



FACULDADE DE MEDICINA DA UNIVERSIDADE DE COIMBRA

TRABALHO FINAL DO 6º ANO MÉDICO COM VISTA À ATRIBUIÇÃO DO GRAU DE MESTRE NO ÂMBITO DO CICLO DE ESTUDOS DE MESTRADO INTEGRADO EM MEDICINA

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***PSYCHOPATHOLOGICAL PROFILE OF PATIENTS WITH ACUTE
PSYCHIATRIC DISORDERS: PROGNOSTIC VALUE AND COURSE
DURING HOSPITALIZATION***

ARTIGO CIENTÍFICO

ÁREA CIENTÍFICA DE

PSIQUIATRIA

**TRABALHO REALIZADO SOB A ORIENTAÇÃO DE:
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[MARÇO/2015]



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**PSYCHOPATHOLOGICAL PROFILE OF PATIENTS WITH ACUTE
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DURING HOSPITALIZATION**

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[MARCH/2015]

PREFÁCIO

O percurso académico de um estudante do curso de Medicina pode variar consideravelmente, dependendo não só da faculdade onde estudou e do tipo de aprendizagens a que pôde aceder ao longo do mesmo, mas também da individualidade da experiência, isto é, da forma pessoalíssima como viveu o que lhe foi proporcionado. A Medicina, como área vastíssima de conhecimento em constante mutação, oferece a quem se inicia neste percurso um desafio considerável que se autorrenovará durante o resto da vida, não só no que respeita à constante actualização do conhecimento que o médico detém da sua área científica, mas também pelas competências que necessita adquirir e manter para levar a bom termo as solicitações do seu trabalho multifacetado.

Além do trabalho clínico propriamente dito, o médico deve saber como analisar conjuntos de dados clínicos e interpretá-los à luz de outros estudos, de forma a manter o seu trabalho relevante e procurar contribuir para o avanço do estado da arte. Por vários motivos, entre os quais a quantidade de informação que é necessário assimilar em tão pouco tempo, no percurso académico de um aluno de Medicina, essa faceta do trabalho científico é menos explorada. Resume-se a uma cadeira introdutória à Bioestatística no primeiro ano, onde a inexperiência e o desconhecimento dos característicos da actividade médica podem porventura minorar o impacto dessa aprendizagem; além disso, o contacto com artigos científicos ao longo do curso atende mais a uma interpretação esporádica dos mesmos, do que à sua utilização sistemática para interpretar juntamente com eles nova informação.

É no sentido de colmatar parcialmente essa deficiência que encarei a realização da minha tese de mestrado. Tive a oportunidade de desenvolver competências a vários níveis, entre as quais se podem enumerar a procura e selecção de informação relevante em variadas fontes; tratamento estatístico de dados clínicos, com especial enfoque na aprendizagem de alguns tipos de análises estatísticas e da sua utilidade na interpretação deste tipo de dados; e o

processo de transformação desses dados em bruto em conjuntos passíveis de serem transmitidos com rigor à comunidade científica, neste caso sob a forma de um artigo científico – que é o tipo basilar de reportamento de novas descobertas a serem avaliadas pelos pares.

Todos os trabalhos necessitam de um plano sólido resultante da percepção do que para ele se exige, para que o percurso decorra no sentido desejado e não em círculos. Para alguém que realiza um trabalho desta natureza numa área cujo contacto foi apenas introdutório, o apoio de quem possua uma vasta experiência no sentido de providenciar uma orientação no caminho a percorrer é mais do que necessário. Nesse sentido, gostaria de deixar um profundo agradecimento ao Sr. Professor Doutor Joaquim Cerejeira, cuja orientação pronta e incansável se revelou de extrema importância para a chegada desta empresa a bom termo. As dúvidas eram muitas, mas rapidamente se converteram em soluções. Sem a sua valiosa disponibilidade, este trabalho não teria certamente atingido o resultado presente.

Ao iniciar a concretização da tese, apenas detinha leves memórias da cadeira de Bioestatística do primeiro ano, aliadas a algumas noções básicas sobre a natureza deste tipo de trabalho; agora, apesar de ulteriores iterações serem necessárias para que as competências adquiridas possam ser aplicadas de forma sistemática e polida, sinto que se fundaram as bases para um trabalho futuro que se espera profícuo. Doravante, perante um problema de semelhante natureza, podendo embora deter uma visão incompleta do caminho a percorrer, saberei no mínimo o que procurar, e como, no sentido de lhe dar uma resposta.

Abstract

Introduction: Costs pertaining to hospitalization of psychiatric patients have a great impact on health systems of various countries. Length of stay and psychopathological dimensions might prove important variables to estimate resource allocation. The aim of this study was to determine prognostic value of psychopathological dimensions in determining length of stay, as well as documenting their evolution during treatment.

Methods: Patients consecutively hospitalized in five beds of Psychiatric Department of Centro Hospitalar Universitário de Coimbra during the period of three years were assessed by a specialist. Demographic data were collected and Clinical Global Impression Scale and 24-Item Brief Psychiatric Rating Scale were applied at admission and at discharge. Statistical analysis with descriptive statistics, mean differences and Pearson correlation between variables, as well as principal factor component analysis, were performed.

