

# Incidence of seclusion and restraint in psychiatric hospitals: a literature review and survey of international trends

Tilman Steinert · Peter Lepping · Renate Bernhardsgrütter · Andreas Conca ·  
Trond Hatling · Wim Janssen · Alice Keski-Valkama · Fermin Mayoral ·  
Richard Whittington

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## Abstract

**Objective** The aim of this study was to identify quantitative data on the use of seclusion and restraint in different countries and on initiatives to reduce these interventions.

**Methods** Combined literature review on initiatives to reduce seclusion and restraint, and epidemiological data on the frequency and means of use in the 21st century in different countries. Unpublished study was detected by contacting authors of conference presentations. Minimum requirements for the inclusion of data were reporting the incidence of coercive measures in complete hospital populations for defined periods and related to defined catchment areas.

**Results** There are initiatives to gather data and to develop new clinical practice in several countries. However, data on the use of seclusion and restraint are scarcely available so

far. Data fulfilling the inclusion criteria could be detected from 12 different countries, covering single or multiple hospitals in most countries and complete national figures for two countries (Norway, Finland). Both mechanical restraint and seclusion are forbidden in some countries for ethical reasons. Available data suggest that there are huge differences in the percentage of patients subject to and the duration of coercive interventions between countries.

**Conclusions** Databases on the use of seclusion and restraint should be established using comparable key indicators. Comparisons between countries and different practices can help to overcome prejudice and improve clinical practice.

**Keywords** Seclusion · Restraint · Epidemiology · Mental health care

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T. Steinert (✉)  
Centres for Psychiatry Suedwuerttemberg, Ulm University,  
Weingartshofer Straße 2, 88214 Ravensburg-Weissenau,  
Germany  
e-mail: tilman.steinert@zfp-weissenau.de

P. Lepping  
University of Wales, Bangor and North Wales NHS Trust,  
Wrexham Academic Unit, Cardiff, Wales, UK

R. Bernhardsgrütter  
Psychiatrische Klinik Wil, St. Gallische Kantonale  
Psychiatrische Dienste—Sektor Nord, Zurcherstrasse,  
Switzerland

A. Conca  
Department of Psychiatry I, Regional Hospital of Rankweil,  
Rankweil, Austria

T. Hatling  
Health services research, SINTEF, Trondheim, Norway

W. Janssen  
GGNet, Network of Psychiatric Hospitals in the Eastern Region  
of The Netherlands, Warnsveld, The Netherlands

A. Keski-Valkama  
Vanha Vaasa Hospital, Vaasa, Finland

A. Keski-Valkama  
Tampere School of Public Health, University of Tampere,  
Tampere, Finland

F. Mayoral  
Hospital Regional Universitario Carlos Haya, Malaga, Spain

R. Whittington  
School of Health Sciences, University of Liverpool,  
Liverpool, UK

## Introduction

Freedom-restrictive interventions such as seclusion and mechanical or physical restraint have generated controversial discussions regarding their justification in many countries since the beginning of modern psychiatry. Textbooks of history date the beginning of psychiatry as a medical discipline to the liberation of the inmates of the French hospitals Bicêtre and Salpêtrière from their chains by Philippe Pinel in Paris in 1793. Thus, the problem of restraint and seclusion is the oldest in institutional psychiatry and remains a challenging question in psychiatric services and institutions worldwide today. In the second half of the 19th century, the no-restraint movement, initiated by Connolly and Hill in England, aimed for the total abolition of compulsory measures in the treatment of mentally ill people [1]. This aim of no-restraint led to controversy and ongoing discussions in several European countries at the time [2]. Effectively, the complete abolition of such freedom-restricting coercive interventions has never been convincingly reported in any country or period. Although interventions such as seclusion and restraint are not supported by evidence-based studies [3], and severe and even fatal side effects have repeatedly been described [4], authors of recent publications from several countries agree that it would not be possible to completely abolish such measures at the present time [5–8].

