



## **Patients' views of involuntary hospital admission after 1 and 3 months: prospective study in 11 European countries**

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Title: Patients' views of involuntary hospital admission after one and three months: a prospective study in eleven European countries

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## **Abstract**

### Background

Legislation and practice of involuntary hospital admission vary substantially among European countries, but differences in outcomes have not been studied.

### Aims

To explore outcomes following involuntary hospitalisation in different European countries.

### Method

In a prospective study in 11 countries 2326 consecutive involuntary patients admitted to psychiatric hospital departments were interviewed within one week after admission; 1809 were followed-up one month and 1613 three months later. Patients' views as to whether the admission was right were the outcome criterion.

### Results

In the different countries, between 39% and 71% found the admission right after one month, and between 46% and 86% after three months. Female patients, those living alone and those with a diagnosis of schizophrenia had more negative views. Adjusting for confounding factors, differences between countries were significant.

### Conclusions

International differences in legislation and practice may be relevant for outcomes and inform improvements of policies, particularly in countries with poorer outcomes.

### Declaration of Interest

None.

## **Introduction**

Throughout the world significant numbers of patients are involuntarily admitted to psychiatric hospital departments. How involuntary hospital admissions should best be legislated for and regulated, has been controversial<sup>1-3</sup>. In the United Kingdom, the government has proposed two bills for a new mental health act in England and Wales since 2002. Following wide resistance of professional groups, user organisations and part of the media, both bills were withdrawn and the government settled for an amendment of the existing 1983 Act<sup>4,5</sup>.

The debate on the most appropriate regulations and practice of involuntary hospital admission is guided by little, if any, research. There is no evidence on whether specific procedures are associated with different outcomes<sup>6,7</sup>. Ethical and practical reasons may prevent experimental designs such as randomised controlled trials. In their absence, observational comparisons between sites with different legislation and practice are a viable method to explore the link between procedures and outcomes.

Countries across Europe share a similar background in terms of societal systems and history of psychiatry, but vary substantially in their legislation for and practice of involuntary hospital admission<sup>8,9</sup>. Involuntary admission rates vary by a factor of more than 10<sup>1,10</sup>. Several studies have analysed the differences in legislation and policies but there is no evidence yet on whether there also are differences in outcomes.

Legislation for involuntary admissions is based on the assumption that patients cannot recognise the need for hospital care because of the severe and usually acute symptoms of their illness. This would imply that patients should later (once the acute phase is over) accept that the involuntary admission was the right intervention at the time <sup>11</sup>. Patients' retrospective view of the appropriateness of the admission has been used as an outcome criterion in studies in Australia, Canada, Sweden, the United States and the United Kingdom <sup>12-18</sup>. Between 33% and 81% of involuntary patients found the admission "right" in retrospect. The rate varied according to the exact wording of the question and the time since admission <sup>6</sup>.

In this study we assessed patients' views of involuntary hospital admission after one and three months at sites in eleven European countries. We explored whether and, if so, to what extent patients' retrospective views of admission vary between sites in different countries and whether these differences hold true after controlling for differences in patient characteristics.

## **Methods**

### **Design and participants**

The study was conducted as a multi-centre prospective cohort study in eleven European countries, Bulgaria (Sofia), Czech Republic (Prague), Germany (Dresden), Greece (Thessaloniki), Italy (Naples), Lithuania (Vilnius), Poland (Wroclaw), Slovakia (Michalovce), Spain (Granada and Malaga), Sweden (Örebro), and the United Kingdom (East London). Between one and five hospitals were studied in each

country. Tel Aviv in Israel was originally included, but omitted from this analysis because of inadequate study implementation. All sites had in-patient units with voluntary as well as involuntary patients. Involuntary admissions were conducted according to national legislation and routine practice. The rationale and methods of the study, the characteristics of the participating hospitals and data of other mental health services in the catchment areas of the hospitals have been described in detail elsewhere <sup>19</sup>. The inclusion criteria were: all in-patients in general psychiatric departments; admitted involuntarily; aged between 18 and 65 years; resident in the catchment area; sufficient command of the national language; able to give informed consent. Exclusion criteria were: Admission because of intoxication; primary diagnosis of dementia; transfer from another hospital.

