

# Factors Associated With Involuntary Psychiatric Hospitalization in Portugal

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## Research

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# Abstract

## Background

Identifying which factors contribute to involuntary psychiatric hospitalization may support initiatives to reduce its frequency. This study examines the sociodemographic, clinical, and contextual factors associated with involuntary hospitalization of patients from five Portuguese psychiatric departments in 2002, 2007 and 2012.

## Methods

Data from all admissions were extracted from clinical files. A Poisson generalized linear model estimated the association between the number of involuntary hospitalizations per patient in one year and sociodemographic, clinical, and contextual factors.

## Results

Male gender [ $\exp(\beta) = 1.31$ ; 95%CI:1.06-1.62,  $p < 0.05$ ], having secondary and higher education [ $\exp(\beta) = 1.45$ ; 95%CI:1.05-2.01,  $p < 0.05$ , and  $\exp(\beta) = 1.89$ ; 95%CI:1.38-2.60,  $p < 0.001$ , respectively], a psychiatric diagnosis of psychosis [ $\exp(\beta) = 2.02$ ; 95%CI:1.59-2.59,  $p < 0.001$ ], and being admitted in 2007 and in 2012 [ $\exp(\beta) = 1.61$ ; 95%CI:1.21-2.16,  $p < 0.01$ , and  $\exp(\beta) = 1.73$ ; 95%CI:1.31-2.32,  $p < 0.001$ , respectively] were associated with an increment of involuntary hospitalizations. Being married/cohabitating [ $\exp(\beta) = 0.74$ ; 95%CI:0.56-0.99,  $p < 0.05$ ], having experienced a suicide attempt [ $\exp(\beta) = 0.26$ ; 95%CI:0.15-0.42,  $p < 0.001$ ], and belonging to the catchment area of three of the psychiatric units evaluated [ $\exp(\beta) = 0.65$ ; 95%CI:0.49-0.86,  $p < 0.01$ ,  $\exp(\beta) = 0.67$ ; 95%CI:0.49-0.90,  $p < 0.01$ , and  $\exp(\beta) = 0.67$ ; 95%CI:0.46-0.96,  $p < 0.05$  for Hospital de Magalhães Lemos, Centro Hospitalar Psiquiátrico de Lisboa and Unidade Local de Saúde do Baixo Alentejo, respectively] were associated with a decrease in involuntary hospitalizations.

## Conclusions

The findings suggest that involuntary psychiatric hospitalizations in Portugal are associated with sociodemographic, clinical, and contextual factors. This information may help to recognize high-risk patients, and to inform the development of better-targeted preventive interventions to reduce these hospitalizations.

## Background

The use of coercive treatment and involuntary hospitalization of people with mental disorders is a central and controversial issue in mental health care. For more than one hundred years, there has been a debate on how to balance different and often contradictory interests, such as the principle of personal freedom and basic human rights, the need for adequate treatment, and public safety [1, 2]. As a result, legal frameworks for involuntary hospitalization have been implemented in different countries [2]. Involuntary hospitalization has been understood as the means to enabling the right to enjoyment of the highest

attainable standard of health when a severe exacerbation of illness impairs decision-making capacity [3], and can be lifesaving [4]. However, it represents a deprivation of personal liberty and a suspension of legal capacity [5], and conflicts with the right of autonomy and decision about treatment [6]. Existing observational studies suggest that involuntarily admitted patients show limited clinical and social improvement [7–11], with mixed evidence on the impact on suicidality [11, 12]. At follow-ups, many of the patients view their admission and treatment positively [7, 8, 13, 14], but a substantial percentage of them retrospectively do not feel that the admission was justified and beneficial [7, 13]. Empirical data suggest that involuntary hospitalization may be experienced as traumatic and stigmatizing [15], lead to low levels of treatment satisfaction [4, 16], have negative effects on patient–therapist relationship [17], lead to long-term avoidance of mental health care [4, 15, 18], and increase the risk of emergency compulsory re-hospitalization [19]. Involuntarily admitted people may also be exposed to further coercive measures during the hospital stay, such as seclusion, administration of medication against their will and restraint [6, 20, 21]. The United Nations (UN) Convention on the Rights of Persons with Disabilities (CRPD) is the most up-to-date international legal instrument specifically tailored to stipulate the rights of persons with disabilities [22, 23], and a major milestone in safeguarding the rights of people with mental disorders and psychosocial disabilities [3]. The Convention, and specifically the Committee’s General Comment N°1 on Article 12 [24], sparked a global debate [14, 23, 25–28] and raised controversy and criticism when considering that all persons have legal capacity at all times, irrespective of mental status, and that substitute decision-making and involuntary hospitalization are indefensible [3, 23, 26, 29].

