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Clinical course and prevalence of coercive measures: an observational study among involuntarily hospitalised psychiatric patients

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Summary

AIMS OF THE STUDY: In daily clinical work, coercion continues to be highly prevalent, with rates differing between countries and sometimes even within countries or between wards of the same hospital. Previous research found inconsistent characteristics of individuals who underwent coercive measures during psychiatric treatment. Furthermore, there continues to be a lack of knowledge on the clinical course of people after being involuntarily committed. This study aimed to describe the rate and duration of different coercive measures and characterise a cohort of involuntarily committed patients regarding sociodemographic and clinical variables.

METHODS: In this observational cohort study, we analysed clinical data from the patients' medical files, the use of coercive measures (seclusion, restraint, coercive medication) and other procedural aspects in involuntarily hospitalised patients (n = 612) at the University Hospital of Psychiatry Zurich. For analysis, we used cross-tabulation with chi-square tests for categorical variables and, owing to a non-normal distribution, the Mann-Whitney U-test for interval variables.

RESULTS: Coercive measures were documented in 170 patients (28% of those who were involuntarily hospitalised). The total number of seclusions was 344, with a mean duration of 9 hours per seclusion. A total of 89 patients (15%) received 159 episodes of coercive medication (oral and intramuscular). Also, 11 episodes of restraint were recorded in 7 patients (1%) with a mean duration of 12 hours per restraint. Patients subjected to coercion were significantly more often male, violent prior to admission, diagnosed with psychosis or personality disorder, and had a history of frequent hospitalisations with long durations of hospitalisation.

CONCLUSIONS: The prevalence of coercive measures is still high in involuntarily hospitalised patients. Seclusion was the most frequently used coercive measure, which may be based on cultural and clinical aspects and differs from findings in other countries where restraint is more frequently used. Some sociodemographic and clinical characteristics were associated with the use of coercion. This underlines the importance of developing treatment strategies for patients at risk to prevent situations in which the use of coercion is necessary. To enable comparison between different study sites, standardised protocols should be used to document frequency and duration of coercive measures.

Key words: *coercion, seclusion, restraint, coercive medication, involuntary hospitalisation*

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Introduction

Although involuntary commitment and coercive measures are massive invasions of a person's right to autonomy and self-determination, they are commonly used in psychiatric emergency situations [1, 2]. Because of the possible violation of the patient`s freedom, the use of coercive measures (e.g., involuntary commitment, seclusion, restraint, coercive medication) in psychiatry is regulated on a regional and national level [3, 4]. Although the criteria that have to be met to justify the use of coercive measures (mostly danger to self or others) are clearly defined in theory and comparable between different countries, situations occur that raise questions in patients [5] and in psychiatric staff [6] as to whether alternatives could have been used.

To reduce the prevalence of coercive measures and strengthen the autonomy of patients, most countries in the western world have reformed their legislation in reecent decades [7]. Not only legislative and medical conditions are relevant for the regulation of coercive measures. Cultural aspects such as beliefs, attitudes, and values of both society and mental-health service structures also have an important impact [8–11] on the execution of coercive measures. These different factors, as well as patient characteristics, are hypothesised to play a role in divergent prevalence levels of coercive measures in different countries [4,

11–26]. Supporting the findings that legislation is not the only factor that influences the use of coercive measures, some studies showed that the inconsistency in the use of coercive measures differs not only between countries but also within the same country and sometimes also between wards of a single hospital [12, 27–29].

Furthermore, there appear to be differences in the measures (seclusion, physical restraint, mechanical restraint, coercive medication) that are preferred. In some studies, seclusion was used more frequently [13–17, 19–21, 30], whereas in others mechanical [13] or physical restraint [18, 22, 26, 31] was the intervention of choice. Studies on the frequency of coercive medication are less common and one study revealed that it is mostly combined with other forms of coercion [15]. The characteristics of patients receiving coercive measures are also inconsistent in the literature. Younger [21, 32–34] or older age [26, 35], female [22, 35] but also male gender [32, 34, 36], psychotic disorders [36, 37], personality disorders [15, 32], substance use-related disorders [27], mental retardation [32], a history of former admissions [21, 27, 38], long duration of hospitalisation [15, 21, 34, 39], involuntary commitment [27] and aggressive behaviour prior to admission [40] were described in different studies.

