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The Use of Seclusion and Mechanical Restraint in Psychiatry

A Persistent Challenge over Time

ACADEMIC DISSERTATION
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Cover
Drawing by patient S-M.M.:

”Mulla oli siivet, joilla lentää pois.
En vain tiennyt, kummalla puolella kaltereita olen.”

”I had wings to soar away.
I just didn't know on which side of the bars I am.”

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Abstract

Coercive measures, such as seclusion and mechanical restraint, have a long history in dealing with mental illness. Both the ethical and legal frameworks for using coercive measures acknowledge that the use of them is, at times, indispensable, but they should only be considered at the last resort, as a safety measure.

In this thesis, the use of coercive measures in psychiatry is studied at the level of international and national statistics as well as at the level of the individual patients. The international meta-analysis of published, unpublished and ongoing research regarding the use of coercive measures (mechanical restraint, seclusion, physical restraint) between 2000 and 2008 comprised databases from twelve countries in and beyond Europe. The Finnish nationwide study regarding the use of seclusion and mechanical restraint was conducted in a specific week in 1990, 1991, 1994, 1998 and 2004. The material was collected from two sources: The Survey Data covered all Finnish psychiatric hospitals, and comprised 671 working-age secluded or mechanically restrained patients. The Register Data covered all hospitalised working-age psychiatric inpatients during the study period (N = 28 064). The interview study was composed of the baseline interviews of 106 secluded patients at the two forensic psychiatric hospitals and at the psychiatric inpatient units of two hospital districts in Finland. A follow-up interview was completed by 83 of the participants.

The present study indicates that coercive measures are in general use in Western psychiatry, but the type and the quantity vary considerably across countries. Initiatives to curtail the use of coercive measures already exist in a few European countries. Finland stood at the average point on the preliminary international statistics in the use of seclusion and mechanical restraint. Despite the tendency of official policies towards the least restrictive psychiatric treatment in our country during the last two decades, national statistics of the present study indicate, that legislation solely can not change the use of coercive measures. The risk for being secluded had not changed, while the risk for being mechanically restrained decreased slightly, but not linearly, during this timeframe. Furthermore, the duration of mechanical restraint remained the same, and the duration of seclusion increased even three-fold. A rather well-entrenched establishment of seclusion and mechanical restraint seems to prevail in clinical practice. These measures were used mainly among the most clinically disturbed patients. Patient agitation or disorientation with no accompanying signs of actual or threatening violence was the most frequent clinical indication for the use of these measures. Psychiatric patients equate seclusion with prolonged, negative connotations, independent of the type of hospital where the treatment is administered. The only difference detected between the secluded patients in the forensic psychiatric hospitals and the general psychiatric in-patient units was that the forensic patients even more frequently viewed seclusion as a form of punishment. From the viewpoint of the secluded patients, both psychological and physical conditions under which coercive measures are implemented in everyday clinical practice are deficient.

Fundamental human considerations demand that the least intrusive practices be achieved and improved upon in order to reduce the use of coercive measures. This thesis indicates that almost no changes toward the reduced use of seclusion and mechanical restraint have taken place over the years, which confirms previous suggestions that deep-rooted treatment traditions and attitudes at least as much as safety requirements or patients` rights determine the use of coercive measures. The shared intention should be to find the best practices to moderate the use of these measures, or when they are really indicated, how they can be implemented in a more benevolent manner. Special attention should be directed toward duration and indications for seclusion and mechanical restraint. Physical conditions and psychological needs of the secluded or mechanically restrained patient must be more scrupulously taken into account.

Tiivistelmä

Mielisairaisiin kohdistuvilla pakkotoimenpiteillä, kuten huoneeseen tai lepositeisiin eristämisellä, on pitkä historia. Nykykäsityksen mukaan pakkotoimenpiteitä pitäisi käyttää psykiatriassa ainoastaan viimeisenä keinona silloin, kun se on välttämätöntä potilaan tai muiden turvallisuuden kannalta.

Tutkimuksessa tarkastellaan huone-eristyksen ja lepositeiden käyttöä sekä kansainvälisellä, kansallisella että yksilötasolla. Kansainvälisessä meta-analyyttiseen menetelmään perustuvassa tutkimuksessa käytiin läpi julkaistut, julkaisemattomat ja meneillään olevat pakkotoimenpiteiden käyttöön liittyvät tutkimushankkeet vuosien 2000–2008 ajalta. Tutkimuksessa vertailtiin huone-eristyksen, lepositeiden ja fyysisen kiinnipidon käyttöä kahdentoista maan välillä. Valtakunnallinen huone-eristyksen ja lepositeiden käyttöön liittyvä kyselylomake- ja rekisteritutkimus toteutettiin tietyn viikon ajalta vuosina 1990, 1991, 1994, 1998 ja 2004. Jokaisesta suomalaisesta psykiatrisesta sairaalasta kyselylomakkein kerätty aineisto muodostui 671 työikäisestä huone- tai leposide-eristetystä potilaasta. Rekisteriaineisto puolestaan kattoi kaikki työikäiset psykiatriset potilaat ko. tutkimusajanjaksolta (N = 28 064). Eristettyjen potilaiden kokemuksia koskevaan haastattelututkimukseen osallistui 106 potilasta kahdesta valtion psykiatrisesta sairaalasta ja kahden sairaanhoitopiirin psykiatrisesta yksiköstä Suomessa. Seurantahaastatteluun osallistui 83 potilasta.

Tutkimus osoittaa, että pakkotoimenpiteet ovat edelleen yleisesti käytössä länsimaisessa psykiatriassa, mutta niiden valinnassa ja määrissä on huomattavia eroja maiden välillä. Hankkeita pakkotoimenpiteiden käytön rajoittamiseksi on jo meneillään joissakin Euroopan maissa. Suomi asettui tässä preliminäärisessä kansainvälisessä vertailussa lepositeiden ja huone-eristysten käytössä keskivaiheille. Valtakunnallinen tutkimus kuitenkin osoittaa, että huolimatta tarkasteltuun 15 vuoden ajanjaksoon sisältyneistä lainsäädännöllisistä muutoksista sekä potilaan asemassa ja oikeuksissa terveydenhuollossa että tahdosta riippumattomasti toteutettavien toimenpiteiden edellytyksissä psykiatriassa, laisäädäntö ei yksinään riitä olennaisesti vaikuttamaan pakkotoimenpiteiden käyttöön. Riski joutua huone-eristetyksi ei muuttunut ja riski joutua leposide-eristetyksi väheni ainoastaan hieman, mutta ei suoraviivaisesti tarkasteltuna ajanjaksona. Lisäksi havaittiin, että leposide-eristysten kesto pysyi samana, ja huone-eristysten kesto kasvoi jopa kolminkertaiseksi. Tutkimus osoittaa myös tiettyjä vakiintuneita käytäntöjä. Leposide- ja huone-eristyksen käyttö kohdistui pääasiassa kliinisesti kaikkein vaikeimpiin potilaisiin. Agitoitunut ja sekava käyttäytyminen ilman merkkejä toteutuneesta tai uhkaavasta väkivaltaisesta käyttäytymisestä oli tavallisin pakkotoimenpiteen syy koko ajanjakson. Riippumatta siitä, onko kyseessä oikeuspsykiatrinen sairaala vai sairaanhoitopiirin sairaala, huone-eristyksessä oleminen oli potilaille pääosin kielteinen kokemus vielä puolen vuoden jälkeen tapahtuneesta. Ainoa havaittu ero sairaaloiden välillä oli se, että oikeuspsykiatrisissa sairaaloissa hoidossa olevat potilaat kokivat eristämisen vielä useammin rangaistukseksi. Eristettyjen potilaiden näkökulmasta tarkasteltuna huone-eristyksen psykologiset ja fyysiset puitteet ovat nykyisellään puutteelliset.

Tutkimus osoittaa ainoastaan vähäisiä muutoksia pakkotoimien käytön vähenemisessä, mikä tukee aiemmin esitettyjä olettamuksia siitä, että syvään juurtuneet käytännöt ja asenteet määrittävät pakkotoimenpiteiden käyttöä ainakin yhtä vahvasti kuin turvallisuusnäkökohdat ja potilaiden oikeudet. Vaikka joissakin tilanteissa pakkotoimenpiteet ovat välttämättömiä, tavoitteena tulisi olla niiden vähäinen käyttö. Tämä edellyttää yhteisesti hyväksyttyjen toimintatapojen jatkuvaa tarkastelua. Erityisesti pakkotoimenpiteiden käytön syihin ja kestoon on kiinnitettävä huomioita. Pakkotoimenpiteen kohteeksi joutuneen potilaan fyysinen ympäristö ja psykologiset tarpeet on huomioitava nykyistä paremmin.

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Vaasa, January 2010
Alice Keski-Valkama

List of original papers

The present thesis is based on the following original papers, which will be referred to in the text by the Roman numerals I – V.

I Keski-Valkama A, Sailas E, Eronen M, Koivisto A-M, Lönnqvist J & Kaltiala-Heino R (2007) A 15-year national follow-up: legislation is not enough to reduce the use of seclusion and restraint. Social Psychiatry and Psychiatric Epidemiology 42: 747 – 752.

II Keski-Valkama A, Sailas E, Eronen M, Koivisto A-M, Lönnqvist J & Kaltiala-Heino R (2009) The reasons for using restraint and seclusion in psychiatric inpatient care: a nationwide 15-year study. Nordic Journal of Psychiatry, November 2, (Epub ahead of print).

III Keski-Valkama A, Sailas E, Eronen M, Koivisto A-M, Lönnqvist J & Kaltiala-Heino R (2009) Who are the restrained and secluded patients: a 15-year nationwide study. Social Psychiatry and Psychiatric Epidemiology, October 21, (Epub ahead of print).

IV Steinert T, Lepping P, Bernhardsgrutter R, Conca A, Hatling T, Janssen W, Keski-Valkama A, Mayoral F & Whittington R (2009) Incidence of seclusion and restraint in psychiatric hospitals: a literature review and survey of international trends. Social Psychiatry and Psychiatric Epidemiology, September 2, (Epub ahead of print).

V Keski-Valkama A, Koivisto A-M, Eronen M & Kaltiala-Heino R Forensic and general psychiatric patients` view of seclusion: a comparison study. Journal of Forensic Psychiatry and Psychology, accepted for publication on October 28.

Contents

1. Introduction

"I felt terribly distressed because I was left alone. I felt like the rest of the world doesn`t even exist anymore. There`s just me and a room like a tiny box, and if I were to look through the window, ashes would be all I`d see..."

The quotation above was uttered by a secluded psychiatric inpatient at the beginning of the 21st century, but the use of coercion in a variety of forms has been associated with the management of mental illness or deviant behaviour throughout the ages. Individual freedom and dignity are fundamental values in the Western world. As Article 1 of the United Nations Universal Declaration of Human Rights proclaimed in 1948, *"All human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood."* The enhancement of individual human rights has reflected on health care as a trend away from paternalism towards more patient autonomy and self-determination in the last few decades (Sjöstrand & Helgesson, 2008; Verkerk, 1999). This has presented a continuous ethical challenge in the field of psychiatry, where interference in the patients` autonomy occurs frequently in order to both cure and control the patients (Kaltiala-Heino, 1999; Prinsen & van Delden, 2009; Salize & Dressing, 2005).

On the one hand, it has been suggested that seriously mentally ill patients are vulnerable to the loss of impulse control, to the demands of interpersonal relationships and to sensory input, and thus the use of coercive measures might be therapeutic for them (Gutheil, 1978). On the other hand, the therapeutic effects of coercive measures are questioned because of unexpected cognitive changes due to sensory deprivation, lack of the possibility of normal social interaction, abrupt changes in daily routines, resentment, and restriction of an individual`s right to freedom (Myers, 1990). In biomedical research, different restraint techniques (e.g. plastic tubes, jackets, tethers, harnesses) are used in standard laboratory procedure for studying stress effects in rats (Glavin, Pare, Sandbak, Bakke, & Murison, 1994). The major effect of restraint has been found to induce stress-related physiological pathology as well as to produce reduction in home cage motor activity, habituation and even to cause learned helplessness. In psychiatry, however, the debate, pro and con, continues because controlled studies for assessing the beneficial or harmful effects of coercive measures do not exist (Sailas & Fenton, 2000; Sailas & Wahlbeck, 2005).

Unaware of the doctrinaire debate swirling around him or her, the secluded patient unsuspectingly poses a challenging question:

"... You start to feel sort of disintegrated in the solitude because you can't even hear anything from the outside. I cried a lot and tried to calm myself by singing. It would've been enough if someone had just been there; it wouldn`t matter who it would be or what he

or she talked about. As a professional, do you really consider seclusion an intensive care of a psychiatric patient?"

This question provided the final impetus needed to initiate this study in order to gain a more profound understanding of the use of coercive measures in current psychiatric practice. In order to discover some answers to the challenge thrown down above, a framework involving historical, ethical, and legal issues regarding the use of coercive measures in general as well as empirical literature associated in more detail to the use of seclusion and mechanical restraint is first devised, and then supplemented by this comprehensive research project, which was carried out at the international and national levels as well as at the level of the individual patients. This research project focuses primarily on the use of seclusion and mechanical restraint.

2. Review of the literature

2.1 Definitions

Coercion denotes the action of coercing, constraint, restraint or compulsion to force another to act or assent (to a measure) contrary to the individual`s personal preference. *Coerce* means to constrain or restrain by the application of superior force, or by authority resting on threats of force; to constrain or enforce to compliance or obedience by forcible means; to keep in order by force; to enforce obedience; or to nullify individual will or desire (Brown, 1993; Gove, 1971; Simpson, Weiner, & Oxford University Press., 1989). In psychiatry, coercion as deprivation of liberty is used under special prerequisites to secure a patient´s admission into hospital, to prevent release from hospital or to compel a patient into community treatment. Coercion is also administered during the hospital treatment episode, when it is used to treat (coercive treatments) or to control (coercive measures) the patient (Kaltiala-Heino, 1999). This thesis deals with the latter form of coercion, i.e. the use of coercive measures during the treatment episode. Seclusion, mechanical restraint, physical restraint and chemical restraint are examples of coercive measures used widely in clinical psychiatric practice around the world (Whittington, Baskind, & Paterson, 2006). The emphasis of this thesis is on the use of seclusion and mechanical restraint.

Seclusion denotes the condition or state of being kept apart from society as well as the place in which a person is secluded. *Seclude* means to shut off, to enclose or confine a person in a segregated place, hard to reach or enter, in order to prevent intercourse with, or influence from the outside (Brown, 1993; Gove, 1971; Simpson et al., 1989). In this thesis, seclusion refers to isolating a patient alone in a locked room from which the patient has no free egress.

Restrain means to restrict, limit, confine or deprive of personal liberty or freedom of action, to shut in by material barriers, to draw or bind tightly, restrict movement of (part of the body), hold (a person) down and back. *Restraint* means the action, or an act, of restraining something or someone, by means of deprivation or restriction of liberty or freedom of action or movement (Brown, 1993; Gove, 1971; Simpson et al., 1989). In this thesis, restraint refers to *mechanical restraint*, i.e. to confining the patient to bed by using belts.

2.2 Historical, ethical and legal framework for using coercive measures in psychiatry

2.2.1 History of coercive measures in managing mental illness

The use of coercive measures has a long history of dealing with mental illness (Brown & Tooke, 1992). The purposes and forms of these measures have varied over time, depending on societal beliefs regarding the nature and curability of mental illness. As far as is known, the earliest recorded use of seclusion can be traced to Ancient times, when it was used in accordance with the spirit of the times for therapeutic purposes on troubled persons. In extreme cases, restraint was also recommended. The Greek physician Soranus of Ephesus wrote in the second century AD (cited by Alty and Mason, 1994, 17–18):

"Have the patient lie in a moderate and slightly warm room. The room should be perfectly quiet, unadorned by paintings… and the bed should be firmly fastened down. It should face away from the entrance to the room so that the patient will not see those who enter. In this way the danger of exciting and aggravating his madness by letting him see many different faces will be avoided."

The earliest explanation for mental illness involved possession by evil spirits and demons, a belief which prevailed even as late as the 16th and 17th centuries (Brown & Tooke, 1992). Mentally ill persons were tortured in an attempt to drive out the demon. Their care was primarily the responsibility of the family and those who wished to achieve merit through charity. Often these persons were confined in cellars and cages. The shift towards the institutional model did not change the treatment of mentally ill persons in the 18th and 19th centuries, when dangerous and other disturbing individuals were isolated from the society in asylums. The pessimistic and punitive views on mental illness still prevailed and coercive measures were primarily used for the management of the most disturbed behaviour (Dix, Betteridge, & Page, 2008; Hyvönen, 2008).

The first basic principles of restraint and seclusion as non-punitive measures were described in "Memoir of Madness" by French physician Philippe Pinel (1745–1826) in 1794 (Weiner, 1992):

"If a madman suddenly experiences an unexpected attack and arms himself with a log, a stick, or a rock, the director – always mindful of his maxim to control the insane without ever permitting them to be hurt – would present himself in the most determined and threatening manner but without carrying any kind of weapon, so as to avoid additional vexation. He speaks with a thundering voice and walks closer toward the maniac in order to catch his eye. At the same time the servants converge on him at a signal, from behind or sideways, each seizing one of the madman's limbs, an arm, a thigh, or a leg. Thus they carry him to his cell while thwarting his efforts and chain him if he is very dangerous or

merely lock him up. That is how one dominates agitated madmen while respecting human rights…But one must avoid any unnecessary constraints and use only enough force to restrain them…Great skill is required to retain the insane locked in their cells only for the necessary length of time and only while they are capable of extreme acts of violence…Grant as much freedom as possible to those madmen who content themselves with mere gesticulations, loud declamations, and acts of extravagance that hurt no one. To lock up this kind of madman on the pretext of maintaining order means to impose needless constraints that provoke his rebellion and violence and render his madness more inveterate and often incurable."

Pinel called this new approach to mental illness moral treatment, i.e. managing mentally ill patients in a psychologically sensitive manner in contrast to harsh physical treatment. As it appears in Pinel`s text, coercive measures were not banned but restricted to certain circumstances after careful consideration.

From the first half of the 19th century, the use of the mechanical restraints (straitjacket, coercion chair, protection bed, hydrotherapy) was included essentially in the asylum psychiatry, especially in the United States, as a form of psychological treatment in order to help patients regain self-control (Colaizzi, 2005). During the same period, a strong anti-restraint movement in Great Britain replaced mechanical restraint interventions by physical restraint in some asylums with success (Belkin, 2002; Haw & Yorston, 2004). A padded seclusion room, a new contrivance by English physician John Conolly (1794–1866), as well as wet packs and tight wrapping sheets were used as a last resort (Angold, 1989; Colaizzi, 2005). Advocates of the mechanical restraints criticised the anti-restraint movement and questioned physical restraint which, in their view, allows personal force against patients. They also questioned seclusion because it left the patient more liable to neglect and social isolation. As a result, the movement of moral treatment declined in the United States.