A central objective of the legal frameworks for involuntary hospitalization and their revisions was to reduce its frequency to the minimum possible in the respect of individual rights [2, 30], which is considered a marker of quality of services provided [31, 32]. However, rates of involuntary hospitalization have varied strikingly between and within countries in the past three decades [2, 32–34], with rates increasing over time in many countries [4, 19, 30, 35, 36]. The large differences in the frequencies of involuntary hospitalization, given the much smaller differences in psychiatric morbidity, suggest that they are a result of a complex set of still poorly understood legal, political, economic, social and multiple other factors [37]. The factors influencing involuntary hospitalization have been classified as: 1) individual-related, including the sociodemographic and clinical features of the affected persons and the attitudes and clinical competence of their caregivers; 2) system-related, including the organization and resources of mental health care; and 3) area-related, including the national legislation, the wider societal perspective and traditions, socioeconomic factors, and economic changes [38]. The few data available on these risk factors are often controversial and of difficult interpretation, and further research in this area is warranted [38].

A systematic review, meta-analysis, and narrative synthesis of 77 studies from 22 countries found that the factors most strongly associated with involuntary psychiatric hospitalization are a diagnosis of a psychotic disorder and previous involuntary hospitalization [4]. On a population level, a positive dose-response relation was found between area-level deprivation and increased rates of involuntary hospitalization [4]. Evidence for an association between health-care system factors and involuntary hospitalization was sparse [4]. Meta-analysis results also identified male gender, single marital status,

unemployment, being in receipt of welfare benefits, and not owning one's own home as risk factors for involuntary admissions [4]. Using narrative synthesis, positive symptoms of psychosis, perceived risk to others, clinician-rated lack of insight, lack of adherence to treatment before hospitalization, scant social support, and police (vs. family doctor) involvement in admission were found to influence involuntary admissions [4].

In Portugal, the 1998 Mental Health Act defines the principles governing compulsory detention of people who are mentally ill and their rights [39], and is currently under review to fully comply with the objectives of reducing coercive measures and enhancing patient autonomy. Involuntary hospitalization must always be the object of a court order and is only permitted if (and as long as) it is the only way of providing absolutely necessary treatment [2, 39]. According to the legislation, only severe mentally ill patients who are at risk of self-harm or of harming others and lack either insight about psychiatric illness or therapeutic adherence can be compulsorily admitted [39, 40]. Portugal has relatively low annual rates of involuntary hospitalization (6 per 100,000 individuals in 2000 and 18.19 per 100,000 individuals in 2013) [32, 34], but few national data are available on involuntary hospitalizations in the country. To our knowledge, evidence on the risk factors for involuntary psychiatric hospitalization in Portugal is scarce or non-existent. The purpose of this study is to identify sociodemographic, clinical, and contextual factors associated with a high risk of involuntary psychiatric hospitalization of adults in Portugal. An identification of these factors could help to recognize high-risk patients, to inform the development of better-targeted preventive interventions to reduce these hospitalizations, and ultimately to develop less restrictive and coercive alternatives.