Previous studies revealed high rates of involuntary commitment and coercion in Switzerland [13, 41], but to our knowledge there is no study evaluating the prevalence of coercion and the factors that are associated with its application. Hence, the aim of this study was to gain information about the rates of coercive measures and clinical characteristics in an inpatient population treated at the University Hospital of Psychiatry Zurich, the largest psychiatric hospital in Switzerland. On the basis of previous studies [15, 21, 34, 36–39], we wanted to test the hypothesis that, compared with patients without episodes of coercion during involuntary hospitalisation, those who experience coercion at the University Hospital of Psychiatry Zurich stay longer in the psychiatric hospital, have a history of former involuntary admissions and suffer more often from psychotic illness.

Material and methods

Study design and setting

We used an observational study design. Commitment documents and the medical records of a cohort of patients admitted involuntarily to the University Hospital of Psychiatry Zurich during a 6-month period from 1 January to 30 June 2016 were analysed.

Fourteen wards of the Hospital for Adult Psychiatry and two wards of the Hospital for Geriatric Psychiatry of the University Hospital of Psychiatry Zurich, with a total of 252 beds, were included. These 16 wards are located in one hospital, with 6 wards for semi-acute treatment, mostly on a voluntary basis and 10 acute wards, responsible for the majority of patients with an involuntary status. The latter have different specialisations, but strive for a balanced patient distribution to avoid wards with a concentration of coercive measures. The hospital constitutes the largest hospital for adult psychiatry in Switzerland, providing mental-health services for a catchment area of 485,000 inhabitants.

The study was reviewed and approved by the Cantonal Ethics Commission of Zurich, Switzerland (Ref.-No. EK: 2016-00749, decision on 01.09.2016).

Study sample

No exclusion criteria were defined. We screened a comprehensive cohort of all patients admitted to the University Hospital of Psychiatry Zurich during a six-month period from 1 January to 30 June 2016. Overall, 1728 inpatients were treated during this period. Of these patients, 577 (33%) were involuntarily and 1151 (67%) were voluntarily admitted. For the following analyses related to the occurrence of coercion, we included the 577 (33%) involuntarily admitted patients and 35 (2%) voluntarily admitted patients who were retained because of harm to themselves or others at a later stage during their hospitalisation, which led to a change of their legal status to involuntary hospitalisation. Thus, we conducted statistical analyses with a total of 612 (35%) patients.

Definitions of seclusion, restraint, coercive medication

Seclusion

In the canton of Zurich, seclusion is defined as being locked in a single room with surveillance through a window with a maximum interval of 15 minutes and, in some cases when danger to self may need immediate response, continuous surveillance through the window.

Mechanical restraint

Patients are strapped to a bed with mechanical devices (belts). At the University Hospital of Psychiatry Zurich, bed belts with 5-point restraints are used. These belts can fix the patient's arms, legs and torso. If possible less than 5 belts can be used. Restraint is always accompanied by staff during the whole time.

Coercive medication

Coercive medication can be used as an acute intervention, orally or as an intramuscular injection. The patient must always be asked whether he or she is willing to take medication orally to avoid injection, which is perceived as more traumatic [42].

Materials and procedures

Data for this study were based on routine documentation in the patient's electronic medical files. Those files were used to merge the data, which were collected during one hospitalisation and include documentation of the admission circumstances, prescribed medication, coercive measures and treatment planning. We included patients who were involuntarily hospitalised (as defined above) for detailed analysis. We analysed for the following parameters of the circumstances of admission: reason for admission, referring physician, reason for involuntary commitment, involvement of police during the admission process and at the time of admission. For the clinical course following the admission, we analysed the medical files for the occurrence of coercive measures, prescription of medication, time to day passes, duration of hospitalisation and the diagnosis at discharge. Also, we assessed procedural aspects such the occurrence of abscondence and episodes of re-hospitalisation during the 6-month study period. Further-

more, we analysed the included wards for differences in the usage of coercion.