However, the questions remain: how, how often, and how long seclusion or restraint should be applied given the basic ethical conflict between respect for the patient's right to autonomy and the paternalistic responsibility to avoid harm to self and others [9]. Some official European organisations have tried to develop guidelines. A recent European Union commission Green Paper emphasized the urgent need to “improve the quality of life of people with mental ill health or disability through social inclusion and the protection of their rights and dignity” [10]. More concretely, the White Paper of the Council of Europe “on the protection of the human rights and dignity of people suffering from mental disorder, especially those placed as involuntary patients in a psychiatric establishment” [11] points out that “the use of short periods of physical restraint and of seclusion should be in due proportion to the benefits and the risks entailed”, and “the response to violent behavior by the patient should be graduated, i.e., staff should initially attempt to respond verbally; thereafter, only in so far as required, by means of manual restraint; and only in a last resort by mechanical restraint”, and lastly “seclusion and mechanical or other means of restraint for prolonged periods should be resorted to only in exceptional cases”. Closest to practice, the European Committee for the Prevention of Torture and inhuman or degrading Treatment or Punishment (CPT) visits facilities in many

European countries each year and publishes detailed reports and responses of the respective governments [12]. Repeatedly, the use of coercive interventions has been described as an indicator of the quality of psychiatric in-patient treatment [13, 14], and the International Quality Indicator Project (IQIP) also defines the frequency of the use of coercive interventions as a quality indicator [15].

However, what do we know about how frequently coercion is applied in psychiatric care across different countries at the beginning of the 21st century? Undoubtedly, all of the above initiatives (ethical debate, projects for improvement of services, and guidelines and programs to reduce seclusion and restraint or attitudes and policies etc.) would be enhanced by reference to consistently collected empirical data. The widespread introduction of electronic records should make it easier to produce and organize such data from routine psychiatric care [16].

The aim of this study was to review the recent literature on the use of seclusion and restraint in different countries, to compare similar data from a number of European and other countries and to identify relevant initiatives to reduce such compulsory measures.

## Methods

### Data collection

A three-stage approach was adopted. First, a medline search was performed using the words “seclusion” or “mechanical restraint” or “physical restraint” for the years 2000–2008. Studies were included if they were

- (1) articles describing initiatives above the level of a single institution or hospital; or
- (2) articles reporting a percentage of admissions or patients exposed to at least one kind of coercive intervention and/or a mean duration of such interventions in representative populations of in-patients. A representative population could be assumed if complete data from the hospitals described were reported, and if the respective hospital or hospitals were responsible for complete psychiatric in-patient treatment in a defined catchment area. Furthermore, a defined period of time for the data collection had to be reported.

Studies were excluded if they were based on non-representative samples, e.g., articles referring only to units of child- and adolescent psychiatry, old age psychiatry, emergency rooms, or special types of wards or if they had missing or insufficient data about a reference population, e.g., number of admissions. Forensic psychiatry was considered as being distinctive and so was not included in this review.

Data from institutions other than psychiatric hospitals, e.g., residential homes and non-psychiatric hospitals, were not found anywhere and are not included in this review.

There were 529 hits, but only six articles from four countries fulfilled the inclusion criteria [5, 14, 16–19].

Therefore, in a second step, the abstracts of the two most relevant conferences in 2007 and 2008 were checked: the WPA Symposium on Coercive Treatment in Dresden and the 5th Conference on Violence in Clinical Psychiatry in Amsterdam. Authors of relevant contributions were contacted and asked to give further information.

Third, all members of the European Violence in Clinical Psychiatry Research Group (EViPRG) were asked to provide unpublished data on coercive measures known to them. We attempted to find the most relevant outcome indicators for compulsory measures as described by Steinert et al. [16] in the articles from stage 1 and 2. If they were not mentioned, we calculated them from the reported data or contacted the authors in order to obtain the relevant data from their databases. Finally, some important additional information about current initiatives was given by reviewers during the review process.

