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The use of coercive measures in psychiatry

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Abstrakt

Psychiatrie má jedinečné postavení mezi ostatními lékařskými disciplínami vzhledem k tomu, že omezení autonomie pacientů používá v jejich nejlepším zájmu jak k jejich léčbě tak k jejich kontrole. Omezovací opatření, jako jsou umístění pacienta do izolace, omezení pacienta v pohybu, nebo užití neklidové medikace jsou široce užívané v klinické praxi jako metody zvládnání akutních psychiatrických stavů či neklidných pacientů. Tato dizertační práce byla provedena v rámci mezinárodního projektu EUNOMIA (European Evaluation of Coercion in Psychiatry and Harmonization of Best Clinical Practice), který probíhal ve dvanácti Evropských státech. Byly stanoveny tyto výzkumné otázky: jaké jsou sociodemografické a klinické charakteristiky nedobrovolně hospitalizovaných pacientů u kterých jsou použita omezovací opatření; jaké typy omezovacích opatření jsou užívaná nejčastěji; jaké jsou interní a externí rizikové faktory související s jejich užitím; a konečně jaké jsou genderové rozdíly u pacientů se schizofrenií, u kterých bylo užití omezovacích opatření. Do studie bylo zařazeno 2,030 nedobrovolně hospitalizovaných pacientů, z nichž celkem u 770 (38%) bylo použito 1,462 omezovacích opatření. Procento pacientů, u kterých bylo použito omezovacích opatření, se ve sledovaných zemích nachází v rozmezí 21% až 59%, a do velké míry kolíše i v typu použitých omezovacích opatření. V osmi státech je nejčastěji použitým omezovacím opatřením neklidová medikace, ve dvou státech je to omezení pacienta v pohybu. Umístění pacienta do izolace bylo použito zřídka, a to pouze v šesti sledovaných státech. Nejčastějším důvodem, který vedl k užití omezovacího opatření bylo heteroagresivní chování pacienta. Diagnóza schizofrenie a závažnější psychiatrická symptomatika jsou asociovány s větší pravděpodobností užití omezovacích opatření. Nicméně technické charakteristiky zařízení, jako jsou počet nemocničních lůžek na 100.000 obyvatel, průměrný počet zdravotního personálu na jedno lůžko, a průměrný počet lůžek na jeden nemocniční pokoj, se v tomto ohledu neukázali jako signifikantní. Genderové rozdíly mezi pacienty se schizofrenií poukazují u žen na zvýšený práh vedoucí k zahájení léčby za použití omezovacích opatření. Na základě výsledků této práce lze konstatovat, že omezovací opatření jsou použita v evropských státech u významné skupiny nedobrovolně přijatých pacientů. Míra jejich užití závisí na diagnóze a tíži psychiatrické symptomatiky, a je dále ovlivněna i státem, ve kterém byl pacient léčen. Národní a mezinárodní doporučení ohledně omezovacích opatření by měla obsahovat a dále rozvíjet cílené léčebné postupy, se zvážením všech dostupných evidence-based informací ohledně užití omezovacích opatření které by vedli k jejich racionalizaci.

Abstract

Psychiatry has unique status among other medical disciplines where patients' autonomy might be restricted in the best interest of the patient in order to both cure and control the patient. Coercive measures such as seclusion, physical restraint or forced medication are widely used in clinical practice as methods for managing acute, disturbed or violent psychiatric patients. This thesis was carried out as a part of the EUNOMIA project (European Evaluation of Coercion in Psychiatry and Harmonization of Best Clinical Practice) in which centers from twelve European countries recruited involuntary admitted patients. The research questions of this thesis were the following: what are the socio-demographic and clinical characteristics of the patients who receive coercive measures; what types of coercive measures are used with involuntarily treated patients; what are the internal and external risk factors for their use; and finally what are the gender differences among involuntary admitted coerced patients with schizophrenia. All together we evaluated a group of 2,030 involuntarily admitted patients, in which 1,462 coercive measures were used with 770 patients (38%). The percentage of patients receiving coercive measures in each country varied between 21% and 59%. These twelve countries varied greatly in the frequency and type of coercive measure used. In eight of the countries, the most frequent measure used was forced medication, and in two of the countries mechanical restraint was the most frequent measure used. Seclusion was rarely administered and was reported in only six countries. The most frequent reason for prescribing coercive measures was patient aggression against others. A diagnosis of schizophrenia and more severe symptoms were associated with a higher probability of receiving coercive measures. Moreover we did not find any statistically significant influences of the technical characteristics of countries such as, number of psychiatric hospital beds per 100.000, number of staff per bed, and average number of beds per room. In regards to the gender differences among schizophrenia patients results point towards a higher threshold for women to be treated with the use of coercive measures. Based on the results we conclude that coercive measures are used in a substantial group of involuntarily admitted patients across Europe. Their use depends on diagnosis and the severity of illness, but was also heavily influenced by the individual country. National and international recommendation on coercive treatment practices should include and further develop targeted treatments with appropriate consideration of the current evidence in inpatient populations that would rationalize the use of coercive measures in psychiatric facilities.

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1. INTRODUCTION

1.1. THE INVOLUNTARY TREATMENT AND THE USE OF COERCIVE MEASURES – HISTORICAL PERSPECTIVE

The coercive measures have been used in psychiatry since its beginning (Brown & Tooke, 1992). More than 2000 years ago Roman encyclopaedist Celsus who considered insanity to be due to perversion of the secretions, attached great importance to individual differences in patients and the treatment. With the advance of Greek civilization at this period some of the biggest superstitions with regard to mentally ill were dispelled, and they were recognized as human with certain rights to be respected. Caelius Aurelianus in the second century had most humane and enlightened views as to the treatment of the mentally ill, and might be held for the first historical defender of the system of non-restraint, and of the control of patients by nurses instead of by mechanical means (Kellogg, 1897).

The Middle Ages are usually referred to as the „dark ages“ of psychiatry. The „insane“ were regarded everywhere as afflicted by the gods or possessed by the Devil. Their symptoms were mistaken for willful demonstrations of wickedness they were treated accordingly in prison cells and cages, or in cells attached to the cloisters under the care of the priests (Kellogg, 1897). Their purpose was less to provide treatment than to protect society by locking up the mentally ill. This belief prevailed even till the 17th century (Brown & Tooke, 1992). In Europe, the first institutions for mentally ill people were opened in the 13th century (Shorter, 1997). In 1403 mentally ill patients were first received at Bethlehem Hospital in London and in 1472 there was a special place for mentally ill in Ghent, in Belgium.