Statistical methods

Analyses were conducted using SPSS 23.0 (IBM Corp. Released 2011. IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp.) for Windows.

First, we compared sociodemographic data and clinical course of hospitalisation in voluntarily and involuntary hospitalised patients. Second, we conducted a two-group analysis in the involuntarily hospitalised group comparing patients who had undergone at least one coercive measure during hospitalisation with those without coercive measures. For the analysis, we used cross-tabulation with chi-square tests and Bonferroni-adjusted *post-hoc* tests for categorical variables. Because of the non-normal distribution of interval variables we used Mann-Whitney U-Test and rank regression analyses. The multiple comparisons were family-wise adjusted with the Bonferroni correction to prevent type I error inflation.

Results

Descriptive statistics

Of the 1728 patients who were hospitalised at the University Hospital of Psychiatry Zurich during a 6-month period, 612 were involuntarily hospitalised. These patients differed significantly from the voluntarily hospitalised inpatients in gender, age, occupation, psychiatric diagnosis, severity of symptoms at admission and prescription of medication. Details are shown in table 1.

The mean age of the group of involuntarily hospitalised patients was 49 years (range 14–95 years, standard deviation [SD] 21 years). About half of the patients were male (51%, n = 314). Harm to self was the most frequent reason for involuntary commitment (55%) and 70 patients (11%) had attempted suicide prior to admission. Psychiatrists were responsible for most involuntary hospitalisations (40%). The admission process of 187 (30%) patients needed police involvement. Psychotic disorders were most frequently coded as primary diagnosis at discharge. Nearly half of the patients (46%) had a secondary diagnosis at discharge, with a substance use disorder being the most frequent (n = 123) comorbidity. About half of the patients had at least one

Table 1: Comparison of voluntarily and involuntarily hospitalised patients.

	Total (n = 1728)		Voluntary (n = 1116)		Involuntary (n = 612)		χ^2	df	p-value
	n	%	n	%	n	%			
Gender							5.39	1	0.020
Male	957	55	641[a]	67	316[b]	33			
Age at admission ()							145.33	4	<0.001
<30 years	422	24	299[a]	71	123[b]	29			
30–39 years	374	22	266[a]	71	108[b]	29			
40–49 years	329	19	235[a]	71	94[b]	29			
50–59 years	303	18	213[a]	70	90[b]	30			
>60 years	300	17	103[a]	34	197[b]	66			
Education							17.37		<0.001
Higher education	368	22	244[a]	66	124[a]	34			
No information	176	10	91[a]	52	85[b]	48			
Occupation							15.31		<0.001
Fully or partially occupied	398	23	294[a]	75	104[b]	25			
Nationality							0.64		0.422
Swiss	1187	69	774	65	413	35			
Psychiatric diagnosis							181.20	6	<0.001
Organic disorder (F0)	129	8	25[a]	19	104[b]	81			
Substance use disorder (F1)	319	19	232[a]	73	87[b]	27			
Psychotic disorder (F2)	514	30	287[a]	56	227[b]	44			
Affective disorder (F3)	394	23	306[a]	78	88[b]	22			
Neurotic disorder (F4)	233	14	169[a]	73	64[b]	27			
Personality disorder (F6)	104	6	76[a]	60	28[a]	40			
Other	35	2	21[a]	65	14[a]	35			
CGI							109.93	3	<0.001
1–2	20	1	12[a]	60	8[a]	40			
2–3	57	3	30[a]	53	27[b]	47			
4–5	1040	61	783[a]	75	257[b]	25			
6–7	581	34	291[a]	50	290[b]	50			
Antipsychotics							16.05	1	<0.001
Yes	873	51	524[a]	60	349[b]	40			
Antidepressant							38.34	1	<0.001
Yes	642	37	474[a]	74	168[b]	26			
Benzodiazepines							5.96	1	0.015
Yes	762	44	468[a]	61	294[b]	39			

CGI = clinical global impression; df = degrees of freedom Missing values for all variables are less than 1.8%. Identical letters indicate no statistically significant difference by Bonferroni-adjusted chi-square *post-hoc* tests at p <0.05.

former voluntary (56%) or involuntary (44%) hospitalisation at the University Hospital of Psychiatry Zurich with some patients having a history of numerous hospitalisations (mean 5, median 1, maximum 69). Abscondence was documented at least once in 105 patients (17% of all involuntarily hospitalised patients) and in 72 (68%) of these episodes the police were informed at least once because patients met the criteria for harm to self or others. Nearly half of those patients (45%) returned on their own. The others were brought back by the police (29%), their next of kin (4%) or discharged in absence (22%).