The use of coercive measures still had a central role in the treatment of mentally disturbed patients at the beginning of the 20th century. In the 20th century, the use of physical therapies (insulin shock, ECT, psychosurgery, sedatives, and especially chlorpromazine at mid-century) were reinforced by the development of a medical model (Brown & Tooke, 1992). Regardless of these innovations, the widespread and unregulated use of coercive measures has been continued up to the present time (Dix et al., 2008).

2.2.2 Ethical issues in using coercive measures

Coercion is used not only to help, treat or cure but also to control the psychiatric patient (Kaltiala-Heino, 1999). These two basic aspects motivate the use of coercive measures, and are intermingled rather than mutually exclusive considerations. Coercive measures as a means of help or protection may prevent suicidal behaviour, or may help the patient regain control over his or her psychiatric symptoms. These measures are used as a method of

control in a situation where a patient's violent, or potentially violent, behaviour threatens the safety of others (Kaltiala-Heino, Tuohimäki, Korkeila, & Lehtinen, 2003). The use of coercive measures presents, however, an ethical dilemma because it involves acting against the patient's autonomy (Bloch & Green, 2006; Katsakou & Priebe, 2007; O'Brien & Golding, 2003; Prinsen & van Delden, 2009).

Traditional justification for using coercion and coercive measures in mental health care is derived from paternalism and from the nature of mental illness (Kaltiala-Heino, 1999; O'Brien & Golding, 2003). In their book "Principles of Biomedical Ethics", Beauchamp and Childress (2001, p. 178) defined paternalism as "*the intentional overriding of one person's preferences or actions by another person, where the person who overrides justifies the action by the goal of benefiting or avoiding harm to the person whose preferences or actions are overridden".* Paternalistic justification used in mental health care, i.e. to justify the use of coercion by protecting the patient against his or her own non-autonomous action, is an example of soft paternalism as opposed to strong paternalism where informed, voluntary and autonomous action of the person is restricted for the patient`s self-protection. Due to the mental illness, the person is considered incompetent to make independent decisions and to lack autonomy. Hence, others need to intervene in the interest of the patient (medical paternalism) or in the interest of others who might be affected (social paternalism) (Kjellin & Nilstun, 1993; Sjöstrand & Helgesson, 2008).

The following theoretical justifications for using coercive measures are presented in order to find the balance between soft paternalism and individual rights and autonomy (Wertheimer, 1993): 1) coercive measures may promote and increase the long term autonomy of the patient, 2) the patient's current or irrational preferences may differ from his or her long term, stable or rational preferences, 3) the patient's subsequent acknowledgement of the beneficial aspects of being coerced, 4) the patient who undergoes substantial psychological change (e.g. a result of brain damage, fundamental traumatic experience, Alzheimer's Disease) should not be allowed to harm his or her personal identity. However, although the expressed purpose for using coercive measures is genuine, the risk of their application for punitive purposes or the misuse of power cannot be excluded (Kaltiala-Heino & Välimäki, 2001; Mason, 1993; O'Brien & Golding, 2003). The primary danger of soft paternalism is losing contact with the patient's actual preference (Wertheimer, 1993). The presence of mental illness cannot automatically be considered an indication of total incompetency in every aspect of life (Appelbaum, 2006; Breeze, 1998).

In 1977, the World Psychiatric Association adopted the Declaration of Hawaii, which was the first concerted effort to explicate the ethical principles of respect for autonomy and beneficence in the psychiatric community (Kingdon, Jones, & Lönnqvist, 2004; Okasha, 2003). The Declaration confined the use of any compulsory intervention only to the case of a mental disorder. The Hawaii Declaration was updated in 1993 by the Declaration of Madrid. The Declarations touch on the use of coercion by upholding the principle of "least restrictive interventions", and forbade involuntary acts "*unless withholding treatment would endanger the life of the patient and/or those surrounding him or her*", i.e. the use of coercion is accepted in certain circumstances to the least invasive extent as possible.

Unfortunately, however, ethical problems related to the use of coercive measures are not routinely examined in everyday psychiatric practice. In Finland, only a minority of nurses in acute psychiatry perceived seclusion and mechanical restraint as ethically problematic (Lind, Kaltiala-Heino, Suominen, Leino-Kilpi, & Välimäki, 2004). In everyday practice, the extent to which authority is used to override the patients` will should be decided on a case by case basis (O'Brien & Golding, 2003). Olsen (1998) has prescribed principles for ethical application of the least restrictive measures in clinical practice: 1) A patient's preference overrides the treatment alternative that is considered least restrictive when the patient's preference is safe, feasible, and efficacious enough to justify the use of resources; 2) The restriction should extend only to those behaviours that potentially harm a patient or others; 3) Restriction in one area does not justify restriction in another; 4) Restriction of the patient's capacity to choose is the primary guide to the degree of restrictiveness of particular measures; 5) Any coercion is a form of restriction; 6) Even when the patient's wishes are denied, the patient is entitled to an explanation of the restricted intervention, the legal and ethical justification, and the conditions under which respect for the patient's autonomy will be restored; 7) The actual condition of the restriction should be designated to fit the patient's specific situation; 8) Disagreement with treatment goals should never be the primary or only evidence of patient incompetence.

2.2.3 International recommendations for using coercive measures

Since the 1970s, both the United Nations (UN) and the Council of Europe have enhanced the protection of the dignity, human rights and fundamental freedom of persons with mental illness. Both organisations have paid attention especially to those who are subject to involuntary placement or treatment. In 1978, the Commission on Human Rights of the UN passed a resolution for the protection of those detained on the grounds of mental ill-health. The UN Resolution for the Protection of Persons with Mental Illness and for the Improvement of Mental Health was promulgated more than ten years later, in 1991. In 1977, the Council of Europe adopted a recommendation that identified the need for legal protection of people with a mental illness, followed by a recommendation regarding the rights of a patient detained for involuntary treatment in 1983, a recommendation on psychiatry and human rights in 1994, and the most recent recommendation in 2004 (Jones & Kingdon, 2005). These international recommendations are not legally binding, but they have a moral obligation. Both organisations have given their specific recommendations on the use of restraint and seclusion in psychiatry.

According to Principle 11 of the UN General Assembly: "*Physical restraint or involuntary seclusion of a patient shall not be employed except in accordance with the officially approved procedures of the mental health facility and only when it is the only means available to prevent immediate or imminent harm to the patient or others. It shall not be prolonged beyond the period which is strictly necessary for this purpose. All instances of physical restraint or involuntary seclusion, the reasons for them and their*

nature and extent shall be recorded in the patient's medical record. A patient who is restrained or secluded shall be kept under humane conditions and be under the care and close and regular supervision of qualified members of the staff. A personal representative, if any and if relevant, shall be given prompt notice of any physical restraint or involuntary seclusion of the patient."

Supplementing the Resolution adopted by the UN General Assembly, the World Health Organisation (WHO) published The Resource Book on Mental Health, Human Rights and Legislation in 2005, to provide guidance for mental health legislation around the world. With reference to using seclusion and restraint, the WHO recommends national legislation to ensure that seclusion and restraint are used as a last resort to prevent immediate or imminent harm and danger to self or another, for the shortest period of time, and never as a punishment or for the convenience of the staff. Infrastructure and resources should be arranged so that seclusion is not used as a substitute for an inadequate structure and lack of resources. Seclusion should be allowed only in accredited facilities and seclusion practices should be recorded in a reviewable register.

In accordance with the UN General Assembly, the Council of Europe has introduced the following special article, Article 27, concerning the use of seclusion and restraint in its Recommendation in 2004: *"Seclusion and restraint should only be used in appropriate facilities, and in compliance with the principle of least restriction, to prevent imminent harm to the person concerned or others, and in proportion to the risk entailed. Such measures should only be used under medical supervision, and should be appropriately documented. In addition, the person subject to seclusion or restraint should be regularly monitored; and the reasons for, and duration of, such measures should be recorded in the person's medical records and in a register."* Article 11 concerning professional standards encourages appropriate training of staff on *"measures to avoid the use of restraint and seclusion"* as well as on "*the limited circumstances in which different methods of restraint or seclusion may be justified, taking into account the benefits and risks entailed, and the correct application of such measures"*. Contrary to its earlier recommendations, the Council of Europe has not prohibited using mechanical restraint since 1994 (Kingdon et al., 2004).

In 1987, the European Convention for the Prevention of Torture and Inhuman or Degrading Treatment or Punishment (CPT) was organised by the Council of Europe to prevent violations against human rights, and enforcement of Article 3 of the European Convention on Human Rights which states that *"No one shall be subjected to torture or to inhuman or degrading treatment or punishment"*. The majority of the Council of Europe member states have ratified the CPT, which has the power to visit these states freely. The CPT has shown a particular interest in the use of seclusion and restraint in the clinical practice of psychiatric in-patient treatment (Niveau, 2004). As a result of the CPT visits to member states, violations have been reported in the implementation of the coercive measures in clinical psychiatric practice, which raise the risk of abuse and ill-treatment: imprecise decision making process, inaccurately defined duration of the measure, insufficient recording, and using the measures for punitive reasons.

Overall, although the use of coercion and coercive measures violates human rights ideals expressed in the international recommendations, these recommendations continue to acknowledge that the use of coercive measures is sometimes unavoidable and may be used as a last resort (Høyer et al., 2002).

2.2.4 Legislation in relation to the use of coercive measures

Increasing awareness of the ethical problems related to the use of coercive measures as well as international recommendations has reflected on the mental health legislation with pressure for more detailed regulations. A comprehensive research project regarding the legislation of involuntary placement and treatment of mentally ill patients across the European Union member states was carried out in 2001 (Salize, Dressing, & Peitz, 2002). The study indicated that almost all Member States had reformed their legislation during the 1980s and 1990s, but by the year 2001, only six states (Austria, Denmark, Germany, The Netherlands, Sweden and the UK) have detailed regulations of coercive measures, i.e., physical restraint, seclusion and chemical restraint. Furthermore, regulations among these six states varied: physical restraint was regulated in all of these states, seclusion was regulated in all of these states except Denmark, but chemical restraint was included in mental health legislation only in Denmark and Germany.

In the United States, many states have their own legislation and regulations regarding mechanical restraint and seclusion (Tardiff & Lion, 2008). The situation is complicated by the different standards of the two central health care institutions, the Centers for Medicare and Medicaid Services (CMS) and the Joint Commission on Accreditation of Health Care Organisations (JCAHO), which supervises hospital care receiving federal funding in all the states. Furthermore, the American Psychiatric Association (APA) Revised Task Force Report on seclusion and mechanical restraint has been in the process of preparation since 2003. The function of the APA`s Revised Task Force is to standardise the current practices by determining authorisation, reviewing procedures as well as limiting the duration of seclusion and mechanical restraint more strictly. The new task force, however, will determine the indications for using coercive measures more broadly than CMS and JCAHO, which restricted coercive measures to emergency situations (Tardiff & Lion, 2008).

In spite of these activities, the picture is far from clear regarding the standardised use of coercive measures both in the Europe and in the United States. A recently published study indicated that legislation and clinical practices regarding coercive measures are still heterogeneous, both within and among the 16 European countries studied (Steinert & Lepping, 2009). Even for the experts, it was difficult to reach a clear understanding of standard treatment and practices in their own countries and what the respective legislation does and does not allow.

2.3 Empirical research on the use of seclusion and mechanical restraint in psychiatry

2.3.1 Prevalence of the use of seclusion and mechanical restraint

The use of seclusion and mechanical restraint varies considerably across psychiatric institutions (Brown & Tooke, 1992; Busch & Shore, 2000). Among studies conducted mostly at the individual psychiatric hospital level, the proportion of secluded and mechanically restrained patients has varied from 0–66%, and the average duration of the measures has ranged from 1.5 hours to 50.6 hours (Brown & Tooke, 1992). Across psychiatric hospitals with a comparable admission and discharge policy and identical regulations, the proportion of the secluded or mechanical restrained patients has been found to vary from 0%–48% and the mean duration between 4.9–18 hours (Okin, 1985). Another study, comprising data from 23 psychiatric hospitals which operated under the same policies and procedures, indicated that the proportion of secluded or mechanically restrained patients varied from 0.4%–9.4% (Way & Banks, 1990). In neither of these studies can the differences be explained exclusively by patients' characteristics.

The use of seclusion and mechanical restraint varies geographically even across hospitals with similar administration and patient characteristics (Betemps, Buncher, & Oden, 1992; Betemps, Somoza, & Buncher, 1993; Korkeila, Tuohimäki, Kaltiala-Heino, Lehtinen, & Joukamaa, 2002). A recently published international review indicated variation in seclusion and mechanical restraint rates which were derived from multi-centre studies conducted in the US, Australia/New Zealand, the UK, Finland, Belgium, Germany, The Netherlands, and Switzerland (Janssen et al., 2008). The number of seclusion and mechanical restraint episodes varied from 3.7–110 per 1000 inpatient days (in the Netherlands and the USA, respectively), and between 1.3–1517 per 1000 admissions (in Australia/New Zealand and Belgium, respectively).

Clinical factors such as demographic characteristics or diagnosis of the treated patients as well as non-clinical factors such as divergent policies, treatment philosophies, staffing resources, attitudes, organisational structure and the climate of psychiatric units have been suggested as explanations for the varied rates (Angold, 1989; Brown & Tooke, 1992; de Cangas, 1993; Fisher, 1994; Larue, Dumais, Ahern, Bernheim, & Mailhot, 2009; Lendemeijer & Shortridge-Baggett, 1997). Furthermore, different methodologies and policies in defining seclusion and restraint and in specifying the patient populations studied make comparing seclusion and restraint rates across studies difficult (Busch & Shore, 2000; Fisher, 1994; Kaltiala-Heino, Korkeila, Tuohimäki, Tuori, & Lehtinen, 2000; Whittington et al., 2006).

2.3.2 Characteristics of the patient being targeted for seclusion and mechanical restraint

Studies on the use of seclusion and mechanical restraint, examining the influence of demographic and clinical factors, such as age, gender, diagnosis and acuteness, have produced contradictory results. Younger patients have been quite consistently found to be restrained and secluded the most frequently (Coutinho, G., Allen, & Adams, 2005; Forquer, Earle, Way, & Banks, 1996; Mason, 1998; Salib, Ahmed, & Cope, 1998; Smith et al., 2005). However, other research has failed to find an association between age and being restrained or secluded (Brown & Tooke, 1992; Kaltiala-Heino et al., 2000). Some research suggests that while younger patients are more likely to be restrained and secluded, older patients are restrained and secluded for a longer period of time (Smith et al., 2005), and that mechanical restraint is more frequently applied to younger patients and seclusion to older ones (Wynn, 2000). Findings regarding gender are inconsistent, with evidence suggesting that the use of mechanical restraint and seclusion is more frequent among female patients (Mason, 1998; Salib et al., 1998; Way & Banks, 1990), and contradictory evidence intimates that male patients are restrained and secluded more frequently (Carpenter, Hannon, McCleery, & Wanderling, 1988; Thompson, 1986), or differences cannot be found at all (Forquer et al., 1996; Hammill, 1987; Kaltiala-Heino et al., 2000; Kasper, Hoge, Feucht-Haviar, Cortina, & Cohen, 1997; Legris, Walters, & Browne, 1999). Higher rates of seclusion and mechanical restraint exist among psychotic patients compared with non-psychotic patients (Mason, 1998), and more precisely, among patients with schizophrenia (Betemps et al., 1993). However, personality disorders (Mason, 1998; Salib et al., 1998), mental retardation (Tardiff, 1981; Way & Banks, 1990), and organic (Kaltiala-Heino et al., 2000; Steinert et al., 2007) or substance use related disorders (Kaltiala-Heino et al., 2000) have also been associated with mechanical restraint and seclusion. Higher mechanical restraint and seclusion rates are reported soon after admission (El-Badri & Mellsop, 2002; Kirkpatrick, 1989; Thompson, 1986), and at hospitals providing acute care compared with hospitals providing chronic care (Crenshaw, Cain, & Francis, 1997). However, some evidence exists that the use of seclusion and mechanical restraint is not necessarily limited to acute patients (Forquer et al., 1996; Way & Banks, 1990). The contradictory results in evaluating clinical factors related to the use of coercive measures can be explained by the fact that studies were carried out in a single or in only a few hospitals or at one time-point only. Selective populations and differences in definitions are also a usual methodological problem in these studies.

2.3.3 Clinical indications for using seclusion and mechanical restraint

Empirical studies indicate that reasons for using seclusion and mechanical restraint varied in clinical practice. In many studies, actual violence has been identified as the most

frequent reason for seclusion and mechanical restraint, accounting for 20.8%–44% of the reasons for seclusion and mechanical restraint (Morrison & Lehane, 1996; Salib et al., 1998; Smith & Humphreys, 1997; Soloff & Turner, 1981; Thompson, 1986). Other evidence suggests that merely threatening violence accounts for 33%–62% of the reason, and is the most common determinant of seclusion and mechanical restraint (El-Badri & Mellsop, 2002; Swett, 1994; Way, 1986). And finally, some studies find that actual and threatening violence are equally important motivations for using seclusion and mechanical restraint (Oldham, Russakoff, & Prusnofsky, 1983). Curiously, some studies indicate that non-violent reasons are the most prominent motivation of seclusion and mechanical restraint. Disorientation or agitation has been reported to be a motivation in 21.1%–43.6% of seclusion or mechanical restraint episodes (Kaltiala-Heino, Tuohimäki et al., 2003; Mattson & Sacks, 1978; Oldham et al., 1983; Plutchik, Karasu, Conte, Siegel, & Jerrett, 1978). Furthermore, it is important to acknowledge that rather than associating the use of coercive measures exclusively with the behaviour of patients, the motivation for using these measures may be associated with other factors as well (Brown & Tooke, 1992; Fisher, 1994; Holzworth & Wills, 1999). Staff have reported, e.g., overcrowding, lack of privacy in the unit, as well as the presence of noisy patients as important factors in the use of seclusion (de Cangas, 1993).

2.3.4 Initiatives to reduce the use of seclusion and mechanical restraint

Since the beginning of the 21st century, successful initiatives to reduce the use of seclusion and mechanical restraint have started to emerge at the individual hospital level, mostly reported from the United States (Gaskin, Elsom, & Happell, 2007). Programmes contain individually planned influential factors, which have been systematically targeted to produce changes at different levels of organisation. Common factors typically included in these programmes comprise emphasising the impact of leadership on the organisational change, systematic and rigorous monitoring of the use of coercive measures, staff education and changing the therapeutic environment. Reduction efforts may be accompanied by an increase in violent incident rates, if the staff have not been given specific training or experience in the management of violent patients except by using seclusion or mechanical restraint (Khadivi, Patel, Atkinson, & Levine, 2004; McCue, Urcuyo, Lilu, Tobias, & Chambers, 2004). Evidence however indicates that reduction in the use of seclusion and mechanical restraint is possible without increasing assaults by the patients (Forster, Cavness, & Phelps, 1999; Hellerstein, Staub, & Lequesne, 2007; Kaltiala-Heino, Berg, Selander, Työläjärvi, & Kahila, 2007; Steinert et al., 2008; Sullivan et al., 2005).