The darkest hour in the history for the mentally ill had passed when Phillipe Pinel (1745 -1826) realized his reform on behalf of mentally ill at the Bicetre in 1793 and introduced the first basic principles of coercive measures as non-punitive measures in “Memoir of Madness” (Keski-Valkama, 2010). „Moral treatment“ as he called it, presented a new approach in the treatment of mentally ill. Not that the coercive measures were totally banned, the straightjacket continued to be used in practice (Paterson, 2010) in most severe cases, but more humane and sensitive approach was put in practice.

Even at the beginning of the 20th century coercive measures still presented one of the main therapeutic and controlling mechanisms in the management of violent and disturbed psychiatric patients (Keski-Valkama, 2010). In this period, clinicians used various ways to restrain patients. Thermal therapy was used to calm aggressive patients, who spent the whole day in a warm bath with a sailcloth cover that prevented them from getting away (Georgieva, 2012). Many

controversial therapies were used, such as an electric bath for healing depression, or, psychosurgical interventions such as frontal lobotomy, which treated psychosis by cutting the connections to and from the prefrontal cortex (Georgieva, 2012).

Situation changed gradually in the second half of the 20th century due to introduction of modern therapeutic tools, mainly because of psycho-pharmacotherapy (Brown & Tooke, 1992). However, till today, the total removal of the coercive measures from the clinical practice seems as an unfeasible goal, as the complete abolition of such freedom-restricting coercive interventions has never been convincingly reported in any country or period (Steinert et al., 2010), and coercive measures are still being used throughout the world (Dix et al., 2008).

1.2. INVOLUNTARY TREATMENT AND THE USE OF COERCIVE MEASURES - LEGISLATIVE AND ETHICAL PERSPECTIVE

Although European countries do share a similar background in terms of societal systems and history of psychiatry, their legislation for and practice of involuntary hospital admission differs significantly (Priebe et al., 2008). A comprehensive study carried out in 2001 across European Union member states regarding the legislation of involuntary placement and treatment of mentally ill patients (Salize et al., 2002) indicated that almost all member states had reformed their legislation in the last decades, but only minority of countries had detailed regulations of the use of coercive measures (Keski-Valkama, 2010).

Even though several attempts have been made to standardize rules and instruments (Priebe et al., 2005), such as the publication of the volume „Mental health legislation and human rights“ by the World Health Organization in 2003 (WHO, 2003), in which the issue of involuntary hospital admissions was specifically addressed from a legal and technical perspective, the differences on the legislative and clinical procedures of involuntary treatment and the use of coercive measures still remain, both within and among European countries (Steinert & Lepping, 2009).

There are basically two complementary aspects that can lead to the involuntary hospitalization and the use of coercive measures; the first aspect is the one of treating and curing the patient; and the second one is more focused on controlling patient's dangerous behavior (Kaltiala-Heino et al., 2000). As for the latter one, involuntary treatment as well as coercive measures might be useful tools in preventing one's auto-aggressive or hetero-aggressive behavior in agitated patients, to ensure one's safety. These measures are used as a method of control only in situation where a patient's violent, or potentially violent behavior threatens the safety of oneself or others

(Keski-Valkama, 2010). If coercive measures have to be used, the decision on, and supervision of these procedures by a physician is mandatory in most Western countries (Kontio et al., 2012). Freedom and dignity are fundamental values in the Western world and as it has been already postulated in the first article of the United Nations (UN) Universal Declaration of Human Rights in 1948, “all human beings are born free and equal in dignity and rights and that they are endowed with reason and conscience and should act towards one another in a spirit of brotherhood” (Keski-Valkama, 2010). Use of coercive measures therefore opens up a variety of ethical questions in relation to human rights and in particular to the patient’s autonomy (Prinsen & Van Delden, 2009). In the mental health field traditional justification for using coercive measures in psychiatry is derived from paternalism and from the nature of mental illness (O'Brien & Golding, 2003). Person is on the grounds of mental illness considered incompetent because of lack of autonomy and/or lack of decision-making competence, therefore others need to intervene in the interest of the patient (medical paternalism) or in the interest of others who might be affected (social paternalism) (Keski-Valkama, 2010).

Even though the expressed purpose for using coercive measures is legitimate, the risk of their application for punitive and repressive purposes as a result of the misuse of power cannot be fully excluded (Keski-Valkama, 2010). What is of great risk, that patients with mental illness are automatically considered being incompetent in every aspect of their life (Appelbaum, 2006).

To prevent misuse of involuntary treatment and the use of coercive measures in psychiatry, the World Psychiatric Association adopted in 1977 the Declaration of Hawaii, which was the first effort to elucidate the ethical principles of respect for person’s autonomy (Kingdon et al., 2004). In 1993 by the Declaration was updated in Madrid and the principle of “least restrictive interventions” in the use of coercive measures was upheld and involuntary acts “unless withholding treatment would endanger the life of the patient and/or those surrounding him or her” were forbidden.

1.3. INVOLUNTARY TREATMENT AND THE USE OF COERCIVE MEASURES – CLINICAL PERSPECTIVE

The remarkable variety of the numbers of involuntary hospitalization and the use coercive measures across Europe is striking in an era of evidence-based medicine (Steinert & Lepping, 2009). Involuntary admission rates vary by a factor of more than 10 (Kallert et al., 2007). In most European countries they range between 3 and 30% (Salize & Dressing, 2004), but even higher numbers have been reported in Switzerland (more than 50%) (Riecher-Rossler & Rossler,

1993) and Norway (47%) (Hatling et al., 2002). Numbers of patients who have been exposed to seclusion, restraint or forced medication in acute psychiatric wards fluctuates in European and United States (US) studies from 6 to 30% of all admitted patients (Steinert et al., 2010, Lay et al., 2011). At least one coercive measure was used in 9.5% of patients in German hospitals (Steinert et al., 2007), but in an Finland study, restraint or seclusion was used in 32.3% of patients and in 8.4% of all inpatients forced medication was applied (Kaltiala-Heino et al., 2000).

