Readmission to an Adolescent Psychiatry Inpatient Unit: Readmission Rates and Risk Factors

Reinternamentos Hospitalares num Serviço de Pedopsiquiatria: Taxa de Readmissão e Fatores de Risco

ARTIGO ORIGINAL

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ABSTRACT

Introduction: Most mental disorders have a chronic evolution and therefore a certain amount of psychiatric readmissions are inevitable. Several studies indicate that over 25% of child and adolescent inpatients were readmitted within one year of discharge. Several risk factors for psychiatric readmissions have been reported in the literature, but the history of repeated readmissions is the most consistent risk factor. Our aim is to calculate the readmission rates at 30 days and 12 months after discharge and to identify associated risk factors.

Material and Methods: The authors consulted the clinical files of patients admitted to the Inpatient Unit between 2010 and 2013, in order to calculate the readmission rates at 30 days and at 12 months. The demographic and clinical characteristics of the readmitted patients were analyzed and compared with a second group of patients with no hospital readmissions, in order to investigate possible predictors of readmission.

Results: A total of 445 patients were admitted to our inpatient unit between 2010 and 2013. Six adolescents were readmitted in a 30 days period (1.3%) and 52 were readmitted in a 12 month period after discharge (11.5%). Duration of the hospitalization and the previous number of mental health admissions were significant predictors of future hospital readmissions ($p = 0.04$ e $p = 0.014$).

Discussion: The low readmission rates may reflect the positive clinical and sociofamilial support being provided after discharge.

Conclusion: Rehospitalisation is considered a fundamental target for intervention concerning prevention and intervention in mental healthcare. Thus, knowledge regarding their minimisation is crucial.

Keywords: Adolescent; Hospitalization; Mental Disorders; Patient Readmission; Portugal; Psychiatric Department, Hospital; Risk Factors

RESUMO

Introdução: A maioria das perturbações mentais tem uma evolução crónica pelo que certos reinternamentos são inevitáveis. Vários estudos indicam taxas de reinternamento pedopsiquiátrico superiores a 25%. O nosso objetivo é calcular as taxas de readmissão no internamento pedopsiquiátrico do Centro Hospitalar do Porto a 30 dias e um ano após a alta, e identificar os fatores de risco associados.

Material e Métodos: A metodologia consistiu na consulta dos processos clínicos dos doentes internados na Unidade de Internamento do Centro Hospitalar do Porto entre 2010 e 2013, a fim de calcular as taxas de readmissão. Foram também recolhidas as características demográficas e clínicas dos doentes readmitidos. Finalmente, os resultados do grupo de doentes reinternados foram comparados com um segundo grupo de doentes selecionados aleatoriamente e sem readmissões hospitalares, a fim de investigar possíveis fatores de risco para reinternamentos.

Resultados: Um total de 445 doentes foi admitido entre 2010 e 2013. Seis adolescentes foram readmitidos no período de 30 dias (1,3%) e 52 foram readmitidos nos 12 meses após a alta (11,5%). A análise comparativa revelou que a duração do internamento e o número de internamentos anteriores são preditores significativos ($p = 0,04$ e $p = 0,014$) para reinternamento.

Discussão: As baixas taxas de readmissão podem refletir não só a eficácia da intervenção terapêutica durante o internamento como também um bom suporte clínico e sociofamiliar após a alta.

Conclusão: Os reinternamentos são considerados um alvo fundamental quanto à prevenção e intervenção nos cuidados de saúde mental. Assim, o conhecimento sobre a sua minimização é crucial.