### **Procedures and measures**

Patients were identified by researchers through ongoing contacts with clinical staff on the wards and the relevant administrators. Clinical staff in the participating wards introduced eligible patients to a researcher, who contacted the patient within the first week after admission, provided a full explanation of the study, and asked for consent. If written informed consent was obtained, the patient was assessed. This included an assessment of psychopathological symptoms, which were taken as baseline symptom levels. Further face to face interviews were conducted at follow-ups at one month and three month after the admission. Patients were recruited between July 2003 and October 2005.

The primary outcome was the patients' retrospective view on the extent to which the admission was right or wrong at one and three months. Patients rated their response to the question "Today, do you find it right or wrong that you were admitted to hospital?" on an 11 point Likert type rating scale ranging from 0 (=entirely wrong) to 10 (=entirely right), which has been used in previous research <sup>14,15</sup>.

Baseline socio-demographic and clinical characteristics and the diagnosis of the patients were obtained from medical records. These included data on age, gender, living situation (living alone vs. living with others), employment situation (no current employment vs. employment), previous hospitalisations (none vs. one or more previous hospitalisations), and clinical diagnosis according to ICD-10 <sup>20</sup>. Diagnoses were collapsed into three groups: schizophrenia or other psychosis (F20-29), affective disorder (F30-39), and 'others'. Researchers assessed baseline symptom levels on the 24-item version of the Brief Psychiatric Rating Scale (BPRS <sup>21</sup>) which ranges from 24 to 168, with 168 indicating the maximum symptom severity. Researchers from all sites had joint training sessions in administering and rating this instrument and achieved an inter-rater reliability (intra-class correlation coefficient) of 0.78. The study was approved by the relevant national and/or local ethics committees.

### **Statistical analysis**

The outcome variable was the patients' retrospective view on the extent to which the admission was right or wrong on an 11 point scale (0=entirely wrong, 10=entirely right), and was treated as quantitative in the analysis to fully utilise the variation of patient's responses and summarised by mean and standard deviation after examining

its distribution. To present the primary outcome in each country in a clinically more meaningful manner, we also dichotomised the scale at 5 (the neutral middle point) and show the percentage of patients who rated above 5 indicating that they viewed their admission as more right than wrong. Descriptive summary statistics were also used to describe the distributions of the predictors of the outcome variable.

To account for possible correlations among repeated measurements, a generalised estimating equation (GEE) model was employed<sup>22</sup> with patients' characteristics measured at baseline and time of measurement as fixed effects and subject as random effect. We performed GEE model analysis in three steps. First, we performed a univariate GEE model analysis for all predictors. Predictor variables that were significant at  $P=0.05$  were subsequently entered in a multivariate GEE model analysis in the second step. Finally, we checked model assumptions by examining the residual plots.

The estimated effects of predictors on the primary outcome from the GEE models are reported together with their 95% confidence intervals. To identify the between country differences, we derived a matrix of  $P$ -values for all possible pair-wise between-country comparisons from the estimated multivariate GEE model.

In England, age, gender, and clinical diagnosis were obtained for all eligible patients in the study including those who were not interviewed (approved by the Patient Information Advisory Group; ref: PIAG 2-10(d)/2005). Interviewed and not interviewed patients were compared on the assessed characteristics to estimate a potential selection bias of the recruitment process.



## **Results**

### **Sample characteristics**

A total of 2326 patients were recruited in all countries and assessed at baseline. Table 1 shows the number of eligible patients and the selection process in each country.

Table 1 about here

Between 31% and 71% of eligible patients were interviewed within the first week of admission, and of these between 63% and 96% were followed up at one month and between 55% and 93% at three months.

The characteristics of the participating patients are summarised in Table 2.

Table 2 about here

Overall, 72% of patients were without employment, 66% lived alone, 71% had been hospitalised before, and 62% were diagnosed with schizophrenia.

