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Reliability and Feasibility of Systematic Registration of Coercive Measures in Care for People With Intellectual Disabilities

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Abstract

Policies limit the use of coercive measures as a measure of last resort to protect people from danger. Success of policies can only be determined by registering the use of coercive measures. The reliability of 57 standardized coercive measures was tested. In addition, implementation was investigated of improved registration in a residential care setting. This mixed methods study within a residential care organization for people with intellectual disabilities in the Netherlands included 55 living units and 269 residents. Reliability of 57 standardized coercive measures was tested against other informants (colleague staff, trained outside observer) and results were validated by a panel of stakeholders. Second, the implementation of a mandatory routine registration system was investigated by comparing registration of coercive measures to personal files of 30 residents. Registration of coercive measures yielded reliable data for at least 25 out of 57 types of coercive measures. The second part of the study showed widely varying explanations of unreliable data by stakeholders, including knowledge and awareness of coercive measures of support staff and the influence of contextual factors on the encoding of coercive measures. After implementation, 46% of the coercive measures were registered in the registration system. Comprehensive registration of coercive measures by staff neither appeared feasible nor yielded reliable data. Clearly, multidisciplinary discussion among support staff and professionals is needed to decide whether care practices are restrictive or not. Further research should focus on how these considerations can lead to a reliable and meaningful registration.

Keywords: coercive measures, intellectual disabilities, policy implications, registration, reliability, restrictive practices

Introduction

The use of coercive measures in care for people with Intellectual Disabilities (ID) has come under intensified scrutiny. Not only is the effectiveness of coercive measures against risky behavior called into question (Harris, 1996), their use also runs counter to important values, such as respect for self-determination and human rights (Chan, LeBel, & Weber, 2012; Heyvaert, Saenen, Maes, & Onghena, 2014). An important expression of consensus about this is the UN convention of human rights for people with disabilities, which prescribes and elaborates respect for self-determination (United Nation, 2006). Policies in several countries now emphasize the use of coercive measures only as a last resort to prevent persons with ID harming themselves or others. Romijn and Frederiks (2012) have pointed at gaps between policy and practice. Given that policies in several countries still allow use of coercive measures in care for people with ID (Gaskin, McVilly, & McGillivray, 2013; Matson & Boisjoli, 2009), describing the prevalence may help to identify the areas and settings that would require more support in finding alternatives (Hucksorn, 2004; Romijn & Frederiks, 2012). However, prevalence estimates vary widely (Romijn & Frederiks, 2012), probably due to practical and definitional issues (Frederiks, Schippers, Huijs, & Steen, 2017). The effects of changes in policy and practice are, therefore, hard to assess and it is difficult to know how practice can be supported better (Hucksorn, 2004).

In the Netherlands, the Inspectie voor de Gezondheidszorg (2008) insists on full registration of coercive measures, in their broadest definition of every measure that is restrictive in a specific situation (Frederiks et al., 2017). The proposal for the Care and Coercion Act (2015) makes such registration obligatory. In the absence of evidence-based national guidelines for reliable registrations, the field employs a wide variety of often incomparable instruments that operationalize the broad definitions in laws and regulations. Research on reliability and feasibility of a

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full registration of coercive measures use in 24-hour care by support staff members and professionals might, therefore, not only contribute to better registrations but also to data that can be combined and compared, providing better guidance for efforts focused on reducing the use of coercive measures.

Webber, McVilly, and Chan (2011) indicated several difficulties in the registration of coercive measure in their analysis of reports of mechanical and chemical restraint and seclusion made by support staff over a 12-month period in the State of Victoria, Australia. They concluded that the utility of support staff reports was hampered by their confusion over definitions of coercive measures, limitations to the types of measures that were reported, and by the absence of important information such as frequency of use. Matson and Boisjoli (2009) reported a wide variation in prevalence numbers among the studies they reviewed, from 14 to 53%. The studies differed with respect to the time frame investigated (3 months vs. 1 month), and the sample sizes (300–500). They proposed that standardized definitions could lead to more information on actual reliability of measurements of the use of coercive measures. To be useful, these standardized definitions should include qualitative aspects, such as the aim of a specific measure or the context in which a specific measure is applied. Qualitative aspects complicate the design of reliable registrations, however.