There are many studies which report that younger patients have been coerced more frequently (Lay et al., 2011). However, findings regarding a potential age effect are inconclusive, as other researchers have identified higher age to be risk factor for the use of coercive treatment (Riecher-Rossler & Rossler, 1993). Psychotic disorders (in particular schizophrenia) (Steinert et al., 2007), organic mental disorders (in particular dementia) (Steinert et al., 2007), substance abuse disorders (Kaltiala-Heino et al., 2000), personality disorders (Salib et al., 1998), and mental retardation (Way & Banks, 1990) have been related to involuntary treatment and also been associated with restraint and seclusion. The common denominators which are being identified as the most frequent reason for the use of coercive measures, regardless of the psychiatric diagnosis, is acute (Salib et al., 1998) or threatening violence (Way, 1986). Aside from acute or threatening violence, disorientation and agitation have been reported to be a frequent motivation in the use of coercive measures (Kaltiala-Heino et al., 2003). The risk of being coerced during psychiatric treatment depends besides the diagnosis of the patient and actual psychopathology also on other socio-demographic characteristics in addition to age and gender, e.g. higher risk for ethnic minorities patients (Bhui et al., 2003), those socially marginalized, socially deprived or unemployed (Cougard et al., 2004).

The variations in the use of seclusion or mechanical restraint point to powerful local effects often more related to external factors (e.g. environmental factors such as staffing resources, staff education level or organizational structure and the facilities, type of shift when admission occurred, lack of single-bed rooms, overcrowding, lack of privacy, presence of noisy patients) (Way et al., 1990) than to internal factors (age, gender, psychopathology) (Martin et al., 2007).

1.4. INVOLUNTARY TREATMENT AND THE USE OF COERCIVE MEASURES – PATIENTS, CAREGIVERS AND STAFFS PERSPECTIVE

Most patients experience the use of coercive measures mainly in a negative way, with adjective such as harmful or traumatic (Frueh et al., 2005). Their complaints focus mainly on lack of information (Kontio et al., 2012). Many patients do not know the reason why they are placed in

seclusion/restraint, or why forced medication is being used (Meehan et al., 2004). Experiences close to a punishment-like procedures (Keski-Valkama et al., 2010a) and feelings of violation of their autonomy are not rare (Hoekstra et al., 2004). Patients' retrospective view of the appropriateness of the admission and the use of coercive measures has been studied in many studies worldwide and 33 to 81% of involuntary patients found the admission „right“ in retrospect (Priebe et al., 2010).

Patient satisfaction with the treatment presents one of the ways how the measure the mental health care is patients who have experienced involuntary treatment or the use of coercive measures (Hackman et al., 2007). In general, psychiatric inpatients tend to be satisfied with their care (Howard et al., 2003). However the use of coercive measures may undermine this satisfaction levels (Kuosmanen et al., 2006) as well as treatment adherence (Jenkins et al., 2002). Only a small number of studies have been conducted on caregivers' views of involuntary hospital treatment (Wilkinson & McAndrew, 2008). In these studies caregivers expressed high levels of dissatisfaction and complained they received too little information and poor guidance from staff and were insufficiently involved in treatment decisions, particularly discharge planning (Jankovic et al., 2011). In a study carried out as a part of the EUNOMIA project (Giacco et al., 2012) caregivers seemed to view the involuntary hospitalization rather positively, actually more positive than the patients and moderately associated with it.

Not only patients and caregivers but also staff members who are directly involved in the involuntary admission and the use of coercive measures are exposed to certain degree of emotional stress (Keski-Valkama, 2010b). Fear from a violent patient may affect the quality of care the mental health-care workers provide (Clarke et al., 2010). It has been shown that the use of seclusion elicits predominantly negative emotions and a high level of distress in staff members (El-Badri & Mellsoop, 2008). Application of any coercive measures of an aggressive patient can be a distressing and anxiety provoking experience for staff members (Fish & Culshaw, 2005).

1.5. INVOLUNTARY TREATMENT AND THE USE OF COERCIVE MEASURES – GENDER PERSPECTIVE IN PATIENTS WITH SCHIZOPHRENIA

Gender differences have in general an impact on mental health and in particular on the course of schizophrenia (Judd et al., 2009). Neurodevelopmental (McDonald & Murray, 2000), neuropathological (James et al., 2002); and the estrogen protection hypothesis (Hoff et al., 2001) have been postulated to explain how gender differences develop in schizophrenia. Psychotic disorders, including schizophrenia, are the most common diagnosis among patients who are involuntarily

admitted to psychiatric hospitals and treated against their will (Sanguineti et al., 1996). Ries et al. found 65% males in a population of acutely admitted patients with schizophrenia (2000). Males with schizophrenia commit severe acts of violence more frequently than females (Elbogen & Johnson, 2009), on the other hand, less severe aggression, like verbal threats, is more frequent among women (Sebit et al., 1998).

Gender differences in biological correlates and clinical presentations of severe mental illness might result in a different use of coercive measures during the acute phases of psychiatric disorders and hospitalizations (Beck et al., 2008). Physical restraint was preferred more often with male patients, while forced medication and seclusion was preferred more often with female patients (Knutzen et al., 2011). Male gender was associated also with higher rates of seclusion (Lay et al., 2011), restraint (Knutzen et al., 2011) and psychiatric intensive care (Whittington et al., 2009). Other studies have found that physical restraint was more often used with females (Beck et al., 2008) and female patients were more frequently secluded than their male counterparts (Salib et al., 1998).

2. RESEARCH STUDY OBJECTIVES

The research questions postulated for this thesis were the following:

- 1) What are the socio-demographic and clinical characteristics of the patients who receive coercive measures?
- 2) What types of coercive measures are used with involuntarily treated patients?
- 3) What are the patient's (internal) and environmental (external) risk factors for the use of coercive measures?
- 4) What are the gender differences among involuntary admitted coerced patients with schizophrenia?

3. METHODOLOGY OF THE RESEARCH PROJECT

3.1. PARTICIPATING CENTERS AND THE RECRUITMENT OF THE PATIENTS

The EUNOMIA project was conducted as a multicenter prospective cohort study in 11 European countries and Israel: Dresden, Germany; Sofia, Bulgaria; Prague, Czech Republic; Thessaloniki, Greece; Tel Aviv, Israel; Naples, Italy; Vilnius, Lithuania; Wroclaw, Poland; Michalovce, Slovak Republic; Granada and Malaga, Spain; Orebro, Sweden; and East London, UK. More than half of the EUNOMIA catchment areas had a population size of approximately 500,000 inhabitants (Table 1).

Each participating center recruited all patients who were legally involuntarily admitted between July 2003 and December 2005 and who fulfilled the following criteria: aged between 18 and 65 years; able to sign an informed (written) consent form; not admitted to a special unit for only forensic or intoxicated patients; not admitted to a special treatment program for eating disorders, because that type of treatment would automatically include coercive treatment; no diagnosis of dementia; not included in the study before (repeated admissions during the study period); not transferred to a participating clinic from another hospital; and having a permanent living address in the catchment area of the participating hospitals.

Eligible patients were identified through administrators or staff in the wards upon admission. Once identified, they were approached by researchers (independent from the patients' care) and invited to take part in the study. Informed consent was obtained from all patients in this study after they were provided a complete description of the study.