#### Data reporting

Data on the use of coercive measures can be reported on different units of analysis: patients, admissions (cases), or measures. The number of patients treated within a period of time is always smaller than the number of admissions because of readmissions. The percentage exposed to coercive measures may be higher for patients than for admissions, if readmissions receive fewer coercive measures and vice versa. If the incidence of coercive measures was identical in first admissions and readmissions during a certain period, the percentages of exposed patients and exposed admissions would also be identical. Approximately, it can be assumed that the percentages of exposed patients versus exposed admissions [16] are roughly the same. Thus, we report them in the same column, since the available reports commonly contain only one or the other measure. The drawback of using this outcome (i.e., percentage of admissions exposed) is that the length of stay has no direct impact on it [20]. However, most violence and compulsion occur in the first days of in-patient treatment [21] and thus the length of stay seems rather negligible. In contrast, publications from the US regularly calculate rates of seclusion and restraint per 1.000 days, thus completely ignoring the related number of admissions. This is probably explained by the nature of the State Mental Hospitals and Veterans' Affairs medical centers, which seem to serve predominantly long-stay patients [22]. For psychiatric acute-care, such a measure independent of the number of admissions would be inadequate.

The duration of a coercive measure is calculated at the level of the interventions, independent of the number of patients involved. Two ways of reporting this variable are common, the mean and the median, the median usually being lower than the mean because of outliers, which consist of single patients with very long coercive interventions. If not indicated otherwise, we report the mean.

Additionally, we attempted to calculate the number of coercive interventions per 100.000 inhabitants as an outcome which should allow a preliminary comparison between countries with very different systems of mental health care. This calculation is only credible if the relevant database is complete for distinct regions and included patients can be assumed to use no other in-patient facilities. We only report results if this assumption seemed to be fulfilled to a reasonable degree.

#### Results

Most of the excluded articles found in the literature review (stage 1) expressed opinions or reported surveys on attitudes and opinions, made proposals, described qualitative research models, and standards or were comments, reviews, or editorials. Most initiatives reported were of a local nature, i.e., restricted to a single unit or hospital. Only a small number of initiatives at a higher level could be detected. If empirical data were reported, most of it was related to highly selected samples such as single intensive care units and child and adolescent psychiatric units. Only six articles reported data which had an acceptable epidemiological quality, based on data from complete hospitals or regions. The search of the congress abstracts (stage 2) revealed two further initiatives in the Netherlands and Norway with reports in the native language and a data set from Spain which was recorded in an EU-funded study (EUNOMIA). A comprehensive report in Japanese was detected also through personal contacts, the most relevant results of which were provided by its author. Through the contacts of the EViPRG group, comprehensive data from two regions in England and one region in Wales could be obtained as well as data from one hospital in Austria which serves a complete federal state ("Bundesland"). Taking into account the different legislations and different administrations, England and Wales were listed as two different countries, although the results are remarkably similar. Evidence of current initiatives in the USA, so far published only in the internet, was given by a reviewer.

#### Initiatives

**Finland** Since 2002, an explicit regulation about the use of restraint and seclusion has been included in the Mental

Health Act. The intent of the legislative reform was to reduce the use of restraint and seclusion by specifying indications for their use as well as clarifying and standardizing practices. Survey data of all Finnish psychiatric hospitals covering the years 1990, 1991, 1994, and 1998 were updated in 2004 to investigate the trends in the use of seclusion and restraint in psychiatric care in Finland over a period of 15 years. This nation-wide follow-up data made it possible to evaluate the effectiveness of the legislation on the use of restraint and seclusion [17].

**Germany** A working group entitled “prevention of violence and coercion in psychiatry” has existed since 1997 and comprises a group of about 10–15 hospitals (number not constant) in the Southern part and of three hospitals in the Northern part of the country [14, 16, 18] as well as having links to two hospitals in North Wales. Funding from the Department of Health was available for a year. A database on the use of coercive measures has been established since 2001. Since then, data are registered within the participating hospitals on standardized forms, using standardized definitions and outcomes.

**Switzerland** A working group entitled “Coercive measures” has existed since 2001, consisting of medical directors and directors of nursing of seven psychiatric hospitals. It was established with the aim of enhancing quality management. Since 2002, data on coercive measures have been recorded in a standardized manner in the participating hospitals. Since 2006, the Swiss group has collaborated with the German working group at conferences and regarding research activities [19].

**The Netherlands** After considering a set of national quality criteria to guide the use of restraint and seclusion [23] and directives governing restrictions of freedom [24] published in 2001, 12 hospitals across the Netherlands took the initiative to implement these standards with the aim of reducing the use of seclusion and restraint. Research on these practices led to the first publication of epidemiological data on the use of coercive measures in the Netherlands [25]. The conclusions of this effort triggered nationwide funding over 3 years aimed at reducing the use of seclusion and restraint by 10% per year. As part of this project, alternative interventions and a new recording system have been developed. Fourteen hospitals across the Netherlands have collaborated in the development of a case register for seclusion and restraint episodes in order to follow trends and identify determinants.