Niemeijer, Depla, Frederiks, Francke, and Hertogh (2014) studied the use of surveillance technology and found that support staff members weighed safety as more important than self-determination. As coercive measures often serve multiple purposes, this priority for security might also influence the extent to which workers recognize that a particular measure limits the possibilities for residents to do what they want. Staff may assume that residents find the goal of security as important as they do, and therefore, would view coercive measures to be aligned with the implied will of residents to be safe. Also, differences of opinion on the right to self-determination among professionals can cause confusion in determining coercive measures. Whenever a resident resists the use of a coercive measure and staff ignores this resistance, the right of self-determination is in peril. However, some residents, as a consequence of their disabilities, are not able to show resistance or, as a consequence of prolonged use of coercive measures, have resigned themselves to the measure.

In sum, further research on registrations is needed to improve policy and practice around the use of coercive measures. One of the subjects to be studied is whether recording of the use of coercive measures can be standardized and sufficiently robust while incorporating the context and the purpose of the potential coercive measure. First, this study aims at establishing reliability of registrations of coercive measures, and second it determines whether registration of coercive measures by support staff and professionals in a routine registration system is comprehensive and feasible. The study followed a flexible design (Dellinger & Leech, 2007) in which intermediate research outcomes on psychometric properties of the initial instrument were validated by reflections by stakeholders in order to arrive at a registration that was both reliable and meaningful, and thus would have the highest chance of successful implementation. The first part of the study focused on the reliability of each of the measures that were identified based on a broad definition of coercive measures, as these measures are taken by support staff over the course of a 24 hour period of providing residential care for residents. Reliability was tested by comparing recordings by different members of the care staff team and by comparing recordings between care staff members and observations made by trained, independent observers. The second part of the study focused on the implications of the findings regarding the reliability with which coercive measures could be recorded in two ways. First, findings concerning reliability were discussed in a stakeholder panel of which results were used for the implementation of a mandatory routine registration system. Testing the success of the implementation of the registration system was the next step in the second part of the study. The question was to what extent the new routine recording of coercive measures yielded data that corresponded with the coercive measures as described and approved in the residents' electronic personal plan.

Method

Study Setting

The present study was performed within one care organization for people with ID in the Netherlands that serves approximately 9500 residents. Type of care is diverse. It includes support for living with intellectual and physical disabilities as well as treatment for additional psychiatric problems, challenging behavior, and health problems, and concerns a wide range in age and level of intellectual disability. This broad scope of support is delivered in residential facilities on areas designed as parks owned by the institution or in districts of villages and cities, through support at home, or within day-care centers or outpatient clinics in residential 24 hour 7 day care. The study was conducted alongside the implementation of a new policy of coercive measure reduction and registration.

Part One: Reliability Study

Participants. The study focused on residential care and therefore care units (n = 55) were randomly selected from a total of 566 24-hour care units. Units, in which on average six residents lived, could be included if they provided care for at least four residents. Units were spread throughout the Netherlands and were located within parks or districts of villages and cities.

Procedure. The study was approved by the Ethics Committee of the faculty of Psychology and Education, Vrije Universiteit Amsterdam. Residents or their representatives and support staff were approached for their participation. Residents or, in case of incapacity, their representatives, received an information letter and were asked to return the informed consent form. Capacity of a resident to decide to participate in the study or not was set by consultation of caregivers, legal representatives, and sometimes by the residents themselves. When no form was received within three weeks the first author or a research assistant

contacted them by phone to provide further explanation. About 269 residents or representatives gave consent (53%). Support staff members received information about the study by email and were asked to participate as well. When staff members did not confirm participation or expressed questions, further explanation was given by researchers by phone or site visit. When support staff members who did not wish to participate in the study were present during a shift that was selected to be registered and observed, the shift was registered by a colleague or the shift was coded as missing data. Support staff received an explanation by email on how they could register coercive measures with a digital list of coercive measures designed for the project. The email was sent to one support staff member per unit and they were asked to discuss it with all staff members in the care unit and to afterwards confirm that the assignment was well understood, or to request additional email or phone consultation until full comprehension was reached. Whenever there was no response or support staff expressed questions, further explanation was given by phone.