The national or regional review boards of the participating centers approved the study. Once written informed consent was received (Kjellin, 2011), patients were asked to take part in interviews within a week after admission (baseline) and at one and three month follow-ups. All baseline interviews were conducted in the hospital. The follow-up interviews were completed most commonly in the interviewees' homes, and sometimes in the hospital or on the telephone.

For the hypothesis on gender differences in coerced patients with schizophrenia, patients needed to fulfill the following criteria: diagnosis of schizophrenia (i.e., F20.0-F20.9 diagnosis according to ICD-10 as established by psychiatric reports within the first seven days of admission); patient has received any form of coercive measure (seclusion and/or forced medication and/or physical restraint) during their hospital stay, age between 18 and 65 years; ability to sign an informed (written) consent form; not admitted to a special unit for only forensic or intoxicated patients; not included in the study before (repeated admissions during the study period); not transferred to a participating clinic from another hospital; and having a permanent living address in the catchment area of the participating hospitals .

3.2. INSTRUMENTS USED TO ASSESS PATIENT-RELATED DATA

As an indicator of clinical functioning, symptom levels were assessed on the 24-item version of the Brief Psychiatric Rating Scale (BPRS) (Overall et al., 1967), which ranges from 24 to 168, with higher scores indicating greater symptom severity. Each single item on the BPRS ranges from 1, not present, to 7, extremely severe. Global Assessment of Functioning scale (GAF) (Goldman et al., 1992) was used as an indicator of global social functioning.

Table 1. Demographic information on the catchment areas of the EUNOMIA centers

	Dresden	Sofia	Prague ^a	Thessaloniki	Tel Aviv	Naples	Vilnius	Wroclaw	Michalovce	Granada	Malaga	London	Orebro
Inhabitants in the catchment area	478,631	900,000	477,626	450,000	538,200	2,265,547	217,800	640,367	326,534	445,497	600,000	451,119	273,412
Size of catchment area (km ²)	328	1,311	99	ca. 7,000	284	13,595	163	293	4,312	ca. 6,300	ca. 3,600	58	8,546
Character of catchment area	urban	urban + rural	urban	urban + rural	urban	urban + rural	urban	urban	urban + rural	urban + rural	urban + rural	urban	urban + rural
Unemployment (%)	14.7	14.4	5.6	8.1	15.8	24.9	7.1	16.4	34.3	21.9	17.3	11.2	- ^a
Population aged 65 years or older (%)	17.4	15.4	19.7	11.3	9.4	8.1	11.5	14.9	10.7	15.5	14.0	8.0	18.2
Suicide rate per 100,000 inhabitants:													
males/females	22.9/10.9	17.8/7.5	21.3/5.9	5.7/1.6 ^b	10.5/2.6 ^b	2.3/0.7	43.3/9.0	12.6/3.5	7.9/0.6	11.4/4.1	12.6/2.8	8.3/1.7	22.9/13.7

^a no valid regional data available, but low unemployment rate

^b national data, no data available for catchment area

*Prague areas 2,3,4,8 and 10

This scale constitutes axis V of the Diagnostic and Statistical Manual for Mental Disorders 4th edition (DSM-IV) (APA, 1994) and assesses patient's social occupational and psychological functioning in a hypothetical continuum of 1 to 100 points. All researchers were trained to use both scales. Inter-rater reliability for BPRS scale was assessed throughout the project (videotaped interview on the international level and with personal interviews on the national level) and an inter-rater reliability with interclass correlation coefficient of 0.78 was achieved. The GAF inter-rater reliability for the training process was good with an interclass correlation coefficient of 0.74.

The Modified Overt Aggression Scale (MOAS), a widely used aggression scale with documented reliability and validity, was used to evaluate violent behavior for the duration of hospitalization. The scale has four categories of aggressive behavior (verbal aggression, aggression against property, auto-aggression, and physical aggression) (Sorgi et al., 1991). Perceived coercion at admission reflects the amount of pressure perceived by patients at admission and the level was assessed on the Cantril Ladder scale, from 1 (minimum) to 10 (maximum) (Hoyer et al., 2002).

Data concerning details of each application of coercive measures during the first 4 weeks of hospitalization or up to his/her discharge were gathered using a special 16-item questionnaire designed by the EUNOMIA group for the purpose of this project (Kallert et al., 2005). The assessment included documentation of coercive measures, which were defined as follows: seclusion was defined as the involuntary placement of an individual alone in a locked room, which may be set up especially for this purpose; restraint was defined as the fixation of at least one of the patient's limbs by a mechanical appliance or at least one limb being held by staff for greater than 15 minutes; and forced medication referred to activities which use restraint or high psychological pressure (involving at least three staff members) to administer medication against the patient's will. All the instruments used to assess patient-related data can be found in Table 2.

3.3. STATISTICAL METHODS

Different types of statistical analyses were performed. For the whole sample analysis all statistical analyses were performed with SPSS, version 17.0. One-way analysis of variance (ANOVA), chi square analysis, and Fisher's exact tests were performed to determine group differences in age, gender, and some clinical characteristics. The prevalence of diagnoses in countries was compared with Kruskal-Wallis test and the differences in the types and frequency

Table 2. Instruments used to assess patient-related data

Construct	Instrument (source of information)	Time points		
		T1	T2	T3
Perceived coercion concerning hospital admission	Perceived coercion items from MacArthur Admission Experience Survey (patient interview)	X		
Perceived coercion and pressures concerning hospital admission	Cantril Ladder of Perceived Coercion, items from Nordic Study on Coercion (patient interview)	X		
Perceived coercion and pressures concerning stay in hospital (only if index episode continues)	Cantril Ladder of Perceived Coercion, items from Nordic Study on Coercion (patient interview)		X	X
Outcome assessment, e.g. use of psychiatric services and contact with the police and criminal justice services after discharge (only if the patient has been discharged after the index episode)	Self-defined items (patient interview, records)			X
Characteristics of treatment	Self-defined items (records)		continuously	
Details of each coercive measure applied in the first 4 weeks after the index admission	Self-defined items (records)		continuously	
Fixed socio-demographic and clinical characteristics	Self-defined items (records, patient interview)	X		
Variable socio-demographic characteristics	Self-defined items (records, patient interview)	X	X	X
Patient's compliance with treatment	Self-defined items (staff rating if patient is in hospital, otherwise patient interview)	X	X	X
Coercion perceived by staff (only if index episode continues)	Cantril Ladder of Perceived Coercion, rephrased (staff rating)	X	X	X
Patient's aggression (only if patient is currently in hospital)	Modified Overt Aggression Scale (staff rating)	X	X	X
Symptom severity	Brief Psychiatric Rating Scale, 24 item version (researcher's rating)	X	X	X
Symptom severity and level of functioning	Global Assessment of Functioning scale (researcher's rating)	X	X	X
Patient's satisfaction with treatment (retrospective evaluation, if the patient has been discharged after the index episode)	Client's Assessment of Treatment, 7 main items (patient interview)	X	X	X
Quality of life, self-rating (optional to each center)	Manchester Short Assessment of Quality of Life (patient interview)	X	X	X