2.3.5 The use of seclusion and mechanical restraint from patients` and professionals` perspectives

A majority of secluded patients view seclusion and mechanical restraint as negative intervention (e.g. Hoekstra, Lendemeijer, & Jansen, 2004; Holmes, Kennedy, & Perron, 2004; Meehan, Bergen, & Fjeldsoe, 2004; Wynn, 2004) and as a form of punishment (e.g. Holmes et al., 2004; Meehan et al., 2004), or even as a form of torture (Veltkamp et al., 2008). The opinions of mechanically restrained patients tended to be even more negative (Wynn, 2004). Patients in varying degree are, however, capable of discerning some positive aspects of seclusion (e.g. Meehan, Vermeer, & Windsor, 2000). These patients have reported that seclusion had a calming effect on them and they had found that seclusion was a protective environment made them feel safe. However, despite the calming effects experienced during seclusion, these same patients unanimously described strong negative feelings towards seclusion such as anger, disgust, helplessness, retribution and depression. Accordingly, when the patients were asked their opinions about curative aspects in a Finnish forensic hospital, they cited more disadvantages than advantages from restrictions and seclusion which, nevertheless, were considered helpful by one third of the patients (Vartiainen, Vuorio, Halonen, & Hakola, 1995).

Seclusion tends to remain a significant and negative experience in the minds of patients even after their discharge from hospital. In one study from the 1970s, patients' art renditions of their illness and treatment were derived from three distinct art therapy sessions: the first, two or three weeks after admission, the second, two to three weeks before discharge and, the final, one year after discharge (Wadeson & Carpenter, 1976). Patients were not specifically requested to produce the material associated with seclusion, but over one third of the secluded patients did so. Even one year after discharge, patients described that their experience of being secluded symbolised, for them, their entire mental illness. In another study, data from an extensive mail survey of former patients in New York State facilities were gathered (Ray, Myers, & Rappaport, 1996). Most of those respondents who reported being secluded or mechanically restrained during at least one treatment episode, recalled negative experiences associated with the measures. Being subjected to coercive measures tended to be associated with a more negative assessment of the overall hospitalisation stay, even two years after discharge.

The use of coercive measures is emotionally distressing and conflicting for the staff as well. Shame, fear and distress as well as concern over abusing patients` rights were associated with using seclusion and mechanical restraint in reports by the staff (Bonner, Lowe, Rawcliffe, & Wellman, 2002). However, the majority of psychiatric professionals tended to believe that coercive measures are used correctly (Wynn, 2003), which may reflect attitudinal adjustment to prevailing practices (Bowers, Alexander, Simpson, Ryan, & Carr-Walker, 2004; Bowers et al., 2007; Whittington, Bowers, Nolan, Simpson, & Neil, 2009). The staff assert that coercive measures are not only necessary for safety, but that they also have therapeutic value devoid of punitive connotation; whereas patients consider mechanical restraint and seclusion forms of punishment and of little therapeutic value

(Brown & Tooke, 1992; Heyman, 1987; Meehan et al., 2004; Wynaden et al., 2001). The two parties disagree about whether the use of seclusion and restraint is beneficial or not. Furthermore, intentions and emotional reactions of each party in relation to seclusion tended to be misinterpreted, e.g. the patients believe that the use of coercive measures reinforces staff control and power over them, whereas the staff are not sufficiently aware of the intense negative emotional reactions of the secluded patients. The two parties agree, however, on the necessity of coercive measures in the psychiatric setting when indication of violent behaviour appears.

2.4 The use of seclusion and mechanical restraint in Finnish psychiatry

Finland joined the United Nations (UN) in 1955, i.e. seven years after the UN`s Universal Declaration of Human Rights. However, due to Finland`s political relations with its Eastern European neighbors, human rights were not a burning issue, neither in the public discussion nor in the courts of law, until Finland joined the European Commission in 1989, and ratified the European Convention of Human Rights the following year (Suutala, 1999). The constitutional provisions regarding fundamental and human rights were comprehensively revised in 1995. The overseeing and monitoring of the legality of authorities` actions in the institutions where people are confined against their will, such as psychiatric hospitals, came under the purview of the Ombudsman of the Finnish Parliament in that year.

The two last decades have seen remarkable changes in how the legal system treats the patients' rights of self-determination in the health care system of Finland. The Act on the Status and Rights of Patients (Finlex, 2009a) emphasising the inherent right of the patient's self-determination in all health care in Finland went into effect in 1993. Furthermore, the limitation of self-determination in psychiatry is written into the Finnish Mental Health Act (Finlex, 2009b), which has changed three times (1978, 1991, 2002) during three decades and has become more restrictive and specific. Until June 2002, the Act referred to seclusion and mechanical restraints as well as involuntary medication merely by mentioning that coercion should be used on a patient in involuntary treatment only to the extent necessary to ensure the health and safety of the patient and of others. In practice, it was local instructions that regulated the use of seclusion and mechanical restraint at the hospital level. In 1997 the Deputy-Ombudsman of the Finnish Parliament gave the national report on the use of seclusion and mechanical restraint in Finnish psychiatric in-patient treatment (Paunio, 1998). According to that report, a considerable number of variations existed in applying these measures in individual hospitals, such as preferences, indications, duration, recording and administration.

The report of the Deputy-Ombudsman hastened the reform of the Mental Health Act, the intent of which was to specify the reasons for limiting the fundamental rights of the

involuntarily treated patient and to clarify and standardise coercive practices. The Revised Act came into force in June 2002. According to the current Act, a patient may be secluded or mechanically restrained from other patients involuntarily if 1) the patient would, on account of his or her behaviour or threats, probably harm himself or herself or others, 2) the patient by his or her own behaviour seriously hampers the treatment of other patients or seriously jeopardises his or her own safety or would probably cause significant damage to property or 3) it is necessary to isolate the patient due to other particular reasons. The use of seclusion had to be authorised by a doctor, who initiates and terminates the seclusion episode. A responsible nurse is nominated to assure that the secluded patient gets sufficient care as well as the possibility to interact with staff. The patient's (legal) representative is notified of the seclusion period if that period lasts more than twelve hours, or if a mechanical restraint episode lasting over eight hours is prescribed. The State Provincial Office must be notified of all seclusions and mechanical restraints of patients at two-week intervals.

As a part of the Nordic Paternalism and Autonomy study (Høyer et al., 2002), all civil admissions in the three Finnish university psychiatric centers during a six-month period in spring 1996 were retrospectively evaluated in order to study the use of coercion and coercive measures in Finland (Kaltiala-Heino et al., 2000). The material comprised 1 543 admissions of working-age patients. Seclusion was used in 6.6%, mechanical restraint in 3.8%, and involuntary medication in 8.4% of the treatment episodes (Kaltiala-Heino et al., 2000; Kaltiala-Heino, Tuohimäki et al., 2003; Kaltiala-Heino, Välimäki, Korkeila, Tuohimäki, & Lehtinen, 2003; Korkeila et al., 2002), but marked differences were found among the centres in their preferences for using these measures (Kaltiala-Heino, Välimäki et al., 2003; Korkeila et al., 2002). The duration of coercive measures was measured by the total time spent in seclusion or being mechanically restrained. The total mean time spent in seclusion during the treatment episode was 35.8 hours, whereas the total mean time spent in mechanical restraint was 19.4 hours (Kaltiala-Heino, Tuohimäki et al., 2003). Contribution of different clinical and non-clinical factors has been found. In the use of seclusion and mechanical restraint, Finland`s placement on the international statistics remains unclear (Kaltiala-Heino et al., 2000; Tuohimäki, 2007).

2.5 Summary of the literature review

A historical, ethical and legal framework for using coercive measures in psychiatry indicated that the use of coercive measures is not always avoidable, but their application should be minimal and as a last resort mainly as security measures. Empirical research indicates however, that rates, duration and indications of seclusion and mechanical restraint vary substantially across psychiatric hospitals even though operating under the same policies and regulations. The contribution of differing clinical and non-clinical factors has been found. Finland`s placement in international statistics on the use of

seclusion and mechanical restraint remains unclear, however (Kaltiala-Heino et al., 2000; Tuohimäki, 2007). The main problem in making international comparisons has been the lack of comparable outcome indicators. Overall, comparison of empirical studies regarding the use of seclusion and mechanical restraint is difficult because they have mostly been done only in one or a few hospitals or at one time-point only. Selective populations as well as differences in definitions and outcome indicators also produce a prevailing methodological problem in these studies. The current trend is the introduction of specific programmes to reduce the use of seclusion and mechanical restraint, but these designs are restricted mostly to individual hospital level. To discover interventions for reducing the use of seclusion and mechanical restraint at a broader level in psychiatric treatment, it would be necessary to study the persistence and patterns of these measures over time with a larger, or even a nationwide, psychiatric population.

Previous studies predominantly demonstrate that patients regarded the use of seclusion and mechanical restraint as a form of punishment and of little therapeutic value. But little is known about the persistence of the patient's view. Existing studies have been confined mostly to one or a few wards in the same hospital, at one time-point only, and with a restricted number of subjects studied. In a forensic psychiatry, where the patients require treatment under conditions of special security on account of their dangerousness, as well as violent and criminal propensities, it could be assumed that coercive measures are common. Unfortunately, studies regarding the secluded patients` viewpoint are sparse in the forensic setting.

3. Aims of the study

The main aim of the present series of five studies is to extend our knowledge regarding the use of seclusion and mechanical restraint in psychiatry both at the national and the international level as well as at the level of the individual patients. Specifically, the aims of the present study are the following:

1. To study the extent of using seclusion and mechanical restraint in psychiatric treatment at both national (paper I) and international levels (paper IV), and the trends in using them in Finnish psychiatry over 15 years (paper I)
2. To study characteristics of the secluded and mechanically restrained psychiatric in-patients, and changes in this population over time (paper III).
3. To study the clinical indications for using seclusion and mechanical restraint and the trends evolving over a 15-year span (paper II).
4. To study the use of seclusion from the perspective of the secluded patients in forensic and general psychiatric settings, and to study persistence of the patients` views (paper V).

4. Material and methods

4.1 Design

The study was based on three separate research projects:

1) The Finnish nationwide postal survey and register study regarding the use of seclusion and mechanical restraint was carried out over a 15-year span. The project started with contributions from the National Research and Development Centre for Welfare and Health and the National Public Health Institute in 1990. In order to evaluate the effect of the reform of the Mental Health Act in 2001, the latest update of the database was carried out in 2004. The study covered the years 1990, 1991, 1994, 1998 and 2004.

2) The international meta-analysis study of published, unpublished and ongoing research projects since 2000 regarding the use of coercive measures (seclusion, mechanical restraint, physical restraint) in different countries was carried out in 2008, and resulted in accessing databases from twelve countries in and outside Europe. Most of the authors of this study were members of the European Violence in Psychiatry Research Group (EViPRG), an active network of mental health researchers, educators and practitioners in 15 European countries, which was utilised in this project. The numbers for Finland were derived from the Finnish nationwide study mentioned above, and based on the data of the study year 2004.

3) The interview study on the secluded patients` opinions of the use of seclusion was carried out in 2003–2005 with the contribution of four Finnish psychiatric hospitals: the two forensic hospitals (Vanha Vaasa Hospital, Niuvanniemi Hospital), and the general psychiatric inpatient units of two hospital districts in Finland (Psychiatric Unit of South Ostrobothnia Central Hospital, Psychiatric Unit of Vaasa Central Hospital). In Finland, the psychiatric in-patient units of the 21 hospital districts offer secondary level psychiatric treatment for patients from well-defined catchment areas. The forensic psychiatric hospitals primarily admit patients who have been found not guilty by reason of insanity, but a small number of the patients, who, because of severe violent and non-compliant behavior, are transferred from general psychiatric hospitals. The present project received the approval of the ethics committee of Vaasa Central Hospital, as well as the permission from the Ministry of Social Affairs and Health, and from the study hospitals.

4.1.1 The material of the nationwide study

The material of the nationwide study was collected from two sources:

The Postal Survey Data covered all Finnish psychiatric hospitals reached through The Register of Institutions maintained by The National Research and Development Centre for

Welfare and Health. Data was collected during a specific week of December in 1990, 1991, 1994, 1998 and 2004 by using the structured postal survey. Data collection was approved by an official request from The National Public Health Institute and The National Research and Development Centre for Welfare and Health to all psychiatric hospitals. Medical directors of the psychiatric hospitals were approached and they distributed the study materials to all wards using seclusion and mechanical restraint for working-aged (18–64 years) patients. The clinical staff were requested to fill in the survey concerning each seclusion and mechanical restraint episode in the ward during the study week. A reminder letter was sent if the forms had not been returned at the end of the study year. As a result, the response rate was 92.3% in 1990, 98.1% in 1991, 98.3% in 1994, 100% in 1998 and 98.2% in 2004.

The survey was created for the purpose of this study and it included structured questions regarding the identification information of the psychiatric hospital, the demographic and clinical data of the secluded and mechanically restrained patient, the form (seclusion/mechanical restraint) and the duration of the coercive measure. The reasons for the seclusion and mechanical restraint episodes were elicited by means of an open-ended question. For each secluded and mechanically restrained patient, only the first episode during the study week was surveyed in detail. If the same patient had more than one episode during the study week, a request was submitted for the total number of consecutive episodes.

In total, the material consisted of 671 working-aged (18–64 years) secluded or mechanically restrained patients. Demographic information of the material is shown in Table 1. The Postal Survey Data was used in four original papers of this thesis (papers I, II, III and IV).

The Register Data covered all hospitalised working-age psychiatric patients in Finland during the survey study week in 1990, 1991, 1994, 1998 and 2004. The Register Data was gathered from The National Hospital Discharge Register authorised by The National Research and Development Centre for Welfare and Health Data. All hospitals in Finland are obliged to supply a detailed document of each patient to The National Hospital Discharge Register after the patient has been discharged from the hospital; it is therefore possible to obtain information on the inpatients at any given time. The information gathered for the purpose of this study included age, gender, main diagnosis and date of admission for each working-age psychiatric inpatient.

In total, the material comprised a database of 28 064 working-aged (18–64 years) psychiatric inpatients. Demographic information of the material is shown in Table 1. The Register Data was used in three original papers of this thesis (papers I, III, and IV).

Table 1. *Demographic information of the Survey Data (secluded and mechanically restrained patients) and the Registered Data (all hospitalised psychiatric inpatients)*

	The Survey Data (n = 671)		The Register Data (n = 28 064)	
Mean age, year (SD)	39.1	(11.4)	41.5	(12.04)
Gender (%)				
Male	374	(55.7)	16 111	(57.4)
Female	291	(43.4)	11 953	(42.6)
Missing	6	(0.9)		(-)
Main diagnosis (%)				
F00–F09	13	(1.9)	662	(2.4)
F10–F19	64	(9.5)	1172	(4.2)
F20–F29	431	(64.2)	18707	(66.7)
F30–F39	51	(7.6)	4154	(14.8)
F40–F49	1	(0.2)	768	(2.7)
F50–F59	2	(0.3)	99	(0.3)
F60–F69	15	(2.2)	1201	(4.3)
F70–F79	10	(1.5)	622	(2.2)
F80–F89	-	(-)	25	(0.1)
F90–99	-	(-)	32	(0.1)
Other than psychiatric main diagnosis	7	(1.1)	136	(0.5)
Missing	77	(11.5)	486	(1.7)

The Combined Data was formed by identifying the patients in The Survey Data from The Register Data by admission date, age, gender, and diagnosis. In 617 (92.1%) cases the information was complete and the patients could be matched to The Register Data. In the remaining cases (7.9%) there was some information lacking and the identification could not be carried out reliably. In order to insure the reliability of the results, the data of only those patients who were documented in The Survey Data and identified in The Register Data were used. The Combined Data was used in one original paper (paper III) in this thesis.

The two forensic psychiatric hospitals and the only Prison Mental Hospital in Finland, each situated in a different tertiary-level catchment area, were included regardless of their specific patient populations. This was considered reasonable because these hospitals work under the same Mental Health Act regarding the regulations of seclusion and mechanical restraint as the other psychiatric hospitals. This inclusion was checked so as not to bias the results.

4.1.2 The material of the international study

The meta-analysis regarding the use of coercive measures (mechanical restraint, seclusion, physical restraint) in different countries was carried out in 2008. The material was collected with a three-phase approach: In the first phase, the Medline Search was done by using the words "seclusion", "mechanical restraints" or "physical restraint" for the years 2000–2008. This search strategy resulted in 529 articles, but only six articles from five countries (Finland, Germany, Iceland, New Zealand, and Switzerland) met the following minimum inclusion criteria: The database regarding the use of coercive measures (mechanical restraint, seclusion, physical restraint) has to cover complete hospital populations, with specification of the study period and the well delineated catchment areas. Furthermore, the number of admissions or patients as well as the mean duration of the intervention must have been available. In the second phase, the abstracts in the two most relevant conferences regarding coercive issues in 2007 (The WPA Symposium on Coercive Treatment, 5th Conference on Violence in Clinical Psychiatry) were reviewed in order to identify unpublished databases as well as databases in the original language. In the second stage, databases from four countries (The Netherlands, Norway, Spain, and Japan) were traced. In the third phase, all the members of the European Violence in Clinical Psychiatry Research Group (EViPRG) were contacted in order to find additional unpublished databases as well as databases in the original language. At this stage, three additional databases were obtained from three countries (England, Wales, and Austria).

Pre-existing outcome indicators were used to enable international comparison of the use of seclusion, mechanical restraint and physical restraint (Steinert et al., 2007): 1) percentage of admissions exposed to a coercive measure, 2) mean duration of coercive measure, 3) mean number of coercive measures per patient who was exposed to measure, and 4) the coercive measures per 100 000 inhabitants per year. The outcome indicators were collated from the reported data. In some cases, if the data presented in the report did not provide enough material for calculating, the authors were contacted in order to obtain the relevant information. The outcome indicators of Finland were calculated by one of the authors (A.K-V.) by using the nationwide database (See paragraph 4.1.1.) regarding the study year 2004.

The material was used in one original paper of this thesis (paper IV).

4.1.3 The material of the interview study

The interview study was conducted between September 2003 and August 2004 at the forensic psychiatric hospitals in Finland (Vanha Vaasa Hospital, Niuvanniemi Hospital), and in the psychiatric inpatient units of two hospital districts in Finland (Psychiatric Unit of South Ostrobothnia Central Hospital, Psychiatric Unit of Vaasa Central Hospital). During the study period, there was a total of 431 in-patient beds at the forensic hospitals,

and a total of 260 in-patient beds in the psychiatric inpatient units of the two hospital districts studied.