To obtain a registration of coercive measures which covered care 24 hour a day, support staff was asked to register applied coercive measures per shift and per resident during a period of one month. Independent research assistants, further called independent observers, recorded coercive measures as well during 28 staff shifts. These shifts were randomly selected out of all staff shifts between 7 am and 10 pm during the period in which registration was performed by the support staff members. Between 10 pm and 7 am, no support staff was at the site but need for care was monitored through surveillance technology such as devices to listen in a resident's room or unit and the use of cameras. Whenever a resident needed support during the night a support staff member was available to visit the unit and provide support. Additional coercive measures during the night were reported. Most coercive measures that were applied at or before 10 pm mostly lasted until 7 am, and were registered by support staff that was present at the unit from 7 am the next morning.

Also a second colleague staff member was asked to register coercive measures, in order to obtain registrations from two support staff members during the same shift. One support staff member from every unit at which two or more persons were present at the unit during one shift was asked to register 10 shifts independently of his or her colleague. Shifts were not randomly selected but chosen based on the presence of the staff member who was asked to maintain an independent registration.

All independent observers were trained to recognize and register coercive measures using a registration standardized list (see instruments). The training consisted of exposure to coercive measures in different situations by using images and learning the terms or phrases used by support staff to indicate the use of coercive measures. All observed coercive measures were registered, irrespective of the purported aims or the presence or absence of resident resistance. This 4-hour training was provided once by the first author.

Instruments. Previous to this study, the care organization had little experience with the registration of coercive measures; the use of a registration system was limited and inconsistent. There were no standardized definitions of coercive measures nor an unequivocal guideline of which coercive measures should be registered.

Therefore, a list of 57 coercive measures was developed, based on studies on coercive measures (Dörenberg et al., 2018; Matson & Boisjoli, 2009; Williams, 2010), reports of the Inspectie voor de Gezondheidszorg (2007, 2008, 2012) and input from the coercive measure committees of the health care organization, who monitor and improve quality of care concerning the use of coercive measures. Coercive measure was defined as every measure that is restrictive in a specific situation, which was in accordance with the Dutch Healthcare Inspectorate and the Care and Coercion Act (2013). The list of coercive measures is shown in Table 1. Examples are "Physical restraints (parts of the body being held down)," "mechanical restraint of feet and legs," "Camera/video surveillance (either within resident's private room and/or in communal part(s) of the building)" and an example of restrictions in movement of resident is "locking the outer doors." The list was administered electronically through the care organization's intranet. Per coercive measure the options were "applied" (coded 1) or "not applied" (default; coded 0). Registration had to be done at the end of a work shift; recorded registration could not be changed afterwards. Independent observers and second support staff members used a printed copy of the registration list. They had to tick at one of the options "applied" or "not applied."

Statistical analysis. In order to determine the reliability of registration of coercive measures the inter-rater agreement between the support staff member and both the observer and the second support staff member was examined by calculating Cohen's Kappa. Variables were set up by date and time of shift, unit, and person who registered, one of the support staff members or an independent observer. A Cohen's Kappa of ≥0.50 was considered as at least a moderate agreement (Landis & Koch, 1977). A *z*-score was calculated to determine the difference between registrations in which the support staff member and both the observer and second support staff member did not agree on the use of a coercive measure. A phi coefficient was calculated to determine the associations between different types of coercive measures. A phi of ≥0.50 was considered as at least a moderately strong association (Cohen, 1988).

Part Two: Validation and Implementation Study

Participants. The panel of stakeholders, which was set up to validate results of the first part of the study, consisted of nine employees of the care organization, one resident representative, and the first three authors who acted as moderators. One year and seven months after the reliability study (part one) the implementation study was performed. By that time, five units did not meet the criterion of at least four residents anymore, and therefore 50 units out of the 55 units in study part one, participated in part two. From the 209 residents who were still included, a random selection of 30 residents was made to test the result of the implemented registration.