At the English site, baseline data was obtained for 181 out of those 183 patients who were eligible but not interviewed. Their mean age was 36.01 (SD=11.41). Of these 40% were female, 60% diagnosed with schizophrenia, 22% with affective disorders,

and 18% with ‘other’ diagnoses. The interviewed and non-interviewed patients were similar on the tested characteristics listed in Table 2.

The baseline characteristics of patients in the total sample followed-up at one month (and at three months) were: 45.1% (45.5%) female; 73.1% (72.2%) unemployed; 35.3% (36.0%) living with others; 71.4% (72.3%) with a previous hospitalisation; 65.7% (64.7%) diagnosed with schizophrenia, 16.7% (17.2%) with affective disorders, and 17.6% (18.1%) with ‘other’ diagnoses. The mean age of those followed-up at one month was 38.87 (SD=11.21), and of those followed-up at three months 39.10 years (SD= 11.13). The baseline BPRS mean score of those followed up at three months was 54.77 (SD=15.84) and of those followed-up at three month 55.08 (SD=15.84). The assessed characteristics of the originally recruited sample, and the samples followed-up at one and three months were similar.

### **Patients’ views on whether admission was right**

Table 3 shows the percentage of patients who thought that the admission was right as well as the means and standard deviations of their ratings for each country and each follow-up.

Table 3 about here

In the total sample, 55% thought at one month that their admission was right and 63% at three months. The percentages varied between 39% and 71% at one month, and between 46% and 86% at three months.

Across all countries, the distribution of the scores of the 11-point rating scale were at one month (and three month): 0=17% (13), 1=3% (2), 2=5% (4), 3=4% (5), 4=3%(3), 5=12%(11), 6=5%(5), 7=8%(9), 8=12%(13), 9=9%(12), 10=22%(24).

### **Factors associated with patients' views**

The univariate associations of all considered predictor variables including country of site with the outcome and the findings of the multivariate analysis are shown in Table 4. Table 5 shows which differences between countries were significant in pair-wise post-hoc comparisons, adjusting for the influence of all other significant predictor variables.

Table 4 about here

Table 5 about here

Patients' views on the appropriateness of their involuntary admission show significant differences between sites in different countries, even when adjusted for other predictor variables. The post-hoc comparisons show that not all differences between sites at different countries were statistically significant, but the more substantial ones were. For example, the patients' views in England are significantly less favourable than those in Bulgaria, Greece, Spain, the Czech Republic, Italy, Germany, and Slovakia, whilst patients' views in Slovakia are significantly more positive than in all sites other than those in the Czech Republic, Italy and Germany.

All further considered predictor variables other than previous hospitalisation showed significant associations with outcomes in univariate analyses. In the multivariate analysis however, only gender, living situation and diagnosis were significantly associated with patients' views. Male patients and those living with others tended to find the admission more often right. Patients with schizophrenia had more negative views than those with other diagnoses.

## **Discussion**

### **Main findings**

One month after involuntary hospital admission, between 39% and 71% believe the admission was right. After three months, when the acute phase of the mental illness justifying the involuntary admission should be overcome for most patients, the rates are higher and range between 46% and 86%. The findings that a substantial proportion of patients do retrospectively not agree with the appropriateness of the admission may shed a critical light on the ethical justification of involuntary hospital admission. At the same time, an average of 63% found the admission right three months later which may be a reassuring finding to many clinicians, patients and their families. The figures are consistent with previous studies with smaller samples and usually less systematic methods<sup>6,14,23,24</sup>. However what is a totally new finding is the large variation across sites in different European countries. This variation is not explained by differences in socio-demographic characteristics, clinical diagnoses or baseline symptom levels included in this study. The size of the differences is substantial, and many of them are statistically significant.

## **Strengths and limitations**

This is the largest prospective study on outcomes of involuntary hospital admissions ever conducted and the first one to use the same methods across sites in several countries. It included centres in eleven European countries with different legislation and practice of involuntary admission. All patients were assessed face to face by trained researchers, and were recruited and interviewed within the first week after admission, which is challenging given that many patients had high symptom levels and all of them were in the hospital on an involuntary basis.