Results: Mean CGI score and BPRS score in all psychopathological dimensions improved after brief hospitalization, with the most significant being Depression and Anxiety domains. Correlation was not found between those scores and demographic variables. Length of stay was found to be only significantly predicted by CGI score at admission and three BPRS items (disorientation, excitement and distractibility). Eight components were extracted and interpreted as “Mania/Agitation”, “Positive Symptoms”, “Negative Symptoms”, “Cognitive Symptoms”, “Depression”, “Dysphoria”, “Anxiety” and “Depression/Anxiety Domain Symptoms”.

Discussion: In this study, we found that the Clinical Global Impression Scale and 24-Item Brief Psychiatric Rating Scale could be used together to predict the evolution of patients’ psychopathological features during treatment. However, psychopathological dimensions were found to be unhelpful in predicting length of stay, rendering them unreliable to estimate resource allocation.

Keywords: Psychopathological dimensions, Length of stay, Clinical Global Impression Scale, Brief Psychiatric Rating Scale, Factor Analysis, Psychiatry

1. Introduction

Psychiatric conditions have a large impact on the lives of patients, but also on the economic balance of countries. According to “The Global Burden of Disease” study, this type of conditions is responsible for 40% of years lived in incapacity, and is one of its principal causes. Moreover, it is now known that the impact that these conditions exert on the countries’ budget by means of direct and indirect costs is significant, adding up to 20% of health costs. [1] For those reasons, in the last decade, there has been a significant change in the mental health sector of many countries of North America and Europe, including Portugal, with the replacement of old institutions with facilities at the general hospitals and community-based services. A decrease in the length of stay (LOS) in acute psychiatric facilities has been subsequently felt, adding to the economical also therapeutic reasons, as some recent studies revealed that shorter LOS was as effective as or more effective than longer periods in some psychopathological conditions. [2] Nonetheless, this tendency to shorten LOS is not always beneficial, as some studies revealed. [3]

Despite advances in neuroscience and unlike other medical specialties, most disorders in Psychiatry are still defined and classified solely on the basis of their clinical syndromes according to the Diagnostic and Statistical Manual for Mental Disorders (DSM) [4] and International Classification of Diseases (ICD) [5] systems. However, natural boundaries between related syndromes are not always clear (e.g. mania and schizophrenia) and accumulating evidence suggests that the most currently recognized psychiatric disorders represent variation in symptomatology by dimensions rather than by categories. Thus, a dimensional assessment of psychiatric conditions is clinically useful as it provides an inclusive approach of all patients (including those who do not fit neatly into the available categories) and it may also be a powerful means of predicting outcome. This is a subject

which holds considerable debate, with some views leaning towards a pluralistic view of psychiatric classification. [6]

In daily clinical practice, the evaluation of the psychopathological profile of patients with acute psychiatric disorders is crucial to determine an adequate therapeutic strategy and whether hospitalization is needed for a specific patient. Because of the significance of these clinical decisions regarding resource allocation in health care, the assessment of psychopathology by medical staff is likely to exercise significant influence over how a given policy is implemented and how the services are actually provided. However, while there were studies arguing that psychopathological features of patients are a better predictor of LOS than clinical diagnoses, others found that psychopathology might not be suitable as a primary indicator for estimating LOS and contingent costs. [7]

In conclusion, whilst many clinical decisions in daily practice with persons suffering from psychiatric disorders depend upon their psychopathological assessment, there is still a relative shortage of prospective studies that explore how psychopathological symptoms influence the patients' clinical outcomes. The aim of this study was, therefore, to determine the prognostic value of the psychopathological dimensions at admission in relation to duration of treatment and LOS, and to document the evolution during treatment of the psychopathological dimensions measured at admission.

2. Methods

The sample consisted of 189 patients who were consecutively hospitalized in five beds in the Psychiatric Department of Centro Hospitalar Universitário de Coimbra during the period between 1st January 2011 and 31st December 2013. This unit receives patients with acute psychiatric conditions. Patients with LOS inferior to 48 hours were excluded. The patients were assessed by a specialist in Psychiatry during the first three days after admission

and at the time of discharge; 24-item Brief Psychiatric Rating Scale and Clinical Global Impression Scale were used for assessment. The first is an instrument frequently used in the evaluation of the possible presence and severity of various psychiatric symptoms, and provides a good way of measuring improvement of patients over a brief period of hospitalization, as a study points out. [8] While there were a 16-item and an 18-item versions of the scale created in the nineteen sixties, [9, 10] the 24-item version, currently in its fourth edition, [11] allows a detailed interview with more probe questions for each symptom as well as improved reliability between raters and better defined anchor points. [12] The latter is also a widely used instrument in assessment of psychiatric conditions, including severity of illness, global improvement and efficacy index as three global measures of the patient's condition. Its appeal resides in it being concise and easy to administer, [13] sensible to change, useful across diagnostic groupings, and reliable when used by skilled clinicians. [14] Clinical and socio-demographic data were collected during treatment, and diagnosis was determined according to DSM-5.

An analysis with descriptive statistics and paired-samples t-test [15] was conducted in order to compare values at admission and at discharge. Correlation between variables was determined by Pearson's test. [16] Two-way ANOVA was used to determine the effect of independent variables on LOS. [17] A multiple regression was subsequently conducted. [18] Factor analysis with principal component extraction method was conducted for BPRS items, with subsequent Varimax rotation performed. [19] Statistical significance is attained for a p value lesser than 0.05 ($p < 0.05$). All analyses were performed with SPSS version 21.0.