In 192 (31%) patients, the legal status of involuntary commitment was revoked during the course of hospitalisation, with the patients remaining in the inpatient setting voluntarily; thus, the length of hospitalisation (mean 25, median 17, maximum 245 days) was longer than the duration of involuntary commitment (mean 20, median 13, maximum 230 days). Day passes were issued after a mean duration of 12 days (median 6, maximum 161 days) if the patient's condition allowed for it (no danger to self and others) and the physician on duty assessed the patient to be sufficiently reliable.

Coercive measures during hospitalisation

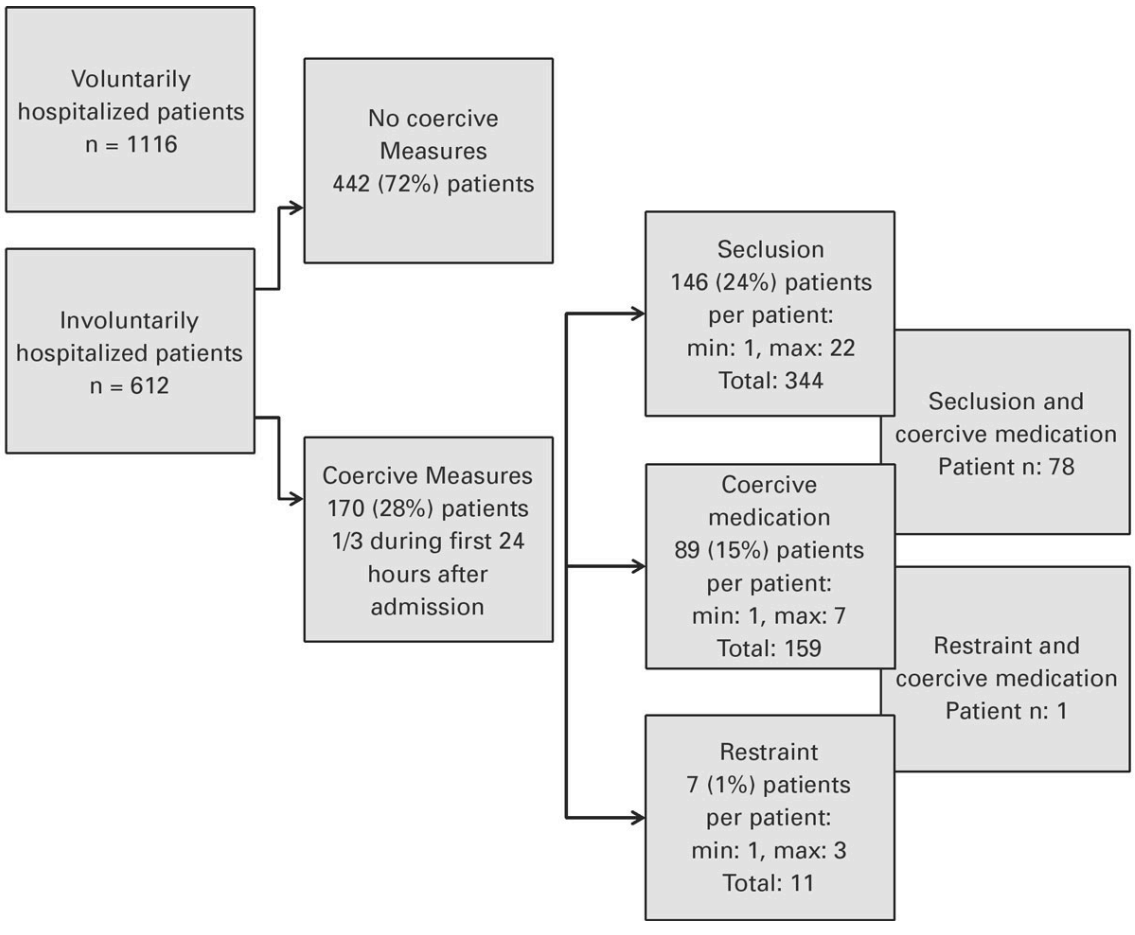
We found the documentation of at least one coercive measure in 28% (n = 170) of the involuntarily hospitalised patients, that is 10% of all patients treated at the University Hospital of Psychiatry Zurich during the study period. Seclusion was the coercive measure most frequently used, followed by coercive medication and then restraint, with the latter being used in only 7 patients (for detailed information see figure 1). Coercive measures, such as barriers to leaving the bed or devices that prevent injury if the patient falls, were specifically used in geriatric psychiatry. These measures were implemented at least once and documented as explicit coercive measures in 15 patients (2%). Nine percent (n = 53) of the involuntarily committed patients were exposed to coercive measures within the first 24 hours after admission.