All the secluded patients, who met the following inclusion criteria, were asked by the assisting nurses to participate in an interview: 1) age of 18–64 years; 2) Finnish-speaking; 3) sufficient coherency and emotional stability to understand the content of the informed consent and to be interviewed. The last criterion was evaluated by the assigned doctor. All interviews were conducted by one of the authors (A.K-V.) as soon as possible after the patient had been released from seclusion and had signed the informed consent. The median time between the termination of the seclusion episode and the interview was six days (range 0–47 days). The follow-up interview took place a half year later. The medical files of the subjects were reviewed by the same author (A.K-V.).

The interviews were carried out by using a structured interview which was created for the purpose of this study on the basis of reviewed empirical studies. The interview form was tested in a pilot study at Vanha Vaasa Hospital. Structured questions regarding beneficial, harmful and punitive aspects of the seclusion were followed by open-ended questions. The self-reported reasons for the seclusion episode as well as improvements regarding the present use of seclusion were elicited by means of an open-ended question. The medical files of the subjects were reviewed, and the following information was gathered: age, the main ICD-10 psychiatric diagnosis, number of the previous seclusion and mechanical restraint episodes prior to the index episode in the present treatment episode, and the indication for, and duration of, the index seclusion episode.

During the one-year recruitment period, 154 of the 246 secluded patients met the inclusion criteria. The most frequent reason for exclusion was the patient's incoherent and unstable condition (67.1%). Of the other excluded patients, 19.7% were excluded because of the inability to speak Finnish and 13.2% were not released from seclusion during the study period. Furthermore, there were 16 patients who were overlooked in the recruitment process. Among the patients included, 48 (31.2%) declined to participate, which left 106 patients for the study. Demographic information of the participating patients is shown in Table 2. Those who refused to participate did not differ from the participants in terms of age, gender or psychiatric diagnosis. Of the patients who participated in the initial interview, 83 (78.3%) participated in the follow-up interview. Those who did not participate in the follow-up study did not differ from the participants in terms of age and gender, but a proportion of schizophrenia related disorders was lower in the former group (69.6% vs. 91.6%, $p = 0.003$). Both in the initial and follow-up interviews, two thirds of the patients came from the forensic hospitals.

The forensic patients group and general patients group differ in terms of many background variables (Table 2). Compared to the general psychiatric patient group, the proportion of the male gender, a schizophrenia diagnosis, and the median number of previous seclusion episodes in their current treatment episode ranged higher than in the general psychiatric group, whereas the diagnosis of substance abuse disorders and mood disorders appeared more frequently in the latter patient group.

The interview material was used in one original paper of this thesis (V).

Table 2. *Demographic information of the interviewed subjects in forensic and general psychiatric hospitals*

	Tota (n = 106)		**Forensic group** (n = 68)		**General psychiatric group** (n = 38)		p
Median age, year (range)	38	(18–63)	34	(20–56)	41	(18–63)	0.66
Male, %	68.9		76.5		55.3		0.024
Main psychiatric diagnosis, % (95% CI)							0.001
Schizophrenia (F20–29)	86.8	(79.0–92.0)	95.6	(87.8–98.5)	71.1	(55.2–83.0)	
Substance use (F10–19)	3.8	(1.5–9.3)			10.5	(4.2–24.1)	
Mood disorder (F30–39)	7.5	(3.9–14.2)	2.9	(0.8–10.1)	15.8	(7.4–30.4)	
Personality disorder (F60–69)	1.9	(0.5–6.6)	1.5	(0.3–7.9)	2.6	(0.5–13.5)	
Median number of previous seclusions in present treatment episode (range)	4	(0–356)	4	(0–356)	1.5	(0–8)	0.024
Median duration of index seclusion, hours (range)	38.5	(5.6–11113.25)	174.5	(9.75–11113.25)	17.7	(5.6–360.5)	<0.001
Recorded indication for index seclusion, %, (95% CI)							0.009
Actual violence	28.3	(20.6–37.5)	29.4	(19.9–41.1)	26.3	(15.0–42.0)	
Threatening violence	17.0	(11.0–25.3)	22.1	(13.9–33.3)	7.9	(2.7–20.8)	
Damage/threat to property	7.5	(3.9–14.2)	5.9	(2.3–14.2)	10.5	(4.2–24.1)	
Agitation/disorientation	34.9	(26.5–44.4)	25.0	(16.2–36.4)	52.6	(37.3–67.5)	
Unclassified	12.3	(7.3–19.9)	17.6	(10.4–28.4)	2.6	(0.5–13.5)	

Keski-Valkama et al. Forensic and general psychiatric patients` view of seclusion: a comparison study. Journal of Forensic Psychiatry and Psychology, accepted for publication on October 28, 2009.

4.2 Variables

4.2.1 The variables of the nationwide study

The form of the coercive measure was defined as following: 1) seclusion, i.e. either as moving the patient to a locked seclusion room or locking up the patient in his or her own room, 2) mechanical restraint, i.e. confining the patient to a restraining bed. Physical restraint, chemical restraint, an order for isolation in an unlocked room, treatment on a locked ward or restraining the patient because of a somatic condition did not qualify as seclusion or mechanical restraint.

To study geographical variation in the use of seclusion and mechanical restraint, the study hospitals were classified *geographically into five different areas* according to tertiary-level catchment areas of specialist level health care services authorised by University Hospitals (Helsinki, Kuopio, Oulu, Tampere, and Turku).

Age was classified into four categories: 1) 18–29, 2) 30–39, 3) 40–49, and 4) 50–64 years old.

The main ICD-10 *diagnoses* as recorded on the medical files were divided into four diagnoses groups because the sample size in the use of seclusion and mechanical restraint was found to be too small in many main diagnosis group on the basis of the preliminary analysis (Table 1): 1) schizophrenia-related group (F20–F29), 2) substance use-related group (F10–F19) 3) mood disorder–related group (F30–F39), and 4) the rest of the diagnoses which included organic mental disorders (F00–F09), mental retardation (F70–F79), personality disorders (F60–F69), and some main diagnoses other than psychiatric.

The phases of hospital treatment were divided into three categories: acute phase (0–4 days), sub-acute phase (5–90 days), and chronic phase (91 days or more). The categories were determined by the regulations regarding the involuntary hospitalisation process of the Finnish Mental Health Act. The involuntary hospitalisation process is initiated by the observation period which may last for a maximum of four days. If the commitment criteria are fulfilled at the end of the observation period, the decision of involuntary detainment is valid for a maximum of three months. For the secluded and restrained patients the length of the hospital stay was calculated from the date of admission to the beginning of the index mechanical restraint or seclusion episode (papers II and III). For the non-secluded and non-restrained patients, the length of the hospital stay was calculated from the date of admission to the end of either the treatment episode or the study week (paper III).

The reason for using seclusion and mechanical restraint was recorded by the clinical staff on the survey form. Two of the authors (A.K-V and E.S.) independently classified answers to an open-ended question ("*What was the reason for the index seclusion or*

mechanical restraint episode?") into six categories on the basis of pre-existing Finnish classification (Kaltiala-Heino, Tuohimäki et al., 2003):
(1) *Actual violence*: This category comprised all completed or ongoing violent acts against self or other persons (e.g. hit, bite, scratch, kick, etc.). The reason was also classified within the actual violence category if it was reported by mentioning the word "violence" without specification. The further classification of the category was formed according to the target of violence: staff, other patients, and patient herself/himself.
(2) *Threatening violence*: This category included verbal threats of violence towards others or self (e.g. the patient said he or she was going to hit someone, threatening to cut himself or herself, etc.).
(3) *Damaging property:* This category contained completed or ongoing events of intentionally breaking property (e.g. by hitting, kicking, throwing, burning etc.).
(4) *Threatening damage of property:* This category included threats of breaking property (e.g. by hitting, kicking, throwing, burning etc.).
(5) *Agitation/disorientation:* This category included both agitated/excited/restless behaviour without any signs of actual or threatening violence, and disoriented/confused/irrelevant behaviour.
(6) *Unclassifiable:* The category included all the reasons which could not be classified into any of the five defined categories. After analysing the unclassifiable category more thoroughly, an additional a*ggression/dangerousness* category was formed. The category included verbalisation of aggression or dangerousness without any specification of the form or target of violent behaviour.

If there were several reasons for the seclusion and mechanical restraint, they were prioritised in the following order: actual violence, threatening violence, damaging property or threatening damage of property, agitation/disorientation, aggression/dangerousness, and unclassified. In the case of disagreements, consensus was achieved by discussion. Damaging property and threatening damage of property categories were put together because of the small case number. The final categories agreed upon for use in the statistical analyses were the following: 1) actual violence, 2) threatening violence, 3) damaging/threatening damage of property, 4) agitation/disorientation, 5) aggression/dangerousness, and 6) unclassified reasons.

4.2.2 The variables of the international study

Pre-existing outcome indicators were used to enable international comparison concerning the use of mechanical restraint, seclusion and physical restraint (Steinert et al., 2007): 1) percentage of admissions exposed to the coercive measure, 2) mean duration of the coercive measure, 3) mean number of coercive measures per patient who was exposed to measure, and 4) coercive measures per 100 000 inhabitants per year.

4.2.3 The variables of the interview study

Question 1 (*"What was the reason for the index seclusion?"*) was classified into five categories by using the same pre-existing classification by Kaltiala-Heino et al. (2003), described in paragraph 4.2.1.: 1) actual violence, 2) threatening violence, 3) damaging/threatening damage of property, 4) agitation/disorientation, and 5) unclassified reasons. Questions 2 and 3 (*"Did you regard being in seclusion as a positive experience"? "Did you regard being in seclusion as a negative experience"*) were divided into three classes: 1) positive, 2) negative, and 3) mixed. Questions 4 and 5 (*"Did you regard being in secluded as beneficial?", "Did you regard being secluded as harmful?"*) were divided into three classes: 1) beneficial, 2) harmful, and 3) mixed. Question 6 (*Did you regard being secluded as punishment?"*) was dichotomised: 1) yes or 2) no. Questions 7 and 8 *("Did you regard staff visits as sufficiently or insufficiently frequent during seclusion? Did you regard the possibility to discuss with the staff as sufficient or insufficient during seclusion?)* were divided into three classes: 1) sufficient 2) insufficient, and 3) indifferent. The last class was formed after a preliminary analysis of the responses. Question 9 (*"Did you undergo debriefing after seclusion?"*) was dichotomised: 1) yes or 2) no. If the patient responded that he/she had not received debriefing, the additional question *"Would you have needed it"* was asked and also dichotomised. Question 10 (*"What alternatives, if any, would you have proposed instead of, or before, your seclusion: a) activities, b) medication, c) rest in your own room, d) verbal de-escalation, or e) something else?"*) was classified according to five pre-determined categories: 1) activities, 2) medication, 3) rest in own room, 4) verbal de-escalation, 5) unclassified. Question 11 ("*Do you think that seclusion is necessary in psychiatric hospitals?"*) was dichotomised: 1) yes or 2) no. Question 12 (*"On the basis of your experience, do you have any improvement to propose for the present use of seclusion"*). Additional question *"Why"* followed by questions 4, 5, 6, and the open-ended question 12. The responses to these open-ended questions were later codified by creating mutually exclusive categories.

In the follow-up study, the questions regarding the reasons for the index episode, the experience of being secluded, the effects of seclusion, and the punitive aspect of seclusion were repeated in order to study the persistence of the secluded patients` views (the questions 1–6). Classification remained identical with the baseline study.

4.3 Data analysis

4.3.1 The data analysis of the nationwide study

The data were analysed by using the SPSS statistical software versions 11.5 (paper I), version 15.0 (paper II), version 16.0 (paper III), and version 17.0 (paper V), and the Confidence Interval Analysis (CIA) software version 2.0.0 (papers I, II, III, V).

In paper I, both the Survey Data regarding the number of the secluded and restrained and The National Hospital Discharge Register Data regarding the number of all psychiatric in-patients in a psychiatric hospital during the study week were used to calculate the relative risk (RR) for being in seclusion or mechanical restraint. RR was calculated per study year with the year 1990 as the reference year. The Kruskall-Wallis test was used to evaluate the differences in the duration of seclusion and mechanical restraint incidents between the study years. To study a geographical variation in the use of seclusion and mechanical restraint, the prevalence of the secluded and restrained patients per 100 000 inhabitants in the five tertiary-level catchment areas was used. The regional variation and its persistence over time were studied by comparing prevalence among these areas separately for each study year using $\chi 2$- tests.

In paper II, prevalence (with 95% confidence intervals) of the reasons for seclusion or mechanical restraint was reported both in total and separately for each year. Prevalence of the indication for seclusion or mechanical restraint was reported with 95% confidence intervals of demographic (age, gender) and clinical (main diagnosis, phase of hospital treatment) subgroups of restrained or secluded patients in the whole sample. $\chi 2$-test was used to evaluate, whether the reasons for coercive measures differed between mechanical restraint and seclusion. This test was also used when comparing the reasons for seclusion or mechanical restraint or in the different sub-groups of the mechanical restraint or secluded patients (age, gender, main diagnosis, phase of hospital treatment).

Because of skewed distributions, medians as well as minimum and maximum values (range) of the duration of seclusion and mechanical restraint due to different reasons were reported. The Kruskal-Wallis test was used to evaluate the differences. Analysis was done separately for each study year. An additional analysis was carried out regarding the duration of mechanical restraint and seclusion due to actual violence against a specific target (staff, fellow patient, patient himself or herself).

All analyses were performed in two ways: one combined seclusion and mechanical restraint; the other analysed them separately, but analyses, stratified for age, gender, main diagnosis and phase of hospital treatment, were only done combining seclusion and mechanical restraint, because the sample size was insufficient for separate stratified analyses.

In paper III, seclusion and mechanical restraint were analysed together. Prevalence of the use of coercive measures was reported with 95% confidence intervals of all psychiatric in-patients. Multivariate binary logistic regression analyses were used to calculate which

groups of in-patients were at risk of being coerced. Being the subject of a coercive measure (yes/no) was used as a dependent variable. Demographic (age, gender) and clinical variables (diagnosis, phase of hospital stay prior to the index mechanical restraint or seclusion episode) were used as independent variables. In the first phase, four different analyses of multivariate logistic regression were conducted to ascertain if the effect of the independent variable remained stable over time. In each model, an interaction term between the study year and each independent variable was entered separately into the model with all the other independent variables. If an interaction was found between a certain independent variable and the study year (i.e. the risk profile varied over time), risks of coercive measure for that variable were calculated with a multivariate logistic regression model separately for each year. In the next phase, for those variables which had no interaction with a study year (i.e. the risks are stable over study years), all study years were combined and risks were obtained from a one multivariate logistic regression model. This model included all independent variables (age, gender, diagnosis, phase of hospital stay and study year), and those interaction terms with the year which was found to be significant in the first phase.

4.3.2 The data analysis of the international study

In order to render the information derived from different databases comparable, the outcome indicators (percentage of admissions exposed to coercive measure, mean duration of coercive measure, mean number of coercive measures per patient who was exposed to measure, coercive measures per 100 000 inhabitants per year) were collected from the data sources. If the indicators were not available, they were calculated from the reported data or the authors of the databases were contacted in order to obtain the relevant information from their databases.

4.3.3 The data analysis of the interview study

Because of skewed distributions, medians as well as minimum and maximum values (range) of continuous background variables (age, number of previous seclusions, and duration of index seclusion) were reported, and a non-parametric Mann-Whitney U test was conducted to explore the differences between forensic and general psychiatric groups. Distributions of the categorised background variables (gender, main psychiatric diagnosis, reasons for the index seclusion) were reported with 95% confidence intervals, and χ^2 -test was used to evaluate the differences between the two groups. This test was also used, when analysing differences in the respective views of the forensic and general psychiatric patients (reasons for seclusion, positive and negative aspects of seclusion, sufficiency of interaction). The McNemar test was used to test any changes in the patients` views

(positive/negative/mixed, beneficial/harmful/mixed, and punishment/not-punishment) between the time shortly after release from seclusion and a half year later.

5. Results

5.1 The use of coercive measures at the national and international level in psychiatry (papers I, IV)

National statistics

The total number of seclusion and mechanical restraint episodes during the study week was 263 in 1990, 242 in 1991, 217 in 1994, 161 in 1998, and 129 in 2004 in Finland. Both the total number of the secluded and mechanically restrained patients and the total number of all hospitalised psychiatric patients decreased over this 15 - year span (Table 3). However, when compared to the first study year 1990, the relative risk for being secluded had not changed during the study time. The decrease was only slight, but not linear, in the risk of being mechanically restrained (Table 3).

The duration of the mechanical restraint episodes did not change ($\chi^2_{(4)}$ = 2.455, p=0.653), but the duration of the seclusion episodes did increase over the 15-year period ($\chi^2_{(4)}$ = 36.111, p<0.001) (Table 4).

Differences in the population – based rates (mechanically restrained or secluded patients per 100 000 inhabitants) were found among the five tertiary-level catchment areas administered by five University Hospitals (Helsinki, Kuopio, Oulu, Tampere, Turku) (Table 5). Areas administered by the University Hospitals of Turku and Tampere consistently used less mechanical restraint than the other areas. While the latter seemed to compensate for a low use of mechanical restraint with higher use of seclusion, the former displayed quite low figures in both measures. In the area administered by the Oulu University Hospital, however, there was a tendency to prefer mechanical restraint over seclusion.

International statistics

The forms, frequency and duration of coercive measures (mechanical restraint, seclusion, physical restraint) varied widely among the twelve countries studied, and initiatives to reduce the use of coercive measures appeared in several countries (Table 6). In the United Kingdom, physical restraint is favoured over seclusion, which is rarely used, and mechanical restraint is not allowed at all. Mechanical restraint is preferred over seclusion in some countries (Austria, Germany, Japan, Norway), whereas seclusion is favoured in others (Finland, The Netherlands, New Zealand, Switzerland). The net bed, i.e. a bed with either metal bars or netting designed to confine a patient inside, is used in Austria in addition to mechanical restraint and seclusion. In Iceland, seclusion and mechanical restraint were suppressed some years ago and physical restraint is used instead. The approximation of the use of seclusion varied between less than one admission exposed to the measure (Norway and Wales) and 15.6 (New Zealand) exposed admissions, whereas

the use of mechanical restraint varied between 1.2 (The Netherlands) and 8.0 (Germany) admissions exposed to the measure. In Finland, these figures were 8.3 (seclusion) and 5.0 (mechanical restraint) admissions exposed to these measures. The approximated prevalence of coercive episodes per 100 000 inhabitants per year varied between 580 (Austria) and 16.1 (Japan). In Finland, the figures were 89.4 per 100 000 inhabitants in seclusion, and 38.7 in mechanical restraint. The mean duration of seclusion and mechanical restraint was available from five countries and two extremes were found: In Norway, an average seclusion episode lasted three hours and mechanical restraint episode 7.9 hours in contrast to 294 hours average duration of a seclusion episode and 1182 hours of a mechanical restraint episode in The Netherlands. In Finland, an average duration of seclusion was 22.8 hours and mechanical restraint 11.1 hours.