of coercive measures used among countries were compared with the Kolmogoroff test. Descriptive analyses, correlation analyses and binary logistic regressions were used for assessing the influence of patient- and ward-related factors on the use of coercive measures. Since we used a dichotomous variable (having received coercive measures vs. not having received coercive measures) as an outcome, logistic regression was used to estimate bivariate and adjusted odds ratios of tested explanatory variables. The candidate explanatory variables for a multiple regression were screened with univariate ordinal logistic regression. A main effect multivariable model followed by a model that included interactions were applied. Chi-square test, Mann Whitney test, T-test were used to assess bivariate associations. In some cases continuous variables were dichotomized at median in order to get illustrative presentation of bivariate associations for both outcomes (e.g. BPRS). To assess facility-related characteristics, cluster analysis methods were used.

4. RESULTS

4.1. BASIC CHARACTERISTICS OF THE SAMPLE

For the first part of this study data for 2.030 involuntary admitted patients from 10 European countries were analyzed. Table 4 summarizes the recruitment of patients for the study in the centers. For the evaluation reported here the centers in Tel Aviv and Michalovce were excluded because of shortcomings in their databases, which left ten countries in the sample. Two centers were sampled in Spain (Granada and Malaga), and one center was sampled in each of the other nine countries. 462 incidents of coercive measures were recorded and were applied to 770 patients (38% of the whole sample) during the first four weeks of the index hospitalization. There was great variability between countries (21% of detainees in Granada/Malaga centers and 59% in Wroclaw).

The baseline characteristics of the study sample are summarized in Table 3. Baseline characteristics of the two groups of patients were compared: those who experienced coercive measures (N=770) and those who did not (N=1.260). No significant differences regarding gender, age, employment, and living situation was found. However, in the group with coercive measures, there was a greater proportion of patients with a diagnosis of schizophrenia (68% versus 60%) ($p=.004$) and the BPRS (T1) score was significantly higher (58 versus 52) ($p<.001$).

Table 3. Baseline characteristics of patients and comparison of their risk factors between coerced and non-coerced patients

Variable	Coerced (N=770)		Not coerced (N=1,260)		p
	N	%	N	%	
Gender					
Female	345	45	540	43	ns
Male	425	55	719	57	
Age (M±SD)	38.1±11		38.8±11		ns
Employment ^a					
No	579	78	1,006	81	ns
Yes	160	22	239	19	
Living situation ^a					
With others	272	36	449	36	ns
Alone	479	64	790	64	
Past hospitalization ^a					
At least one	528	75	867	70	p<0.01
None	173	25	368	30	
Diagnosis					
Schizophrenia	522	68	762	60	p<0.01
Affective disorders	130	17	214	17	
Other	118	15	283	22	
BPRS score (M±SD)	58.0±17		52.3±15		p<0.01
GAF score (M±SD)	30.5±13.8		33.6±14.9		p<0.01
Perceived coercion (M±SD)	7.5±3.1		6.4±3.4		p<0.01

^a Data were missing for some patients.

Age, gender, BPRS, GAF: T-test, Status, diagnosis, previous hospitalization: Chi-square

4.2. COERCIVE MEASURES USED IN THE GENERAL SAMPLE

As shown in Table 4, there was great variation in the frequency of various coercive measures used in the countries. The application of a single coercive measure per patient was the typical pattern in Dresden, Sofia, Prague, Thessaloniki, Naples, Vilnius and Orebro; whereas in Wroclaw, East London and Granada/Malaga, two or more measures per patient were frequently applied. These differences between the two groups of centers in the number of coercive measures used per patient were statistically significant. The pattern of the frequency of individual coercive measures used also differed significantly when each center was compared with all other centers investigated. Forced medication was the most frequently used intervention (56%), followed by restraint (36%) and seclusion (8%) (Raboch et al., 2010). This "average" pattern was found in centers in Prague, Vilnius and Granada/Malaga. In centers in Sofia and Orebro, forced medication was applied more frequently than the average. Use of physical restraint exceeded the average in Dresden and Thessaloniki centers. Use of seclusion exceeded the average only in East London and Naples.

The most commonly used forced medication among patients with coercive measures was first-generation antipsychotics, especially haloperidol (in 229 cases) and zuclopenthixol (in 120 cases). Also, benzodiazepines were often used separately or in combination with antipsychotics (diazepam in 111 cases, clorazepate in 92 cases, and clonazepam in 82 cases). The most frequent reasons for use of a coercive treatment (it was possible to name more than one reason) were aggression against others (N=866, 59%), threat to his or her health (N=398, 27%), auto-aggression (N=326, 22%), aggression against property (N=352, 24%), prevention of escape (N=193, 13%), and inability to care for oneself (N=165, 11%).

4.3. PATIENT RELATED FACTORS FOR THE USE OF COERCIVE MEASURES

The statistical analysis found that age, gender, and BPRS score at time 1 were significantly different according to the type of coercive measure used. Seclusion was used more often among younger men. Forced medication was applied with older male patients who had more severe psychopathological symptoms. Restraint was used with equal frequency for both men and women. No significant difference between the two groups was found with regard to age and gender. The proportion of men was however higher in both groups (57% in coerced group vs.

Table 4. Coercive measures used among 770 involuntary admitted patients in ten European countries

Center	Seclusion		Restraint		Forced medication		p ^a	Number of coercive measures applied	Number of coercive measures applied per patient
	N	%	N	%	N	%			
Dresden	0	—	51	55	42	45	<.001	93	1.50
Sofia	4	4	17	15	90	81	<.001	111	1.13
Prague	9	6	50	33	94	61	ns	153	1.66
Thessaloniki	0	—	131	69	59	31	<.001	190	1.64
Naples	19	19	24	24	59	58	<.001	102	1.36
Vilnius	0	—	9	27	24	73	ns	33	1.32
Wroclaw	0	—	83	32	174	68	<.001	257	2.86
Granada/Malaga	10	5	82	37	129	58	ns	221	2.51
East London	79	30	68	26	113	43	<.001	260	2.74
Orebro	1	2	7	17	34	81	.004	42	1.45
Total	122	8	522	36	818	56		1,462	1.90

^a For the difference (Pearson chi square) in the pattern of applied coercive measures compared with other countries investigated.