3. Results

3.1. Descriptive Statistics at admission and at discharge

The socio-demographic and clinical characteristics of the sample are shown in Table 1.

Mean CGI score was significantly higher at admission than at discharge (4.35 ± 1.18 vs. 3.62 ± 1.26 ; $t(188)=8.12$, $p<0.01$) (Fig. 1). Similarly, BPRS total scores were significantly reduced during hospitalization (43.72 ± 10.72 vs. 31.72 ± 7.13 ; $t(188)=15.67$, $p<0.01$) (Fig.3). Only 8.5% of subjects didn't improve globally (as measured by CGI) during hospitalization whereas in 88.5% of patients the severity of psychopathology (as measured by BPRS) was reduced at discharge. Most patients (65.4%) were classified as being "much improved" or "very much improved" (Fig. 2).

Table 1. Socio-demographic and clinical characteristics of the sample (N = 189)			
Age	49,9 ± 17,6 (15 – 90)	CGI Scale	
Gender (female)	143 (75.7%)	At admission	4,4 ± 1,2 (2 – 7)
Marital Status		At discharge	3,6 ± 1,3 (1 – 7)
Married	77 (40.7%)	Improvement	2,2 ± 1,0 (1 – 6)
Single	50 (26.5%)	BPRS Scale	
Divorced	30 (15.9%)	At admission	43,7 ± 10,7 (24 – 79)
Widow	25 (13.2%)	At discharge	31,7 ± 7,1 (24 – 70)
Civil Union	7 (3.7%)	Change	-12,0 ± 10,5 (-47 – 15)
		Length of stay	21.7 ± 21.5 (2 – 196)
SD: standard deviation; CGI: Clinical Global Impression Scale; BPRS: Brief Psychiatric Rating Scale Age, CGI and BPRS values are given in Mean ± SD (Min. – Max.). Gender and marital status values are given in absolute value and percentage.			

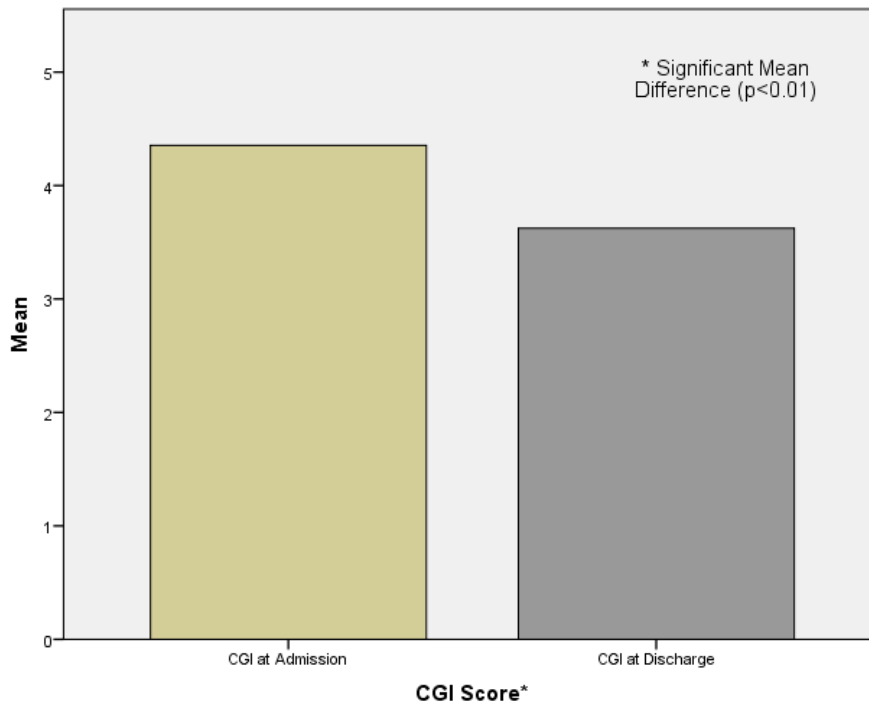


Fig. 1 Mean CGI score at admission vs. at discharge.