The cumulative duration of seclusion in the 14 patients with the longest episodes of seclusion (10% of those patients with episodes of seclusion) was 1773 hours, which accounts for 57% of the total duration of seclusion (for detailed information about the duration of coercive measures see table 2). In those patients with restraint, one patient with an episode of 54 hours accounted for 40% of the total time under restraint.

Comparison between groups of patients with/without application of coercion during involuntary hospitalisation

Male gender was significantly associated with the use of coercion. More detailed analysis showed that this was the case for coercive medication and seclusion, whereas the use of restraint did not differ significantly between males and females. Age did not show significant differences between the group of patients who received coercive mea-

Figure 1: Prevalence of coercive measures at the University Hospital of Psychiatry Zurich.



sures and those without such measures. Retention of patients who were admitted voluntarily at first was significantly correlated with the use of coercion. In patients with involuntary commitment, those referred by emergency medicine physicians were significantly more often exposed to coercion, whereas the group referred from hospital physicians showed the lowest rates of coercive measures. Patients who were referred because of harm to self or others and those whose admission involved the police force were more frequently treated with coercion. A primary diagnosis of psychotic disorder or personality disorder was significantly associated with coercion. In the patients with personality disorders, 70% met the criteria for cluster B [43], with most of them having borderline personality disorders. Nearly half of all patients meeting cluster B criteria, received at least one coercive measure. The type of coercive measure used did not differ between patients with personality disorder and those with other diagnoses. A secondary substance use disorder was significantly associated with coercion (n = 218, chi-square 17.76, p <0.01). Antipsychotics and benzodiazepines were prescribed significantly more often in patients who experienced coercion during their hospitalisation. Other pharmacological groups, such as antidepressants, mood stabilisers, replacement therapy and stimulants showed no significant differences between the groups. For detailed information see table 3.

Time until issue of a day pass, time until revocation of involuntary commitment and total duration of hospitalisation were significantly longer in the group of patients exposed to coercion. This was also the case when controlled for gender, age, former admissions and the psychiatric diagnosis F2 by rank regression analyses. Patients who experienced coercive measures also had significantly more former admissions than those without coercion (for details see table 4). Also, the number of re-hospitalisations during the 6 months was significantly higher in those patients with coercion (n = 612, chi-square 9.73, p <0.01). The individual hospital wards did not differ significantly in the rates of coercion (n = 612, chi-square 18.60, p = 0.181).

Discussion

Key results

Our study showed that there are some clinical and procedural characteristics of patients that are associated with the usage of coercive measures in Switzerland. We were also able to show that 28% of the involuntarily hospitalised patients (10% of all inpatients) experienced coercive measures in the largest psychiatric hospital in Switzerland.