The study has a number of weaknesses: Overall only 50% of the eligible patients were interviewed, a rate that varied across countries. The rate may be seen as low in many other fields of health research, but has been described as good for this type of studies in acute settings with difficult to recruit patients <sup>6</sup>. For the comparison of recruited and non-recruited patients data were available only for the English site, whilst the followed up and not followed up patients were compared at all sites. These comparisons did not suggest a selection bias on the assessed characteristics, neither for the recruitment of eligible patients nor for the follow ups. However, only a few characteristics were assessed.

We assessed only between one to five hospitals in each country and do not know to what extent the data is representative for the country as a whole. In England we have data of a linked national study to estimate this <sup>24</sup>. The study sites were two hospitals in the London Boroughs of Hackney and Newham. In 20 other hospitals, the same

outcome data were assessed in 371 involuntary patients at one month and in 307 patients at three months. At one month, 45% (166) of patients felt that the admission was rather right (mean=4.81; SD=3.99), and at three months 50% (154) expressed that view (mean=5.34; SD=3.94). Outcomes at the two hospitals of the study site in East London and 20 other hospitals in England were similar, and using the data of those 20 hospitals would not have substantially changed the findings of the national comparisons. However, there is no similar data from other countries to check whether the results at the study sites are representative for or different from the outcomes at other hospitals in the country.

### **Possible reasons for the differences**

Can the identified differences of patients' views of involuntary admission be linked to characteristics of the given legislation? There is no straightforward answer. The legislation in all countries is complex and has many features which are of potential importance. Any interpretation of the findings of the identified differences against the characteristics of the national legislation is a post-hoc exercise and inevitably speculative.

One possible criterion to classify the national regulations is the extent to which they protect the rights and interests of the patients concerned<sup>8,9</sup>. Seven criteria that vary between countries and may be seen as relevant for the protection of the interests of the patients are shown in Box 1. Although the answers to the questions are not always clear cut, we established the number of criteria for each country. The resulting ranking has similarities with the order of outcomes in the multivariate analysis of this study

(with the most protective legislation and most positive patient views in Slovakia and Germany, and the least protective legislation and most negative views in England), but the criteria still leave many of the differences in patients' views unexplained.

Box 1 about here

A number of other national features might be important. These include the geographical position and political history (e.g. Western vs. Eastern Europe), the relative expenditure of health care funding on mental health care <sup>25</sup>, the overall rates of involuntary admissions <sup>2</sup>, and the recruitment and follow-up rates in this study. However, none of these was clearly associated in our study with the differences identified in patients' views. There are three other possible factors accounting for the differences that were not assessed. Firstly, patients at the various sites may have differed in relevant social or clinical characteristics that were not captured in the study. Secondly, national differences in the expectations of patients and overall rating tendencies may have favoured more or less positive answers to the outcome question. Finally, clinical practice (the behaviour of professionals towards involuntary patients and the methods employed to support and treat them) is likely to vary across Europe and impact on outcomes. Some aspects of clinical practice may be linked to national cultures and traditions and difficult to change, but others may reflect training and policies that are transferable to other countries.

### **Factors associated with outcomes across countries**

Some patient characteristics were associated with views of admission across countries. Females expressed more negative views, as has been reported for other patient reported outcomes in psychiatry, although not a consistent finding <sup>26,27</sup>. Patients living alone more often rated the admission as wrong, which may reflect their difficulties adjusting to the confined space and the often tense atmosphere with fellow patients and staff on a ward. It may also be that patients living with others had often experienced conflicts and tension with these making the admission a relief and therefore right in retrospect. During and after hospital treatment they are likely to have had discussions with their partners about their illness and received support from them. Both discussions and support may have led to more positive appraisals of the admission. Patients with schizophrenia had more negative views of admission, which may be linked to more frequent lack of insight in these patients <sup>28</sup>. In the multivariate analysis, the degree of baseline symptoms was not associated with later views of the admission. Thus, this study provides no evidence for the assumption that a high level of initial symptoms is associated with more negative views of admission later.

