of 21.47% of hospitalization was verified after IT creation. As stated in other studies, this can be attributed to higher availability of professionals and multidisciplinary discussion of cases (namely problem solving and discharge planning) between key elements from different professional classes[8,17,22,23].

Possible relationships between demographic and clinical factors and LOS were also evaluated. In line with previous studies' results[4-8], higher age was associated with increased LOS. Several factors can contribute to a longer duration of hospitalization in older people, in particular, higher frequency of organic comorbidities and greater risk of complications during hospitalization. A scarcest social and family support is also a major problem. The IT has often faced difficulties referring elderly patients, since institutions to integrate most of these patients at clinical discharge were found difficult to provide. Therefore, not only clinical factors but also social and family issues have a major influence on the duration of hospitalization of elderly patients.

No relationship between sex and LOS was found, similarly to previous studies[5,12].

Regarding diagnostic category, it was found a statistically significant correlation with LOS, in P2 period. The categories that showed longer LOS were neurocognitive disorders, bipolar disorders, and schizophrenia and other psychotic disorders. The categories with a shorter duration of hospitalization were anxiety and obsessive-compulsive disorders, personality disorders and neurodevelopmental disorders. Overall, the results were similar to other studies in this field[4,6-8,10,13-15].

The main limitations of this study relate to the fact that it is a retrospective study, which relied on data recorded at the admission date. Thus, it was not possible to obtain other information from all patients, making it impossible to study other variables.

CONCLUSIONS

This study demonstrates that the creation of an IT was associated with a decrease in the duration of hospitalization, confirming the importance of the optimization of human resources, particularly when these are scarce, aiming to improve care for psychiatric inpatients.

Investment in structures in the community will be, in our opinion, the next step for continued improvement of mental health care to the population covered by the DPMH of CHTS. These would also allow the reduction of admission rates and the utilization of the IU only by patients with severe mental illness and/or in crisis.

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The authors have declared no competing interests exist.
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