## Methods

### Design and study sample

This study integrated the research project “Mental Health, Impact Assessment of Local and Economic Constraints - SMAILE”, funded by the Foundation for Science and Technology (PTDC/ATP-GEO/4101/2012). This retrospective cross-sectional study is based on a detailed analysis of all inpatient mental health records from five public psychiatric departments during 2002, 2007 and 2012. The objective of this study was to assess the use of mental health services in times of economic crisis, consequently, the years were selected to represent periods before the Great Recession (2002 and 2007) and the period of economic crisis (2012). The data of interest was extracted from patients' clinical files in a systematic manner. The study was conducted in psychiatric departments in the Metropolitan Areas of Lisboa and Porto, and the region of Baixo Alentejo, described in Table 1. They were selected for the purpose of covering municipalities with distinct geographical and socioeconomic characteristics, and included consolidated urban areas (Lisboa and Porto), recent urban growth areas with low socioeconomic status characteristics (Amadora), recent urban growth areas with high socioeconomic status characteristics (Oeiras, Póvoa de Varzim and Vila do Conde), and rural areas (Aljustrel, Almodôvar, Alvito, Barrancos, Beja, Castro Verde, Cuba, Ferreira do Alentejo, Mafra, Mértola, Moura, Ourique, Serpa, and Vidigueira). Patients living in the catchment area of each hospital were admitted to the respective

department, with the exception of Unidade Local de Saúde do Baixo Alentejo, EPE, which had no acute inpatient service, and whose patients were admitted to Centro Hospitalar Psiquiátrico de Lisboa (180 kms away) after evaluation in the local emergency department. The psychiatric departments where the study was conducted are quite different from each other and underwent significant changes between 2002 and 2012, because mental health reform was underway in the country. Two of them (Centro Hospitalar Psiquiátrico de Lisboa and Hospital de Magalhães Lemos, EPE) are large psychiatric hospitals with a pavilion organization and large catchment areas [41], and had an important reduction in the number of acute beds during the study period (Centro Hospitalar Psiquiátrico de Lisboa: 301 in 2005 and 134 in 2012; Hospital de Magalhães Lemos, EPE: 142 beds in 2005 and 99 in 2012) [42, 43]. Two others (Centro Hospitalar de Lisboa Ocidental, EPE and Hospital Professor Doutor Fernando Fonseca, EPE) have multidisciplinary community teams, are part of general hospitals [41], and experienced less marked changes during the study period. Unidade Local de Saúde do Baixo Alentejo, EPE is also part of a general hospital, covers a large geographical area, and had no acute inpatient service.

Table 1  
Characterization of the study areas and psychiatric departments

		<b>Hospital Professor Doutor Fernando Fonseca, EPE</b>	<b>Centro Hospitalar de Lisboa Ocidental, EPE</b>	<b>Centro Hospitalar Psiquiátrico de Lisboa</b>	<b>Hospital de Magalhães Lemos, EPE</b>	<b>Unidade Local de Saúde do Baixo Alentejo, EPE</b>
<b>Characteristics of the hospital</b>		General hospital with community teams	General hospital with community teams	Psychiatric Hospital	Psychiatric Hospital	General hospital
<b>Study areas (municipalities)</b>		Amadora	Lisboa (Western parishes) and Oeiras	Lisboa (Eastern parishes) and Mafra	Porto, Póvoa de Varzim and Vila do Conde	Aljustrel, Almodôvar, Alvito, Barrancos, Beja, Castro Verde, Cuba, Ferreira do Alentejo, Mértola, Moura, Ourique, Serpa, Vidigueira
<b>Resident population in the study areas (inhabitants)</b>	<b>2001</b>	175,872	212,386	199,160	284,971	135,105
	<b>2011</b>	175,136	218,208	213,863	279,310	126,692
<b>Population growth between 2001 and 2011 (%)</b>		-0.4	2.7	7.4	-2.0	-6.2
<b>Population density (inhabitant/Km2)</b>	<b>2001</b>	7,551	3,613	792	1,121	16
	<b>2011</b>	7,368	3,704	848	1,098	15
<b>Ageing index (individuals aged 65 or older per 100 aged 0 to 14 years)</b>	<b>2001</b>	94	132	173	97	176
	<b>2011</b>	126	142	151	128	189
<b>Unemployment rate (%)</b>	<b>2001</b>	7.7	6.4	5.6	6.4	12.1

		Hospital Professor Doutor Fernando Fonseca, EPE	Centro Hospitalar de Lisboa Ocidental, EPE	Centro Hospitalar Psiquiátrico de Lisboa	Hospital de Magalhães Lemos, EPE	Unidade Local de Saúde do Baixo Alentejo, EPE
	2011	14.9	10.8	10.7	14.4	15.1
Population with higher education (%)	2001	12.0	19.4	10.3	7.2	3.0
	2011	17.9	32.8	19.3	13.5	6.2
One person household (%)	2001	21.2	23.4	21.7	13.7	22.4
	2011	27.7	29	24.7	17.3	26.6
Average monthly earnings (€)	2004	1045.1	1405.3	1016.8	821.1	716.6
	2011	1249.4	1648.8	1232.7	1049.5	900.7

The research was approved by the ethics committee of each hospital, and confidentiality of all information gathered was ensured.

