



Original article

Predictors of length of stay in psychiatric inpatient units: Does their effect vary across countries?



Giorgia Dimitri^a, Domenico Giacco^{b,*}, Michael Bauer^c, Victoria Jane Bird^b, Lauren Greenberg^d, Antonio Lasalvia^e, Vincent Lorant^f, Jacek Moskalewicz^g, Pablo Nicaise^f, Andrea Pfennig^c, Mirella Ruggeri^a, Marta Welbel^g, Stefan Priebe^b

^a Section of Psychiatry, Department of Public Health and Community Medicine, University of Verona, Verona, Italy

^b Unit for Social and Community Psychiatry (World Health Organisation Collaborating Centre for Mental Health Services Development), Queen Mary University of London, London, UK

^c Department of Psychiatry and Psychotherapy, Carl Gustav Carus University Hospital, Technische Universität Dresden, Dresden, Germany

^d Queen Mary University of London, Pragmatic Clinical Trials Unit, London, UK

^e UOC Psichiatria, Azienda Ospedaliera Universitaria Integrata (AOUI) di Verona, Verona, Italy

^f Institute of Health and Society IRSS, Université Catholique de Louvain, Bruxelles, Belgium

^g Institute of Psychiatry and Neurology, Warsaw, Poland

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ABSTRACT

Background: Previous studies in individual countries have identified inconsistent predictors of length of stay (LoS) in psychiatric inpatient units. This may reflect methodological inconsistencies across studies or true differences of predictors. In this study we assessed predictors of LoS in five European countries and explored whether their effect varies across countries.

Methods: Prospective cohort study. All patients admitted over 14 months to 57 psychiatric inpatient units in Belgium, Germany, Italy, Poland and United Kingdom were screened. Putative predictors were collected from medical records and in face-to-face interviews and tested for their association with LoS.

Results: Average LoS varied from 17.9 days in Italy to 55.1 days in Belgium. In the overall sample being homeless, receiving benefits, social isolation, diagnosis of psychosis, greater symptom severity, substance use, history of previous admission and being involuntarily admitted predicted longer LoS. Several predictors showed significant interaction effects with countries in predicting LoS. One variable, homelessness, predicted a different LoS even in opposite directions, whilst for other predictors the direction of the association was the same, but the strength of the association with LoS varied across countries.

Conclusions: The same patient characteristics have a different impact on LoS in different contexts. Thus, although some predictor variables related to clinical severity and social dysfunction appear of generalisable relevance, national studies on LoS are required to understand the complex influence of different patient characteristics on clinical practice in the given contexts.

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1. Introduction

Mental health care provision has moved from a hospital-based model to community-based services across most European countries [1]. However, hospital treatment still plays an important role in the management of large numbers of patients with mental disorders and constitutes a major determinant of costs in mental health care [2].

The aim of cost reduction is one of the reasons why mental health policies recommend shortening length of stay (LoS) in psychiatric inpatient services. These recommendations are supported by the lack of significant differences in re-hospitalisation rates and other clinical outcomes between short and long-term hospitalisations [3]. Also, patients commonly report the experience of long hospitalisations as unpleasant and stigmatising [4].

Understanding which patients stay longer in hospitals may help to reduce LoS, as services can target specific patient groups adjusting their in-patient treatments or providing alternative options. Various studies have explored which patient-level characteristics are associated with longer LoS [5,6]. The results of these studies have been inconsistent. It is unclear whether the

* Corresponding author at: Newham Centre for Mental Health, E13 8SP, London, UK.

E-mail address: d.giacco@qmul.ac.uk (D. Giacco).

different results of studies reflect true differences in the predictive value of patient characteristics across different regions and countries, or whether they are due to methodological inconsistencies in data collection and analyses across studies.

For example, some studies have identified psychotic disorders as associated with a longer LoS [5,7,8] compared to other mental disorders, whilst others have found that people with affective disorders have longer LoS than people with other diagnoses [9].

More severe clinical conditions are usually associated with longer LoS [5,10–12]. However, different studies have considered different indicators of severity, such as symptom levels (measured on different instruments) [11,12], type of admission (voluntary or involuntary) [13], and risk to self and others [14,15].

Similarly to clinical severity, poor social functioning [16–27] is a widely accepted predictor of longer LoS, although it is inconsistently measured across studies. A number of indicators were found to be associated with longer LoS, such as lack of family support [16–19], social isolation [20,21], homelessness [22–24], and unemployment [25–27].

A central problem of the current evidence is that all of the studies in the field have been conducted within one individual country (most often in the United States), with inconsistent findings reported in different countries.

