Variability in psychiatric medical practice evaluated by studying short-term psychiatric rehospitalization

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Variabilidad en la práctica medicopsiquiátrica evaluada mediante el estudio de los reingresos psiquiátricos a corto plazo

Summary

Introduction. *Variability in medical practice can detect deficiencies in medical care quality. This study was designed to determine variations in psychiatric practice by studying short-term rehospitalization (SRH) that could result in differences in quality of psychiatric care.*

Methods. *Data on 894 consecutive admissions to an inpatient unit from March to December 2001 were collected. Readmissions over the next 90 days or less (SRH) were analyzed. The database was reviewed in order to extract information about several variables: age, gender, period from the first admission, number of previous admissions, interval between initial discharge and readmission, psychiatric diagnosis, aftercare provided by the mental health centers (MHC) and psychiatrist-associated variables. Differences between SRH and the other admissions were examined.*

Results. *There were significant variations in the aftercare provided by the MHC* (p = *0.028). There were also variations in the psychiatrist responsible for the inpatient unit* (p = *0.03), in the reference psychiatrist in a MHC* (p = *0.007), but not in the emergency unit.*

Conclusions. *This short-term rehospitalization study showed variations in quality of aftercare and in psychiatrist-associated variables. Both these findings warrant further investigation that pays specific attention to staff attitudes, system barriers and facilitators of psychiatric care.*

Key words: *Mental health services. Variability in medical practice. Service utilization. Aftercare.*

Resumen

Introducción. *La variabilidad en la práctica médica puede detectar deficiencias en la calidad de la asistencia. Este estudio se diseñó para evaluar variaciones en la práctica psiquiátrica mediante el estudio de los reingresos a corto plazo (RAC) que pudieran determinar diferencias en la calidad de la asistencia psiquiátrica.*

Métodos. *Se recogieron datos de 894 ingresos sucesivos en la unidad de agudos de marzo a diciembre de 2001. Se analizaron los reingresos ocurridos en un plazo inferior o igual a 90 días (RAC). Se revisó el registro de casos para obtener información sobre diversas variables: edad, sexo, período transcurrido desde el primer ingreso, número de ingresos previos, intervalo desde el alta al reingreso, diagnóstico psiquiátrico, seguimiento en los centros de salud mental (CSM) y variables relacionadas con los psiquiatras. Se examinaron las diferencias entre los RAC y el resto de los ingresos.*

Resultados. *Se encontraron variaciones significativas en el seguimiento de los CSM después del alta* (p = *0,028). También se encontraron diferencias en el psiquiatra referente de la unidad de agudos* (p = *0,03) y en el psiquiatra de referencia de un CSM* (p = *0,007), pero no en urgencias.*

Conclusiones. *El estudio de los reingresos psiquiátricos mostró variaciones en la calidad de la continuidad de cuidados y en factores relacionados con los psiquiatras. Son necesarios nuevos estudios que presten especial atención a las actitudes del equipo médico y a los factores que obstaculizan o facilitan la accesibilidad a la asistencia psiquiátrica.*

Palabras clave: *Servicios de salud mental. Variabilidad en la práctica médica. Utilización de servicios. Continuidad de cuidados.*

INTRODUCTION

Since the pioneer studies of Wennberg[1] on the variations in surgical intervention rates of some diseases which showed that there were variations of up to six times for adenoidectomy and four times for hysterectomy and prostatectomy in neighboring hospital areas, variability in the medical practice has been the object of studies in different settings. The different utilization rates of the

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health care services have been associated to multiple factors that are classified into[2]: inaccuracy of the data, population dependent factors, factors dependent on the offer and services and on the supplier. Styles of the medical practice are included in the latter category. At present, the variability concept in the medical practice is generally used to define the systematic, non-randomized variations in the use of a specific clinical procedure, standardized by age and gender, in a geographic area and in a defined period of time. The results obtained are generally interpreted as indirect evidence of the existence of avoidable components of health care which, according to the magnitude of the variations found, can have implications in the quality of the results of the medical care[2].