## **Conclusions**

The findings suggest that the great differences of legislation and practice of involuntary hospital admission and subsequent treatment across Europe may indeed be associated with substantial differences in patients' views. Although the exact causal factors and mechanisms remain poorly understood, the differences between European countries appear to matter for outcome <sup>29</sup>. Future in-depth studies could identify those factors in legislation and practice that are specifically relevant for achieving more positive views of patients <sup>30</sup>. Countries with currently less favourable



outcomes, such as England, might consider implementing them, and methods may be developed to strengthen these factors and improve outcomes across all countries.

### **Contributors**

S Priebe led on the analysis and interpretation reported in this paper and took overall responsibility for its writing.

T Kallert was the principal investigator on the grant of the European Commission (ref: QLG4-CT-2002-01036) and supervised the overall study completion.

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D Wang took responsibility for and C Katsakou conducted the statistical analysis.

All authors contributed to and approved the final version of the paper. All authors had full access to all of the data (including statistical reports and tables) in the study and can take responsibility for the integrity of the data and the accuracy of the data analysis.

### **Declaration of Interest**

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interpretation of data; in the writing of the report; and in the decision to submit the article for publication. All authors declare that they have no competing interests.

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Table 1. Recruitment and follow-up rates at sites in all countries

	Bulgaria	Czech Republic	England	Germany	Greece	Italy	Lithuania	Poland	Slovakia	Spain	Sweden	Total sample
Eligible patients	475	581	451	466	349	280	120	334	439	850	306	4651
Absconded/ discharged	27	80	30	186	58	7	1	30	41	219	49	728
Clinically too unwell	76	160	89	59	43	60	17	52	87	84	44	771
Asked to take part	372	341	332	221	248	213	102	252	311	547	213	3152
Refused to take part	63	139	64	76	26	84	17	100	15	126	116	826
Assessed at baseline	309	202	268	145	222	129	85	152	296	421	97	2326
% of eligible patients	65%	35%	59%	31%	64%	46%	71%	46%	67%	50%	32%	50%
Assessed at 1 month follow-up	297	165	179	120	178	116	66	141	221	264	62	1809
% of participants at baseline	96%	82%	67%	83%	80%	90%	78%	93%	75%	63%	64%	78%
Assessed at 3 months follow-up	287	146	175	106	147	111	48	140	162	236	55	1613
% of participants at baseline	93%	72%	65%	73%	66%	86%	56%	92%	55%	56%	57%	69%



Table 2. Baseline characteristics of participating patients at sites in all countries and hospitalisation status at one month and three month follow ups