TABLE 1
Prevalence of coercive measures, and agreement between staff members and observers, and between staff members

	Prevalence		Staff member—observer						Staff member—second staff member					
Coercive measure	*% Applied*	*% of Total*	*Kappa*	*0 - 0*	*1 - 1*	*0 - 1*	*1 - 0*	*Z*	*Kappa*	*0 - 0*	*1 - 1*	*0 - 1*	*1 - 0*	*Z*
Orthosis used in bed, with the result the resident is not able to move	3.8	0.8	1.00	131	4	0	0	0.00	0.77	322	16	7	2	1.68
Use of "Swedish belt" in bed (bed belt)	0.1	0.0	1.00	134	1	0	0	0.00	0.00	350	0	1	0	1.00
Locks on shoes	0.6	0.1	1.00	134	1	0	0	0.00	0.00	341	0	0	6	-2.46^{2*}
Camera/video surveillance (either within resident's private room and/or in communal part(s) of the building)	6.0	1.3	0.96	121	13	1	0	1.00	0.84	272	58	14	3	2.70^{2**}
Jump suit which cannot be torn and/or prevents residents taking off their clothes	6.0	1.3	0.87	126	7	1	1	0.00	0.59	333	6	1	7	-2.13^{2*}
Mechanical restraint of feet and/or legs	1.7	0.4	0.85	131	3	0	1	−1.00	0.61	342	4	2	3	−0.45
Types of beds where the resident is not able to get out of (bedrails, Poseybed, bedbox).	17.9	3.8	0.85	103	25	1	6	−1.91	0.80	271	55	13	8	1.11
Audio surveillance (either within resident's private room/and/or in the general care unit	43.6	9.2	0.78	38	84	13	0	3.70	0.79	139	172	31	5	4.45^{2**}
Belt/body harness used in wheelchair	11.4	2.4	0.78	113	15	6	1	1.91	0.39	282	19	40	6	5.19^{2**}
Very strict rules with regard to the use of cigarettes, alcohol, or other substance use	2.5	0.5	0.72	123	7	2	3	−0.45	0.57	299	21	26	1	4.91^{2**}
A movement detector (used either within a resident's private room and/or in the general care unit)	2.9	0.6	0.72	128	4	1	2	−0.58	0.53	331	6	9	1	2.55^{2*}
Jumpsuit which includes a lock at the back to prevent the resident taking off his clothes	5.3	1.1	0.70	126	5	1	3	−1.01	0.66	341	5	3	2	0.45
Limiting the use of internet (i.e., a fixed amount time, or only within a specific location (within sight of the carer), or limited access to certain websites)	1.7	0.4	0.70	126	5	3	1	1.01	0.41	325	6	9	7	0.51
Chemical restraints which modulate behavior, such as the antipsychotics	24.6	5.2	0.68	66	48	13	8	1.14	0.68	216	83	32	15	2.57^{2*}

TABLE 1
Continued

	Prevalence		Staff member—observer						Staff member—second staff member					
Coercive measure	*% Applied*	*% of Total*	*Kappa*	*0 - 0*	*1 - 1*	*0 - 1*	*1 - 0*	*Z*	*Kappa*	*0 - 0*	*1 - 1*	*0 - 1*	*1 - 0*	*Z*
Closing access to the garden	24.7	5.3	0.67	92	26	7	10	−0.75	0.90	243	94	12	2	2.70^{2**}
Having to wear gloves in order to prevent a resident from scratching themselves (form of self- harm)	0.8	0.2	0.66	132	1	0	1	−1.00	–	347	0	0	0	0.00
Intensive one on one care	1.7	0.4	0.59	128	3	3	1	1.01	0.66	339	4	4	0	2.01^{2*}
A form of surveillance technology which detects a door being opened (used either within a resident's private room and/or general care unit)	12.7	2.7	0.57	90	23	12	10	0.44	0.80	282	46	16	3	3.02^{2**}
Physical restraint (parts of the body being held down)	1.6	0.3	0.57	123	5	0	7	−2.68	0.86	347	3	0	1	−1.00
Mechanical restraint of arms/hands	0.7	0.1	0.56	130	2	0	3	−1.74	–	351	0	0	0	0.00
Mechanical restraint of trunk by belt/ harness (other than used in wheelchair)	1.9	0.4	0.55	125	4	2	4	−0.83	−0.01	345	0	3	3	0.00
The resident not being allowed within and outside the institutional grounds without permission	29.1	6.2	0.54	60	44	23	8	2.86	0.71	204	100	45	2	6.49^{2**}
Use of wheelchair brake which cannot be removed by the resident	4.0	0.9	0.53	127	3	5	0	2.26	0.40	343	1	2	1	0.58
The resident not allowed outside and within the residential grounds without surveillance (either under supervision of support staff or through the use of surveillance technology)	18.5	3.9	0.52	83	25	21	6	3.04	0.30	215	39	82	15	7.33^{2**}
Limited access to rooms/areas by locked doors in the care unit	41.6	8.8	0.51	21	89	20	5	3.15	0.37	97	135	6	113	-10.76^{2**}
Locking the outer doors (to prevent the resident or other residents from leaving the care unit)	33.0	7.0	0.47	73	30	18	14	0.75	0.70	190	110	47	4	6.25^{2**}
Limiting the use of (mobile) phones (having to hand in your phone to the staff at certain (set) times, only being allowed to call someone under supervision or at certain (set) times.	1.2	0.2	0.47	123	4	2	6	−1.44	0.91	341	5	1	0	1.00
Being confined to one's own room with the door locked	4.2	0.9	0.46	117	6	10	2	2.36	0.57	333	7	5	5	0.00