## Measurements

### Dependent variable

The dependent variable was the number of involuntary psychiatric hospitalizations per patient in one year.

### Independent variables

The independent variables included the participants' individual characteristics, year of admission, and psychiatric service.

For each admission, information on the patient's sociodemographic and clinical characteristics, such as age, gender, marital status, education, employment status, psychiatric diagnosis, and presence of a suicide attempt in the last 12 months were extracted. Age was grouped into four categories (15–29; 30–49; 50–64; ≥65 years). Marital status was categorized into three groups (single; married/cohabitating; divorced/separated/widowed). Education was divided into four categories [none/primary education (≤ 4 years); basic education (5–9 years); secondary education (10–12 years); higher education (> 12 years)]. Employment status was assessed into three categories [workers (including on sick leave)/students; unemployed; retired/others (including homemakers)].

Psychiatric main diagnoses were established according to the International Classification of Diseases 9th revision criteria, and categorized into five groups: mood and anxiety disorders; dementia; substance use

disorders; psychosis; other mental disorders.

The years of evaluation were 2002, 2007, and 2012.

The data were retrieved from the clinical records of the abovementioned hospitals. The clinical records of the patients from Unidade Local de Saúde do Baixo Alentejo, EPE were obtained from Centro Hospitalar Psiquiátrico de Lisboa, where they were admitted.

## Statistical analysis

Descriptive statistics were performed through frequencies and percentages.

A Poisson generalized linear model (GLM) was employed for modelling the expected number of involuntary hospitalizations as a function of the following covariates: gender, age group, marital status, education, employment status, suicide attempt, psychiatric diagnosis, year of evaluation and psychiatric unit. Overdispersion was not present as the data did not exhibit greater variation than was expected for this model. The statistical test to check for overdispersion in this Poisson GLM provided a p-value equal to 0.7. The goodness-of-fit of the model was assessed using the deviance of 1347.4 on 2248 degrees of freedom which, with a Chi-Square distribution, gives a clear indication that the model fits the data ( $p > 0.995$ ).

The R statistical software [44] was used to perform all the statistical analyses.

## Results

### Descriptive statistics

Table 2 presents the number of involuntary hospitalizations in the study sample. Of the 3871 participants, 16.2% ( $n = 604$ ) had at least one involuntary hospitalization in the previous year, with 90.6% ( $n = 547$ ) with one involuntary hospitalization, 7.8% ( $n = 47$ ) two, 1.2% ( $n = 7$ ) three, and 0.5% ( $n = 3$ ) four involuntary hospitalizations.

Table 2  
Frequency of involuntary hospitalizations in the study sample

Number of involuntary hospitalizations									
0		1		2		3		4	
n	%	n	%	n	%	n	%	n	%
3127	83.8	547	14.7	47	1.3	7	0.2	3	0.1

Table 3 presents the sociodemographic, clinical, and contextual characteristics of the study sample and the sub-sample with at least one involuntary hospitalization.

Table 3

Sociodemographic, clinical, and contextual characteristics of the study sample and sub-sample with at least one involuntary hospitalization

Sociodemographic characteristics	Full sample (n = 3871)		Respondents with $\geq 1$ involuntary hospitalization (n = 604)	
	n	%	n	%
<b>Gender</b>				
Women	1977	51.1	249	41.2
Men	1894	48.9	355	58.8
<b>Age</b>				
15–29	679	17.5	112	18.5
30–49	1802	46.5	317	52.5
50–64	826	21.3	117	19.4
$\geq 65$	565	14.6	58	9.6
<b>Marital status</b>				
Single	1702	45.5	356	61.0
Married/cohabitating	1222	32.6	113	19.3
Divorced/separated/widowed	819	21.9	115	19.7
<b>Education</b>				
None or primary education	773	31.9	84	21.3
Basic education	858	35.4	143	36.2
Secondary education	404	16.7	77	19.5
Higher education	390	16.1	91	23.0
<b>Employment status</b>				
Workers or students	1076	31.3	165	29.4
Unemployed	915	26.6	180	32.0
Retired or others	1445	42.1	217	38.6
<b>Clinical characteristics</b>				
<b>Psychiatric diagnosis</b>				
Mood and anxiety disorders	1603	41.7	154	25.6
Dementia	204	5.3	15	2.5