	Bulgaria N= 309	Czech republic N= 202	England N= 268	Germany N= 145	Greece N= 222	Italy N= 129	Lithuania N= 85	Poland N= 152	Slovakia N= 296	Spain N= 421	Sweden N= 97	Total sample N= 2326
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Gender												
Female	195 (63)	108 (53)	86 (32)	55 (38)	72 (32)	45 (35)	46 (54)	80 (53)	117 (40)	146 (35)	51 (53)	1001 (43)
Male	114 (37)	94 (47)	181 (68)	90 (62)	150 (68)	82 (65)	39 (46)	72 (47)	179 (60)	275 (65)	46 (47)	1322 (57)
Age												
N	309	202	265	145	222	127	85	152	296	421	97	2321
Mean (SD)	39.15 (10.24)	40.33 (13.26)	34.72 (9.73)	37.35 (11.68)	38.75 (10.29)	39.04 (10.32)	40.48 (11.67)	41.79 (11.71)	39.78 (10.47)	37.73 (11.08)	41.30 (11.92)	38.72 (11.12)
Employment												
No	255 (87)	123 (61)	216 (82)	107 (74)	127 (57)	87 (69)	62 (73)	116 (77)	227 (77)	272 (66)	69 (71)	1661 (72)
Yes	37 (13)	78 (39)	47 (18)	38 (26)	95 (43)	39 (31)	23 (27)	35 (23)	69 (23)	143 (34)	28 (29)	632 (28)
Living situation												
With others	124 (41)	84 (42)	65 (25)	47 (32)	55 (25)	36 (29)	33 (40)	67 (44)	132 (45)	106 (25)	29 (31)	778 (34)
Alone	170 (58)	117 (58)	191 (75)	98 (68)	166 (75)	88 (71)	50 (60)	84 (56)	163 (55)	313 (75)	66 (69)	1506 (66)
Past hospitalisation												
At least one	236 (80)	148 (74)	193 (72)	104 (72)	137 (63)	93 (76)	71 (86)	99 (65)	175 (61)	269 (65)	82 (88)	1607 (71)
None	60 (20)	52 (26)	74 (28)	41 (28)	81 (37)	29 (24)	12 (14)	53 (35)	112 (39)	143 (35)	11 (12)	668 (29)
Diagnosis												
Schizophrenia	249 (90)	120 (60)	154 (59)	67 (46)	161 (73)	85 (67)	78 (92)	108 (71)	143 (48)	225 (53)	38 (40)	1428 (62)
Affective dis.	24 (9)	25 (12)	61 (23)	31 (21)	28 (13)	25 (20)	2 (2)	23 (15)	19 (6)	95 (23)	29 (31)	362 (16)
Other	5 (2)	57 (28)	47 (18)	47 (32)	33 (15)	17 (13)	5 (6)	21 (14)	134 (45)	101 (24)	28 (29)	495 (22)
Symptoms (BPRS)												
N	309	201	264	144	209	126	85	152	296	415	94	2295
Mean (SD)	69.09 (13.99)	50.23 (13.41)	51.26 (10.85)	54.25 (12.71)	48.55 (10.37)	73.16 (21.11)	58.23 (10.94)	47.98 (11.55)	49.94 (13.06)	45.30 (10.83)	48.36 (10.82)	53.39 (15.36)
Still in hospital at 1 month	222 (75)	105 (62)	116 (50)	91 (72)	113 (57)	5 (5)	64 (81)	105 (73)	177 (61)	35 (9)	27 (37)	1060 (50)
Still in hospital at 3 months	135 (47)	16 (11)	36 (17)	21 (19)	17 (10)	3 (3)	16 (27)	10 (7)	8 (3)	3 (1)	12 (16)	274 (14)

Table 3. Patients' views on whether admission was right or wrong at sites in all countries

Patients' views of admission	Bulgaria	Czech Republic	England	Germany	Greece	Italy	Lithuania	Poland	Slovakia	Spain	Sweden	Total sample
1 month follow-up												
N	284	159	176	118	163	112	66	138	204	253	59	1732
Mean (SD)	4.76 (3.31)	6.09 (3.54)	4.89 (3.91)	6.46 (3.44)	5.49 (4.07)	6.48 (1.81)	4.33 (3.71)	5.10 (3.84)	7 (3.85)	6.51 (3.24)	6.11 (3.81)	5.77 (3.63)
% wrong	55	43	53	36	52	29	61	51	33	38	42	45
% right	45	57	47	64	48	71	39	49	67	62	58	55
3 months follow-up												
N	265	112	175	105	134	102	45	137	144	224	54	1497
Mean (SD)	5.86 (3.30)	6.95 (3.04)	5.6 (3.98)	7.18 (3.08)	6.63 (3.73)	7.25 (1.54)	6 (2.84)	5.93 (3.69)	7.13 (3.74)	6.35 (3.29)	5.79 (3.72)	6.37 (3.43)
% wrong	42	32	46	30	39	14	49	39	31	34	54	37
% right	58	68	54	70	61	86	51	61	69	66	46	63

Table 4. Factors associated with patients' views of admission in univariate and multivariate GEE\* analyses