Resident is not allowed within the institutional grounds without permission	23.2	4.9	0.43	67	32	22	14	1.43	0.73	213	95	34	9	3.93^{2**}
Very strict rules/agreements such as having to follow a specific day program, having fixed times and amounts with regard to eating and drink, strict rules on when to shower and sleep	16.4	3.5	0.37	60	33	32	10	3.69	0.67	287	33	26	1	4.91^{2**}
Monitoring the resident by keeping a close eye on him through other means (such as the window or door)	4.5	1.0	0.32	106	7	19	3	3.56	0.79	281	46	18	2	3.63^{2**}
Locking cupboards, wardrobes, kitchen cabinets, refrigerator	28.9	6.1	0.31	20	76	26	13	2.25	0.32	193	52	82	20	6.65^{2**}
Very strict rules with regard to sexuality/intimacy	2.0	0.4	0.28	129	1	0	5	−2.26	0.74	316	19	10	2	2.33^{2*}
Resident is not allowed at or outside the institutional grounds without supervision (supervised by support staff or surveillance technology)	16.4	3.5	0.26	82	15	24	14	1.75	0.47	228	50	71	2	8.53^{2**}
Administration of all forms of medication without informing the resident (e.g., crushing and mixing medication into foods)	2.5	0.5	0.23	128	1	5	1	1.65	0.00	350	0	1	0	1.00
The resident being confined to a room/area of the unit without the doors being locked (hallway, own bedroom)	5.0	1.1	0.23	128	1	4	2	0.83	0.69	264	52	31	4	4.68^{2**}
Resident is not allowed to be on the institution area without permission of staff carers	32.9	7.0	0.22	50	32	37	16	3.22	0.79	170	144	32	5	4.56^{2**}
(Wheel) Chair with tabletop to prevent residents from getting out of the chair	2.0	0.4	0.17	126	1	6	2	1.44	0.50	316	11	20	0	4.54^{2**}
The resident not being allowed to enter certain communal areas (of the general care unit) without permission	13.5	2.9	0.10	98	5	18	14	0.75	0.38	201	55	87	8	8.72^{2**}
Chemical restraint, that is, medication of which its (side) effects can be restrictive to resident	3.2	0.7	0.05	117	1	12	5	1.75	0.18	329	2	7	9	−0.51
Deep tub chair to prevent a resident from getting up	0.0	0.0	0.00	134	0	1	0	1.00	–	347	0	0	0	0.00
Limiting visitation (either receiving or visiting) of family friends and others	2.6	0.6	0.00	133	0	0	2	−1.42	0.81	306	29	11	1	2.91^{2**}