	Full sample (n = 3871)		Respondents with $\geq 1$ involuntary hospitalization (n = 604)	
Substance use disorders	335	8.7	45	7.5
Psychosis	1269	33.0	338	56.1
Other mental disorders	433	11.3	50	8.3
<b>Suicide attempt</b>				
Yes	610	16.4	51	8.6
No	3117	83.6	545	91.4
<b>Contextual characteristics</b>				
<b>Year</b>				
2002	1188	30.7	115	19.0
2007	1309	33.8	226	37.4
2012	1375	35.5	263	43.5
<b>Psychiatric service</b>				
Centro Hospitalar de Lisboa Ocidental, EPE	523	13.5	138	22.8
Hospital de Magalhães Lemos, EPE	1556	40.2	177	29.3
Centro Hospitalar Psiquiátrico de Lisboa	991	25.6	138	22.8
Hospital Professor Doutor Fernando Fonseca, EPE	462	11.9	88	14.6
Unidade Local de Saúde do Baixo Alentejo, EPE	340	8.8	63	10.4

## Association between involuntary hospitalization(s) and sociodemographic, clinical, and contextual variables

The results of the multivariate Poisson regression model are presented in Table 4. Gender, marital status, education, psychiatric diagnosis, a suicide attempt, year of admission, and psychiatric service were found to be independently associated with involuntary hospitalizations.

Table 4

Multivariate Poisson regression model of the association between the number of involuntary hospitalizations and sociodemographic, clinical, and contextual characteristics

	Exp ( $\hat{\beta}$ )	95%CI
<b>Sociodemographic characteristics</b>		
<b>Gender</b>		
Women	Ref.	
Men	1.31	1.06–1.62 *
<b>Age</b>		
15–29	Ref.	
30–49	1.10	0.86–1.42
50–64	0.97	0.69–1.38
>=65	0.89	0.52–1.49
<b>Marital status</b>		
Single	Ref.	
Married/cohabitating	0.74	0.56–0.99 *
Divorced/separated/widowed	0.94	0.70–1.24
<b>Education</b>		
None or primary education	Ref.	
Basic education	1.30	0.98–1.73
Secondary education	1.45	1.05–2.01 *
Higher education	1.89	1.38–2.60 ***
<b>Employment status</b>		
Workers or students	Ref.	
Unemployed	1.08	0.84–1.39
Retired or others	1.11	0.86–1.45
<b>Clinical characteristics</b>		
<b>Psychiatric diagnosis</b>		

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

	Exp ( $\hat{\beta}$ )	95%CI
Mood and anxiety disorders	Ref.	
Dementia	0.98	0.46–1.92
Substance use disorders	0.94	0.60–1.43
Psychosis	2.02	1.59–2.59 ***
Other mental disorders	0.84	0.55–1.26
<b>Suicide attempt</b>		
No	Ref.	
Yes	0.26	0.15–0.42 ***
<b>Contextual characteristics</b>		
<b>Year</b>		
2002	Ref.	
2007	1.61	1.21–2.16 **
2012	1.73	1.31–2.32 ***
<b>Psychiatric service</b>		
Centro Hospitalar de Lisboa Ocidental, EPE	Ref.	
Hospital de Magalhães Lemos, EPE	0.65	0.49–0.86 **
Centro Hospitalar Psiquiátrico de Lisboa	0.67	0.49–0.90 **
Hospital Professor Doutor Fernando Fonseca, EPE	0.79	0.54–1.14
Unidade Local de Saúde do Baixo Alentejo, EPE	0.67	0.46–0.96 *
* p < 0.05; ** p < 0.01; *** p < 0.001		