Rehospitalization has been used as an indicator of quality in the contract program of some health services. On the other hand, psychiatry, due to the nature of the disease, is probably the medical speciality having the greatest percentage of rehospitalizations in a middle sized hospital[3]. Psychiatric rehospitalization has been related both with the organization of psychiatric care, especially the type of follow-up offered after discharge[4-8], as well as the different clinical-care factors: seriousness of the psychopathology on discharge[9-12], greater deterioration of self care and greater persistence of the disease[12], lower academic level[13] or unsatisfactory family relationships[11]. The methodology used in these studies has varied greatly. Rehospitalization in the short term[10,14-17] (7-90 days), middle term[18] (6 months), long term[13,19-22] (12-36 months) and total rehospitalizations[8,23] have been analyzed. Some designs have compared rehospitalizations between several hospitals[7,12,24-26], while others have compared rehospitalizations with the rest of the admissions[10,18,27]. As a consequence, the results obtained have sometimes been very different. Thus, for example, it has been published that rehospitalization would be associated with a previously shorter hospital stay[16,24], but other studies have not been able to repeat this finding[12,19,26,28]. In regards to the diagnosis, most of the studies have not found any association while others have related rehospitalization either with the diagnosis of schizophrenia[3] or with other chronic psychiatric disorders[5]. However, in spite of all these differences, agreement exists in regards to one finding: the variable that predicts rehospitalization with the greatest consistency is the number of previous admissions[5,10-11,13,18,22,24,27]. This variable, as mentioned by Bernardo and Forchuk[22], would imply that several factors that are not related with the patient's condition, such as the attitudes of the staff during admission, could contribute to rehospitalization and condition the diagnostic attitude and treatment in the future.

The Catalan model of management in public health[29] is characterized by the separation of functions between the «public insurer» (CatSalut) and the suppliers of direct care to the patient (a public or private service company). The specific application of this model to management of mental health has certain advantages: it decentralizes management, avoids complex public bureaucracy and gives co-responsibility of the final result obtained to the supplier entity. However, it also has some disadvantages[30]. Perhaps, one of the most serious is the atomization of the entities supplying psychiatric care in a population area. This atomization has the risk of increasing the care variability between suppliers, that is already important in the field of mental health. The variability of the clinical practice styles can reach extremes that are so unequal that they not only affect clinical effectiveness but also efficiency of the assignation of resources and equity in the supply of psychiatric services. There is an increasing consensus on the need to evaluate this variability, however, the discrepancy on the methodology and the instruments that would be necessary to carry it out is maintained[31]. The objective of this paper is to study the variability in the psychiatric medical practice by studying the percentage of psychiatric rehospitalizations that is produced in an Acute Unite and their relationship with patient and care characteristics.

METHODS

Study population and sample

The study was performed in the Acute Unit (AU) and in the Mental Health Center (MHC) of the Psychiatric and Mental Health Department of the Health Care Centers Dr. Emili Mira, dependent on the Council of Barcelona, in collaboration with the Badalona 1 and 2 MHC, dependent on the City Hall of Badalona. It is a descriptive study that has included all the successive rehospitalizations of the AU occurring in a period inferior to or equal to 90 days, which we call Short Term Rehospitalization (SRH), during the months of March to December 2001. This period has been chosen because previous studies[16] state that the influence of previous admission in future rehospitalization disappears around the sixth month of the discharge and because a period less than 90 days could affect the sample size. During the period studied, the unit had 64 beds that covered the care of patients over 18 years of age in the Barcelona health care sector of Nord (299,405 inhabitants) and Osona (91,587 inhabitants). The unit is not integrated in the drug addict network and no admissions for deintoxification were made. Patient with dual disease were admitted when the comorbid psychiatric disease made it advisable. Rehospitalizations that were a consequence of referral to the general hospital for assessment and/or treatment of medical disease as well as rehospitalizations produced after an escape from the unit of less than 7 days were excluded. Patients with cognitive disorders that were followed-up in specific units were also not included. The comparison group was made up of all the other hospitalizations (OH) occurring in the same time period in the Acute Unit.