TABLE 1
Continued

	Prevalence		Staff member—observer						Staff member—second staff member					
Coercive measure	*% Applied*	*% of Total*	*Kappa*	*0 - 0*	*1 - 1*	*0 - 1*	*1 - 0*	*Z*	*Kappa*	*0 - 0*	*1 - 1*	*0 - 1*	*1 - 0*	*Z*
Resigning a resident to a chair/stool on which he or she has to remain seated without being allowed to get down	0.6	0.1	0.00	134	0	1	0	1.00	0.49	345	2	2	2	0.00
Under mattress bed alarm system which can detect a resident leaving their bed	1.4	0.3	0.00	134	0	0	1	−1.00	0.43	326	6	15	0	3.92[2**]
Seclusion (for a certain amount of time) whereby the resident is isolated from others in a room specifically designed for short term forms of seclusion	0.3	0.1	0.00	134	0	0	1	−1.00	0.00	345	0	0	6	−2.46[2*]
Inspection of mobile phone; checking messages and calls	0.2	0.1	0.00	127	0	0	8	−2.87	0.00	338	0	9	0	3.02[2**]
Resident had to stay in a room (other than his own) with the door locked	1.4	0.3	−0.01	132	0	1	2	−0.58	0.45	331	6	14	0	3.78[2**]
All forms of medication administered under coercion	1.2	0.2	−0.01	131	0	1	3	−1.01	–	351	0	0	0	0.00
Inspection of private room, cupboards, refrigerator and so on	2.1	0.5	−0.03	122	0	2	11	−2.56	0.74	327	12	8	0	2.84[2**]
Limiting the receiving and sending of letters/mail	0.9	0.2	−0.04	123	0	4	8	−1.18	0.40	343	1	3	0	1.74
All forms of nutrition (food and liquids) administered under coercion	1.6	0.3	–	135	0	0	0	0.00	0.00	350	0	0	1	−1.00
Strip-searching	0.3	0.1	–	135	0	0	0	0.00	0.00	345	0	1	1	0.00
Inspection of bags and jacket/clothes	1.2	0.2	–	135	0	0	0	0.00	0.00	345	0	1	1	0.00
Seclusion (for a certain amount of time) whereby the resident is isolated from others in a room specifically designed for long term forms of seclusion	0.0	0.0	–	135	0	0	0	0.00	–	351	0	0	0	0.00
A tilting chair which prevents residents from getting out of the chair	0.1	0.0	–	135	0	0	0	0.00	–	347	0	0	0	0.00
A weighted down blanket preventing the person from getting up	0.3	0.1	–	135	0	0	0	0.00	–	347	0	0	0	0.00
A form of surveillance technology which can detect a resident getting out of their chair	0.3	0.1	–	135	0	0	0	0.00	–	347	0	0	0	0.00
Total	8.1	100.0	0.64	6509	694	387	239	6.04	0.70	17412	1610	896	302	17.42[2**]

Note. *$p \leq .05$, **$p \leq .01$, - = Kappa could not be determined.

Procedure. In order to form a panel of stakeholders an email with information on the study and an invitation to participate in the panel was sent to professionals of the care organization and the committee of representatives of residents. Because the response rate of this invitation was low a reminder was sent four week later. Nevertheless, the response rate stayed low and five professionals were individually approached and asked to participate. Eventually, the panel consisted of thirteen people, including the first 3 authors. One meeting of 4 hour was organized.

For the purpose of the implementation of a mandatory routine registration system senior support staff members, managers, psychologists, and physicians of 50 units were informed by email about this step of the study and invited for training in registration of coercive measures. The online system was developed to register and justify the use of coercive measures within the health care organization; it had to meet extant standards which were set by law, health care inspectorate, and organizational policy. The system is part of the electronic personal file of a resident. Therefore, training focused as well as on the identification of coercive measures as on laws and regulations and policies and how the system could be used. Outcomes originating from reflections by stakeholders on results of the first part of the study contributed to the training. This meant increasing awareness and thereby the identification of coercive measures. Training was given by the first author, by a research assistant, and by several master students. At the end of the training, coercive measures were registered in the system and caregivers were able to maintain the registration. Training contained one or more visits to units to support registration of coercive measures. The number of visits depended on the number of coercive measures which had to be registered, and time needed for identification and registration of all coercive measures. Whenever a psychologist or physician was not able to come to training, the inventory of coercive measures and an explanation of the system were talked through by phone. Senior support staff members were always present at training.

When researchers and support staff, professionals, or management did not agree whether a measure was a coercive measure or not, they were registered in a different section of the electronic personal file of a resident. This section had the structure of a form on which day to day components of care are described. Professionals were ultimately responsible for the registration of coercive measures in the system and, therefore, they decided if a coercive measure was registered in the registration system or not. In most cases, the researchers considered measures as a coercive measure according to the list of coercive measures, but the staff members and professionals thought it was not in that specific case.