Holding all other variables constant, men have an increment of 1.31 involuntary hospitalizations when compared to women (95%CI:1.06–1.62, p < 0.05). Participants married/cohabitating have a 26% decrease in the expected number of involuntary hospitalizations when compared to single participants (95%CI:0.56–0.99, p < 0.05). Participants with secondary education and with higher education have 45% and 89% more involuntary hospitalizations than participants with none or primary education, respectively (95%CI:1.05–2.01, p < 0.05, and 95%CI:1.38–2.60, p < 0.001). Participants with a diagnosis of psychosis have an increment of 2.02 involuntary hospitalizations when compared to participants with mood and anxiety disorders (95%CI:1.59–2.59, p < 0.001). Participants with a suicide attempt have a decrease of 74% in the estimated mean number of involuntary hospitalizations when compared to participants with no suicide attempt (95%CI:0.15–0.42, p < 0.001). Participants admitted in 2007 and in 2012 have a 61%

and 73% increase in the expected number of involuntary hospitalizations when compared to participants admitted in 2002, respectively (95%CI:1.21–2.16,  $p < 0.01$ , and 95%CI:1.31–2.32,  $p < 0.001$ ). Participants from Hospital de Magalhães Lemos, EPE, Centro Hospitalar Psiquiátrico de Lisboa and Unidade Local de Saúde do Baixo Alentejo, EPE have a 35%, 33% and 33% decrease in the expected number of involuntary hospitalizations when compared to participants from Centro Hospitalar de Lisboa Ocidental, EPE, respectively (95%CI:0.49–0.86,  $p < 0.01$ , 95%CI:0.49–0.90,  $p < 0.01$ , and 95%CI:0.46–0.96,  $p < 0.05$ ).

## Discussion

This study evaluated clinical data from all acute inpatients from five psychiatric departments serving different catchment areas in Portugal in the years of 2002, 2007 and 2012, and identified several sociodemographic, clinical, and contextual factors associated with involuntary psychiatric hospitalizations in Portugal.

Male gender, having secondary and higher education, a psychiatric diagnosis of psychosis, and admission in 2007 and 2012 were associated with an increment of involuntary hospitalizations. Being married/cohabitating, having experienced a suicide attempt, and belonging to the catchment area of three of the psychiatric services evaluated (Hospital de Magalhães Lemos, EPE, Centro Hospitalar Psiquiátrico de Lisboa and Unidade Local de Saúde do Baixo Alentejo, EPE) were associated with a reduction of involuntary hospitalizations.

People with a psychotic disorder were found to be at high risk for involuntary hospitalization, one of the most consistent findings from studies worldwide [31, 32, 45–62]. It is reassuring that mental health legislation is being used most frequently for people with the most severe and disabling mental health conditions [4]. Since no definition of diagnosis is provided by legal frameworks, it is important to understand what specific pathways and mechanisms might increase the risk for involuntary admission in someone with psychosis. One study found that hostility and suspiciousness were significant compulsory admission determinants, and that diagnosis had no longer any independent influence on the risk of involuntary hospitalization after controlling for these specific symptoms [48]. A high level of suspiciousness and uncooperativeness might go hand in hand with reduced coping-strategies and insight, and lead to poor medication adherence and impaired capacity to establish a therapeutic alliance [51, 60, 62], explaining the higher risk of involuntary hospitalization in psychosis. Another study concluded that aggression and psychotic symptoms increased the odds of involuntary hospitalizations [63]. Increased stress-level and aggressive behaviors might be perceived as an imminent danger to self or others, reflecting the still widespread assumption that people with severe mental disorders are unpredictable and dangerous, and be a central factor in mental health professionals' judgments regarding involuntary admission [38]. It is also likely that the shortage of community services for early recognition and assertive outreach is particularly serious for cases of psychosis, leading to a higher rate of acute psychiatric crisis and emergency admittances among this group [55].