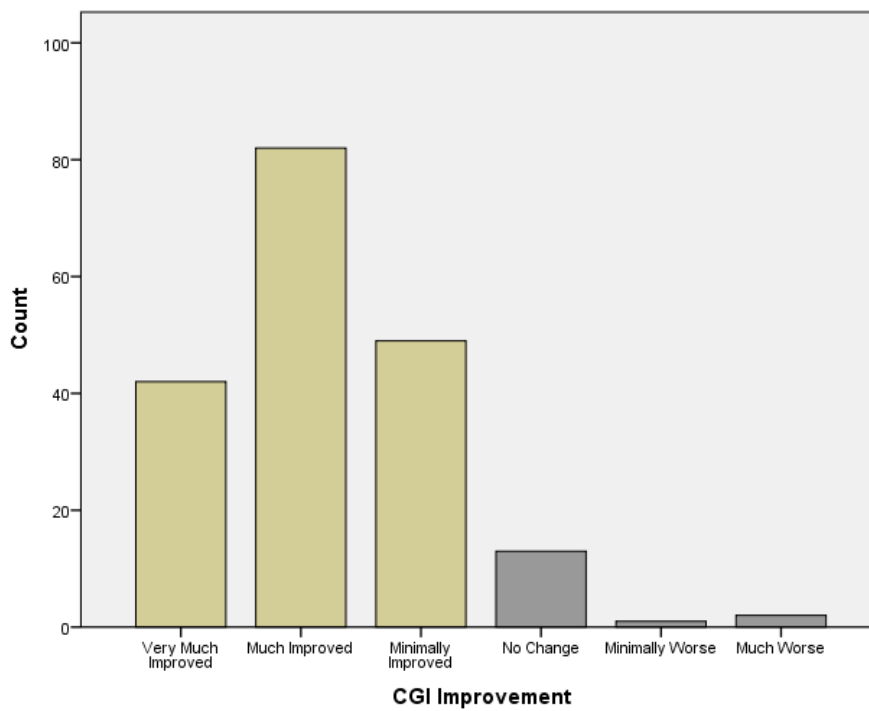


Fig. 2 CGI Improvement of patients during treatment. Absolute values.

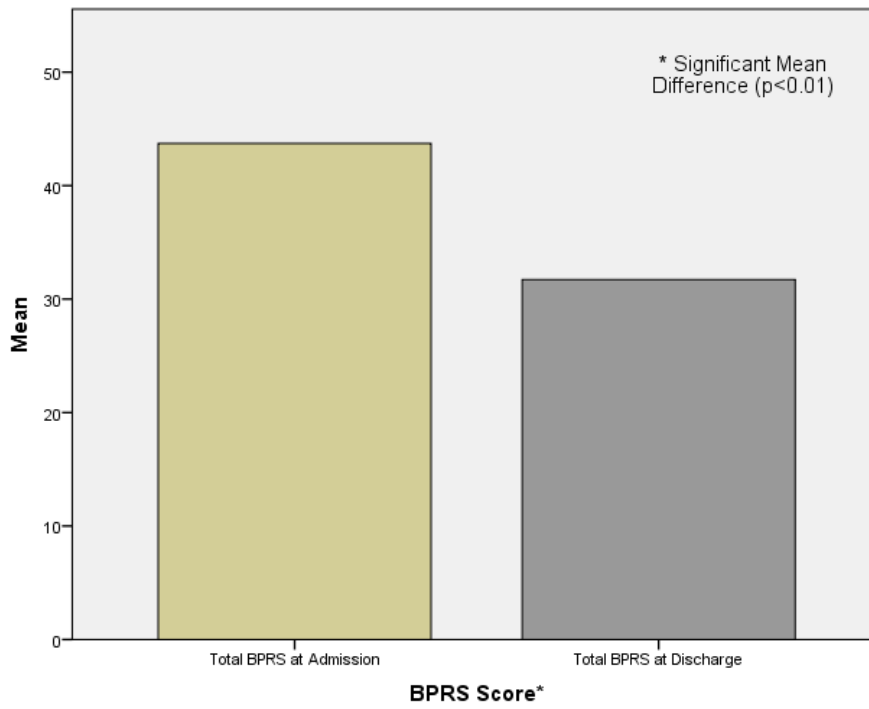


Fig. 3 Mean BPRS score at admission vs. at discharge.