To address the question as to whether different results of studies on predictors of LoS reflect true differences or methodological inconsistencies, we conducted a study across five countries (i.e. Belgium, Germany, Italy, Poland, United Kingdom [UK]), assessing more than 1000 patients in each country with a consistent methodology. The large sample size allowed for the statistical testing of interaction effects of predictor variables with countries, i.e. whether the predictive value of a given predictor variable was similar or significantly different across countries.

Specifically, we addressed the following research questions: a) which patient characteristics are associated with longer LoS in a large sample of in-patients across different European countries? b) is the predictive value of the identified predictor variables consistent or different across countries?

2. Methods

2.1. Study design and participants

This is a prospective study, carried out in hospitals in five European countries. It is part of the COFI project (COMparing policy framework, structure, effectiveness and cost-effectiveness of Functional and Integrated systems of mental health care), funded by the European Commission Framework Programme 7 [28]. COFI was conducted in Belgium, Germany, Italy, Poland and the UK. These countries differ in the number of psychiatric beds per population, and in funding systems, type of provider organisations, and governance arrangements for mental health services. Hence, the study explored predictors of LoS across national contexts with differences in several characteristics that may influence LoS in in-patient treatment.

The sample size calculation was estimated in order to enable us to capture a 5% difference in re-hospitalisation rates within one year from an index hospital admission according to the primary research question of the COFI study [28]. We calculated a target sample size of 6000 patients overall, with on average 1200 patients per country [28].

Based on different expected numbers of hospital admissions per country within the recruitment period, we included a different number of hospitals in each country. Hospitals were purposively selected considering the characteristics of the area (rural or urban and high or low population density) and the organisation of care across hospital and community services (with or without personal continuity) [28].

The inclusion criteria were: 18 years of age or older; International Classification of Disease-10 [29] diagnosis of psychotic disorder (F20–29), affective disorder (F30–39) or anxiety/somatisation disorder (F40–49); being hospitalised in a general adult psychiatric inpatient unit; sufficient command of the language of the host country to provide written informed consent and understand the questions in the research interviews; mental capacity to provide informed consent. Exclusion criteria were: diagnosis of organic brain disorders and/or severe cognitive impairment affecting the ability to provide information on the study instruments.

2.2. Ethical approval

Ethical approval was obtained in all five participating countries. Belgium: Comité d’Ethique hospitalo-facultaire des Cliniques St-Luc; Germany: Ethical Board, Technische Universität Dresden; Italy: Comitato Etico per la sperimentazione clinica (CESC) delle provincie di Verona, Rovigo, Vicenza, Treviso, Padova; Poland: Komisja Bioetyczna przy Instytucie Psychiatrii i Neurologii w Warszawie; and UK: National Research Ethics Committee North East–Newcastle & North Tyneside (ref: 14/NE/1017).

2.3. Procedures

Every patient admitted in psychiatric wards of 57 hospitals (10 in Belgium, 4 in Germany, 14 in Italy, 6 in Poland, 23 in UK) was screened between 1 st October 2014 and 31 st December 2015. All eligible patients were approached by study researchers for the first assessment within two days from the hospital admission. One of the researchers discussed the study with the patients in detail and obtained written informed consent.

Data on socio-demographic characteristics, social situation, and formal status of admission were obtained through initial face-to-face interviews. Other information was collected by clinical records: psychiatric and non-psychiatric diagnoses (according to ICD-10) at admission and at discharge, severity of illness (evaluated by Clinical Global Impression Scale, CGI) [30] and LoS.

2.4. Measures

2.4.1. Outcome variable

The outcome variable was LoS, which was defined as number of nights spent in the psychiatric wards of a hospital. For several reasons, the number of included hospitals per country varied. Whilst this resulted in differing sample sizes per hospital, we had a substantial number of patients (i.e. >1000) in each country and therefore decided to analyse on country level.

2.4.2. Predictors

We selected putative predictor variables based on the existing literature [5–27]: age, gender, marital status, migrant status, education, homelessness, living alone, unemployment, receiving benefits, diagnosis of psychotic disorder, comorbid diagnosis of substance misuse, severity of symptoms (Clinical Global Impression score–CGI), first admission versus repeat admission, and legal status, i.e. voluntary versus involuntary admission. Social isolation was assessed by asking patients whether they had met a friend in the previous week and whether they had anyone they would call a close friend.

2.5. Statistical analysis

Descriptive statistics, i.e. mean, standard deviation and median were calculated for LoS. For the other socio-demographic variables, mean and standard deviation or frequencies were used as

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