Regarding sociodemographic factors, male gender was significantly associated with higher risk of involuntary hospitalizations. This finding is congruent with several previous studies [31, 32, 45–47, 52, 53, 55, 57, 58, 60, 64], while other studies have shown a higher risk in female gender [51, 65, 66]. Possible explanations might be related to societal attitudes and treatment culture that lead to different help-seeking behavior in males and females, or that mentally ill men are perceived as being more violent, suggesting that perception of dangerousness and overtly dangerous behavior are important contributing factors to involuntary hospitalizations [31, 32, 53, 60]. It is important to know that gender independently influences the risk of involuntary hospitalization. On the one hand, it provides evidence for the possible need to plan mental health services with differing pathways to care for women and men with severe mental disorders. On the other hand, it draws attention to issues relating to equality and human rights of mental health legislation, mental health services, or potentially discriminatory practices by other parties (e.g., police) [64].

Mixed results have been found regarding the association between educational level and involuntary hospitalization. The finding that a higher educational level is a risk factor for involuntary hospitalizations is in line with some studies [51, 62] but inconsistent with others [53, 58, 67]. Evidence is scarce and difficult to interpret. However, it has been hypothesized that schooling may be associated with greater awareness of individual's rights, causing the patient to disagree with inpatient treatment [51].

Regarding marital status, most previous studies have shown that being married is associated with a reduced risk [46, 68] or being unmarried with a higher risk of involuntary hospitalizations [47, 51, 57, 61, 67]. However, one study showed married status to be associated with an increased risk of involuntary treatment [62]. Overall, the finding of a greater likelihood of involuntary care among unmarried people may reflect the associations between poorer social capability, loneliness, scant social support, and severe mental health difficulties [4, 51, 61]. It might also reflect the role that friends and family may have in encouraging and facilitating help-seeking by voluntary means [4].

In line with some studies [47, 48, 56, 62] but in contradiction with other [54], we found that a history of suicidal attempt within the previous 12 months was a negative predictor of involuntary treatment. A possible explanation could be that after non-fatal suicidal attempt the individual may receive more social support from family and friends that, in turn, may increase his/her compliance with treatment and hospitalization [47]. Moreover, these patients could gain good insight into the severity of their clinical condition and develop a therapeutic collaboration, learning to ask for help and voluntary hospitalization when in need [48]. Alternatively, individuals with severe physical damage resulting from attempted suicide are voluntarily hospitalized for treatment in general hospitals with consequent referral to psychiatric departments [47].

Previous research on the system-related factors associated with involuntary hospitalizations is somehow scarce and inconclusive. Factors such as previous mental health service utilization [53, 69, 70], availability of inpatient beds [34, 52, 71], availability of alternative less restrictive forms of care, such as temporary housing or residential crisis stabilization [72– 74], adequacy of community services [4],

availability of home visits [75, 76], lower levels of service integration [62, 77], referral procedures such as contact with police, referral by physicians who did not know the patient or the professional that requires a compulsory admission [63, 65, 67], and longer waiting times for obtaining appropriate mental health care [62, 75] may be associated with involuntary hospitalization. This study found variation across psychiatric services, suggesting that services organization plays a role in predicting involuntary hospitalizations. However, service-level variables were not included in the analysis and it is not possible to ascertain which are the aspects of mental health care organization specifically involved.

Another relevant finding was the increase in involuntary hospitalizations in 2007 and 2012 in comparison to 2002. This may correspond to a time trend, following the increasing rates over time in some European countries [4]. The increment in 2012 may also reflect an association between the Great Recession and involuntary hospitalizations in Portugal. During periods of economic recession, it is plausible that factors such as family stress, dearth of social associations, social stigma associated with mental health problems, reduced tolerance for persons with mental illness, declining social capital and increased desire for security in society will lower the threshold and shape the decision for an involuntary admission [60, 78–80], that involves a complex interaction between clinical judgement, patients' psychopathology, social variables, fulfilment of legal requirements, and local availability of resources.