The electronic personal file consisted of all information of a resident, including treatment plans, challenging behavior management plans, records of professionals, and forms on which information is included concisely. Conform policy of the organization, the use of coercive measures is described and supported by professionals in these plans. The first author and a research assistant checked plans of 30 residents on coercive measures which were not registered in the registration system nor in the section of electronic personal file where coercive measures could be described in case no consensus was obtained.

Instruments. In order to validate the results of the first part of the study, the panel of stakeholders discussed its results within a set structure. Results were presented and the panel was asked to generate explanations why support staff would or would not register a measure as a coercive measure. Also, they discussed consequences of results for routine registration of coercive measures by support staff and professionals. The reflections of the panel were recorded and minutes were made.

To register coercive measures, a mandatory registration system of the health care organization was used, which was developed by the health care organization in order to provide data and reduce the use of coercive measures, and was implemented after the first part of this study. The registration system included the 57 listed coercive measures used in the first part of the present study and additional coercive measures. Registration could be done at any given moment and, depending on the type of coercive measure, evaluations took place at least every 3 or 6 months, but updates could be made more frequently when necessary. The registration system was part of the resident's electronic personal file. This file contained all information of a resident including written plans and forms. Forms are displayed as a fixed format and used to include information concisely. The form on which components of daily care were noted was used to include coercive measures on which no consensus was obtained. Support staff members were asked to use the description of coercive measures corresponding with the list of 57 coercive measures in order to obtain information in an unambiguous way. Plans of professionals or support staff members are displayed as written text, without a template.

Analysis of data. In order to validate the conclusions from the first part of the study, a panel of stakeholders discussed the psychometric outcomes. Recordings were made and findings were used to achieve an optimal registration of coercive measures in a mandatory routine registration system.

In order to test the success of the implementation of the new registration system, correspondence of the new routine recording of coercive measures with the coercive measures as described and approved in the resident's electronic personal file was analyzed by comparing the number of coercive measures of the different sources of the electronic personal file. In addition, type and number of coercive measure registered in the system were compared to the results of the first part of the study.

Results

Part One: Reliability Study

During a period of 36 days, 43 out of 55 units registered coercive measures. Registration of coercive measures concerned 231 residents and 554 shifts. Research assistants made 28 independent observations of one shift on 28 units. Within 16 units during a total of 67 shifts, a second support staff member performed registration independent from the first support staff member.

Table 1 shows the Kappa and *z*-scores for the correspondences between the use of coercive measures during a shift as

TABLE 2
Correlations of ≥0.50 between different types of coercive measures

		1	2	3	4	5	6	7	8	9
1	Jump suit which cannot be torn and/or prevents residents taking off their clothes		0.56							
2	Jumpsuit which includes a lock at the back to prevent the resident taking off his clothes									
3	Locking the outer doors (to prevent the resident or other residents from leaving the care unit)				0.64	0.55	0.58	0.54		
4	Closing access to the garden					0.56	0.63	0.61		
5	Resident is not allowed to be in the institution area without permission of staff carers						0.79	0.70		
6	The resident not being allowed within and outside the institutional grounds without permission							0.79	0.50	
7	Resident is not allowed within the institutional grounds without permission									
8	The resident not allowed outside and within the residential grounds without surveillance (either under supervision of support staff or through the use of surveillance technology)									0.72
9	Resident is not allowed at or outside the institutional grounds without supervision (supervised by support staff or surveillance technology)									

registered by the first support staff members, the independent observers, and the second support staff member. Adequate agreement (i.e., Cohen's Kappa ≥ 0.50) was found for 25 out of 57 coercive measures concerning registration by support staff members and observers, with the following five measures achieving the highest score: orthosis used in bed, preventing the resident from moving about, the use of "Swedish belt" in bed (bed belt), locks on shoes, camera/video surveillance (either within resident's private room and/or in communal part(s) of the building), and a jump suit which cannot be torn and/or prevents residents taking off their clothes. For 27 coercive measures concerning the agreement between staff members and observers or staff members and second staff members, with the next five measures achieving the highest score: limiting the use of (mobile) phones (having to hand in your phone to the staff at certain (set) times, only being allowed to call someone under supervision or at certain (set) times), closing access to the garden, camera/video surveillance (either within resident's private room and/or in communal part(s) of the building), physical coercive measure (parts of the body being held down), and limiting visitation (either receiving or visiting) of family friends and others. Adequate agreement for both staff-observer and staff-second staff correspondence was found for 15 coercive measures. An overall Kappa of 0.64 and 0.70 was found for the staff-observer and staff- second staff correspondence. Both the observer and second staff member more often registered a coercive measure when the staff member did not than vice versa, respectively $z = 6.04$ and $z = 17.42$, $p \leq 0.01$.