Palavras-chave: Adolescente; Factores de Risco; Hospitalização; Perturbações Mentais; Portugal; Readmissão do Doente; Serviço de Psiquatria

INTRODUCTION

Most mental disorders follow a chronic clinical course with frequent relapses and unavoidable psychiatric readmissions.[1] More than 25% of admitted children and adolescents were readmitted within one year upon discharge, according to different studies[1,2] and 30 to 50% rates have been more recently described,[3-5] while 30-day readmission rates of 10 to 14% have also been found.[6,7]

Different risk factors for readmission of adult patients to psychiatric wards have been described in literature, with conflicting results, such as the fact that patients are diagnosed with (i) psychotic or (ii) personality disorders, (iii) poor compliance with treatment, (iv) substance abuse, (v) lack of occupation, (vi) poor family support and (vii) family history of mental illness.[3,5,7–9] Less studies on the risk factors for readmission in children and adolescents have been found, even though the following risk factors were described: disease severity,[5,8] presence of disruptive behaviour or severe behaviour disorders,[2,5] parental harsh discipline,[2] low parental

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involvement,[2] patients diagnosed with mood,[10] psychotic or eating disorders,[5] institutionalisation,[5,7] suicidal behaviour,[5,7] learning problems,[5] length of stay in hospital[8,9,11] and lack of an adequate post-discharge child psychiatric care.[3,5,8,10] An history of repeated readmissions is the most consistent risk factor described in literature.[3,5-8]

The following risk factors for readmission were described in a previous study carried out in our department at a time when it was included into the *Hospital Central Especializado de Crianças Maria Pia*, involving the group of patients admitted between 1999 and 2003 with personality, eating or psychotic disorders and previously admitted for at least 30 days (Teles A, Martins V, Guerra J, Fontes C, Rodrigues AC. Personal communication and poster presentation to the *XV Encontro Nacional de Psiquiatria da Infância e da Adolescência*).

No other studies have been found on child psychiatric hospital readmissions in Portugal. One of the main constraints regarding the generalisation of the international studies regards the specific characteristics of each ward as these are mostly specialised in a certain pathology or age group. The ward of the Department of Children and Adolescent Psychiatry at the *Centro Hospitalar do Porto* was launched in 1974 and has currently a 10-bed capacity, providing psychiatric medical care to young patients aged 12 to 17 living in the Northern region of Portugal, even though patients from other regions may be admitted. Younger children may exceptionally be admitted to the ward whenever having a clinical indication. Child psychiatrists, clinical psychologists, social assistants, cultural entertainers and nurses are included in the unit's multidisciplinary staff, providing specific psychotherapeutic approach to patients and families, namely individual and family approach (artistic expression group, inpatient therapy group and parents group). A therapy intervention in Family Therapy and Moreno Psychodrama is available and may be requested whenever necessary.

Specific criteria for a therapeutic intervention are considered and usually occurring when other forms of treatment are insufficient, when patient's safety is concerned or in case of any severe psychological decompensation. The fact that the ward is a confined and protective space makes it a preferred mean for diagnostic clarification and for the implementation of intensive treatment, allowing for a quick therapeutic switch. The fact that the unit is not designed for the treatment of drug addictions or for juvenile residential care is worth mentioning. The ward allows for the assessment of young patients with severe psychiatric symptoms, the clarification of a demanding diagnosis and for an adequate treatment within a protected and specialised environment.

This study aimed at the assessment, at two different times, of the readmission rates in this generalist ward (30-day and one year post-discharge) and at the identification of risk factors.

MATERIAL AND METHODS

The clinical records of the patients admitted to the ward between Jan 2010 and Dec 2013 were analysed, involving a 12-month post-discharge follow-up, in order to obtain 30-day and 12-month readmission rates. Data on any readmission of patients who were discharged to an adult Psychiatry department during the 12-month follow-up period were obtained from the *Plataforma de Dados da Saúde* (PDS).

The socio-demographic and clinical characteristics of the patients readmitted within a 12-month period post-discharge were analysed and included into a 'Readmission Group' (n = 51). Data regarding patient's gender, age, occupation, main caregiver, district of origin, reason for admission, length of stay, number of previous psychiatric admissions, substance abuse, history of suicidal attempts, family history of mental illness and post-discharge care upon index admission (IA) were obtained, in which IA corresponds to patient's initial admission over the study period (Jan 2010 to Dec 2013) followed or not by a readmission within a one-year period, regardless of whether it was an initial admission or a readmission. Only the principal diagnosis has been considered, i.e. the diagnosis responsible for the symptoms underlying the admission and was subsequently classified according to the DSM IV-TR criteria in order to allow for a statistical analysis. DSM-IV-TR was the most recent classification system at the time of the study and in use at the unit. Comorbidities were not considered.