Table 3. *The proportion (%) of and the risk (RR, 95% CI) for being secluded (S) or mechanically restrained (R) during the study week for all patients in psychiatric hospitals*

Study year	Number of all psychiatric in-patients	Number of S patients	S patients of all psychiatric in-patients (%)	RR(95% CI)	Number of R patients	R patients of all psychiatric in-patients (%)	RR(95% CI)
1990	6417	94	1.5	1.0	75	1.2	1.0
1991	6103	107	1.8	1.19 (0.91–1.58)	43	0.7	0.60 (0.42–0.88)
1994	5785	71	1.2	0.84 (0.62–1.14)	86	1.5	1.27 (0.94–1.73)
1998	5170	59	1.1	0.78 (0.56–1.08)	40	0.8	0.66 (0.45–0.97)
2004	4589	59	1.3	0.88 (0.64–1.21)	36	0.8	0.67 (0.45–0.99)

Keski-Valkama et al. (2007) A 15-year national follow-up: legislation is not enough to reduce the use of seclusion and restraint. Social Psychiatry and Psychiatric Epidemiology 42: 747 – 752.

Table 4. *Median duration (minutes) of mechanical restraint and seclusion episodes for each study year*

Study year	Mechanical restraint			Seclusion		
	Median duration, minutes	min	max	Median duration, minutes	min	max
1990	425	30	3045	335	15	5040
1991	322.5	50	3950	540	15	7515
1994	400	55	10080	672.5	40	10080
1998	442.5	45	5159	727.5	55	8520
2004	420	30	3705	1025	120	7590

Keski-Valkama et al. (2007) A 15-year national follow-up: legislation is not enough to reduce the use of seclusion and restraint. Social Psychiatry and Psychiatric Epidemiology 42: 747 – 752.

Table 5. *The regional variation in the population standardised rates (per 100 000 inhabitants) of secluded and mechanically restrained patients between the five tertiary-level catchment areas (University Hospitals of Helsinki, Kuopio, Oulu, Tampere, and Turku) according to study year*

Study	Number of secluded patients							Number of mechanically restrained patients						
year	Helsinki	Kuopio	Oulu	Tampere	Turku	$\chi^2_{(4)}$	p	Helsinki	Kuopio	Oulu	Tampere	Turku	$\chi^2_{(4)}$	p
1990	1.8	2.7	1.7	1.6	1.6	4.2	0.375	1.6	2.7	2.6	0.4	0.3	30.6	<0.001
1991	1.9	2.5	0.8	2.9	2.4	10.4	0.034	1.2	0.9	1.4	0.6	0	10.6	0.032
1994	1.4	0.3	0.3	2.9	1.3	32.5	<0.001	2.1	2.6	2.3	0.4	1.0	20.6	<0.001
1998	1.1	1.0	0.3	1.9	1.0	10.3	0.036	1.0	1.3	1.0	0.3	0.3	10.4	0.034
2004	1.1	0.9	0.6	1.3	1.7	5.2	0.267	1.2	1.1	0.6	0.08	0.1	17.8	<0.001

Keski-Valkama et al. (2007) A 15-year national follow-up: legislation is not enough to reduce the use of seclusion and restraint. Social Psychiatry and Psychiatric Epidemiology 42: 747 – 752.

Table 6. *The use of coercive measures (mechanical restraint, seclusion, physical restraint, net bed) in different countries*

Country	Data source	Mechani-cal restraint	Seclusion	Physical restraint	Net bed	Admission exposed (%)	Mean duration of measure (hours)	Mean number of measures per patient	Measures per 100 000 inhabitants	Reduction initiatives
Austria (unpublished)	One hospital serving a complete catchment area in 2006	**	*		*	35.6	4.5	3.3	580	
England (unpublished)	Four hospitals serving a catchment area of 1.200.000 inhabitants in 2005 (recruitment period of six months)		(*)	**		Seclusion 2.0 Physical restraint 7.3	20 minutes	4.17	77.2	Clinical Practice Guidelines for Violence (NICE, 2005); Mental Health Policy Implementation Guide: Developing Positive Practice to support Safe and Therapeutic Management of Aggression and Violence in Mental Health Inpatient settings (NIMHE, 2004)
(unpublished)	Seven hospital units and 35 community facilities, serving a catchment area of 662,890 inhabitants in July 2005 – December 2007			**		Physical restraint 2.5	10 minutes	4.05	52.4	
Finland (Keski-Valkama et al.. 2007)	Catchment area of 5 200 000 inhabitants, i.e. the complete population in 2004 (National survey, recruitment period of one week)	*	**			Mechanical restraint 5.0 Seclusion 8.3	11.1 22.8	1.4	38.7 89.4	
Germany (Steinert et al., 2007)	Ten hospitals in 2004	**	*			Mechanical restraint 8.0 Seclusion 3.6	9.8 6.6	4.7	314	Prevention of Violence and Coercion in Psychiatry Working Group since 1997
Iceland (Snorrason, 2007)	Catchment area 316.000 inhabitants, i.e. the complete population	No coercive measures used, but 1/1 nursing								

Table 6. continued

Country	Data source	Mechani-cal restraint	Seclusion	Physical restraint	Net bed	Admission exposed (%)	Mean duration of measure (hours)	Mean number of measures per patient	Measures per 100 000 inhabitants	Reduction initiatives
Japan (Hatta et al., 2003)	Nine hospitals in 2000	**	*			Mechanical restraint 4.1 Seclusion 4.9	68.0 98.0	1.6	16.1	
The Netherlands (Abma, Widdershoven, & Lendemeijer, 2005)	12 hospitals in 2003	*	**			Mechanical restraint 1.2 Seclusion 11.6	1182 294	2.2 3.0	12.6 115.8	Quality of Coercion in Psychiatry; Directives for freedom restrictions in 2001
New Zealand (El-Badri & Mellsop, 2002)	One hospital serving a catchment area of 313.000 inhabitants (nine months recruitment period)		**	*		Seclusion 15.6 Physical restraint 6.5	14 (median)	1.5	41.2	
Norway (Pedersen, Halting, & Røhme, 2007)	Catchment area of 3.547.000 inhabitants, i.e. the complete population in 2005 (National survey)	**	*			Mechanical restraint 2.6 Seclusion 0.07	7.9 3.0	4.7 5.6	149.8	
Spain (unpublished)	One unit in University hospital serving a catchment area of 330.000 inhabitants	**		*		13.5	16.4	1.4	45.2	
Switzerland (Martin, Bernhardsgrutter, Goebel, & Steinert, 2007)	Seven hospitals in 2004	*	**			Mechanical restraint 3.1 Seclusion 8.7	41.6 41.6	1.4	20.9 75.9	Coercive Measures Working Group since 2001, collaboration with German Working Group since 2006
Wales (unpublished)	Two hospitals serving catchment area of 526.000 inhabitants		(*)	**		Seclusion 0.03 Physical restraint 5.7	9 min	3.2	39.7	(see initiatives in England)

** the measure is commonly used; * the measure is less commonly used in comparison to a different one wich is preferred; (*) the measure occurs, but is rarely used.

Steinert et al. (2009) Incidence of seclusion and restraint in psychiatric hospitals: a literature review and survey of international trends. Social Psychiatry and Psychiatric Epidemiology, September 2, (Epub ahead of print).

5.2 Characteristics of the secluded and mechanically restrained psychiatric patients (paper III)

As a whole, the proportion of the youngest (18–29 years) psychiatric in-patients tended to increase over time, and the proportion of the oldest (50–64 years) in-patients decreased in the early stages of the study period but subsequently increased (Table 7). Over time, a majority of the psychiatric in-patients belonged to the schizophrenia-related group. Proportions of both the mood disorder–related group and the substance use-related group increased over the study time mostly at the expense of the schizophrenia-related group. The proportion of the acute phase group (i.e. treatment episode has already lasted fewer than four days) increased slightly and the sub-acute phase group (i.e. treatment episode has lasted from five days to three months) increased clearly, whereas the proportion of chronic phase group (i.e. treatment episode has lasted over three months) decreased.

Age

In total, the prevalence of the use of seclusion or mechanical restraint was the lowest in the oldest in-patient group and highest in the youngest in-patient groups (Table 7). Annual prevalence indicated however, that the differences disappeared during the study period. This was confirmed by the multivariate logistic regression analysis. An interaction was found between age and study year ($p = 0.004$), i.e., the age profile of the secluded or restrained patients varied during the study years. Annual logistic regression analyses indicated, that compared to the youngest age group, the older patients had a statistically significantly lower risk of being mechanically restrained or secluded at the beginning of the 15-year study period (Table 8). However, the risk tended to migrate towards older age groups during the study period, though not statistically significantly.

Gender

The prevalence of the use of seclusion or mechanical restraint was almost identical for both genders overall and annually (Table 7) Because no interaction was found between gender and study year ($p = 0.245$) (i.e., females` risk of being secluded or mechanically restrained did not differ that of the males over the study years), in multivariate logistic regression all the years were combined. This analysis indicated that gender is not a statistically significant independent risk factor (OR for females 1.18, 95% CI = 0.99–1.39, $p = 0.058$).

Diagnosis

In total, seclusion or mechanical restraint was most frequently used in the treatment of the substance use–related group, followed by the schizophrenia–related group (Table 7). Annual prevalence indicated that the prevalence of the use of seclusion or mechanical

restraint in different diagnosis groups was quite stable over time. No interaction was found between diagnosis and study year ($p = 0.246$), i.e. the diagnostic profile of the secluded or mechanically restrained patients remained the same during the study years, so study years were combined for further analysis. Multivariate logistic regression analysis indicated that the diagnosis is a statistically significant independent risk factor for the use of seclusion or mechanical restraint ($p < 0.001$). Both the mood disorder–related group (OR = 0.49, 95% CI = 0.37–0.66) and the other main diagnosis groups (OR = 0.43, 95% CI = 0.32–0.59) had a lower risk of being secluded or mechanically restrained than the schizophrenia group. The risk of the substance use group did not differ statistically significantly from the schizophrenia group (OR = 1.30, 95% CI = 0.96–1.77).

Phase of hospital stay

Seclusion or mechanical restraint was most frequently used in the acute phase of psychiatric treatment both in total and over time (Table 7). No interaction was found between the phase of hospital stay and the study year ($p = 0.286$), i.e., the profile remained the same during the study years. Multivariate logistic regression analysis, in which study years were combined, indicated that the phase of hospital stay is a statistically significant independent risk factor ($p < 0.001$). Compared to the chronic phase group, the acute group had a higher risk (OR = 6.77, 95% CI = 5.43–8.44) while the sub-acute phase group had a lower risk (OR = 0.80, 95% CI = 0.65–0.98) of being secluded or mechanically restrained.

Table 7. *Distribution of age, gender, diagnosis and phase of hospital stay among all psychiatric in-patients (n = 28 064) during the study weeks in 1990, 1991, 1994, 1998 and 2004, and proportion (% with 95 % CI) of the mechanically restrained or secluded (n = 617) in each sub-group*

	1990			1991			1994			1998			2004			Total		
	All	R/S*		All	R/S		All	R/S		All	R/S		All	R/S		All	R/S	
	N	%	(95 % CI)	N	%	(95 % CI)	N	%	(95 % CI)	N	%	(95 % CI)	N	%	(95 % CI)	N	%	(95 % CI)
Age (years)																		
18–29	972	3.8	(2.8–5.2)	1109	3.2	(2.4–4.5)	1115	3.2	(2.3–4.4)	1025	1.8	(1.1–2.8)	1146	1.8	(1.2–2.8)	5367	2.8	(2.4–3.2)
30–39	1686	2.8	(2.1–3.7)	1595	2.9	(2.2–3.9)	1486	2.6	(1.9–3.5)	1324	1.9	(1.3–2.8)	988	2.1	(1.4–3.2)	7089	2.5	(2.2–2.9)
40–49	1674	2.4	(1.8–3.2)	1552	2.4	(1.7–3.3)	1789	2.6	(2.0–3.5)	1472	1.4	(0.9–2.2)	1176	1.5	(1.0–2.4)	7663	2.1	(1.8–2.5)
50–64	2085	1.5	(1.1–2.2)	1847	0.8	(0.5–1.3)	1395	1.6	(1.1–2.5)	1349	2.0	(1.4–2.9)	1269	2.5	(1.8–3.5)	7945	1.6	(1.4–1.9)
Gender																		
Male	3741	2.4	(1.9–2.9)	3544	2.2	(1.7–2.7)	3385	2.4	(2.0–3.0)	2944	1.5	(1.1–2.0)	2497	2.2	(1.7–2.9)	16111	2.2	(1.9–2.4)
Female	2676	2.5	(2.0–3.2)	2559	2.2	(1.7–2.9)	2400	2.6	(2.0–3.3)	2226	2.1	(1.6–2.8)	2092	1.7	(1.3–2.4)	11953	2.3	(2.0–2.5)
Diagnosis																		
Schizophrenia	4457	2.5	(2.1–3.0)	4256	2.4	(2.0–2.9)	3911	2.9	(2.4–3.4)	3323	1.9	(1.5–2.5)	2760	2.0	(1.6–2.6)	18707	2.4	(2.2–2.6)
Substance use	198	8.6	(5.4–13.3)	190	4.2	(2.2–8.1)	240	6.2	(3.8–10.1)	275	2.9	(1.5–5.6)	269	6.7	(4.3–10.3)	1172	5.6	(4.5–7.1)
Mood disorder	592	1.7	(0.9–3.1)	670	2.1	(1.3–3.5)	874	1.0	(0.5–2.0)	937	1.3	(0.7–2.2)	1081	1.1	(0.6–1.9)	4154	1.4	(1.1–1.8)
Other	981	1.7	(1.1–2.8)	822	1.2	(0.7–2.2)	661	1.2	(0.6–2.4)	617	1.1	(0.6–2.3)	465	1.3	(0.6–2.8)	3546	1.4	(1.0–1.8)
Phase of hospital stay**																		
Acute	251	13.5	(9.9–18.3)	322	11.5	(8.5–15.4)	437	11.2	(8.6–14.5)	420	7.4	(5.3–10.3)	433	9.2	(6.9–12.3)	1863	10.3	(9.0–11.7)
Sub-acute	2342	1.2	(0.9–1.8)	2454	1.4	(1.7–2.8)	2680	1.8	(1.3–2.3)	2703	1.2	(0.9–1.7)	2599	1.2	(0.9–1.7)	12778	1.4	(1.2–1.6)
Chronic	3824	2.4	(2.0–3.0)	3327	1.9	(1.5–2.4)	2668	1.8	(1.4–2.4)	2047	1.3	(0.9–1.9)	1557	1.3	(0.9–2.1)	13423	1.9	(1.7–2.1)
Total	6417	2.4	(2.1–2.8)	6103	2.2	(1.9–2.6)	5785	2.5	(2.1–2.9)	5170	1.8	(1.4–2.2)	4589	2.0	(1.6–2.5)	28064	2.2	(2.0–2.4)

* Restraint/secluded psychiatric in–patients

** Length of hospital stay prior to the index restraint/seclusion episode or at the end of the study week: acute (0 – 4 days), sub-acute (5 – 90 days), chronic (over 90 days

Keski-Valkama et al. (2009) Who are the restrained and secluded patients: a 15-year nationwide study. Social Psychiatry and Psychiatric Epidemiology, October 21, (Epub ahead of print).

Table 8. *Annual risks of being mechanically restrained or secluded in different age groups (adjusted for gender, diagnosis and phase of hospital stay)*

	1990			1991			1994			1998			2004		
	OR	95% CI	p	OR	95% CI	p	OR	95% CI	p	OR	95% CI	p	OR	95% CI	p
Age			0.001			<0.001			0.146			0.724			0.240
18–29	1.00	reference		1.00	reference		1.00	reference		1.00	reference		1.00	reference	
30–39	0.64	0.41–0.00		0.89	0.56–1.40		0.72	0.45–1.16		1.04	0.56–1.94		1.02	0.54–1.90	
40–49	0.57	0.36–0.91		0.74	0.46–1.19		0.74	0.47–1.17		0.83	0.44–1.59		0.73	0.38–1.40	
50–64	0.37	0.23–0.61		0.24	0.13–0.46		0.53	0.31–0.91		1.17	0.63–2.17		1.36	0.77–2.40	

Keski-Valkama et al. (2009) Who are the restrained and secluded patients: a 15-year nationwide study. Social Psychiatry and Psychiatric Epidemiology, October 21, (Epub ahead of print).

5.3 Clinical indications for using seclusion and mechanical restraint in psychiatric practices (paper II)

In total, the most usual motivation for using seclusion or mechanical restraint was agitation/disorientation, followed by actual violence, threatening violence, unclassified reasons, breaking property/threatening to break property, and aggression/dangerousness, in descending order (Table 9). Agitation/disorientation remained the most frequent reason over the 15 -year span, whereas actual violence tended to decrease proportionately until 2004 when it increased again to the level of the early 1990s. Seclusion and mechanical restraint were motivated by different reasons ($p < 0.001$). The proportion of agitation/disorientation was even higher when comparing mechanical restraint with seclusion, whereas the unclassified reasons were a more frequent motivation for seclusion. Otherwise, the motivations for seclusion or mechanical restraint did not essentially differ (Table 9).

Median durations for seclusion and mechanical restraint revealed no statistically significant difference based on the reasons given for them. However, when the median duration of the measures which were due to actual violence, was analysed separately according to target, the duration was 650 minutes when a patient was suicidal, 592 minutes when the target was staff, and 240 minutes when the target was a fellow patient ($p = 0.004$). When seclusion and mechanical restraint were analysed separately, the median durations of seclusion differed according to the target ($\chi^2_{(2)} = 11.331$, $p = 0.003$), but this was not the case in the use of mechanical restraint.

No statistically significant difference emerged in the reasons for seclusion and mechanical restraint or among age groups ($\chi^2_{(15)} = 21.253$, $p = 0.129$) (Table 10). The reasons for the measures, however, did differ in episodes involving male and female patients ($\chi^2_{(5)} = 14.681$, $p = 0.012$). Actual violence was more frequently the motivation for using seclusion and mechanical restraint on women, whereas aggression/dangerousness was more frequently the reason with male patients. The motivation differed statistically significantly among the diagnostic groups ($\chi^2_{(15)} = 58.709$, $p < 0.001$). Of the diagnostic groups involved, applying mechanical restraint or seclusion for actual violence was less common in the substance use disorders – related group, whereas agitation/disorientation was more directly associated to that diagnosis group. The motivation differed statistically significantly among the phases of the treatment ($\chi^2_{(10)} = 63.656$, $p < 0.001$). Actual violence as a reason for using seclusion or mechanical restraint occurred less often in the acute phase of treatment. Instead, in this phase of treatment, agitation/disorientation was more often the motivation. Unclassified reasons were most frequently the motivation in the chronic phase of treatment.