**England and Wales** National guidelines on the use of seclusion and restraint have been produced and should be incorporated into policies developed by local services [26, 27]. Control and restraint teams have been set up across England and Wales to standardize training and the

provision of safe restraint techniques. Part of the provision is the collection of data on restraint which is regularly audited in each hospital area without many publications combining data. The Royal College of Psychiatrists organizes big audit projects on violence on psychiatric wards in England and Wales. Up to 80% of all eligible wards in the two countries participated in the audits. Data are available for two periods (2003–2005 and 2006–2007). The results are available on the College’s website [28].

**New Zealand** According to the growing awareness of the emotional impact of coercive measures, monitoring and evaluation of the use of seclusion, and restraint have been introduced. This includes patient feedback questionnaires, a stringent policy concerning restraint minimization, regular auditing, and other quality controls [29]. In this process, evidence for more use of restrictive measures among Maori people was not found [30].

**USA** Several initiatives to reduce seclusion and restraint have been reported, especially for Pennsylvania State Mental Hospitals where impressive results were achieved [22]. Within the last two years, a national initiative to reduce seclusion and restraint has repeatedly been described in a series of articles (e.g., 19). The conditions in the USA are rather different to those in other countries because of a different system for delivering psychiatric care in emergency rooms, local psychiatric units, State Mental Hospitals, Veterans Affairs Hospitals, and Private Mental Hospitals. e.g., the data from the Pennsylvania State Mental Hospitals [22] cannot be compared with the data reported here since patients are referred to these institutions only if they are not stabilized within 30 days in local acute-care units. However, based on former research efforts and successful projects [13, 22, 31, 32] the National Association of State Mental Health Program Directors Research Institute [33] launched a comprehensive initiative to introduce a hospital-based in-patient psychiatric services core measure set for all psychiatric hospitals in 2007. Almost 200 sites participated in a test phase, and a final version has been completed in the beginning of 2009. The data set comprises seclusion and restraint overall rates, seclusion and restraint rates in different age groups, hours of physical restraint used, and hours of seclusion used per patient [34]. It is therefore to be expected that comprehensive and representative data from US in-patient psychiatric services will be available within the next years. As the used data set is similar to the data reported in this article, comparisons will be possible.

#### Data

Table 1 gives an overview of the available data from the three sources. This table refers to any kind of freedom-