55% in non-coerced group) and men were younger than women in both groups (41.0 ± 11.0 vs. 35.8 ± 11.0 in coerced group; 41.1 ± 11.0 vs. 37.1 ± 11.0 in non-coerced group). Separation of the group samples to age deciles however revealed significant differences in first and last decile between coerced and non-coerced groups. Patients aged 22-29 had a higher risk of receiving coercive measures (OR 2.07; 1.15 - 3.7), while those who were older (57 – 64 years) had a significantly reduced risk of receiving coercive measures (OR 0.56; 0.32 – 0.97).

A statistically significant difference was found regarding diagnosis, with patients affected by psychosis being more represented in coerced group (68% in coerced vs. 60% in non-coerced group). Patients from coerced group had also a higher number of previous hospitalizations (75% vs. 70%). We did not find any difference concerning living situation between groups, with 64% of patients from both groups living alone. Patients from coerced group were more often unemployed in comparison with those non-coerced, but the difference was not statistically significant.

Diagnosis of schizophrenia is positively associated with higher odds of the use of coercive measures in a model including interactions. The interaction with gender strengthens the effect of diagnosis of psychosis on the use of coercive measures. The interaction adjusted odds ratio 1.54 describes a positive correlation of male gender together with a diagnosis of psychosis with the use of coercive measures. Levels of perceived coercion at admission were significantly higher in patients who have experienced coercion.

4.4. WARD RELATED FACTORS FOR THE USE OF COERCIVE MEASURES

Significant differences in ward related characteristics were found. The number of psychiatric hospital beds per 100.000 (4.6 in Naples and 63.7 in Dresden), the number of staff per bed (.4 in Michalovce and 2.0 in Orebro and Naples), and the average size of ward varied from 13 beds in Naples to 50 beds in Thessaloniki. The number of beds per room showed an increase from West to East (1.2 beds in Orebro and Naples and up to 8 beds per room in Vilnius). The clinical staff/patient ratio is only approximate and also varies greatly among centers, with the highest numbers in Naples and Orebro and the lowest in Sofia. Facility-related characteristics followed in the study did not have a significant influence on the application of coercive measures using cluster analysis.

4.5. GENDER DIFFERENCES IN COERCED PATIENTS WITH SCHIZOPHRENIA

In the part of the study that has focused on gender differences 1284 involuntary patients with schizophrenia were identified and the final sample of coerced patients recruited in this study consisted finally of 291 male and 231 female patients (55.8% vs. 44.2%). 74.6% males and 64.0% females were patients with paranoid type of schizophrenia (F20.0), residual type of

schizophrenia (F20.5) was the second most represented group with 21.2% being women and 12.0% men.

Female patients were significantly older (41.1 ± 10.8) than their male counterparts (35.7 ± 10.8) ($p < .05$). Men were significantly more likely single (77.0% vs. 41.2%) while women were more likely married (30.3% vs. 14.4%), divorced (22.2% vs. 8.6%) or widowed (6.3% vs. 0%) ($p < .001$). Female patients did live on their own significantly more often than male patients (70.5% vs. 46.1%), on the other hand almost half of male patients (48.4%) did live by their family/partner/friend, compared to only 26.7% of women ($p < .001$). Only 1.4% male and female patients did live in social institutions and the proportion of homeless was also very low (2.4% males and .9% females). Male patients were significantly more likely to be unemployed (41.0% vs. 29.2%), but the numbers on those partially or fully employed (20.0% vs. 19.6%) did not differ among genders. The biggest proportion of both genders, however, was on social welfare (33.1% males and 43.0% females).

The BPRS total score, as an indicator of overall severity of symptoms, was significantly higher for female patients (58.9 ± 14.5 vs. 54.6 ± 14.0) ($p = .004$) at T1. When performing an in depth analysis of individual items of BPRS several gender differences have been traced. Female patients did score significantly higher on several items, from “positive cluster”; hallucinations (3.15 ± 2.0 vs. 2.80 ± 1.8) ($p < .001$); bizarre behavior (3.28 ± 1.7 vs. 2.80 ± 1.7) ($p < .001$); conceptual disorganization (2.57 ± 1.6 vs. 2.27 ± 1.5) ($p < .001$); from “negative cluster”; emotional withdrawal (2.37 ± 1.4 vs. 2.10 ± 1.3) ($p < .001$); and from “activation/manic cluster”; uncooperativeness (2.29 ± 1.6 vs. 2.03 ± 1.5) ($p < .001$); and motor hyperactivity (2.51 ± 1.7 vs. 1.94 ± 1.3) ($p < .001$). Male patients did not score significantly higher on any of the individual items. Very similar results as for BPRS total scores comparison were observed when comparing GAF scores as measures of global social functioning. Male patients scores were significantly higher (30.5 ± 12.7 vs. 26.2 ± 12.8) ($p < .001$) indicating better social performance.

More than two-thirds of both groups, men and women, have developed aggressive behavior during the first four weeks after admission (79.6% females and 71.7% males). When assessing aggressive behavior simply by counting average MOAS scores for both groups, no significant difference was found (females 5.20 ± 5.61 vs. males 5.62 ± 6.80) ($p = .462$). Women were more likely to show aggressive behaviors but with a lesser intensity (total MOAS score 1 to 7) (50.2% vs. 40.2%) and men were found to be more severely aggressive when counting only those who scored 8 or higher in MOAS (14.47 ± 5.61 vs. 12.34 ± 4.97) ($p = .01$).

373 incidents of coercive measures were applied to 231 women and 573 to 291 men during the first four weeks of the hospitalization. Most frequently used coercive measure was forced medication (80.7%), followed by physical restraint (57.1%) and seclusion (10.7%). Women were

more likely to receive forced medication (87.9% vs. 74.9%) (OR=2.4, 95% confidence interval 1.51-3.90), whereas men were more likely to end physically restraint (66.2% vs. 45.5%) (OR=2.4, CI 1.66-3.67) or secluded (17.2% vs. 2.6%) (OR=7.8, CI 3.27-18.50) ($p < .001$). No significant difference has been observed in the reasons that led to the use of coercive measures. From those provided in this study the most common reasons in both genders were „to prevent acts of violence against others“ (56.0% females and 59.0% males), followed by „worsening of condition“ (31.4% females and 27.8% males), and by „aggression against objects“ (23.6% vs. 18.5%).