Finally, the results obtained in the first group of patients who were at least once readmitted within a year were compared with a 'Control Group' of patients randomly selected from all the patients who were not readmitted over that period of time (n = 58). The size of the study sample was designed in order to approximately meet the number of readmitted patients.

The SPSS 20.0 software has been used for the statistical analysis. Student's t-test was used for the comparison between continuous variables and chi-square for the assessment of the association between categorical variables. A logistic regression was applied by using the length of stay and the number of previous admissions. A statistical significance has been considered with $p < 0.05$.

RESULTS

A total of 445 patients have been admitted over the study period (2010 - 2013). Only six patients were readmitted within 30 days upon discharge, corresponding to a 1.3% readmission rate, while 51 patients were readmitted within a year upon discharge, corresponding to an 11.5% readmission rate.

Six patients were readmitted within 30 days upon discharge between the 11th and the 24th day and presented with pervasive developmental (two patients), mood (two patients), psychotic (one patient) and anxiety disorder (one patient).

Only 17 patients were readmitted within three months upon discharge, corresponding to only 1/3 of early readmissions (within 90 days upon discharge).

The distribution of readmitted patients by diagnostic categories is shown in Fig. 1; eating and psychotic disorders were the most prevalent categories in this group.

The diagnosis underlying patient's admission can correspond to a decompensation in patients with an underlying disorder with higher chronicity and severity, at that moment compensated, due to external stressors. Whether the readmission diagnosis corresponded to the same diagnosis as in the IA or to a different pathology was not analysed as this was beyond the scope of the study. For instance, patients diagnosed with an adjustment disorder mostly corresponded to young patients with relevant comorbidities, even though these did not reflect the reason for the IA. Therefore, patients presented with comorbid borderline personality disorder (one patient), unspecified psychotic disorder (two patients), mental deficiency (one patient) and anxiety disorder (two patients) at the time of the IA. The fact that an adjustment disorder may be considered in young patients with dysfunctional personality traits even though not meeting the criteria for such diagnosis at the time of the IA is worth mentioning. In fact, a diagnosis of personality disorder has only been established in two other patients at

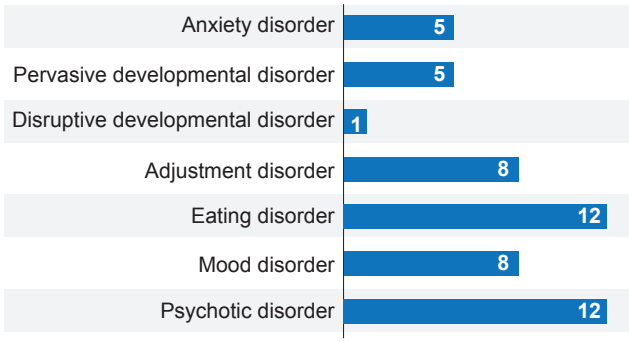

Figure 1 – Diagnostic categories in readmitted patients to a child psychiatric ward according to the DSM IV-TR within one-year post-discharge

Table 1 – Clinical and socio-demographic characteristics of both groups of patients