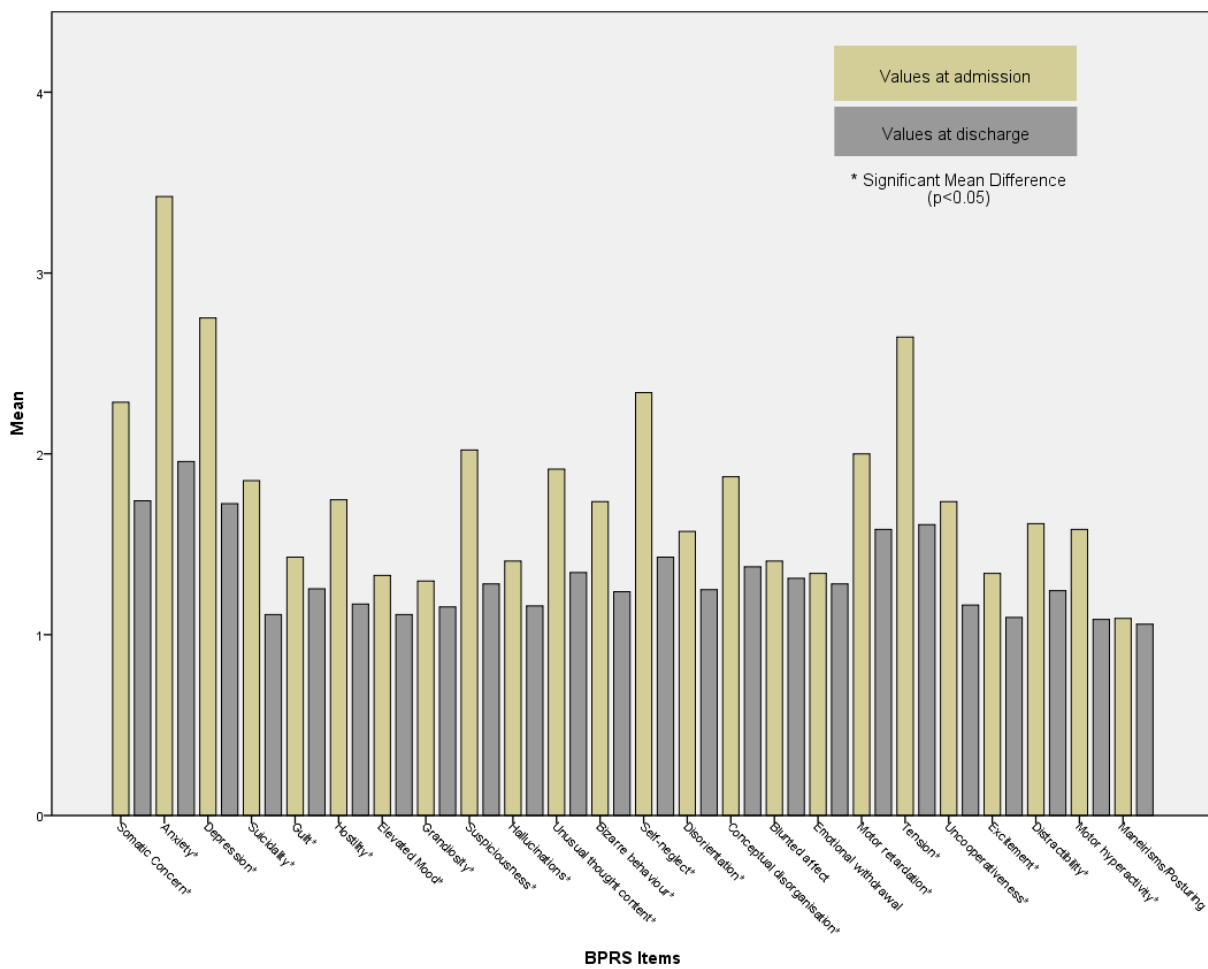


Fig. 4 Mean BPRS item score at admission vs. at discharge.

Figure 4 relates the BPRS score at admission and discharge for each item of the scale. There was a decrease in the mean values between admission and discharge for every item of the BPRS scale, which indicates a general improvement in all psychopathological dimensions. We found that, from the 24 items of the BPRS scale, only blunted affect, emotional withdrawal and mannerisms and posturing didn't have a significant mean difference; for guilt it was significant ($p<0.05$) and for the others highly significant ($p<0.01$).

A positive correlation between CGI total score at admission and at discharge was found (0.486, $p<0.01$), as well as between BPRS total scores measured at the same periods (0.359, $p<0.01$).

CGI and BPRS values also correlated with each other. The CGI score at admission was tested against total BPRS at admission (0.653, $p<0.01$), as well as CGI score at discharge against total BPRS at discharge (0.253, $p<0.01$). Besides, CGI improvement was tested against BPRS change (0.250, $p<0.01$). The results show a positive correlation between the three groups of variables, which means that CGI and BPRS scales can be used together to predict and analyze the evolution of the patients.

3.2. Relation between clinical features and other variables

No correlation was found between age and any of the variables tested (data not shown), except for total BPRS at discharge (0.190, $p<0.01$).

A positive correlation between LOS and CGI at admission (0.418, $p<0.01$) and at discharge (0.172, $p<0.05$) was found. LOS also correlated with total BPRS at admission (0.316, $p<0.01$) and, similarly, at discharge (0.220, $p<0.01$). There was a negative correlation between LOS and BPRS change (-0.173, $p<0.05$), but no association was found between LOS and CGI improvement.

We examined the effect of BPRS items at admission, CGI score at admission, age, gender and marital status on LOS. Only four BPRS items affected LOS: disorientation, $F(1, 154)=6.220$, $p<0,05$; conceptual disorganization, $F(1, 154)=5.844$, $p<0,05$; excitement, $F(1, 154)=10.016$, $p<0.01$; and distractibility, $F(1, 154)=5.378$, $p<0.05$. There was also a significant effect of CGI score at admission on LOS, $F(1, 154)=10.42$, $p<0.01$.

There were five predictors of LOS which explained 25.6% of the variance, $R^2=0.256$, $F(5,183)=12.614$, $p<0.01$. It was found that CGI at admission significantly predicted LOS ($\beta=7.906$, $p<0.01$), as well as disorientation ($\beta=3.277$, $p<0.05$), excitement ($\beta=6.714$, $p<0.01$) and distractibility ($\beta=-5.048$, $p<0.01$). Only conceptual disorganization did not significantly predict LOS.

3.3. Relation between psychopathological features (CGI vs. BPRS items)

CGI at admission positively correlated with all BPRS items' score at admission, except for somatic concern, guilt and hostility. For values of BPRS items' score at discharge, only 8 of the 24 items available correlated with CGI at admission (grandiosity, unusual thought content, bizarre behavior, disorientation, conceptual disorganization, uncooperativeness, distractibility and motor hyperactivity). The results are shown in table 2.

CGI at discharge positively correlated with 10 BPRS items' score at admission (anxiety, depression, suspiciousness, hallucinations, unusual thought content, self-neglect, conceptual disorganization, blunted affect, emotional withdrawal and mannerisms and posturing), while being positively correlated with 9 BPRS items' score at discharge (depression, hallucinations, unusual thought content, self-neglect, disorientation, conceptual disorganization, blunted affect, emotional withdrawal and uncooperativeness). The results are shown in table 3.