5. DISCUSSION

5.1. DISCUSSION ON THE GENERAL SAMPLE RESULTS

The study that was performed was the largest prospective study of the use of coercive measures among involuntarily admitted patients in Europe, and it is the first one to use the same methods across centers in several countries. It included centers in ten European countries with different legislation and practice concerning involuntary admissions (Kallert et al., 2007). It is known that involuntary legal status on admission is a predictor of "heavy use" of restrictive interventions (Korkeila et al., 2002) and higher levels of restraint and seclusion (Bilanakis et al., 2010). Therefore, the frequency of coercive measure use in the sample of hospitalized patients was 38%, which was higher than the rates found in other studies of different groups of patients in various European countries, for example, 11% in Greece (Bilanakis et al., 2010) and 10% in Germany (Steinert et al., 2007).

According to EUNOMIA project results almost 40% of involuntarily admitted patients received some form of coercion during their treatment. Similar results were reported from other studies on involuntarily admitted patients (Georgieva et al., 2012a; Husum et al., 2010). The variance in clinical practice of the use of coercive measures is extensive. Differences are found internationally and also among hospitals, or even individual wards within one country. Even when psychiatric hospitals are subject to the same regulations, significant differences in the number of applied coercive measures have been found, as robust as two- or threefold higher numbers between hospitals (Steinert et al., 2007; Lay et al., 2011).

We report only a slight association between patients' socio-demographic characteristics (age, gender, occupational and social status) and the use of coercive measures. However, it should be emphasized that this study comprises a specific group of involuntarily admitted patients, the majority of which were male and young. Pharmacological restraint was preferred with female patients and older patients with a nonorganic psychotic disorder. Seclusion was preferred with older male patients with an organic psychotic disorder. However, other analyses regarding a

potential age effect yielded inconclusive findings, some researchers have identified a higher age to be a risk factor for the use of coercive treatment (Riecher-Rossler & Rossler, 2013), and others have failed to find any association between age and being coerced (& Tooke, 2002). Some studies suggest that while younger patients are more likely to be restrained and secluded, older patients are restrained and secluded for longer periods of time (Smith et al., 2005).

We found a positive association between a diagnosis of psychosis, the severity of symptoms according to the BPRS scale, and the use of coercive measures. Previous studies suggest that the diagnosis of psychosis (in particular schizophrenia) or of mania is consistently associated with the risk of receiving coercive measures (Keski-Valkama et al., 2010). For more than one-third of patients in our sample, at least one coercive measure was used during the period up to four weeks after involuntary hospitalization. A diagnosis of schizophrenia and higher scores on the BPRS were significantly correlated with receipt of coercive measures. Severity of illness also appeared in previous studies as a factor influencing the use of coercive measures (Lay et al., 2011). The common denominator, which has been identified as a frequent reason for the use of coercive measures regardless of the diagnosis in the past, was acute (Smith et al., 2005) or threatening violence (El-Badri & Mellsop, 2002).

According to our data, a decreased level of global functioning is also associated with a higher likelihood that a patient will be coerced. The level of global functioning seems to be correlated with the severity of psychosis, as reported in other studies (Fiorillo et al., 2012).

We found significant variations in relative frequency and type of measure used in the participating centers. This is in line with other authors who are reporting from 6 to 30% of all admitted patients to have experienced seclusion, restraint or forced medication in acute psychiatric settings (Steinert et al., 2010, Lay et al., 2011). The most frequent coercive measure that was found in the general sample was forced medication.

Pharmacological treatment has in the algorithm of the management of an acutely agitated patient its indisputable place and should be initiated only if previous de-escalation techniques and other non-pharmacological methods had fail (Vevera et al., 2007). The most commonly used forced medication among patients with coercive measures was first-generation antipsychotics, especially haloperidol and zuclopenthixol. Second-generation antipsychotics, although preferred by several recommendations, were not that frequently applied (Allen et al., 2005; NICE 2006). Benzodiazepines were often used separately or in combination with antipsychotics.

Physical restraint and seclusion were used less frequently than forced medication. Some studies are however reporting figures on those secluded or restrained as high as 66% of all inpatients (Brown & Tooke, 1992). Our results are showing numbers twice or even three-times lower. Only in two centers included in the study (Dresden and Thessaloniki) were mechanical restraints used

more often than the average. Seclusion was used more than the average only in Naples and East London. In many hospitals these special rooms for seclusion were not available at all. The application between one and two coercive measures per patient was predominant pattern in majority of the centers, but there have been centers (Wroclaw, East London) where the number of coercive measures per patient was close to three.

In contrast to other studies, our results did not show any significant association between the size of the ward, the number of patients per room and the use of coercive measures (Palmstierna et al., 1991; Van der Schaaf et al., 2013). Palmstierna et al. showed that an increased number of patients in the ward significantly increased the risk of aggressive behaviors in patients with psychosis (1991). It is presumable that a low number of ward personnel is connected with a higher probability of staff exhaustion. From a different viewpoint, more staff during the day could mean more activities for patients, which could lead to their over-stimulation (Terpstra et al., 2006). Some studies, including ours, have not found a significant relationship between the number of staff and the use of coercive measures (Husum et al., 2010).

The data presented for the general sample revealed that despite the fact that the studied countries have markedly different practices concerning the use of coercive measures, which are influenced by socio-cultural and legal norms it appears that coercive measures are used in a very similar group of patients. These patients have high levels of positive symptoms and hostility, have poor global functioning before admission, and have high levels of coercion at admission. The research and clinical focus should be oriented on these traits and predictors when considering the preparation of specific programs to reduce the use of coercive measures in psychiatry.

On the basis of our results, programs could focus on techniques leading to effective and fast management of hostility and of positive symptoms. Experiences from the Netherlands also suggest that uniform guidelines or uniform methods are still not enough to manage violent behaviors and patients' individual choices should be considered (Georgieva et al., 2012b). In spite of many international guidelines on the management of agitated patients, clinical practice still relies mostly on local and national traditions rather than on scientific evidence (Georgieva et al., 2012a). Some efforts should be made to include efficient guidelines in daily practice. Some studies also reported on programs aimed at reducing the use of coercive measures in acute psychiatric settings (Donat, 2005). These programs try to change the routine practice of using coercive measures by making changes to the ward structure and climate (training of staff, changes in unit rules) and also by including a higher involvement of patients in treatment planning (Borckardt et al., 2011).