Table 9. *Prevalence (% with 95% CI) of reasons among the combined mechanical restraint and seclusion episodes (n = 668) during the study weeks in 1990, 1991, 1994, 1998 and 2004, and among mechanical restraint (n = 278) and seclusion (n = 390) episodes separately*

	1990			1991			1994			1998			2004			Total		
	%	(n)	95 % CI	%	(n)	95 % CI	%	(n)	95 % CI	%	(n)	95 % CI	%	(n)	95 % CI	%	(n)	95 % CI
Actual violence																		
Total	*26.0*	(44)	20.0–33.1	*26.0*	(39)	19.6–33.6	*17.3*	(27)	12.2–24.0	*15.3*	(15)	9.5–23.7	*26.3*	(25)	18.5–36.0	*22.5*	(150)	19.5–25.8
Restraint	*26.7*	(20)	18.0–37.6	*14.0*	(6)	6.6–27.3	*14.1*	(12)	8.3–23.1	*15.4*	(6)	7.3–29.7	*30.6*	(11)	18.0–46.9	*19.8*	(55)	15.5–24.9
Seclusion	*25.5*	(24)	17.8–35.2	*30.8*	(33)	22.9–40.1	*21.1*	(15)	13.2–32.0	*15.3*	(9)	8.2–26.5	*23.7*	(14)	14.7–36.0	*24.4*	(95)	20.4–28.9
Threatening violence																		
Total	*9.5*	(16)	5.9–14.8	*6.0*	(9)	3.2–11.0	*10.3*	(16)	6.4–16.0	*13.3*	(13)	7.9–21.4	*12.6*	(12)	7.4–20.8	*9.9*	(66)	7.8–12.4
Restraint	*13.3*	(10)	7.4–22.8	*0*	(0)	-	*12.9*	(11)	7.4–21.7	*17.9*	(7)	9.0–32.7	*8.3*	(3)	2.9–21.8	*11.2*	(31)	8.0–15.4
Seclusion	*6.4*	(6)	3.0–13.2	*8.4*	(9)	4.5–15.2	*7.0*	(5)	3.1–15.5	*10.2*	(6)	4.7–20.5	*15.3*	(9)	8.2–26.5	*9.0*	(35)	6.5–12.2
Damaging property																		
Total	*4.1*	(7)	2.0–8.3	*10.0*	(15)	6.2–15.8	*7.7*	(12)	4.5–13.0	*6.1*	(6)	2.8–12.7	*1.1*	(1)	0.2–5.7	*6.1*	(41)	4.6–8.2
Restraint	*2.7*	(2)	0.7–9.2	*9.3*	(4)	3.7–21.6	*9.4*	(8)	4.9–17.5	*5.1*	(2)	1.4–16.9	*2.8*	(1)	0.5–14.2	*6.1*	(17)	3.9–9.6
Seclusion	*5.3*	(5)	2.3–11.9	*10.3*	(11)	5.8–17.5	*5.6*	(4)	2.2–13.6	*6.8*	(4)	2.7–16.2	*0*	(0)	-	*6.2*	(24)	4.2–9.0
Agitation/disorientation																		
Total	*43.2*	(73)	36.0–50.7	*40.7*	(61)	33.1–48.7	*57.1*	(89)	49.2–64.6	*52.0*	(51)	42.3–61.7	*44.2*	(42)	34.6–54.2	*47.3*	(316)	43.6–51.1
Restraint	*48.0*	(36)	37.1–59.1	*62.8*	(27)	47.9–75.6	*60.0*	(51)	49.4–69.8	*56.4*	(22)	41.0–70.7	*52.8*	(19)	37.0–68.0	*55.8*	(155)	49.9–61.5
Seclusion	*39.4*	(37)	30.1–49.5	*31.8*	(34)	23.7–41.1	*53.5*	(38)	42.0–64.6	*49.2*	(29)	36.8–61.6	*39.0*	(23)	27.6–51.7	*41.3*	(161)	36.5–46.2
Aggression/dangerousness																		
Total	*4.7*	(8)	2.4–9.1	*7.3*	(11)	4.1–12.7	*3.8*	(6)	1.8–8.1	*1.0*	(1)	0.2–5.6	*11.6*	(11)	6.6–19.6	*5.5*	(37)	4.0–7.5
Restraint	*4.0*	(3)	1.4–11.1	*9.3*	(4)	3.7–21.6	*2.4*	(2)	0.7–8.2	*0*	(0)	-	*5.6*	(2)	1.5–18.1	*4.0*	(11)	2.2–7.0
Seclusion	*5.3*	(5)	2.3–11.9	*6.5*	(7)	3.2–12.9	*5.6*	(4)	2.2–13.6	*1.7*	(1)	0.3–9.0	*15.3*	(9)	8.2–26.5	*6.7*	(26)	4.6–9.6
Unclassified																		
Total	*12.4*	(21)	8.3–18.3	*10.0*	(15)	6.2–15.8	*3.8*	(6)	1.8–8.1	*12.2*	(12)	7.2–20.2	*4.2*	(4)	1.7–10.3	*8.7*	(58)	6.8–11.1
Restraint	*5.3*	(4)	2.1–12.9	*4.7*	(2)	1.3–15.5	*1.2*	(1)	0.2–6.4	*5.1*	(2)	1.4–16.9	*0*	(0)	-	*3.2*	(9)	1.7–6.0
Seclusion	*18.1*	(17)	11.6–27.1	*12.1*	(13)	7.2–19.7	*7.0*	(5)	3.1–15.5	*16.9*	(10)	9.4–28.5	*6.8*	(4)	2.7–16.2	*12.6*	(49)	9.6–16.2

Table 10. *Prevalence (% with 95% CI) of reasons for using mechanical restraint or seclusion according to demographic and clinical sub-groups*

	Actual violence			Threatening violence			Damaging property			Agitation/ disorientation			Aggression/ dangerousness			Unclassified		
	%	(n)	95 % CI	*%*	(n)	95 % CI	*%*	(n)	95 % CI	*%*	(n)	95 % CI	*%*	(n)	95 % CI	*%*	(n)	95 % CI
Age years																		
18–29	*29.4*	(48)	23.0–36.9	*10.4*	(17)	6.6–16.1	*6.1*	(10)	3.4–10.9	*42.9*	(70)	35.6–50.6	*3.7*	(6)	1.7–7.8	*7.4*	(12)	4.3–12.4
30–39	*19.6*	(37)	14.6–25.8	*13.2*	(25)	9.1–18.8	*8.5*	(16)	5.3–13.3	*44.4*	(84)	37.5–51.6	*6.9*	(13)	4.1–11.4	*7.4*	(14)	4.5–12.1
40–49	*18.2*	(32)	13.2–24.5	*8.5*	(15)	5.2–13.6	*6.8*	(12)	3.9–11.5	*51.7*	(91)	44.4–59.0	*6.2*	(11)	3.5–10.8	*8.5*	(15)	5.2–13.6
50–64	*24.3*	(33)	17.8–32.1	*6.6*	(9)	3.5–12.1	*2.2*	(3)	1.3–6.3	*49.3*	(67)	41.0–57.6	*5.1*	(7)	2.5–10.2	*12.5*	(17)	8.0–19.1
Gender																		
male	*19.9*	(74)	16.2–24.3	*11.8*	(44)	8.9–15.5	*6.2*	(23)	4.2–9.1	*44.4*	(165)	39.4–49.4	*7.3*	(27)	5.0–10.4	*10.5*	(39)	7.8–14.0
female	*26.1*	(76)	21.4–31.5	*7.6*	(22)	5.1–11.2	*5.8*	(17)	3.7–9.2	*50.5*	(147)	44.8–56.2	*3.4*	(10)	1.9–6.2	*6.5*	(19)	4.2–10.0
Diagnosis																		
Schizophrenia	*25.4*	(114)	21.6–29.7	*9.8*	(44)	7.4–12.9	*6.9*	(31)	4.9–9.7	*44.4*	(199)	39.9–49.1	*5.4*	(24)	3.6–7.9	*8.0*	(36)	5.9–10.9
Substance use	*3.0*	(2)	0.8–10.4	*6.1*	(4)	2.4–14.6	*1.5*	(1)	0.3–8.1	*77.3*	(51)	65.8–85.7	*10.6*	(7)	5.2–20.3	*1.5*	(1)	0.3–8.1
Mood disorder	*23.2*	(13)	14.0–35.8	*16.1*	(9)	8.7–27.8	*5.4*	(3)	1.8–14.6	*44.6*	(25)	32.4–57.6	*1.8*	(1)	0.3–9.5	*8.9*	(5)	3.9–19.3
Other	*25.5*	(13)	15.6–38.9	*13.7*	(7)	6.8–25.7	*3.9*	(2)	1.1–13.2	*27.5*	(14)	17.1–15.0	*5.9*	(3)	2.0–15.9	*23.5*	(12)	14.0–36.8
Phase of hos-pital stay *																		
Acute	*11.2*	(23)	7.6–16.3	*8.8*	(18)	5.6–13.5	*4.4*	(9)	2.3–8.1	*65.9*	(135)	59.1–72.0	*5.9*	(12)	3.4–10.0	*3.9*	(8)	2.0–7.5
Sub-acute	*26.0*	(47)	20.1–32.8	*12.2*	(22)	8.2–17.7	*7.2*	(13)	4.3–11.9	*45.9*	(83)	38.8–53.1	*2.8*	(5)	1.2–6.3	*6.1*	(11)	3.4–10.6
Chronic	*30.2*	(78)	25.0–36.1	*9.3*	(24)	6.3–13.5	*7.4*	(19)	4.8–11.2	*32.9*	(85)	27.5–38.9	*7.4*	(19)	4.8–11.2	*12.8*	(33)	9.3–17.4

* Length of hospital stay prior to the index restraint/seclusion episode: acute 0–4 days, sub-acute 5–90 days, chronic over 90 days

Keski-Valkama et al. (2009) The reasons for using restraint and seclusion in psychiatric inpatient care: a nationwide 15-year study. Nordic Journal of Psychiatry, November 2, (Epub ahead of print).

5.4 Perspective of secluded patients (paper V)

Baseline interview

The most frequently self-reported reasons for seclusion were unclassified reasons, agitation/disorientation and actual violence (Table 11). Self-reported reasons showed statistically significant differences between the forensic and general psychiatric groups. The most common self-reported reasons given by the forensic group were unclassified reasons and actual violence, whereas the most common reason in the general psychiatric group was agitation/disorientation. Inconsistency between the self-reported reasons and that recorded in the files was found in 23.6% of the cases. The proportion did not differ in the forensic and general patients' groups (23.5% vs. 23.7%; $\chi^2_{(1)} = .000$, p = 0.986). In both groups, unclassified reasons were over-reported by the patients.

Table 11. *Self-reported reasons for the index seclusion in forensic and general psychiatric groups*

	Total (n = 106)			**Forensic group** (n = 68)			**General psychiatric group** (n = 38)			
	%	(n)	95%CI	%	(n)	95%CI	%	(n)	95%CI	p
										0.015
Actual violence	*27.4*	(29)	19.8–36.5	*30.9*	(21)	21.2–42.6	*21.1*	(8)	11.1–36.4	
Threatening violence	*8.5*	(9)	4.5–15.4	*11.8*	(8)	6.1–21.5	*2.6*	(1)	0.5–13.5	
Damage/ threat to property	*6.6*	(7)	3.2–13.0	*5.9*	(4)	2.3–14.2	*7.9*	(3)	2.7–20.8	
Agitation/ disorientation	*28.3*	(30)	20.6–37.5	*17.6*	(12)	10.4–28.4	*47.4*	(18)	32.5–62.7	
Unclassified	*29.2*	(31)	21.4–38.5	*33.8*	(23)	23.7–45.7	*21.1*	(8)	11.1–36.4	

Keski-Valkama et al. Forensic and general psychiatric patients` view of seclusion: a comparison study. Journal of Forensic Psychiatry and Psychology, accepted for publication on October 28, 2009

Over half of the patients regarded being secluded a negative experience in both groups studied (Table 12). In contrast, more beneficial than harmful effects of seclusion were reported. Of the subjects who regarded seclusion as at least partly beneficial (beneficial; both beneficial and harmful), 82.8% were able to give a reason for their opinions: learn control of one`s own behaviour (37.7%), positive effect on psychiatric condition (30.2%), own privacy (20.8%). Other explanations were also given, such as safety issues, learn to suppress personal feelings and sober up. Of the subjects who regarded seclusion as at least partly harmful (harmful; both harmful and beneficial), 63.4% were able to state a reason for their opinion: negative effect on psychiatric condition (38.5%), experience of

stigmatisation or ostracisation (34.6%), negative attitude to treatment (11.5%), loss of acquired permissions (11.5%), and fear of re-seclusion (3.9%).

Two thirds of the patients perceived seclusion as a form of punishment (Table 12). The forensic group perceived seclusion as a form of punishment statistically significantly more often than the general psychiatric group. Of the subjects who regarded seclusion as a punishment, 55.1% were able to give a reason for their opinion: seclusion was believed to be a consequence of "bad behaviour" (42.1%), the reason for seclusion was unknown or insignificant (18.4%), inhumane setting (13.2%), and loneliness (10.5%). Other explanations were also given, such as being locked-up, the lengthy duration of seclusion, and being under continuous surveillance.

The number of staff visits to the seclusion room was reported as sufficient by a half of the patients, but only one third were satisfied with opportunities for discussion with the staff during seclusion (Table 12). Out of the patients who did not receive debriefing after release from seclusion, 77.8% reported that they would have needed it. No statistically significant differences were found between the forensic patient group and general patient group.

Most of the patients considered seclusion as a necessary measure in psychiatric hospitals (Table 12). Actual or threatening violence (64%) was the most frequent justification given by the patients, followed by agitation/disorientation (28%). Other explanations were also given (8%), e.g. the patient's wilfulness. The opinions of forensic and general psychiatric groups did not differ statistically significantly. However, a half of the patients (50.9%) proposed at least one alternative that would have helped them better than the index seclusion: resting in one's own room (51.9%) followed by verbal de-escalation (46.3%), medication (40.7%), and activities (18.5%). Other alternatives proposed were (25.9%), e.g. relaxing music, transfer to a more heavily supervised ward and better explanation of ward rules. The following improvements in current seclusion arrangements were proposed by half of the subjects (51.9%): more interaction with the staff (27.2%), the possibility to use toilet facilities and to take care of their own hygiene (25.5%), more comfortable bed and bedclothes (21.8%), smoking provisions (14.5%), more therapeutic furnishing (12.7%), alarm bell (10.9%), shorter duration of seclusion episodes (9.1%), and ordinary clothing (7.3%).

Follow-up interview

Of those patients who participated in the follow-up interview, 68.7% still remembered the reason for the index seclusion, 14.5% were confused regarding it, and 16.9% had no recall.

The majority of the participants had maintained their original view of seclusion as positive, negative, or mixed (McNemar = 2.500, p = 0.287). A separate analysis of the forensic group and the general psychiatric group did not alter this finding. The patients' view as to whether the index seclusion was beneficial or harmful proved to be unstable over the study time (McNemar = 10.273, p = 0.016). The majority of the patients (93.8%) who had found both beneficial and harmful aspects shortly after their release from seclusion changed their views to either totally beneficial (62.5%) or totally harmful (31.2%) at the follow-up interview. Of those patients who regarded seclusion as a totally

beneficial measure shortly after release, 44.4% changed their views at least partly at the follow-up interview. Of those patients who regarded seclusion as a totally harmful measure shortly after release, 37% reversed their views at least partly by time of the follow-up interview. A separate analysis of the forensic group and the general psychiatric group resulted in differences only in the former group (McNemar = 7.900, $p = 0.048$), whereas changes tended to be alike in the latter group, though not statistically significant. The comparison between the rates of change in regard to seclusion as punishment was not statistically significant ($p = 0.607$). A separate analysis of forensic and general psychiatric groups resulted in no differences either.

Table 12. *Forensic and general psychiatric patients' experiences of seclusion, interactions with staff during and after seclusion, and opinion of seclusion as a necessary option (n (%, 95% CI))*

	Total (n = 106)			**Forensic group** (n = 68)			**General psychiatric group** (n = 38)					
	%	(n)	95 %CI	*%*	(n)	95 %CI	*%*	(n)	95 %CI	χ^2	f	p
Seclusion as										0.590	2	0.745
Positive	*19.1*	(17)	12.3–28.4	*19.3*	(11)	11.1–31.3	*18.8*	(6)	8.9–35.3			
Negative	*57.3*	(51)	46.9–67.1	*59.6*	(34)	46.7–71.4	*53.1*	(17)	36.5–69.1			
Mixed	*23.6*	(21)	16.0–33.4	*21.1*	(12)	12.5–33.3	*28.1*	(9)	15.6–45.4			
Seclusion as										1.043	2	0.594
Beneficial	*50.6*	(42)	40.1–61.1	*54.4*	(31)	41.6–66.6	*42.3*	(11)	25.5–61.1			
Harmful	*22.9*	(19)	15.2–33.0	*21.1*	(12)	12.5–33.3	*26.9*	(7)	13.7–46.1			
Mixed	*26.5*	(22)	18.2–36.9	*24.6*	(14)	15.2–37.1	*30.8*	(8)	16.5–50.0			
Seclusion as												
Punishment	*66.3*	(69)	56.8–74.7	*73.1*	(49)	61.5–82.3	*54.1*	(20)	38.4–69.0	3.887	1	0.049
Not punishment	*33.7*	(35)	25.3–43.2	*26.9*	(18)	17.7–38.5	*45.9*	(17)	31.0–61.6			
Visits during seclusion										3.923	2	0.141
Sufficient	*51.0*	(49)	41.2–60.8	*56.9*	(37)	44.8–68.2	*38.7*	(12)	23.7–56.2			
Insufficient	*37.5*	(36)	28.5–47.5	*30.8*	(20)	20.9–42.8	*51.6*	(16)	34.8–68.0			
Indifferent	*11.5*	(11)	6.5–19.4	*12.3*	(8)	6.4–22.5	*9.7*	(3)	3.3–24.9			
Discussions during seclusion										1.154	2	0.562
Sufficient	*34.4*	(32)	25.5–44.5	*36.9*	(24)	26.2–49.1	*28.6*	(8)	15.3–47.1			
Insufficient	*45.2*	(42)	35.4–55.3	*41.5*	(27)	30.4–53.7	*53.6*	(15)	35.8–70.5			
Indifferent	*20.4*	(19)	13.5–29.7	*21.5*	(14)	13.3–33.0	*17.9*	(5)	7.9–35.6			
Debriefing										2.575	1	0.109
Performed	*18.9*	(18)	12.33–28.0	*23.4*	(15)	14.8–35.1	*9.7*	(3)	3.3–24.9			
Not performed	*81.1*	(77)	72.0–87.7	*76.6*	(49)	64.9–85.3	*90.3*	(28)	75.1–96.7			
Seclusion is necessary												
Yes	*92.8*	(90)	85.9–96.5	*89.2*	(58)	79.4–94.7	*100*	(32)	–	3.714	1	0.054
No	*7.2*	(7)	3.5–14.2	*10.8*	(7)	5.3–20.6	–	(–)	–			

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6. Discussion

6.1 Methodological aspects of the present study

6.1.1 Strengths and limitations in the nationwide study

The data of the present study had the advantages of nationwide coverage, a long follow-up period, and a high response rate. Furthermore, special attention was paid to the collection of data so that it performed exactly the same procedure in each study year. The main limitation of the study was that collection of the Postal Survey Data was carried out during only one week per year with only the first coercive episode of each patient during this week documented in detail. Representativeness would have been better, if it had been possible to collect data during another season as well. However, there was no reason to suspect that the week chosen for study differed from the other weeks of the year. Furthermore, the risk of interfering with routines in the ward was avoided by using this relatively short period for data collection. It is possible that occasionally some episodes that took place were not recorded in the study form. Hence, the data may underestimate the number of mechanically restrained and secluded patients as well as the number of coercive episodes of the patients.