Variables and information sources

The variables investigated were: *a)* demographic and clinical: age, gender, evolution time (time from the year

of the first admission), chronicity (assessed by the total number of admission since 1970), time between the discharge and SRH, toxic consumption and diagnosis according to the ICD-9. The evolution time and chronicity could only be obtained for the SRH; *b)* health care: psychiatrist that signs the discharge from the AU, belonging to each one of the MHC that receive the patient after the discharge, physician who performs the rehospitalization from emergencies, link to each SRH (it evaluates the compliance to the out-patient treatment and the continuity of cares and is defined as the time from the last time the patient was seen in the MHC and the date of rehospitalization) and referring psychiatrist in the MHC. The link to each MHC could only be analyzed in those three in which there was a periodic coordination, those of Nord in Barcelona. The rehospitalization according to the reference psychiatrist in the MHC could only be analyzed in the MHC-3, that depends on the Psychiatry Department. As there are no data on the total admissions per psychiatrist in the MHC-3, the SRH have been compared with the number of severe mental disorders (SMD) assigned to each psychiatrist of the MHC-3, taking advantage of the fact that there is a specific therapeutic program for the SMD.

Analysis

The percentage of rehospitalizations is compared with the rest of the variables and the SRH with the OH. The percentages, together with the 95 % confidence interval (95 % CI) have been calculated, except specific indication, in relationship to all the admissions in each category studied: SRH vs OH. The analysis of the possible association between qualitative variables has been performed with the X^2 test. The Z test for comparison of independent proportions together with 95 % CI was used for the individual differences between psychiatrists.

RESULTS

Of the 894 admissions produced during the period studied, 209 (23.4 %) were SRH (95 % CI %: 20.6-26.2 %). In the 10 months studied, the SRH involved 124 patients: 79 patients presented one SRH, 27 patients two, nine patients three and nine patients more than three rehospitalizations. The SRH profile (table 1) is the following: male (63.2%), age under 40 years (71.3%), and evolution inferior to or equal to 5 years (60.8%). In regards to the degree of chronicity, two situations can be defined: scarce chronicity (33.5 % with only 2-3 admissions during the evolution) and elevated chronicity (39.7 % with more than 10 admissions during the evolution). A total of 62.7 % of the rehospitalizations occurred in the first month of the hospital discharge, which means that the percentage of rehospitalizations at 30 days is 14.7 % (95 % CI: 12.5 %-17.1 %). The most frequent diagnoses are schizophrenic disorders (34.5 %) and personality disorders (32.5 %); 35.4 % presented a disorder due to substance consumption. Comparison of the SRH with the OH shows that the percentage of rehospitalizations is superior in those under 39 years of age than in the rest of the age groups (table 2). In addition, this percentage is greater for personality disorders and neurotic disorders (51.5 % and 48.2 % of rehospitalizations in these categories, respectively).

The percentage of rehospitalizations according to the psychiatrist who signed the hospital discharge shows

TABLE 1. Demographic and clinical characteristics of the short term rehospitalizations (SRZ)

Variable	*SRH (n = 209)*	
	n	*%*
Gender		
Men	132	63.2
Women	77	36.8
Age		
18-39 years	149	71.3
40-60 years	44	21.1
> 60 years	16	7.7
Evolution time (years from the 1st hospitalization)		
Less than 1 year	72	34.5
1-5 years	55	26.3
6-10 years	34	16.3
11-15 years	23	11.0
More than 15 years	25	12.0
Chronicity (total number of hospitalizations)		
2-3	70	33.5
4-5	25	12.0
6-10	31	14.8
More than 10	83	39.7
Time passed (discharge-rehospitalization)		
0-10 days	64	30.6
11-20 days	38	18.2
21-30 days	29	13.4
More than 30 days	78	37.3
Subclassification		
Rehospitalization in 30 days or less	131	62.7
Rehospitalization in 30-90 days	78	37.3
ICD-9 diagnosis		
Schizophrenic D	72	34.5
Bipolar D	20	9.6
Other affective D	12	5.7
Personality	68	32.5
Substance consumption disorders	15	7.2
Neurotic D	13	6.2
Other disorders	9	4.3
Substance consumption		
Not diagnosed	135	64.6
1st diagnosis	15	7.2
2nd diagnosis	59	28.2

TABLE 2. Comparison of demographic and clinical variables between the SRH and other hospitalizations (OH)