Table 2. Pearson correlation between CGI and BPRS scale				
BPRS Items	CGI adm. vs BPRS adm.	p	CGI adm. vs BPRS dis.	p
Somatic concern	0.052	0.479	0.031	0.669
Anxiety	0.269**	<0.01	0.067	0.358
Depression	0.217**	<0.01	0.083	0.259
Suicidality	0.162*	0.026	0.131	0.071
Guilt	0.067	0.357	0.034	0.645
Hostility	0.141	0.052	0.041	0.580
Elevated mood	0.169*	0.020	0.017	0.812
Grandiosity	0.252**	<0.01	0.160*	0.028
Suspiciousness	0.322**	<0.01	0.131	0.072
Hallucinations	0.319**	<0.01	0.098	0.180
Unusual thought content	0.405**	<0.01	0.212**	0.003
Bizarre behavior	0.391**	<0.01	0.170*	0.019
Self-neglect	0.369**	<0.01	0.124	0.088
Disorientation	0.195**	0.007	0.158*	0.030
Conceptual disorganization	0.316**	<0.01	0.186*	0.010
Blunted affect	0.238**	0.001	0.094	0.198
Emotional withdrawal	0.179*	0.014	0.070	0.338
Motor retardation	0.172*	0.018	-0.061	0.407
Tension	0.195**	0.007	0.020	0.788
Uncooperativeness	0.385**	<0.01	0.203**	0.005
Excitement	0.204**	0.005	0.007	0.922
Distractibility	0.303**	<0.01	0.157*	0.031
Motor hyperactivity	0.250**	0.001	0.160*	0.028
Mannerisms and posturing	0.207**	0.004	0.119	0.103
Total BPRS score	0.653**	<0.01	0.228**	0.002

Table 3. Pearson correlation between CGI and BPRS scale				
BPRS Items	CGI dis. vs BPRS adm.	p	CGI dis. vs BPRS dis.	P
Somatic concern	0.113	0.120	0.095	0.193
Anxiety	0.192**	0.008	0.059	0.420
Depression	0.161*	0.027	0.223**	0.002
Suicidality	0.108	0.141	0.045	0.534
Guilt	-0.016	0.829	-0.032	0.667
Hostility	0.027	0.710	-0.032	0.657
Elevated mood	-0.069	0.344	-0.127	0.081
Grandiosity	0.068	0.355	0.011	0.880
Suspiciousness	0.148*	0.043	0.083	0.258
Hallucinations	0.267**	<0.01	0.222**	0.002
Unusual thought content	0.240**	0.001	0.177*	0.015
Bizarre behavior	0.086	0.240	0.132	0.069
Self-neglect	0.242**	0.001	0.168*	0.021
Disorientation	0.059	0.424	0.242**	0.001
Conceptual disorganization	0.166*	0.022	0.189**	0.009
Blunted affect	0.273**	<0.01	0.192**	0.008
Emotional withdrawal	0.211**	0.004	0.205**	0.005
Motor retardation	0.027	0.707	0.079	0.278
Tension	0.124	0.089	0.076	0.301
Uncooperativeness	0.106	0.148	0.208**	0.004
Excitement	-0.009	0.906	-0.112	0.126
Distractibility	0.010	0.896	0.077	0.294
Motor hyperactivity	-0.021	0.773	-0.012	0.869
Mannerisms and posturing	0.179*	0.014	0.137	0.061
Total BPRS score	0.307**	<0.01	0.253**	<0.01

3.4. Factor analysis

The sample, being composed of 189 patients, almost attains the number of 200 observations considered fair for sample adequacy. Correlations between items were all below 0.9 (highest value being 0.832), thus excluding the possibility of multicollinearity, and therefore permitting the use of all 24 variables in the test. Moreover, Kaiser-Meyer-Olkin Measure of Sampling Adequacy returned a value of 0.755, which is a good value for

adequacy of the sample, and the result of Bartlett's Test of Sphericity was significant ($p < 0.01$).

Table 4. Communalities after extraction for BPRS items

BPRS Item	Communality	BPRS Item	Communality
Somatic concern	0.744	Self-neglect	0.624
Anxiety	0.816	Disorientation	0.806
Depression	0.764	Conceptual disorganization	0.703
Suicidality	0.717	Blunted affect	0.829
Guilt	0.665	Emotional withdrawal	0.829
Hostility	0.753	Motor retardation	0.682
Elevated mood	0.865	Tension	0.765
Grandiosity	0.791	Uncooperativeness	0.745
Suspiciousness	0.740	Excitement	0.872
Hallucinations	0.694	Distractibility	0.709
Unusual thought content	0.850	Motor hyperactivity	0.762
Bizarre behavior	0.597	Mannerisms and posturing	0.696

Table 4 shows the communalities for BPRS items after extraction, which were generally above 0.6 except for bizarre behavior. The analysis resulted in 8 components with Eigenvalues greater than 1, which together explain more than 75% of the total variance (table 5). These results are illustrated by a scree plot (Fig. 5).