International perspectives

As well as the percentage of patients in which coercion was used, it is important to analyse the number and length of coercive measures in the patients affected. The number of coercive measures per affected patient in Zurich (3) was higher than in various European countries where a mean number of 1.5 coercive measures per affected patient [44]. The complexity of the interpretation of coercive measures can be illustrated by a comparison with a German study, which revealed a prevalence of coercive measures of 9.5% in all treated patients [12]. This is comparable to data in this study. But further analysis showed that in this study 5.4 coercive measures per patient were applied. The mean duration per patient was also lower in Zurich, with 20 hours compared with 50.6 hours in Germany.

In this study we showed that seclusion was the most commonly used coercive measure. This differs from countries such as Germany, where seclusion is rarely used relative to restraint [13]. The low numbers of restraints at the University Hospital of Psychiatry Zurich may explained by knowledge about their harmful side effects [45–47]. But differences in the attitude towards coercive measures, which had been shown in earlier studies, [48, 49] could also account for this difference and future studies should aim to gain more understanding about this phenomenon. When we compared the wards for their usage of coercive measures, no significant between-ward variance was found. This contrasts with former findings [29], where such a variance was described. Our finding may be explained by the fact that the entire hospital adheres to the same strategy in the treatment of involuntarily hospitalised patients. The wards distribute patients at “high-risk” with a good balance, and interpersonal bias might be reduced through combined staff training from all wards, which is a standard procedure at the University Hospital of Psychiatry Zurich.

Interpretation of the association between patients’ characteristics and coercion

Patients who were admitted because of danger to others were more likely to be subjected to coercion, which was also shown in other studies [50, 51] and might be an explanation for the significant association between police involvement at admission and the use of coercion. Our data revealed that, during inpatient treatment, harm to others was the most common reason for seclusion or coercive medication. The fact that male gender is a risk factor for coercive measures has already been described [36], but it is important to remember that other studies have shown females to be more often exposed to coercion [35].

As in other studies, our study showed that patients with schizophrenia or other psychotic disorders were significantly more likely to experience coercion. Paranoid ideation, hallucinations and anxiety (some of the main symptoms in these disorders) might be associated with an increased stress level and reduced coping strategies in conflicts, resulting in danger and the use of coercive measures [43]. Personality disorders were also significantly associated with use of coercive measures. The big group of

Table 2: Duration of coercive measures during a 6 month period.

	Per patient					Per measure
	Minimum	Maximum	Mean	Standard deviation	Median	Mean
Duration of seclusion in hours 146 patients, 344 measures	0.5	655	21	60	7.25	9
Duration of restraint in hours 7 patients, 11 measures	0.25	54	19	17	17	12

Cluster B personality disorders in these patients might be caused by impaired impulse control and excessive emotions [43], which also might lead to threatening situations on the wards. Interestingly, a substance use disorder as primary diagnosis was not significantly associated with use of coercive measures, but when given as a secondary diagnosis a significant association was shown. Withdrawal and craving might lead to higher vulnerability to stress with less coping strategies available. In patients with a dual diagnosis, withdrawal might combine with symptoms caused by another disorder, which increases sensitivity in patients.

Table 3: Comparison of patients' characteristics with/without coercion of clinical and procedural parameters.