		Readmission Group (n = 51)		Control Group (n = 58)	
Gender	Male	16	(31.4%)	23	(39.7%)
	Female	35	(68.6%)	35	(60.3%)
Age	< 15 years	18	(35.3%)	14	(24.1%)
	15 - 18 years	33	(64.7%)	44	(75.9%)
Caregiver	Parents	49	(96.1%)	51	(87.9%)
	Other family/institution	2	(4.0%)	7	(12.0%)
Substance abuse		4	(7.8%)	10	(17.2%)
Poor compliance with therapy		20	(39.2%)	13	(22.4%)
Social risk		20	(39.2%)	24	(41.4%)
Suicidal ideation		16	(31.4%)	23	(39.7%)
Aggressive behaviour		13	(25.5%)	14	(24.1%)
Previous admission*		14	(26.5%)	2	(3.4%)
Family history of mental illness		31	(60.8%)	30	(51.7%)
Learning disabilities*		23	(45.1%)	15	(25.9%)
Length of stay (mean ± sd)*		36.47 ± 36.29		22.67 ± 25.89	

* Statistically significant differences

readmission and taking into account the disease progression upon the IA.

Three patients presented with obsessive-compulsive disorder, one patient with unspecified anxiety disorder (with comorbid avoidant personality disorder) and one with unspecified phobic anxiety disorder.

The sociodemographic characteristics of both groups of patients are shown in Table 1.

No statistically significant differences were found between both groups as regards patient's caregivers, age, occupation, admission origin, aggressive behaviour, substance abuse, compliance with therapy, social risk, suicidal ideation, number of comorbid conditions, family history of mental illness, previous attendance to mental health services, prescribed depot medication, post-discharge orientation or time to post-discharge reassessment.

Statistically significant differences were found between both groups as regards:

- Hospital admissions previous to the IA. More previous admissions were found in the Readmission Group ($p < 0.05$);
- Length of stay in the IA ($p < 0.05$). Longer stay has been found in readmitted patients;
- Diagnostic category ($p = 0.056$). Eating and psychotic disorders seemed as more frequently presented by readmitted patients;
- Learning disabilities ($p < 0.05$). More retentions and special educational needs were found in readmitted patients.

Whether or not a readmission could have been predicted by the length of stay and the number of previous admissions was assessed by a logistic regression. All the requirements were met. The model was statistically significant $\chi^2 = 16.65$, $p < 0.05$ and 67.9% of the patients were correctly assessed.

The length of stay and the number of previous admissions were significant predictors ($p = 0.04$ and $p = 0.014$, respectively). As the length of stay increases, so does the risk of readmission (OR: 1.02). As the number of previous admissions increases, so does the risk of a new readmission (OR: 4.99).

DISCUSSION

The readmission rates found in our ward were far lower than those described in literature (1.3% *vs.* 10% - 14% at 30 days and 11.5% *vs.* 25% - 50% at one year).[1-7] An adequate and quick post-discharge clinical, social and family support, the efforts aimed at frequent psychiatric re-evaluations and the important coordination work with community institutions have been mentioned as possible explanations by the authors, promoting the social insertion and family support and allowing for the maintenance of outpatient care and preventing from frequent readmissions.

The study results were different from those described in literature showing that the risk of readmission in childhood is more likely within the first trimester upon discharge.[2,5] An efficient connection between the child psychiatry emergency unit responsible for most admissions and the child psychiatry team responsible for the follow-up of adolescent patients, allowing for an easy communication capability with the assistant child psychiatrist, with a medical examination available at the short-term in case of a crisis can also prevent some hospital readmissions.

Apart from these, some factors related to the therapeutic team and to the approach to certain pathologies can lead to low readmission rates, namely regarding the implementation of accurate and efficient admission criteria, as well as post-discharge treatment response optimization. As regards self-injurious behaviours whether or not with suicidal ideation and dysfunctional personality traits in the adolescence, our experience led to the conclusion that an admission to hospital is in many cases inefficient and/or harmful. A short-term admission involving clear and well-defined objectives is always aimed at, in order to prevent from potential negative consequences (social and educational disintegration, noncompliance with daily and school tasks, avoiding dealing with stressors, family estrangement with the risk of encysting of the difficulties with interpersonal relationships, etc.). This is a group of patients with a specific susceptibility for a 'revolving-door' phenomenon (cyclical pattern of short-term readmissions) due to relapsing symptoms and admission to hospital can paradoxically reinforce maladaptive problem-solving mechanisms (avoidance, reinforcement of the patient status, etc.). The development of outpatient interventions is crucial for these patients.