The rotated component matrix for the BPRS items is shown in table 6. The common cut-off of 0.40 for size of loading to be interpreted was adopted, as our sample size was approximately 200. [20]

Table 7 summarizes the BPRS items by component extracted. Factor 1 was interpreted as “Mania/Agitation”, factor 2 as “Positive Symptoms”, factor 3 as “Negative Symptoms”, factor 4 as “Cognitive Symptoms”, factor 5 as “Depression”, factor 6 as “Dysphoria”, factor 7 as “Anxiety” and factor 8 as “Depression/Anxiety Domain Symptoms” [21-24].

Table 5. Total variance explained for BPRS items

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.381	22.420	22.420	5.381	22.420	22.420
2	3.054	12.723	35.143	3.054	12.723	35.143
3	2.362	9.843	44.986	2.362	9.843	44.986
4	2.009	8.373	53.359	2.009	8.373	53.359
5	1.585	6.605	59.963	1.585	6.605	59.963
6	1.405	5.855	65.818	1.405	5.855	65.818
7	1.193	4.972	70.790	1.193	4.972	70.790
8	1.030	4.291	75.081	1.030	4.291	75.081
9	0.745	3.103	78.184			
10	0.645	2.687	80.871			
11	0.566	2.358	83.229			
12	0.538	2.242	85.471			
13	0.516	2.148	87.619			
14	0.475	1.981	89.600			
15	0.381	1.587	91.187			
16	0.366	1.526	92.713			
17	0.325	1.355	94.067			
18	0.283	1.179	95.246			
19	0.267	0.114	96.360			
20	0.219	0.913	97.273			
21	0.206	0.860	98.133			
22	0.177	0.739	98.872			
23	0.142	0.592	99.464			
24	0.129	0.536	100.000			

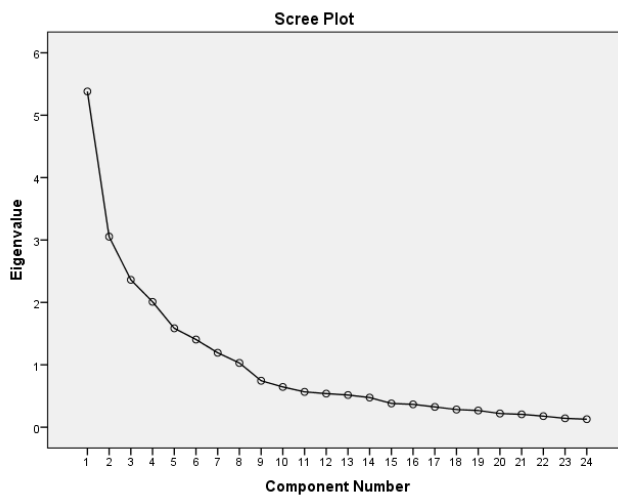
**Fig. 5** Eigenvalues scree plot for the factors extracted (BPRS items).

Table 6. Component matrix for BPRS items

BPRS Items	Components							
	1	2	3	4	5	6	7	8
Somatic concern	-0.042	0.027	-0.096	0.010	-0.166	-0.226	0.260	0.766*
Anxiety	0.060	0.135	-0.169	-0.007	0.319	-0.106	0.737*	0.330
Depression	-0.190	-0.212	0.018	0.007	0.705*	-0.130	0.195	0.361
Suicidality	-0.136	-0.252	-0.074	-0.084	0.750*	-0.108	0.218	-0.042
Guilt	-0.034	-0.017	-0.038	-0.054	0.797*	-0.051	-0.089	-0.119
Hostility	0.131	0.148	0.093	<0.01	-0.123	0.825*	0.058	-0.076
Elevated mood	0.922*	0.029	-0.052	0.036	-0.081	0.028	0.035	0.035
Grandiosity	0.791*	0.334	0.066	-0.115	-0.045	-0.162	-0.021	-0.086
Suspiciousness	-0.122	0.693*	-0.084	0.112	-0.063	0.464*	0.030	0.077
Hallucinations	0.137	0.807*	0.059	-0.069	-0.104	-0.025	-0.026	0.066
Unusual thought content	0.083	0.903*	-0.007	0.044	-0.112	0.088	0.067	0.040
Bizarre behavior	0.238	0.523*	0.267	0.136	-0.146	0.250	0.194	-0.235
Self-neglect	-0.034	0.116	0.284	0.655*	0.115	0.132	0.024	0.262
Disorientation	-0.034	-0.022	0.043	0.875*	-0.174	-0.029	0.038	-0.061
Conceptual disorganization	0.155	0.555*	0.292	0.407*	-0.102	-0.014	0.068	-0.324
Blunted affect	-0.047	0.102	0.883*	0.113	0.003	0.095	-0.090	0.077
Emotional withdrawal	-0.033	0.027	0.889*	0.085	-0.032	0.128	-0.103	0.049
Motor retardation	-0.133	0.006	0.373	0.242	0.210	0.159	-0.229	0.587*
Tension	0.135	0.043	0.025	0.149	0.036	0.205	0.823*	-0.041
Uncooperativeness	0.103	0.154	0.323	0.356	-0.142	0.667*	0.080	-0.090
Excitement	0.912*	0.032	-0.043	0.055	-0.073	0.156	0.042	-0.049
Distractibility	0.422*	0.091	-0.062	0.666*	-0.014	0.241	0.119	0.059
Motor hyperactivity	0.679*	-0.005	-0.083	0.312	-0.180	0.282	0.253	-0.148
Mannerisms and posturing	-0.027	0.010	0.619*	-0.031	-0.175	-0.024	0.395	-0.352

* Values equal or above the cut-off value.