Variable	*SRH (n = 209)*				*OH (n = 685)*	
	n	*%*	*95% CI*		*n*	*%*
Gender						
Men	132	24.2	20.6	27.8	414	75.8
Women	77	22.1	17.8	26.5	271	77.9
Age*						
18-39 years	149	27.7	13.7	23.7	390	72.3
40-60 years	44	18.7	7.3	19.4	191	81.3
> 60 years	16	13.3	15.7	23.9	104	86.7
Diagnosis (ICD-9)**						
Schizophrenic D	72	19.8	23.9	31.4	291	80.2
Bipolar D	20	29.9	18.9	40.8	47	70.1
Other affective D	12	10.2	4.7	15.6	106	89.8
Personality D	68	51.5	43.0	60.0	64	48.5
SCD	15	12.2	6.4	18.0	108	87.8
Neurotic D	13	48.2	29.3	67.0	14	51.8
Other disorders	9	14.1	5.5	22.6	55	85.9
Substance consumption***						
No	135	22.8	19.5	26.2	456	77.2
1st diagnosis	15	12.2	6.4	18.0	108	87.8
2nd diagnosis	59	32.8	25.9	39.6	121	93.3

D: disorder; SCD: substance consumption disorder. * $X^2 = 15.1$; gl = 2; p = 0.0005. ** $X^2 = 94.9$; gl = 6; p < 0.0001. *** $\chi^2 = 17.6$; gl = 2; p = 0.0002.

statistically significant differences, both globally (*p* = 0.031) as well as in some individual cases (table 3). No differences were measured in regards to the category of the physician who performed the rehospitalization from the emergency service (staff or resident). Globally among the residents, there is a certain tendency to variability ($\chi^2 = 15.8$; gl = 9; p = 0.071) and in one specific case, the difference is statistically significant (percentage of rehospitalization: 37.1 %; 95 % CI: 25.8 %-48.4 %; *p* = 0.005). The analysis of the SRH based on assignment to one MHC or another was only performed in those three in which there was a periodic coordination (n = 177). The percentage of rehospitalizations was similar for the three MHC. Globally, the degree of linkage to the MHC was scarce (62.1 % had not been seen in the 21 days prior to the SRH) and there are also differences (*p* = 0.028) among the 3 centers studied (table 4). In the MHC-1, the follow-up was greater: almost half of the cases (46.8 %) had come to a visit in the 21 days prior to the SRH, while in the other two MHC, only one third of the cases had consulted. In addition, the linkage problems were also different according to the MHC studied. In MHC-1, an excessively prolonged follow-up (greater than 21 days, and the difficulties in accessibility) 25.5 % who did not even have a clinical history open, stand out equally. In the two other MHC, the main reason for the limited linkage was a very prolonged follow-up. Finally,

TABLE 3. Percentaje of rehospitalizations according to the psychiatrist who signed the previous hospital discharge

Psychiatrist (discharge)	*SRH (n = 209)*				*OH (n = 685)*	
	n	*%*	*95% CI*		*n*	*%*
1.	19	21.1	12.7	29.5	71	78.9
2.	16	19.8	11.1	28.4	65	80.2
3.	12	22.2	11.1	33.3	42	77.8
4.	21	40.0	27.0	53.7	31	59.6
5.	23	20.9	13.3	28.5	87	79.1
6.	20	25.0	15.5	34.5	60	75.0
7.	30	21.7	14.9	28.6	108	78.3
8.	12	12.9	6.1	19.7	81	87.1
9.	21	25.6	16.2	35.1	61	74.4
10.	32	31.7	22.6	40.8	69	68.3
11.	3	23.1	0.2	46.0	10	76.9

$X^2 = 19.8$; gl = 10; p = 0.03.

in the only MHC studied (n = 36), the distribution of the SRH and the SMD was different (p = 0.007) according to whom the reference psychiatrist was (table 5).

DISCUSSION

In relationship to the health care variability, our study shows differences in the rehospitalization rates in regards to the psychiatrist who signs the discharge, a result that coincides with another study[7], to the physicians who perform the rehospitalization in the emergency service (among the residents) and to the reference psychiatrist in the mental health center. Although this variability can be explained by clinical characteristics, it may also reflect differences in the medical practice styles, that could require a review and later consensus in the action guidelines for certain diseases.

Perhaps the most outstanding result of the study was that the follow-up prior to the SRH was poor or non-existent in 62 % of the cases. This information, although alarm-

TABLE 4. Time from last visit in the MHC until rehospitalization, according to the MHC*

	MHC-1		*MHC-2*		*MHC-3*	
	n	*%*	*n*	*%*	*n*	*%*
0-21 days	22	46.8	23	32.9	13	36.1
> 21 days	13	27.6	39	55.7	19	52.8
Without clinical history	12	25.5	8	11.4	4	11.1
Total	47	100	70	100	36	100

$\chi^2 = 18.86$; gl = 4; p = 0.028. *The cases in which the follow-up was performed in the drug addict network or with a private psychiatrist have not been included.