**Table 1** Data on the use of seclusion and restraint in different countries

	Percentage of admissions exposed	Mean duration of intervention (h)	Mean number of measures per patient	Measures per 100,000 inhabitants per year	Number of admissions included	Kind of measure	Data source
Austria [pu]	35.6%	4.5	3.3	580	1,784 <sup>f</sup>	mRes <sup>a</sup> Sec <sup>b</sup>	1 hospital serving a complete catchment area 2006
England [pu]	7.3% phys res 0.2% Sec	20 min (1–100)	4.17 (median:2.83)	77.2 (49.2 without the 2 most restraint patients)	1,516	Net Bed <sup>b, h</sup> Phys Res <sup>a</sup> Sec <sup>c</sup>	Catchment area Cheshire & Wirral 1,200,000 inhabitants 4 hospitals 6 months in 2005 Catchment Area 662,890 inhabitants 7 hospital units and 35 community facilities July 2005–December 2007
[pu]	2.5% phys res 0.0% Sec	10 min	4.05 (median:1.0)	52.4	8,600	Phys Res <sup>a</sup>	
Finland [17]	5.0% mRes 8.3% Sec	mRes 11.1 Sec 22.8	1.4	mRes 38.7 Sec 89.4	713 <sup>h</sup>	mRes <sup>b</sup> Sec <sup>a</sup>	National survey 2004 over one week 5,200,000 inhabitants
Germany [16]	9.1% <sup>d</sup> 8.0% mRes <sup>d</sup> 3.6% Sec <sup>d</sup>	9.6 <sup>d</sup> mRes 9.8 <sup>d</sup> Sec 6.6 <sup>d</sup>	4.7 <sup>d</sup>	314 <sup>e</sup>	36,690	mRes <sup>a</sup> Sec <sup>b</sup>	Complete data set 10 hospitals 2004
Iceland [36]	No coercive interventions used but 1:1 nursing	0	0	0	not reported	none	Catchment area 316,000 inhabitants (complete population)
Japan [44]	4.1% mRes 4.9% Sec	mRes 68.0 Sec 98.0	1.6	16.1	46,628	mRes <sup>a</sup> Sec <sup>b</sup>	Data set 9 hospitals 2000
The Netherlands [25]	11.6% Sec 1.2% mRes	Sec 294 mRes 1182	Sec 3.0 mRes 2.2	Sec 115.8 mRes 12.6	18,800	Sec <sup>a</sup> mRes <sup>b</sup>	Dataset 12 hospitals 2003
New Zealand [45]	15.6% Sec 6.5% physRes additionally	Sec 14.0 (median)	1.5 Sec	41.2	539	Sec <sup>a</sup> Phys Res <sup>b</sup>	Data set 1 hospital, 9 months, catchment area 313,000
Norway [46]	2.6% mRes 0.07% Sec	mRes 7.9 Sec 3.0	4.7 mRes 5.6 Sec	149.8	42,911	mRes <sup>a</sup> Sec <sup>b</sup>	National survey 2005 3,547,000 inhabitants
Spain [pu]	13.5%	16.4	1.4	45.2	827 <sup>f</sup>	mRes <sup>a</sup> phRes <sup>b</sup>	30 bed unit in University hospital serving a complete catchment area with 330,000 inhabitants in Andalusia
Switzerland [19]	11.8% <sup>d</sup> 3.1% mRes <sup>d</sup> 8.7% Sec <sup>d</sup>	41.6 <sup>d</sup> mRes 41.6 Sec 41.6	1.4 <sup>d</sup>	100.8 <sup>e</sup> mRes 20.9 Sec 75.9	2,145 <sup>f</sup>	Sec <sup>a</sup> mRes <sup>b</sup>	Data set 7 hospitals 2004

Table 1 continued

	Percentage of admissions exposed	Mean duration of intervention (h)	Mean number of measures per patient	Measures per 100,000 inhabitants per year	Number of admissions included	Kind of measure	Data source
Wales [pu]	5.7% phys Res 0.03% Sec	9 min	3.2	39.7	1,108	Phys res <sup>a</sup> Sec <sup>c, i</sup>	Catchment area 526,000 North Wales 2 hospitals

*mRes* mechanical restraint, *Sec* Seclusion, *pu* previously unpublished

<sup>a</sup> Measure is common in use

<sup>b</sup> Measure is less common in use in comparison to a different one which is preferred

<sup>c</sup> Measure occurs, but is rarely used

<sup>d</sup> Separate data available for all ICD-10 principal diagnostic groups

<sup>e</sup> Unpublished data, calculated from 4 hospitals completely serving a catchment area of 1,114,000 inhabitants

<sup>f</sup> Demented patients not or to a very small percentage included

<sup>g</sup> National survey over one week

<sup>h</sup> Not used in the part of Austria where data was recorded

<sup>i</sup> Only one seclusion room existing in Wales, included in this data set

restricting coercive measure. If available, separate figures for different measures are reported. Data from published material are identified by the relevant reference. All other data were calculated by the authors from the databases available to them.