5.2. DISCUSSION ON THE RESULTS OF THE GENDER DIFFERENCES IN COERCED PATIENTS WITH SCHIZOPHRENIA

This is the first international multicenter study focused also on gender differences which assessed a large sample of coerced, involuntary treated patients with schizophrenia using standardized instruments. There are several interesting findings we would like to point out; 1) both genders do not differ in socio-demographic or clinical characteristics from the non-coerced inpatient populations; 2) coerced female patients do show a worse social functioning than their male counterparts which is contrary to the non-coerced inpatient populations; 3) patterns of aggressive behavior are different between men and women; women are exhibiting more frequently aggressive behavior, but men are more frequently accounted for severe aggressive acts; this may lead, along with "cultural factors" to 4) different patterns of use of coercive measures among genders; where forced medication is preferred by the staff in women and physical restraint and seclusion in men.

Although some studies found no association between the risk of being coerced and the gender (Keski-Valkama et al., 2010a) in psychiatric populations, this study revealed several differences in this regard. In European institutions men with schizophrenia are more than twice likely to end up being physically restrained than women, while the opposite is true for forced medication. One can only speculate on the reasons for such difference. One of the explanations of higher use of forced medication among women might be the fact that they do express more positive psychotic symptoms, plus positive psychotic symptoms are more likely to result in assaults in women than in men (Krakowski & Czobor, 2004). As for the more frequent use of physical restraint by men, we assume that the most likely explanation is that more serious aggressive behavior in men puts the staff on guard more easily than the same aggressive type of behavior by women. Physical restraint may be seen as a more immediate way to control hetero-aggression and a "safer" option to avoid aggressive acts against the hospital staff and other patients. However, as Lam et al. (2000) conclude, injuries to staff members are as likely to be caused by violence by female patients as by male patients and thus signs of an elevated risk of violence should not be discounted on the basis of gender.

When it comes to seclusion the likelihood of men being secluded is almost eight times higher than the one by women. The reasons for the large disproportion of the use of seclusion might be again explained by more severe aggressive behavior that was observed in males (although seclusion was not used in all centers).

No significant difference has been observed in the reasons that led to the use of coercive measures. The most common reasons in both genders were „to prevent acts of violence against others“, followed by „worsening of condition“, and by „aggression against objects“. Auto-

aggressive behavior accounted „only“ for less than one-fifth of reasons that led to the use of coercive measures and also here no gender differences have been traced, although women with schizophrenia do usually have greater number of suicide attempts (Thorup et al., 2007).

5.3. LIMITATIONS OF THE STUDY

The major strength of this study is the large sample size, which allowed for interpretation of both positive and negative findings and the number of assessed factors and, in particular, the thorough documentation of the coercive measures received by patients. The sample was large but not epidemiologically representative of all psychiatric in-patient wards in participating countries; yet, due to the large sample size we had enough statistical power to interpret findings. There were however also several limitations regarding our findings. Overall, only about 50% of the eligible patients were interviewed. This rate may be seen as low in many other fields of health research, but it has been described as good for this type of study in acute settings with difficult-to-recruit patients (Katsakou & Priebe, 2006). For the comparison of recruited and non-recruited patients, only minimal data were available for the UK, which did not suggest a selection bias on the assessed characteristics (Priebe et al., 2010). Furthermore patients with dementia were excluded by the exclusion criteria.

Because only few centers in each country were assessed (Kallert et al., 2005), and as we know that the variance in use of coercive measures even between hospitals in the same country is high (Martin et al., 2007), these our results cannot be generalized for the whole countries. Only a restricted number of characteristics related to psychiatric facilities in each of the 10 centers could be analyzed, thus further limiting the generalizability of the findings. We cannot exclude that other characteristics (for example staff experience, training, organizational aspects etc.) of the psychiatric wards may be associated with the use of coercive measures and should be the focus of future research.

Over the past decade, especially in the US, several programs minimizing the use of coercive measures during psychiatric treatment were launched, and these have been discussed in several publications (Martin et al., 2008; Lewis et al., 2009). It was even found that reducing compulsory treatment decreased financial expenditures (Le Bel & Goldstein, 2005). Scanlan's analysis (2010) of recent literature described seven key strategies for coercive measure reduction programs: change in policy or leadership, external review or debriefing, data use, training, consumer and family involvement, increase in staff-to-patient ratio or use of crisis response teams, and changes in program elements. Similar trends are evident in some European countries (Steinert et al., 2010). It is imperative that during procedures for involuntary hospital admission

and the hospitalization, patients' rights should be recognized and interventions should adhere to the principle of the "least restrictive alternative" (Fiorillo et al., 2011).

6. CONCLUSION

Coercive measures such as seclusion, restraint, or forced medication are considered as interventions of last resort when managing violent, disturbed or suicidal patients, and when other methods of calming a patient have failed (Lay et al., 2011). Even though severe and even fatal side effects have repeatedly been described by the use of coercive measures (Laursen et al., 2005), the authors of recent publications from several countries agree that it would not be currently possible to abolish such measures completely (Fiorillo et al., 2012).

In the thesis we evaluated a group of more than 2.000 detained patients in psychiatric facilities in twelve countries. For more than one-third of patients, coercive measures were applied during the first four weeks of involuntary treatment. These twelve countries varied greatly in the frequency and type of coercive measure used. Age, gender, diagnosis, and severity of psychopathology played an important role in this regard. Overall, we did not find any statistically significant influences of the technical characteristics of countries (that is, number of psychiatric hospital beds per 100.000, number of staff per bed, and average number of beds per room).

Nonetheless, the influence of an individual center was obvious. Therefore, we share the opinion of other authors (Larue et al., 2009) that is a country's sociocultural traditions, as well as its treatment customs in individual psychiatric facilities play a decisive role in this very sensitive issue. However, this very important area of psychiatric care needs further study. Future research projects could identify the factors in legislation and clinical practice, including important staff-patient interactions (Beck et al., 2008) that could lead to a more constructive cooperation of all parties involved, in order to rationalize the use of coercive measures in psychiatric facilities.

Further results of this study point towards a higher threshold for women to be treated with the use of coercive measures. The reasons for it might be that even less serious aggression actions can lead to application of coercive measures in men as the aggression of men puts the staff on guard more easily than in women. Moreover coerced women are in comparison with their non-coerced counterparts in contrast to men showing lesser social functioning, and more importantly more severe symptoms from the „excitement/hostile“ cluster.

Delineating gender differences in the use of coercive measures in patients with schizophrenia is important for developing targeted treatments (Koster et al., 2008). Therefore national and international recommendation on coercive treatment practices should include appropriate consideration of the evidence of gender differences in clinical presentation and aggressive behaviors found in inpatient populations.

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8. LIST OF PUBLICATIONS

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