Due to the proficiency of the Finnish official registration system, it was possible to access the entire country for the exact number and characteristics of patients in psychiatric facilities during the study week. The Finnish National Hospital Discharge Register enabled the researchers to report the coercion episodes in relation to patients at risk as well as to calculate the risk of being mechanically restrained or secluded in different patient groups. The reliability of the databases was confirmed by pairing The Postal Survey Data to The Register Data assuring almost complete matching. Less than 8% of the cases do not match due to missing some data on the survey forms.

The diagnoses were not made by structured interviews, but were collected by the informants from the patient medical files. In this regard, the basic diagnostic procedures in Finland have been proven to be reliable (Isohanni et al., 1997; Pihlajamaa et al., 2008).

Survey and register research methods have the advantage of producing large amounts of structured data for quantitative analyses, but these methods always miss nuances that could be seized upon by using qualitative methods such as a participating observation.

6.1.2 Strengths and limitations in the international study

Comparable data have been lacking regarding international variations on the use of coercive measures. In order to compare the outcome indicators in different countries, the results of this study must be looked upon as preliminary with the following limitations:

Definitions of coercive measures may vary across countries. For example, in the United Kingdom, the term "restraint" means only physical restraint, i.e. holding a patient upright or on the floor, whereas in all other countries the same term means mechanical restraint. Physical restraint is required in an unknown proportion of cases to transfer the patient to the seclusion room or to mechanical restraint, but the use of physical restraint is not registered separately in these cases. Hence, the data on the use of seclusion and mechanical restraint in countries other than the UK contain an unknown proportion of physical restraint. The use of chemical restraint is not a subject of the present study and therefore, it cannot determine the extent of its use, although it undoubtedly plays a role in addition to other coercive measures. No concensus exists on whether medication given urgently to manage aggression or agitation is a form of coercion or a form of patient-focused intensive care (Currier, 2003; Kaltiala-Heino, Välimäki et al., 2003; Steinert & Lepping, 2009). Furthermore, apart from restraint and seclusion, other freedom-restricting procedures, e.g. enhanced observation, may be in use in some countries. There is no shared opinion as to whether some of these interventions should be registered as a coercive measure or not. Overall, this discussion indicates that the boundary between overt and covert coercion is difficult to determine. For this reason, only the distinct coercive measures, i.e. mechanical restraint, physical restraint and seclusion have been incorporated in the present study.

The quality of the different databases should be taken into account as well. The studies included represent data varying from a single hospital serving a defined catchment area to complete nationwide surveys. Underestimation may be a problem in at least some of the reported databases. The included patient populations may also be different. Some of the outcome indicators, particularly the mean duration of a coercive measure and the number of coercive measures per 100.000 inhabitants, can be influenced by outliers, i.e. single cases subjected to prolonged episodes or high numbers of coercive measures. Reporting the median would have minimised the influence of outliers, but unfortunately, the mean was predominately available in the databases studied. In order to interpret the mean durations, one must take into account that the median is usually lower than the mean because the latter includes outliers, which consist of very long coercive episodes. Despite the problem with outliers, the number of coercive measures per 100 000 inhabitants was chosen as one outcome indicator because it allows a preliminary comparison of different countries with different systems of mental health care (Kaltiala-Heino, 1999). Other outcome indicators, 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. Overall, the comparison of international statistics can be established as quite reliable due to the use of different outcome indicators in the present study.

The data from the United States is not included in the present study despite the availability of some data (Betemps et al., 1993; Crenshaw et al., 1997; Curie, 2005; Donat, 2003; Smith et al., 2005). The decision to exclude the US was made because the existing data had already been published in the 1990s and no information was available regarding the number of admissions or patients treated. Furthermore, the mental health care system of the US is rather different from that of many other countries and, within the country itself, differs markedly among the fifty federal states. The use of coercive measures occurs in a wide range of different settings – in emergency rooms, public and private mental hospitals, State Mental Hospitals, and Veterans Affairs Administration Hospitals (Curie, 2005).

6.1.3 Strengths and limitations in the interview study

The present study had the advantages of multi-centre as well as follow-up study design. The recruitment was organised in a systematic manner within a one-year span, and as a result, the number of subjects studied was higher than previous interview studies in this field. In order to interpret comparison between the forensic group and the general psychiatric group, however, it is important to consider that these groups were relatively small, and some of the possible findings might have remained statistically insignificant due to this reason, i.e., true differences between the two groups might exist where statistically significant associations had not been found (Type II error).

One of the main limitations of the present study in line with previous studies regarding the view of the secluded patients was systematic exclusion of the most disturbed patients. Coercive measures are undoubtedly applied most frequently in this patient group, but unfortunately at present, there is no opportunity to get information of seclusion practices based on their views due to the ethical standard that requires scientific research to procure informed signed consent. Determination and assessment on decision making capacity is a problematic issue with severe mentally ill patients (Appelbaum, 2006; Dunn, Nowrangi, Palmer, Jeste, & Saks, 2006; Jeste et al., 2007; Wirshing, Wirshing, Marder, Liberman, & Mintz, 1998). The degree of capacity needed to consent to research participation, how to deal with fluctuating capacity during the research project, and the legitimate extent of surrogate consent for the participation of incompetent patients are re-occurring questions open to various interpretations in research dealing with mentally ill patients (Appelbaum, 2006). The informed consent procedure is, of course, essential to avoid potential malpractices; but on the other hand, the exclusion of patients on the basis of their incompetent status might contravene their competent preferences as well as the prospect of better quality of care. Research context sets different requirements for levels of functional abilities, i.e., a higher level of decisionmaking capacity is demanded for high-risk procedures compared to a lower level for low-risk study procedures (Dunn et al., 2006). Practicable screening instruments to assess decisional capacity are still at the stage of development (Dunn et al., 2006; Jeste et al., 2007). In the present study, one fifth of all the

secluded patients in the one year recruitment period did not possess the inclusion criteria for sufficient coherency nor the emotional stability to understand the content of the informed consent and to be interviewed. The criterion was assessment by the assigned doctor on the basis of his or her clinical experience regarding the patient. It is possible that some potential subject was excluded by following this process. Furthermore, in order to interpret the findings of this study, one must take into account the group that refused to participate. Their demographic characteristics did not differ from the participants` characteristics. Instead, their refusal may be a reflection of even higher levels of negative connotations associated with being secluded.

Despite the growing number of studies from the perspective of the secluded patients, there is a lack of established measures in this field probably due to the heterogeneity of the secluded patient population. A structured interview was therefore developed for the purpose of this study, based on empirical research reviewed in the literature. The intelligibility of questions was tested in a pilot study. All the interviews were conducted by one of the authors in order to insure the uniformity of the data collection. The interviewer was previously familiar with many patients in one of the two forensic hospitals, where the study was conducted (Vanha Vaasa Hospital). However, no differences between the two forensic hospitals were detected in the viewpoint of the patient on the preliminary analyses. The qualitative material in the present study remained too sparse for qualitative analysis, mainly because the subjects differed widely in their ability to verbalise their own experiences. Regardless of the level of verbal faculties, however, the subjects embraced the study earnestly.

6.2 Trends in the use of coercive measures in psychiatry (papers I, III, IV)

6.2.1 International variation in the use of coercive measures

The main finding of the present study indicated that preferences, frequency and duration of coercive measures (mechanical restraint, seclusion, physical restraint) varied widely among the countries studied. Differences in preferences of specific forms of coercive measures have also been noticed previously (Janssen et al., 2008; Steinert & Lepping, 2009; Whittington et al., 2006), which may reflect the different national cultural traditions and values within which a psychiatric system is situated (Bowers et al., 2007). For example in The Netherlands, involuntary medication is regarded as more invasive and a more serious violation of personal integrity compared to the use of seclusion and mechanical restraint. However, the extensive use of seclusion and mechanical restraint found in the present study as well as the highest rates of in-patient violence in Europe found previously by Nijman et al. (2005) can be at least partly explained by this negative

attitude toward chemical restraint. In contrast, in the the UK, seclusion is rarely used, mechanical restraint is not allowed but physical restraint is subtituted. It has been suggested that involuntary medication is more likely to be used in the UK than in other countries, where seclusion and mechanical restraint are used (Jarrett, Bowers & Simpson, 2008). Unfortunately, equivalent data on the use of rapid tranquillisation across countries is not available yet. Overall, a plethora of contrasting judgments on behalf of and against all coercive measures and their intrusiveness can be found. It seems that those coercive measures that are not familiar tend to be rejected as archaic psychiatry, whereas the more personal the involvement associated with these measures, the more they are believed in (Bowers et al., 2004; Exworthy, Mohan, Hindley, & Basson, 2001; Holt, 2004; van Doeselaar, Sleegers, & Hutschemaekers, 2008; Whittington et al., 2009).

Finland's rank in international statistics has remained unclear (Kaltiala-Heino et al., 2000; Tuohimäki, 2007). This has been due to a lack of comparable outcome indicators. The present preliminary international study tended to indicate that the use of coercive measures in our country falls between the extremes estimated by admissions exposed to coercive measures, the mean duration of measures as well as the number of measures per 100 000 inhabitants. The estimation is in line with another recently published international review (Janssen et al., 2008) which included the Finnish study by Kaltiala-Heino et al. (2000). Comparison of the international statistics must be undertaken bearing in mind that the figures are approximations and derived from databases, where different methodologies have been used. Beyond methodological difficulties, this preliminary comparison across countries allows, however, an international transparency and the opportunity for critical reflection on national traditions.

The present study involved two nationwide databases from Finland and Norway. The same number of coercive measures, measured per 100 000 inhabitants, was used in these countries. This is in contrast with the previous comparison between these two countries where the use of coercive measures in Norway was suggested as being approximately one-fifth of that found in Finland measured in relation to population (Høyer & Drange, 1991, 1994; Kaltiala-Heino et al., 2000). In the present study, different patterns in the use of seclusion and mechanical restraint were found between these two Nordic countries, however. Seclusion was preferred over mechanical restraint in Finland, whereas mechanical restraint was preferred in Norway. However, the mean duration of mechanical restraint was somewhat longer and the duration of seclusion was multiple times in Finland. This raises the question whether seclusion is maintained longer than necessary in Finnish psychiatric practice.

The initiation of a reduction in the use of coercive measures on a broader base than an individual institution was found in a few European countries: Germany, Switzerland, The Netherlands, England and Wales. The study revealed that the common point of ongoing initiatives at this stage of development is focused on standardising the registration practices instead of developing or implementing alternative interventions in order to reduce the use of these measures. Unfortunately, no data was yet available regarding the effectiveness of these initiatives. Systematic and well determined monitoring of the use of coercive measures may be, however, a preliminary stimulus for reducing these measures

and for providing a compelling motive for changes in the policy of coercive measures in future. A successful reduction of coercive measures requires the systematic use of several simultaneous interventions operating at multiple levels nationwide and in hospital administration with emphasis on responsible leadership toward organisational change, systematic and determined monitoring of coercive usage, staff updated education and a thorough revision of the therapeutic environment (Gaskin et al., 2007).

6.2.2 The use of seclusion and mechanical restraint in Finland over a 15 -year span

On the basis of this study, it is evident that legislation alone is not enough to reduce the use of coercive measures. Regardless of the legislative changes in the study period 1990–2004 resulting in more restrictive and specific regulations in this area in Finland, the relative risk for being secluded has not changed, and the decrease was only slight, but not linear, in the risk of being mechanically restrained. The laws consisted of the principles of the patient's self-determination as well as the principle of using the least restrictions. One purpose of the partly revised Mental Health Act in 2002 was to specify the indications of coercive measures as well as to clarify and standardise coercive practices. However, the laws were implemented without any national programme or practical guidelines, which might have produced a real challenge to the prevailing treatment traditions. Evidence already exists at the individual hospital level that making the nationwide formal regulations more explicit, together with systematic facility-level initiatives has a reducing impact on using mechanical restraint and seclusion (Currier & Farley-Toombs, 2002; Donovan, Plant, Peller, Siegel, & Martin, 2003; Khadivi et al., 2004; McCue et al., 2004; Pollard, Yanasak, Rogers, & Tapp, 2007; Schreiner, Crafton, & Sevin, 2004; Sullivan et al., 2005).

The present study demonstrated that regardless of the decrease in the total number of coercive measures in a 15-year span, the duration of mechanical restraint incidents had not changed and the duration of seclusion incidents increased as much as threefold during this period. This could be an unintended side-effect of the stricter regulations regarding more complex registration: because re-seclusion requires more complicated and time-consuming registration practices, patients are not released from seclusion as quickly as before. A two-year research project conducted in a public child and adolescent psychiatric hospital in Connecticut indicated, that ongoing and accurate monitoring of restraint and seclusion practices, both inside the facility and between institutions compatible with national reform including stricter rules for coercive practices, reduced the use of coercive measures, measured by the number of episodes per patient as well as the duration of each episode (Donovan, Plant et al., 2003; Donovan, Siegel, Zera, Plant, & Martin, 2003). Simultaneously, the four core values: the patients` autonomy, belonging, competence and doing for others, were implemented to guide all interventions at the hospital and everyday clinical practices of each unit were observed in order to evaluate the application of these values. Accordingly, if the overall attitude towards the use of coercive measures does not

change, practices do not decline but simply assume new forms as seems to be the case in Finland.

Not only has the legislation changed in Finland during the last decades, but a rapid deinstitutionalisation process in Finnish psychiatry might also have had an effect on the use of coercive measures in clinical practice. While the number of psychiatric hospital beds declined, the number of psychiatric patients did not (Korkeila, 1998). On the contrary, the average time spent in psychiatric hospitals shortened considerably. It can be assumed that, as a result, the psychiatric inpatient population has become more acutely ill, leading to an increase in the use of coercive measures. Indeed in Paper III of the present thesis such development was observed (see below). It can be also speculated that without changes in legislation, the risk of being coerced might actually be even higher.

6.2.3 Regional variation in seclusion and mechanical restraint practices in Finland

A systematic regional variation was found in the prevalence of secluded and mechanically restrained patients per 100 000 Finnish inhabitants among the five tertiary-level catchment areas administered by five University Hospitals (Helsinki, Kuopio, Oulu, Tampere, Turku). This finding tended to reinforce the findings in a previous Finnish study (Korkeila et al., 2002), in which population-based rates of coercive measures showed the same kind of patterns in a comparison of the three university psychiatric centers in Turku, Tampere and Oulu. The differences among these three Finnish centers were attributed to a range of factors such as some observed differences in clinical characteristics of studied patient populations as well as the possible differences in the physical properties of the facilities and treatment cultures. Legislation is uniform throughout the country and cannot explain the regional differences, neither in previous nor present Finnish studies. This affirms previous studies, conducted in the US, which indicated considerable variations in the rates of restraint and seclusion in hospitals with similar policies and regulations (Okin, 1985; Way & Banks, 1990).

It has been suggested that observed variations in the use of restraint and seclusion prevails due to the disparate clinical perspectives on the advisability of these measures as well as the lack of comparative monitoring of coercive practices in psychiatric setting (Ray & Rappaport, 1995). This explanation is supported by a recent Swedish nationwide study that did not find clear-cut differences in the analyses of structure, resources and processes of psychiatric services between counties with high or low levels of compulsory care (Kjellin, Östman, & Östman, 2008). Some evidence of differences emerged in the type of leadership between the two groups, i.e. the countries with low levels of compulsory care had a more united and distinct leadership with more emphasis on patient autonomy. Overall, it seems that uniform legislation alone is not enough to equalise differences in coercive treatment traditions in different hospitals as they appear to be fairly entrenched.

6.3 Profile of the patients at risk of being secluded and mechanically restrained (paper III)

Previous research has shown inconsistent results regarding characteristics of mechanically restrained and secluded patients, partly resulting from methodological problems such as selective populations or variables measured at one time-point only. The present study indicated that instead of demographic characteristics (age, gender), the clinical characteristics (main diagnosis, phase of hospital stay) were independent risk factors for being coerced, and remained so over time.

The present study found that using coercive measures was the most prevalent in the substance abuse –related group, and the next most prevalent in the schizophrenia –related group. The results were consistent with previous Finnish studies which indicated that the use of coercive measures was the most frequent in the organic, substance abuse and schizophrenic disorders (Kaltiala-Heino et al., 2000; Korkeila et al., 2002). However, these previous Finnish studies were based on treatment episodes instead of individual patients, and that may have influenced the analysis of the diagnostic groups. The present study, which was based on the data of individual patients instead, showed that differences between the substance abuse and the schizophrenia -related groups disappeared when the variable was adjusted for the other variables studied, i.e., the effect of the substance abuse diagnosis on the use of coercive measures was dependent on the other variables.

Not surprisingly, the risk of being coerced was found to be smaller in the mood disorder -related diagnosis group as well as in the group of the other main diagnoses. The latter group also comprised the group of organic disorders because of the small sample size. Presumably the main problem in the group of mood disorders is not disturbing or violent behaviour towards others. Some evidence exists that the largest sub-category in this diagnosis group, who are at risk of being subject to coercive measures, consists of manic patients (Klinge, 1994; Taxis, 2002). Violent behaviour can occur during the manic phase of bipolar disorder, which may be due to psychosis as well as gross disorganisation of thoughts or behaviour (Binder & McNiel, 1988). Unfortunately, the data size did not allow analysis for separate sub-categories of the main diagnoses.