TABLE 5. Comparison of the SRH and the SMD according to the reference psychiatrist in the Mental Health Center

Psychiatrist (MVH-3)	*SRH*		*SMD*	
	n	*%*	*n*	*%*
1.	6	16.7	36	36.4
2.	4	11.1	19	19.2
3.	4	11.1	15	15.2
4.	17	47.2	17	17.2
5.	5	13.9	12	12.1
Total	36	100	99	100

$\chi^2 = 14.1$; gl = 4; p = 0.007.

ing, coincides with that published in the Klinkenberg review[5]. Several factors would influence the quality of the follow-up of the SMD, some dependent on the patient or the sociocultural medium and other on the organization of the psychiatric services. The fact that variability is found in the quality of follow-up according to the MHC studied indicates that the characteristics of the patients and their families (awareness and knowledge of the disease, educational level, interpersonal relationships) do not explain the limited compliance to out-patient treatment shortly after the discharge by themselves. The variability in the causes that affect the follow-up between the MHC (prolonged follow-up vs difficulties in accessibility) points to the role that their organization has with the degree of linkage of their patients[4-8].

On the other hand, it is obvious that treatment compliance not only depends on the MHC but also on the organization of all the health care network. In this sense, the type of care given in the acute unit (treatment, information to the family, stay, coordination with the MHC) is also a first order factor. The significant variability between psychiatrists of the AU also indicates the co-responsibility of them in the quality of the post-discharge follow-up. Finally, the absence of variability between the emergency physicians in the SRH would be coherent with the fact that it is a specific intervention in its evolution. The different rates among the residents could be explained because the level of knowledge and clinical experience vary on the basis of the years of residency, and in fact, the only significant percentage corresponded to a R-2.

The variability in the medical-psychiatric practice identified in the SRH poses the question on what aspects of the organization of the psychiatric care could be modified and improved. The results point to the fact that the variability would be found more in the health care work carried out in the AU and the MHC than in that of the emergency services. One question, although polemical, that should not be overlooked is the possibility that the health care area studied suffers a deficient organization of the psychiatric care and that the results only reflect it. In this sense, it is necessary to mention that the Catalan Health Service performed an external evaluation of all the MHC of Catalonia and that one of the three MHC analyzed in our study was in first place with a compliance of 100 % of the indicators of health care quality; this MHC was not the one having the closest follow-up. All this would indicate, on the one hand, that the health care problems mentioned could be common to all the mental health care network of Catalonia and, on the other hand, that the quality indicators used were focused greatly on structure, somewhat on the condition and little on the result[32]. However, our results are an alarm sign. Globally, they show a young population that just initiated the evolution of a severe mental disorder, with limited compliance to the outpatient follow-up in the MHC and who were re-hospitalized early. Thus, a future chronic evolution can be feared already from the first episodes.

In regards to the diagnosis, the results would coincide with the studies that relate the re-hospitalization with the diagnosis of schizophrenia[3] and with the substance consumption disorder[5]. The elevated percentage of personality disorders found among the SRH would be in the line of investigations that reflect the elevated use of services by these disorders and the emerging problem that it means[33-34].

The main limitations of the study are: *a)* the type of case recording of the hospital does not make it possible to compare some variables between the SRH and OH; *b)* standardized diagnostic instruments were not used; *c)* the control group, OH, is relatively heterogeneous, and *d)* the application of the results to another mental health service network will depend on its characteristics, although probably many of the data presented are comparable in Catalonia.

To finish, it can be concluded that the study of the short term psychiatric re-hospitalizations show variations in the medical practice that can reflect quality problems of the organization of the care in the psychiatric services, especially in that related to the continuity of post-discharge cares. As a consequence of this, it is possible to fear for a chronic future evolution already from the first episodes. This variability poses the question on what aspects of the organization of the psychiatric care could be modified and improved[18,35]. The results point more towards the organization of the health care work developed in the AU and the MHC than that of the emergency service. New studies that give special attention to the staff attitudes and to the factors that hinder or facilitate accessibility to psychiatric care are needed.

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