The results of this study should be interpreted in the light of several limitations. First, the analysis was based on a retrospective observational study based on clinical records and we did not have access to information on several factors that might be helpful in explaining the likelihood of involuntary hospitalization, such as symptom severity, level of psychosocial functioning, insight, perceived social support or poor adherence to outpatient treatment. Second, the use of routinely collected clinical data may lead to data quality issues (e.g. risk of misclassification). Third, the dataset did not include system or area-related variables that might describe the organizational, environmental or situational factors influencing involuntary hospitalization. Evidence for an association between availability of inpatient beds and involuntary hospitalization is sparse and inconclusive [4]. Mixed results have been found about the adequacy of community services and the rate of involuntary hospitalization. Reduced rates of involuntary care were found to be associated with more home visits [76], with availability of home visits after 22H [75], and with the availability of alternative less restrictive forms of care [72, 73]. However, community services rated more highly by service users were associated with greater numbers of patients admitted involuntarily [33]. In this study, it was not possible to conduct a retrospective analysis of the different typologies of service organization that could help to clarify the impact of factors such referral procedures, use of crisis intervention practices, total number of psychiatric beds, availability of adequate housing, social care, and other support services. Fourth, patients from Unidade Local de Saúde do Baixo Alentejo, EPE were admitted to Centro Hospitalar Psiquiátrico de Lisboa, which makes interpretation of results more complex. Finally, the findings from this study may allow limited comparisons given the marked differences between mental health systems across different countries.

Despite these limitations, this study provided a detailed analysis of all psychiatric admissions under the Mental Health Act over the course of three years in different psychiatric departments covering catchment

areas with distinct geographical and socioeconomic characteristics. This study did not restrict potential risk factors to patient characteristics alone, although a future more in-depth analysis of service and area aspects is needed to lead to better predictions and to provide data for services and policies improvement.

## Conclusions

A new approach to mental health care that is human rights-based and recovery-oriented is increasingly recognized and prioritized [81], and reducing the use of compulsory care is a policy priority. More evidence is needed on how to reduce involuntary hospitalizations in mental health care, preserving the right of people with mental health disorders to receive effective treatments when they are less able to express their own will and preferences [6]. Some interventions have shown effectiveness in reducing the risk of compulsory admissions in adults with severe mental illness, such as shared decision-making (e.g., advance statements and joint crisis plans with indicators for relapse and future treatment preferences) and integrated care (e.g., 24 h crisis resolution team; assertive community treatment; self-management interventions with a relapse prevention element, psycho-education and monitoring programs) [6, 82–89], when used in the context of existing mental health systems with a community-based organization of mental healthcare [6]. The effectiveness of these interventions highlights that advocating patients' desires and preferences regarding a future crisis, deepening self-monitoring of their illnesses, increasing patient participation in treatment choices and satisfaction with psychiatric treatment, involving family and friends, and improving the cooperation between community mental health and hospital teams are important steps to guarantee continuity of care and the definition of a shared therapeutic plan [19, 82]. Ensuring that these interventions are offered to high-risk patients could significantly reduce the risk of compulsory admissions.

Further research should focus on a better understanding about the risk factors and clinical decision processes that lead to an involuntary hospitalization, the consequences on treatment outcomes, along with the development, implementation and evaluation of the effective interventions to reduce involuntary hospitalization. This knowledge is essential to inform the development and implementation of targeted strategies to reduce the use of involuntary hospitalization and to ensure equitable access to psychiatric treatment and reduce health-care inequalities.

## Abbreviations

UN

United Nations; CRPD:Convention on the Rights of Persons with Disabilities; GLM:generalized linear model; 95% CI:95% confidence interval

## Declarations

**Ethics approval**

This study has been approved by the Ethics Committees of Centro Hospitalar Lisboa Ocidental, EPE, Hospital de Magalhães de Lemos, EPE, Centro Hospitalar Psiquiátrico de Lisboa, Hospital Professor Doutor Fernando da Fonseca, EPE, and Unidade Local de Saúde do Baixo Alentejo, EPE and has been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments.

### **Consent to participate**

Not applicable

### **Consent for publication**

Not applicable

### **Availability of data and materials**

The datasets generated and analysed during the current study are not publicly available, and the authors are not authorized to share the data.

### **Competing interests**

The authors declare that they have no competing interests.

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### **Authors' contributions**

MS conceptualised the study design, contributed to data analysis and interpretation, and drafted the manuscript. AA was a major contributor in conceptualising the study design, data analysis and interpretation, and critically reviewed the manuscript. SAL and AL contributed to data analysis and interpretation. BS, JMCA, and GC reviewed and approved the final manuscript. The author(s) read and approved the final manuscript.

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