	Total (n = 612)		No coercion (n = 442)		Coercion (n = 170)		χ^2	df	p-value
	n	%	n	%	n	%			
Gender							7.12	1	0.008
Male	314	51	212[a]	67	102[b]	33			
Age at admission							7.38		0.117
<30 years	127	21	89	70	38	30			
30–39 years	111	18	71	64	40	36			
40–49 years	91	15	72	79	19	21			
50–59 years	94	15	67	71	27	29			
>60 years	189	31	143	76	46	24			
Retained patients							27.40	1	<0.001
Yes	39	6	14[a]	36	25[b]	64			
Referring physician							19.75	4	<0.001
Psychiatrist	274	40	171[a]	69	76[a]	31			
Emergency physician	135	22	86[a]	64	49[b]	36			
Hospital physician	142	23	122[a]	86	20[b]	14			
General physician	66	11	46[a]	70	20 [a]	30			
Other	22	4	17[a]	77	5[a]	23			
Reason for involuntary commitment							69.97	3	<0.001
Harm to self	337	55	287[a]	85	50[b]	15			
Harm to others	118	19	60[a]	51	58[b]	49			
Harm to self and others	134	22	77[a]	57	57[b]	43			
Other	23	4	18[a]	78	5[a]	22			
Psychiatric diagnosis							65.48	6	<0.001
Organic disorder (F0)	109	18	82[a]	75	27[a]	25			
Substance use disorder (F1)	94	15	82[a]	87	12[b]	13			
Psychotic disorder (F2)	225	37	136[a]	60	89[b]	40			
Affective disorder (F3)	80	13	60[a]	75	20[a]	25			
Neurotic disorder (F4)	67	11	66[a]	99	1[b]	1			
Personality disorder (F6)	21	3	9[a]	43	12[b]	57			
Other	16	3	7[a]	44	9[b]	56			
Police involved at admission							20.40	1	<0.001
Yes	187	31	112[a]	60	75[b]	40			
Former involuntary commitment							27.78	1	<0.001
Yes	270	44	166[a]	61	104[b]	39			
Antipsychotics							59.14	1	<0.001
Yes	457	75	293[a]	64	164[b]	36			
Antidepressant							4.79	1	0.029
Yes	222	36	172[a]	78	50[b]	22			
Benzodiazepines							26.34	1	<0.001
Yes	454	74	303[a]	67	151[b]	33			

df = degrees of freedom Missing values of all variables are less than 1.8%. Identical letters indicate no statistically significant difference by Bonferroni-adjusted chi-square *post-hoc* tests at p <0.05.

Table 4: Comparison of group with/without coercion of procedural aspects during hospitalisation.

	Coercion	Mann-Whitney U	Z	p-value	Cohen's r						
	No (n = 442)					Yes (n = 170)					
	Minimum					Maximum	Mean	Median	Minimum	Maximum	Mean	Median
Number of former admissions	0	69	4	0	0	67	9	2	27771.5	5.249	<0.001	0.21
Time until revocation of IC	0	88	15	10	1	230	31	25	20859.5	8.453	<0.001	0.34
Duration of hospitalisation	0	138	21	13	1	245	37	31	21871.5	8.015	<0.001	0.32
Time until issue of day passes	0	109	10	5	0	161	18	11	23864.0	6.918	<0.001	0.28

IC = involuntary commitment

A recovery-oriented patient-centred deescalating attitude from the staff's side may be helpful to meet the needs of this group of patients [52]. Clarity and communication skills have been shown to create an environment where patients feel secure and are better able to engage in a therapeutic relationship. In some situations informal coercion may also be a potent way to avoid legal coercion [53]. Its use should nevertheless be considered within the team and the patient [54].

Limitations

Some limitations have to be mentioned regarding this study. The analysis was based on retrospectively collected data, and it was not possible to assess the subjective perspectives of patients and hospital staff in a standardised form. Also, in some cases when patients were secluded and took medication, the documentation of the situation did not explicitly reveal if the application of medication was voluntary, or if either informal or legal coercion was used. As it was not possible to gain more information we decided to document the occurrence of coercive medication only if it was declared as coercive medication in the patient's documentation file. Owing to the retrospective character of the study, the clinical course and severity of the patients' psychopathological symptoms could not be assessed in a standardised, way which limits the comparability of patients. Clinic culture and organisational aspects as potential influencing factors were not included in the analysis which might also be a limitation in this study.

Conclusion and generalisability

Despite these limitations, this study was able to show that there is a group of patients who are at risk for receiving coercion. We also showed that more than half of the coercive measures (in number and duration) were used in a small group of patients. Further studies should focus on interventions that could help to reduce the number of coercive measures and their duration. Further studies investigating the prevalence of coercive measures should analyse different measurement parameters to ensure comparability of the results (number of coercive measures in voluntarily and involuntarily hospitalised patients, number of coercive measures per patient, duration per patient, duration per measure). Furthermore, it should be an aim of future studies to analyse reasons for the prolonged hospitalisation in patients who experience coercion compared with those without coercion, especially because one argument for the use of coercive measures is that they help to defuse a crisis.

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