Predictor variables	Univariate Analysis				Multivariate Analysis			
	<i>B</i> **	95% CI		<i>P</i> -value	<i>B</i> **	95% CI		<i>P</i> -value
Country								
England	0.00				0.00			
Lithuania	-0.10	-0.98	0.77	0.817	0.04	-0.84	0.93	0.923
Poland	0.29	-0.37	0.96	0.391	0.25	-0.41	0.93	0.454
Bulgaria	0.04	-0.51	0.60	0.882	0.64	0.02	1.27	0.041
Sweden	0.77	-0.09	1.63	0.080	0.77	-0.11	1.65	0.086
Greece	0.63	-0.00	1.27	0.051	0.61	-0.03	1.27	0.064
Spain	1.26	0.69	1.83	<0.001	1.15	0.57	1.73	<0.001
Czech Republic	1.22	0.57	1.88	<0.001	1.19	0.53	1.85	<0.001
Italy	1.64	0.92	2.36	<0.001	1.47	0.70	2.24	<0.001
Germany	1.49	0.79	2.19	<0.001	1.30	0.60	2.01	<0.001
Slovakia	1.92	1.31	2.52	<0.001	1.74	1.13	2.36	<0.001
Gender								
male vs female	0.77	0.47	1.06	<0.001	0.77	0.46	1.08	<0.001
Employment								
employed vs unemployed	0.44	0.11	0.77	0.008	0.17	-0.16	0.51	0.307
Living alone								
Yes vs no	-0.56	-0.87	-0.26	<0.001	-0.69	-1.02	-0.37	<0.001
Diagnosis								
Schizophrenia	0.00				0.00			
Affective disorder	0.70	0.30	1.10	0.001	0.60	0.19	1.01	0.004
Other	0.84	0.45	1.22	<0.001	0.43	0.03	0.84	<0.001
BPRS score	-0.01	-0.01	-0.00	0.035	0.00	-0.00	0.01	0.517
No past hospitalisation	0.17	-0.15	0.50	0.286				

\* GEE = Generalised Estimating Equation. \*\**B*= regression coefficient

Table 5. *P*-values from pair-wise between-country comparisons derived from multivariate GEE\* model

	England	Lithuania	Poland	Bulgaria	Sweden	Greece	Spain	Czech Republic	Italy	Germany
Lithuania	0.923									
Poland	0.454	0.648								
Bulgaria	0.041	0.165	0.257							
Sweden	0.086	0.190	0.272	0.781						
Greece	0.064	0.213	0.311	0.932	0.738					
Spain	<0.001	0.012	0.005	0.100	0.376	0.082				
Czech Republic	<0.001	0.013	0.009	0.102	0.363	0.097	0.909			
Italy	<0.001	0.004	0.004	0.021	0.170	0.036	0.419	0.497		
Germany	<0.001	0.008	0.006	0.059	0.264	0.064	0.659	0.759	0.694	
Slovakia	<0.001	<0.001	<0.001	<0.001	0.029	0.001	0.043	0.089	0.477	0.209

\* GEE = Generalised Estimating Equation

Box 1. Criteria to distinguish the legislation on involuntary hospital admission with respect to the protection of the interest of the patients (the first option in each question is seen as more protective of the interest of the patients)

Legislation criteria
<p>1) Is involuntary admission possible only when patients pose a risk to themselves and/or others, or also to avoid a more general threat to the patients' health?</p> <p>2) Can the admission be initiated only by authorities and medical doctors or also by other stakeholders?</p> <p>3) Does involuntary admission require the decision of a court or not?</p> <p>4) Is the period of time for which the hospital can decide to keep patients involuntarily on the wards without a formal decision for involuntary treatment shorter or longer than 24 hours?</p> <p>5) Is legal support guaranteed or not?</p> <p>6) With respect to appeal procedures to independent bodies, are there binding time periods for a response, and are people and/or institutions other than the patient authorised to appeal, or not?</p> <p>7) Is the decision for involuntary treatment measures separate from the decision for involuntary admission or not?</p>
Criteria protecting the interest of the patients in each country
<p>Seven: Germany (1-7)</p> <p>Five: Slovakia (1,3,4,6,7), Sweden (1,2,4,5,6)</p> <p>Four: Bulgaria (1,3,4,7), Czech Republic (1,3,4,7), Spain (3,4,5,7)</p> <p>Three: Italy (2,6,7), Poland (2,3,5), Lithuania (1,2,3)</p> <p>Two: Greece (3,6)</p> <p>One: England (5)</p>