## Discussion

This review shows that in 2008 empirical knowledge about how, how often, and how long coercive measures are used among psychiatric in-patients in different countries is still very limited. The overview would be much poorer still, if several reports in national language journals had not been identified and included and if it had not been possible to gather previously unpublished data from some countries for the purposes of this article. However, in the future, more detailed data can be anticipated for several reasons. First, there is an increasing awareness amongst policy makers about human rights issues relating to mental health services throughout Europe, the USA and some other parts of the world, and willingness to fund projects in this area seem to be increasing. This growing awareness extends also to the employment rights of staff who may be entitled to sue services if they have been injured when implementing coercive interventions without adequate training. Second, the increasing availability of electronic records makes it relatively easy to construct and manage large data sets from routine psychiatric care and to use it for epidemiological research and quality management purposes. Third, within the last few years an increasing interest in initiatives to reduce seclusion and restraint has emerged both in the USA and in several European countries at a regional or even national level, e.g., in the Netherlands, Germany, the UK, and Switzerland. A critical point at this stage of development seems to be that the most part of these initiatives concentrate on monitoring data on the use of coercive measures, obviously with the implicit hope that recording and data feedback will be a sufficient stimulus to reduce the use of coercive measures. There is some evidence that this may work if special projects are developed for defined groups of patients [35]. However, there is some criticism, too that the development of alternatives to seclusion and restraint might be neglected [29].

The results of our review show a huge variety in the type, frequency, and duration of coercive measures used. Most striking is the difference between practice in the Netherlands and the UK, the latter represented by three previously unpublished data sets from different regions in England and Wales. While a seclusion episode lasts for nearly 300 h on average and the rare episodes of mechanical restraint last nearly 1,200 h on average in the Netherlands, in the UK seclusion is used rarely, mechanical

restraint is not allowed, and physical restraint lasts considerably less than half an hour on average. Equivalent data on rapid tranquillisation in these services are not available but may go some way to explaining this variation. All the other countries apart from Iceland fall between those two extremes with mechanical restraint being used in most of them. Iceland, being a small country with only one psychiatric hospital serving the entire population of about 300,000 inhabitants, seems to be an interesting exception: Seclusion and restraint were abolished some decades ago and never used again as reported by local experts [36]. However, the conditions may be somewhat different from other European countries.

Since western European mental health services are broadly similar in terms of resources and populations at risk, the obtained data suggest that the use of coercive measures may be based much more on culture, traditions, and policies than on medical or safety requirements. A further reason for the discrepancy between the Dutch practice and the British practice may be that in the opinion of Dutch psychiatric professionals involuntary medication is more invasive and threatens the personal integrity to a higher degree than the application of seclusion or mechanical restraint (W.J., personal communication). This is reflected by the Dutch mental health legislation which is very restrictive regarding involuntary medication. It is allowed only in cases of acute emergency [37]. Probably as a consequence of this, the frequency of aggressive incidents in the Netherlands is the highest reported from any European country [38]. Additionally, the Dutch figures are possibly an overestimation of actual practice. This is because the reported mean and median length of stay in seclusion and restraint is related to data on seclusion orders as gathered by the Dutch Health Inspectorate. The validity of these data is subject to critical discussion [23, 25]. Information on the number of discrete seclusion or restraint episodes and their exact duration is not available. Owing to the legal purpose of the Inspectorate's database, the start of the intervention is expected to be registered accurately. No real incentive exists for the accurate measurement of the end point, leaving room for error [39]. However, this alone certainly does not explain the huge differences observed sufficiently. Although definitive evidence is not available, it is not probable that differences in staffing levels, staff-patient relationship, or funding of services account for these differences. The legal provisions in the different countries are rather similar regarding the application of coercive measures with the above-mentioned exceptions, involuntary medicating being highly restricted in the Netherlands and mechanical restraint being forbidden in the UK [37]. In addition, pressure through auditing, benchmarking, and other quality control mechanisms have highly sensitized staff in the UK to achieve a reduction in

coercive measures. This was supported by extensive obligatory training and the setting up of control and restraint teams whose remit includes further quality control through regular audit.

The rates of coercive measures per 100,000 inhabitants allow comparisons between different countries to be drawn, but these should be considered with caution and may be misleading because of different ways of collecting the data. The rates depend highly on whether the service contributing to the study is representative of practice in each country. In Germany, where the highest rate of 314 measures per 100,000 inhabitants was found, 52.8% of the measures were used on patients with organic brain syndromes (ICD-10 diagnostic group F0) and people with this disorder are not treated in psychiatric hospitals in all countries. Furthermore, some countries may have lower rates since coercive interventions are carried out in places other than psychiatric hospitals to which problematic patients are diverted, e.g., in prisons, residential homes, or on medical wards. All the data reported here therefore do not reflect the use of coercive measures in general hospitals and in homes for people with learning disability, not do they apply to forensic psychiatry, and units for child- and adolescent psychiatry.