Table 7. BPRS items loaded on each component.				
Components	1	2	3	4
BPRS Items	Elevated mood Grandiosity Excitement Distractibility* Motor hyperactivity	Suspiciousness* Hallucinations Unusual thought content Bizarre behavior Conceptual disorganization*	Blunted affect Emotional withdrawal Mannerisms and posturing	Self-neglect Disorientation Conceptual disorganization* Distractibility*
Components	5	6	7	8
BPRS Items	Depression Suicidality Guilt	Hostility Suspiciousness* Uncooperativeness	Anxiety Tension	Somatic concern Motor retardation
* BPRS items loaded on 2 components.				

4. Discussion

In this study, we verified that, for the vast majority of the included subjects, hospitalization was beneficial to their condition, with both CGI and BPRS scores improving during treatment. Both scales significantly correlated with each other, which means they can be used together to assess the patients, but also have some predictive value when used alone. This is consistent with other studies [25-28] which, while focusing on groups of patients with Schizophrenia, attest for the validity of using psychopathological dimensions as a way of evaluating patients during treatment and predicting their evolution.

Older patients usually had higher BPRS score at discharge, which might have implications in predicting the success of treatment according to age, but conclusions cannot be made based on the results of this study, as no other correlation was found between age and other parameters. Particularly, the correlation with CGI score at discharge was almost significant, which, having been verified, could have attested for the age variable being more important at predicting the psychopathological state of the patients at discharge.

Psychopathological features were generally improved, with those associated with mood and anxiety disorders (such as anxiety, depression, self-neglect and tension) having the most significant improvements across the sample. It is important to note, however, that these features had the highest scores at admission when compared to the other dimensions whose reduction was not as substantial. It is also important to note that, at admission, the psychopathological features as measured with BPRS scale were related more closely to CGI (21 from the 24 items) than at discharge (with only 9 of the 24 items correlating with low strength). This suggests that a diversity of psychopathological symptoms, while present at discharge, were not deemed to be clinically relevant probably because of their mild severity (as observed at discharge).

We may consider our mean time of 21.7 days of hospitalization to be brief, as shown in another article. [2] The significant decrease in the average values of both CGI score (0.73) and total BPRS score (12.00) can lead to the conclusion that brief hospitalization did have a positive impact on the psychopathological dimensions of the patients. In other studies, this is not consensual, however. While a study argued that brief hospitalization was found to be highly effective, [2] another reported that patients with mild disorders were unlikely to benefit from inpatient treatment. [3] A longer length of stay was associated with a greater decrease of BPRS total score, but not with CGI score. Generally, patients with higher CGI and BPRS scores at admission were hospitalized for longer periods, although they also presented higher values at discharge than those with shorter LOS. We also found that LOS could only be predicted by CGI at admission and 3 BPRS items (disorientation, excitement and distractibility). Our results corroborate a study that argues that psychopathology at admission may not be suitable to estimate resource use, and therefore predicting financing of inpatient care facilities, [7] and another study mentioning it has no relationship with demographic variables. [2] These findings contrast, however, with another study, [29] which attested for

the influence of various variables on LOS, including gender, age, severity of hospitalization and marital status.

Factor analysis showed that although the factors extracted were generally constituted by distinct symptoms, there was some overlapping between them. Distractibility was included in “Mania/Agitation” and “Cognitive Symptoms”; conceptual disorganization in “Positive Symptoms” and “Cognitive Symptoms”; and suspiciousness was included in both “Positive Symptoms” and “Dysphoria”. Moreover, while the first components had more distinct differences in symptoms with which to refer clinical entities, the latter became less meaningful, especially with “Depression”, “Anxiety” and “Depression/Anxiety Domain Symptoms” factors, which we feel could represent the same cluster of clinical features. Difficulty in categorization and interpretation of components may be represented by the variations across studies who performed a similar analysis. [21-24] These differences, and other limitations that usually accompany these studies, including our own, attest for the need of having greater consistency in the criteria applied for categorization, in order to get more meaningful results. [30]

There were several limitations which have to be taken into account when interpreting the results of our study. First, there was a relatively small number of patients studied, although high communalities, such as in our case, might render the small sample size sufficient. [31] All of them were hospitalized at a single inpatient unit. In the particular case of this study, said unit recruits more female patients than male patients, as can be seen by the gender distribution of our sample, possibly having implications on the distribution of the psychopathological features regarding different incidence on genders. These facts impact the generalizability of our results. Another limitation of our study was the absence of follow-up on the patients recruited. Moreover, the variables taken into consideration didn't account for

the diagnoses of patients, and no analyses were performed to compare diagnostic groups, which would have furthered the characterization of the psychopathology of this sample.

In conclusion, in this study we found that the generality of patients benefited from brief hospitalization, with all psychopathological dimensions but particularly those associated with anxiety and depression disorders being improved. There was evidence, however, that psychopathological features might not be the best predictors of length of stay and resource allocation. Further studies are necessary in order to refine the categorization criteria, so as to obtain more consistency across multiple studies.

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