Regardless of being a minority group among the psychiatric in-patients, the risk of being secluded or mechanically restrained among the acute patients, whose hospitalisation had lasted fewer than four days, was manifold compared to the chronic group of patients whose hospitalisation had lasted more than three months. This is in accordance with previous findings that most of the restraint and seclusion episodes occur soon after admission (El-Badri & Mellsop, 2002; Kirkpatrick, 1989; Thompson, 1986). This is not surprising when, on the basis of a common sense approach to psychiatric knowledge, one realises that patients are generally most confused and disoriented at admission and simultaneously, the staff are as yet unacquainted with the incoming patients. Furthermore, it has been found that most violent behaviour occurs in the first few days of hospitalisation (Abderhalden et al., 2008; Steinert, Wolfle, & Gebhardt, 2000). In the present study, the risk of being secluded or mechanically restrained was less likely to occur in the group of

sub-acute patients, i.e. when hospitalisation had lasted from five days to three months, than in the chronic group of patients. The prolonged hospital treatment presumably reflects the existence of a more complicated psychiatric condition compared with many patients in the sub-acute group, and this increases the risk of being coerced. However, it might be assumed that the staff has a much better possibility to become familiar with the long-term patient, and would presumably be more capable of anticipating the behaviour and mental state of the patient.

6.4 Discrepancy between theoretical and clinical indications of seclusion and mechanical restraint (paper II)

Containment or prevention of actual violence in order to prevent injuries is the most widely accepted justification for the use of coercive measures both ethically and legally. International recommendations clearly consider restraint and seclusion as emergency measures, not therapy or treatment. The present study however demonstrated that agitation and disorientation without any sign of potential violence is the most frequent reason for using seclusion and mechanical restraint in everyday psychiatric practice reported by the clinical staff. Moreover, the finding remained unchanged over a 15-year span regardless of continually tightened legislation related to the use of coercion and coercive measures. The intent of the revised Mental Health Act in 2002 was to specify and standardise the use of coercive measures, but the present study indicated that the Act still left room for various understandings, and even to subjective interpretations. The Act specifies seclusion and mechanical restraint primarily to control or prevent imminent harm to the patient or other people. However, paragraph 3 allows isolating the patient "*due to other particular reasons*", but lacks a definition of the particular reasons or practical examples.

Agitation and disorientation, without any signs of actual or threatening violence, ranked high as a reason for mechanical restraint and seclusion and is in line with previous studies in which non-violent behaviours covered 21.1–43.6% of the reasons given for coercive incidents in clinical practice (Betemps et al., 1993; Kaltiala-Heino, Tuohimäki et al., 2003; Mattson & Sacks, 1978; Oldham et al., 1983; Plutchik et al., 1978). In the present study, the proportion was even higher (47.3%). It varied between 40.4%–57.1% of all the seclusion episodes and 48%–62.8% in mechanical restraint episodes during the 15-year period. In previous studies, where actual violence has been the most frequent reason, its proportion varied 20.8%–44% of all the coercive episodes (Morrison & Lehane, 1996; Salib et al., 1998; Smith & Humphreys, 1997). When threatening violence has been found to be the main reason, it has covered 33%–62% of the incidents (El-Badri & Mellsop, 2002; Swett, 1994; Way, 1986). Obviously, clinical psychiatric practice deviates from the theoretical, ethical and legal grounds for the use of restraint and seclusion.

Confusion, irritability or boisterousness may be early warning signs for actual violence in psychiatric inpatients in addition to physical threats, verbal threats and attacks on objects (Linaker & Busch-Iversen, 1995). However, assessing acute risk of violent behavior in a psychiatric in-patient setting is far from simple because, in addition to the current mental state of the patient, violent behaviour is affected by situational and contextual factors such as ward structure and routines, staff's characteristics, resources, attitudes and interaction with patients, as well as the patient's typical reactions to these factors (Daffern, 2007; Daffern & Howells, 2002). Sheridan et al. (1990) found that events preceding aggression and leading to the use of restraint were more frequently external than directly related to symptoms of the patients` illness. The most frequent external event was conflict between patient and staff, i.e. enforcement of rules by staff, staff denying privileges or staff denial of a patient's request. It has been demonstrated that clinical judgment of short-term violence risk based only on a nurse's clinical experience and knowledge of the patient, is less accurate than judgments guided by structured assessment (Ogloff & Daffern, 2006). Working in an environment with continuous anticipation of violence is stressful and may lead to false positive assessment, i.e., an incorrect prediction that restraint or seclusion is required to prevent actual violent behaviour (Becker, 2007; Daffern, 2007). The possibility to use restraint and seclusion more or less consciously for punitive purposes (Lendemeijer & Shortridge-Baggett, 1997) or to manage workload with the constant interference of disturbed and noisy patients cannot be excluded as reasons either (Brown & Tooke, 1992). Hence, agitation and disorientation without any signs of actual or threatening violence as a reason for coercive measures is too open to false-positive assessment from patients` as well as professionals` points of view.

The danger of false-positive assessment may be especially emphasised in the two special sub-groups of inpatients detected in the present study: patients who have been in treatment for fewer than four days (i.e. acute patients) as well as patients with substance abuse disorder. In both groups, coercive measures were most frequently used based on observation of agitation and disorientation, but the least frequently due to actual violent behaviour. Coercive measures are used more readily among these groups because behaviour in both groups is presumably the most difficult to be anticipated with surety by the staff.

The present study indicated gender differences among the reasons for being secluded or mechanically restrained. Male patients were secluded and mechanically restrained more frequently due to unspecified aggressiveness, whereas actual violence was the reason for the use of these measures with female patients. The same phenomenon was also found previously in Finland (Kaltiala-Heino, Tuohimäki et al., 2003). This is an interesting finding because the rate of violent behaviour is actually found to be equal in genders in psychiatric inpatient setting (Krakowski & Czobor, 2004; Lam, McNiel, & Binder, 2000). Moreover, the risk for being violent tends to be generally overestimated in the case of male patients, but underestimated in the case of female patients in clinical practice (McNiel & Binder, 1995). This can also explain the perceived gender differences in the reasons for using coercive measures in the present study, i.e., the staff are more alert to early signs of

escalating actual violent behaviour by male patients (Rossberg & Friis, 2003; Soloff & Turner, 1981).

The duration of seclusion and mechanical restraint was not associated with the indication for using these measures, i.e., duration is determined individually, not by objective indications. However in the case of actual violence, the duration of coercive measures was more than two-fold when violence was targeted towards staff or towards the patient himself or herself compared to situations where the target was another patient. This raises the question of the relation between the use of coercive measures and the emotional reaction of the staff. It has been found that both aggressive and suicidal behaviour evoke negative emotions among staff (Rossberg & Friis, 2003; Rossberg, Hoffart, & Friis, 2003). It has also been indicated that patient are more likely to be secluded or restrained if they have been violent toward a staff member rather than another patient (Foster, Bowers, & Nijman, 2007). Hence, there is the possibility of using coercive measures for punitive purposes if the staff is not aware of their emotional reactions.

6.5 Toward a dialogue between professionals and secluded patients (paper V)

The most significant finding of this study was, from the secluded patients' point of view, the lack of interaction between the secluded patients and the staff during and after a seclusion episode. Half of the secluded patients perceived the number of the staff's visits as insufficient, and two-thirds of the patients were dissatisfied with opportunities for discussion with the staff during seclusion. Responses of some patients even reflected a cynical attitude toward interaction with staff. In accordance with previous findings (e.g. Meehan et al., 2000), most of the patients reported the lack of debriefing procedure after the seclusion. Unequivocally, most of them reported that they would have needed it. It has previously been suggested that the manner and attitude in which coercion is implemented by the staff in their contact with the patients may be of more essential importance than the coercion itself (Bonsack & Borgeat, 2005; Katsakou & Priebe, 2007; Svindseth, Dahl, & Hatling, 2007; Wallsten, Kjellin, & Lindström, 2006).

In accordance with previous studies (e.g. Hoekstra et al., 2004; Holmes et al., 2004; Meehan et al., 2004; Wynn, 2004) and on the basis of the present findings described above, it was not surprising that many secluded patients in the present study perceived seclusion primarily as a negative experience as well as a punitive measure. Furthermore, the view remained consistent at least a half year later. Qualitative studies have repeatedly indicated that central themes related to being coerced are perceived deprivation of autonomy and self-determination, reduced quality of care as well as an inferior sense of dignity or self-value (Hoekstra et al., 2004; Holmes et al., 2004; Johnson, 1998; Katsakou & Priebe, 2007; Meehan et al., 2000), which might be possible explanations for negative emotional reactions.

The present study indicated that negative emotional reactions associated with being secluded does not exclude the capacity to find beneficial aspects of seclusion as well. The patients tended to report beneficial effects more frequently than harmful effects of seclusion. One explanation might be that most of the patients were aware of the reason for their seclusion. It has been found that if the coerced patients know the justifications for the intervention, they judge it to be more effective (Veltkamp et al., 2008). It might seem at first glance that this observation helps to justify the use of seclusion. According to a retrospective rationale for psychiatric coercion Wertheimer stated (1993): "*If a reasonable number of patients come to retrospectively approve of coercive treatment, retrospective approval may show that it was reasonable for us to have imposed coercive treatment in the first place. Not because the later consent removes the force of the earlier refusal to consent, but because it shows us that we may have been right not to place excessive value on the earlier refusal in the first place.* (p. 254)" However, this rationale does not dismiss the moral issue that the patient was coerced (Gardner et al., 1999). Nor does it imply that the patient will be grateful afterwards. In the present study, the majority of the patients maintained their original view of seclusion primarily as a negative emotional experience and as a punitive measure, i.e., patients` evaluation regarding beneficial or harmful effects of seclusion does not change their repulsion of being secluded. The question also arises: what constitutes a reasonable number of viewpoints changed from harmful to beneficial to justify seclusion? In the present study, the proportion of the patients who changed their views at least partly, was almost equal between the groups of patients who initially regarded seclusion either as totally beneficial or totally harmful.

Consistent with the theoretical rationale of using seclusion discussed previously in this thesis, and some previous studies concerning the secluded patient's views (Mann, Wise, & Shay, 1993; Richardson, 1987; Sagduyu, Hornstra, Munro, & Bruce-Wolfe, 1995), the majority of the patients in this study considered seclusion as a necessary measure in the psychiatric hospital setting primarily due to violent behaviour. One possible explanation could be that these patients have sometimes experienced other patients` violent behvaviour as threatning. Furthermore, some of the patients may afterwards, when their psychiatric condition is stabilized, have been able to see their own behaviour as frightening to others. Regardless of what the explanation is, the secluded patient and the professional seem to concur that the use of coercive measures in psychiatry is sometimes indispensable. The question is then: in the case where coercive measures are necessary, how should they be implemented to minimise negative emotional reactions of patients and to make the measures more humane? The main improvements suggested by the patients in the present study were associated with both physical (e.g., possibilities for better personal hygiene, appropriate furnishings) and psychological (e.g., appropriate stimulation in addition to increased opportunities to interact with the staff) conditions of seclusion; i.e., mostly concrete and simple to implement in everyday practice. Preventive interventions were also suggested; the two main ones were the possibility of a single bedroom as well as the use of verbal de-escalation. It has been found that the secluded patients tended to be more positive if they believe that lesser restrictive interventions are tried before resorting to seclusion (Ray et al., 1996).

The only difference between the patients treated in forensic psychiatric setting and general psychiatric setting was that the patients in the former setting perceived seclusion as a form of punishment much more frequently. This group was found to be subjected to more frequent and long-term seclusion, which may translate into higher levels of perceived punishment. The possible existence of underlying differences in the treatment cultures due to different patient populations cannot be excluded either. Especially in the forensic setting, where patients with violent propensities are treated, the search for balance between treatment and security responsibilities is a continuous challenge (Derks, Blankstein, & Hendrickx, 1993; Weinstein, 2002).

7. Conclusions

On the basis of this thesis, conclusions can be drawn both at the international and the national level as well as at the level of the individual patients.

1. Coercive measures are customarily used in Western psychiatry; such as, mechanical restraint, seclusion and physical restraint, but the preferred measures and their quantity vary considerably across countries. Opinions on behalf of and against all coercive measures can be debated, but the common intention should be to find the best practices to moderate the need for these measures, and when they are really indicated, how they can be implemented in a more benevolent manner. Initiatives to reduce the use of coercive measures are already in progress in a few European countries.
2. Finland seems to lie in the average range on the preliminary international statistics in the implementation of seclusion and mechanical restraint estimated by the number of admissions exposed to coercive measures, and the mean duration of measures as well as the number of measures per 100 000 inhabitants. However, Finnish national statistics show that almost no changes toward diminished use of seclusion and mechanical restraint have taken place in clinical practice despite the general trend toward the least restrictive psychiatric treatment through legislative changes, de-institutional policy and discussion in society. The risk for being secluded did not change, and the risk for being mechanically restrained decreased only slightly, but not linearly, over a 15 -year span. This suggests that legislation is not enough to reduce the use of coercive measures or to equalise the regional differences.
3. While the duration of mechanical restraint has remained stable, the duration of seclusion has increased three-fold in Finland over a 15 -year span. This suggests that the use of coercive measures is deep-rooted and merely adopting modified forms rather than diminishing. The duration of these measures is not determined by the recorded reason for the measure. However, it was associated with the target of the actual violence towards a person (staff, another patient, patient himself or herself), indicating that there is the possibility that coercive measures are being applied for punitive purposes if professionals are not aware of their emotional reactions. Overall, the duration of coercive measures is one of the key indicators to be used in the evaluation of coercive practices.
4. The acute, and diagnostically, the most disturbed patients are at the highest risk of being mechanically restrained and secluded, i.e., those in-patients who are instinctively assumed to require coercive measures.

5. Agitation and disorientation without any signs of actual or threatened violence is the most frequent reason for using mechanical restraint and seclusion in Finland. This indicates deviation from theoretical grounds to their use primarily as a containment of violent behaviour. Agitated and disoriented behaviour of some sub-groups of patients (acute patients, patients with substance abuse disorder, male gender) may be more prone to interpretation by the staff as a prelude to actual violent behaviour. As a result, mechanical restraint and seclusion may be employed more readily among these in-patient groups. Overall, the use of agitation and disorientation as the sole indication for using coercive measures is a precarious situation from the viewpoint of the inpatients` legal protection and from that of professionals` ethics as well.
6. The experiences of the secluded patients are independent of the type of hospital where they are treated. The only difference between the patients treated in general psychiatric hospitals and those in forensic hospitals was that the patient in the latter setting more frequently viewed seclusion as a form of punishment. This finding is not surprising because the more frequent and longer-term use of seclusion episodes was found in the forensic setting, where the patients require treatment under conditions of special security on account of their dangerousness as well as their violent and criminal propensities and general non-compliant behaviour.
7. Being secluded is associated with prolonged negative connotations. Although the patients usually regard seclusion as a necessary security measure in psychiatric hospitals, the practical implementation of seclusion encompasses considerable deficiencies perceived by the secluded patients. Interaction during and after the seclusion episode was, in the main, perceived as insufficient, and the physical environment was substandard from the secluded point of view.

8. Recommendations

A broad consensus exists on the theoretical level that coercive measures used in psychiatry should be regarded primarily as security measures, not a method of treatment or therapy. This thesis shows that almost no changes toward diminished use seclusion and mechanical restraint have taken place in clinical practice despite the legislative efforts, which seems to confirm previous suggestions that deep-rooted treatment traditions and attitudes determine the use of coercive measures at least as much as do safety requirements and patients' rights. It will be a real challenge to develop new initiatives to reduce the use of these measures as well as to introduce alternative ways of using them in emergencies instead of repeating conventional practices.

If the target is reducing the use of coercive measures, the question then arises what is the optimal level of using coercive measures without endangering the safety of the patient and other people. Answers still lie in the future, but the present study was a preliminary step towards the determination of a baseline for the use of coercive measures at the international level by using various outcome indicators. To maintain the proper use of coercive measures, there should be continuous and objective monitoring at every stratum: international, national and at the level of the individual hospitals. Setting alert levels might be useful both at institutional and national levels so that aberrations from the average on the use of coercive measures can be detected promptly and interventions applied. Ongoing national initiatives to reduce the use of coercive measures should be described and results of their implementation reported internationally in the effort to find the best practices.

The use of mechanical restraint and seclusion in Finnish psychiatry seems to rank as average in preliminary international comparisons. Furthermore, the nationwide study indicated that mechanical restraint and seclusion are the most commonly used with those who are generally assumed to require these measures, i.e., acutely ill and the most disturbed patients. During the last two decades, however, the primary target of legislative changes regarding the patient`s right of self-determination as well as the use of coercion and coercive measures has been to reduce coercion in the Finnish mental health care field. The methods to date have not been powerful enough to reduce the use of mechanical restraint and seclusion. The finding that countries exist where the use of coercive measures are at a lower level than in Finland challenges us to re-evaluate our traditional patterns of using these measures. Special attention should be directed at duration and indications for these measures. A systematic national programme would be necessary.

Agreement exists between psychiatric patients and professionals that the use of coercive measures is sometimes indispensable as a security measure. In these cases, however, developing more humane practices during the coercive episode as well as after-care procedures should be considered more carefully. General standards for physical and psychological conditions regarding the coercive episode would be necessary in order to insure more benign treatment of the coerced patient. The principle of using the least

invasive restrictions during the episode should be integral to this standard in order to balance any conflict between paternalism and autonomy, i.e., even the most disturbed coerced patient may be capable of making decisions for himself or herself, at least to some degree. Because of patients´ entrenched prolonged negative connotations associated with coercion, debriefing tailored individually according to the cognitive capacity and mental state of the patient would be one of the most essential after-care procedures. At its best, the procedure could be a tool for anticipating the future behaviour of the patients who are at risk for being coerced and to prevent unnecessary use of coercive measures by discovering and applying the least restrictive measures for the individual patients in advance. Furthermore, debriefing could be an essential tool for the continuous and systematic assessment of coercive practices. Realisation of a more patient-focused intensive care, especially with the most disturbed coerced patient, is more probable with tangible resources.

A challenge for future research would be to find and describe the best practices to reduce using coercive measures as well as to find other alternative interventions besides them. Preventive interventions, such as a continuing structured risk assessment and de-escalation intervention strategies should be introduced more widely into clinical psychiatric practice. Research is also needed to tailor specialised interventions especially in the care of the most disturbed patients, i.e. for those patients whose risk of being the target of coercive measures is the highest, who are the target of frequent and prolonged coercive measures, and whose voices are systematically excluded from the studies. Professionals` attitudes toward the use of coercive measures as well as the impact of treatment cultures ought to be studied also. Research findings should be used to develop more consistent and humane psychiatric practices.

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