#### Limitations

Our results must be looked upon as preliminary. Definitions of coercive interventions may be somewhat different across countries, however, standard definitions have recently been established by consensus and could be used in future [37]. A principal difference refers to the use and understanding of restraint in the UK on the one hand and all other countries on the other. In the UK, restraint means only physical restraint, i.e., holding a patient upright or on the floor. Mechanical restraint with belts is considered as unethical and is not in use. In all other countries, restraint means mechanical restraint, i.e., fixing a patient by belts to a bed or a chair or binding arms to a hip belt. The purpose is not only managing aggressive behavior but, in a considerable proportion of incidents, preventing falls in elderly patients. Physical restraint is required outside the UK in an unknown proportion of cases to initiate the procedure of mechanical restraint but is nowhere registered separately. Thus, the data on the use of mechanical restraint in countries other than UK contains an unknown proportion of physical restraint. The use of medication plays a major role which should be subjected to further exploration, even though involuntary medication was not the subject of this review and the extent of sedation is difficult to determine, and not restricted to coercion. Definitions of medication as a coercive procedure and legal requirements in this area differ amongst the countries examined [37]. It has to be

considered that apart from seclusion and restraint, other freedom-restricting procedures may be in use in some countries. There is no shared opinion as to whether some of these procedures have to be considered and registered as “coercive” or not. In fact, the boundary between overt and covert coercion is very difficult to draw clearly [40]. Nursing technique such as 1:1 nursing or 2:1 nursing [36], a practice used in Scandinavian countries is called “skaerming” [41], and similar practices in the UK, which could be described as intensive observation in a separated ward area, and practices in a number of countries to prevent falls for people with dementia, such as special devices for beds and chairs, all lie close to this boundary.

The quality of the detected studies and surveys is rather variable, stretching from data for a single hospital serving a defined catchment area (Austria, Spain, and New Zealand) to complete national surveys (Norway, Finland). Under-reporting might be a problem in at least some of the reported studies and surveys, and methods to control the validity of the data were of varying quality, if reported at all. Furthermore, the extent to which seclusion and restraint occur outside psychiatric hospitals, e.g., in nursing homes, in the various countries is not known. Thus, the figures referring to the number of measures per 100.000 inhabitants may be incomplete in at least some of the sample countries. We do not know the degree to which the patient populations included in the reports differ. One solution to this problem would be reporting outcomes separately for the major diagnostic groups. However, such data are only available for Germany and Switzerland so far [16, 19]. They show that the highest proportion of coercive interventions occurs among people with organic mental disorders such as dementia in order to prevent falls. Thus, the outcomes reported here will depend, to a considerable extent, on whether old age psychiatry is included in the services selected for the study where no nation-wide data were available.

Another difference between the reported studies may relate to the statistical parameters used to summarize the data, particularly the choice of mean or median. Some of the outcomes, particularly the number of coercive measures per 100.000 inhabitants and the duration of a coercive measure, can be influenced by outliers (single cases subjected to huge numbers of coercive measures) to a considerable degree. Others, such as the percentage of admissions exposed to any coercive measure do not rely on measures of central tendency and thus do not have outliers. Reporting the median minimizes the influence of outliers in skewed distributions.

A final limitation of this overview is that we were not able to include reports from the USA despite the availability of some data [13, 22, 31, 42, 43]. There are several reasons for this: National American surveys were last

published some time ago in the 1990s [42, 43]. These older studies use outcome data such as coercive measures per 1,000 in-patient days which are calculated differently to our measures and which do not include any information about the number of admissions or patients treated. Furthermore, the US Mental Health Care system is rather different from that of many other countries and differs itself within the country amongst the 50 federal states. Coercive procedures such as seclusion and restraint occur in a wider range of different settings—in emergency rooms, public and private mental hospitals, State Mental Hospitals, and Veterans Affairs Administration Hospitals [31]. So far, no publications are available that provide data in a format comparable to that reported here, i.e., referring to a complete range of mental health services serving defined populations of mentally ill patients living in defined regions. However, within few years comprehensive data will be available due to the current introduction of an in-patient psychiatric services core measure set in all or most hospitals [34].

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