Our experience, as well as the approach and intervention methods are supported by the different guidelines for the approach to personality disorders in the adolescence (NICE, IACAPAP) in which an outpatient treatment is recommended. According to these guidelines, the admission to hospital should only be considered in case of a severe comorbidity or in a crisis situation that is not controlled in an outpatient setting, involving a high risk for the patient.[12,13]

The risk factors described in literature are mostly inconsistent. Our results showed a statistical trend towards considering eating disorders and learning disabilities as risk factors; however, further studies are necessary to clearly establish this relationship.

The number of previous admissions is the most consistently described risk factor in literature.[3, 5-8] The results of this study supported this association in childhood. Frequent psychiatric readmissions are correlated to poor outcomes.[2] Therefore, a quick and vigorous assessment and orientation should be provided to adolescents with more than one

admission to hospital in order to prevent from a 'revolving-door' phenomenon.

As regards the length of stay, literature is not so consistent.[6,8,11] Any long-term admission has been considered in some studies as a risk factor, even though disease severity has been described as a potential bias.[14-18] In addition, short-term admissions have also been associated with a higher risk of admission as clinical stability may have not been reached at the moment of patient's discharge.[9,19]

According to our results, the risk of a future readmission was increased by a long-term stay, which has been mainly associated with patients diagnosed with eating and psychotic disorder and, therefore, with longer length of stay, which can in fact reflect a greater severity of the disease. More detailed studies are required in order to control for these potential confounding factors. Short-term stays were not associated with an increased risk for readmission, frequently corresponding to admissions aimed at a diagnostic clarification and therapeutic orientation to be implemented in an outpatient setting, whenever possible.

Patients diagnosed with personality, eating or psychotic disorders, apart from those having been admitted for over 30-days in the hospital were found as having risk factors for readmission in the previous study carried out in our unit between 1999 and 2003 (Teles A, Martins V, Guerra J, Fontes C, Rodrigues AC. Personal communication and poster presentation to the *XV Encontro Nacional de Psiquiatria da Infância e da Adolescência*). The diagnostic category was not a statistically significant variable in this study, even though eating disorders have shown a statistical trend in that direction, which can be due to different methodologies between the studies or to the small size of our sample.

Psychiatric readmissions are explained by the combined influence of clinical factors such as the diagnostic category or the disease severity with contextual factors, making more difficult the assessment of all the possible elements of risk or protection. Some variables may have shown no statistical significance due to the small number of patients included in the study and certain variables may also have impaired the results (like for instance family stress, economic capacity, symptom severity, cognitive capacity, etc.). The fact that only the principal diagnosis was considered, excluding the assessment of psychiatric comorbidities, the randomly selected control group of non-readmitted patients and the fact that the total population of non-readmitted patients was not used for the comparison with readmitted patients where the main limitations of the study.

Further information on the characteristics of readmissions and their comparison with previous admissions would certainly allow for interesting conclusions.

CONCLUSION

The results suggested that any information obtained during the patient's stay in hospital (diagnosis, length of stay, number of previous admissions) is a useful index for the assessment of the risk of subsequent readmissions.

Readmissions are considered as a crucial target for the analysis and prevention in healthcare. Therefore, the knowledge regarding its minimisation is crucial. This study allowed for a greater knowledge on the characteristics of the group of readmitted patients to our unit and for the identification of easily detectable risk factors during hospitalisation aimed at an adequate approach and any preventive measures in patients in higher risk for readmission.

HUMAN AND ANIMAL PROTECTION

The authors declare that the followed procedures were according to regulations established by the Ethics and Clinical Research Committee and according to the Helsinki Declaration of the World Medical Association.

DATA CONFIDENTIALITY

The authors declare that they have followed the protocols of their work centre on the publication of patient data.

CONFLICTS OF INTEREST

The authors declare that there were no conflicts of interest in writing this manuscript.

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