Associations between different types of coercive measures were determined by calculating phi correlation coefficients for all types of coercive measures. Thirteen correlations ≥0.50 were determined (see Table 2).

Part Two: Validation and Implementation Study

The panel of stakeholders discussed possible explanations of the results in part one for the differences among informants, and the implications of the findings for routine registration in day to day care. No obvious explanation was agreed upon for the variation in agreement on coercive measures between the different informants, leaving the degree of error unexplained. Hypothetical explanations varied widely from differences in intentions of staff and targeted behavior, knowledge, and awareness of support staff on the value on self-determination, visibility of coercive measure, policy of the health care organization, and the degree to which application of coercive measures were a matter of normal routine. In fact, stakeholders considered it likely that measures with a low extent of agreement would be restrictive when above explanations were not applicable. A consequence of reducing the list to measures with at least a moderate extent of agreement would be the coverage of the registration of coercive measures would drop. The discussion revealed a number of elements that determine agreement on measures, including knowledge, skills, and awareness of caregivers, that can be improved by, for example, training and thus could lead to stronger agreement. As an implication of these reflections for the registration

of coercive measures in the second part of the study the complete list of 57 coercive measures was retained and attention was paid on training on identification and registration of coercive measures.

Data collection was completed one year and seven months after the system was released and training and registration of coercive measures started. During training, coercive measures were identified using the list of 57 coercive measures and registered in the registration system. However, when there was no consensus among the multidisciplinary team and researchers on whether a measure was restrictive or not, it was noted on a form with components of day to day care, which is part of the electronic personal file. Conform process and policy of the care organization it was assumed that all coercive measures were described and substantiated by professionals in written plans as part of the electronic personal file. Therefore, electronic files of 30 residents were checked for coercive measures. Content of these plans was considered as 100% of applied coercive measures. Compared to this number 46% of the coercive measures were registered in the registration system, 38% of the coercive measures were noted at the form which contained a set of components of daily care, and 16% of the coercive measures were noted in plans as part of the electronic personal file, although they were not identified during training. Comparing results of both parts of the study, only four types of coercive measures (7.0%) were measured with at least a moderate reliability *and* were considered and registered at least in 75% of cases as coercive measure by support staff and professionals. These were "being confined to one's own room with the door locked," "the resident not being allowed within and outside the institutional grounds without permission," and "orthosis used in bed, resulting the resident is not being able to move."

Conclusion and Discussion

Findings revealed a subset of coercive measures that were recorded with reasonable reliability, and that could provide the basis for routine registration of the use of coercive measures. This registration can be used to improve care and protect the rights of persons with intellectual disabilities, at the level of individual care plans, institutional policies, as well as national policies. However, registration of coercive measures yielded reliable data for only 25 out of 57 types of coercive measures. Despite standardized definitions for each coercive measure (Matson & Boisjoli, 2009; Williams, 2010), registration that covers the broad definition of coercive measures ("any measure that is restrictive") is due to yield unreliable and variable prevalence outcomes.

The data revealed patterns of disagreement between registrations of support staff members, independent observers, and colleague support staff members. Both the observer and colleague staff member more often registered a coercive measure when the support staff member did not than the reverse. The stakeholder group, which reflected in the second part of the study on the findings concerning reliability, suggested that decisions to register particular care practices as coercive measures may be dependent on the encoding of practices performed and observed during the shift as restrictive, which would require awareness of the full set of 57 coercive measures. This awareness may have been heightened among the observers, because they were specifically trained and only had to focus on observing, rather than providing care and support. In addition to factual knowledge about practices that could be restrictive, differences in norm setting (e.g., the importance of self-determination) and being accustomed to restrictive measures may influence the encoding and interpretation of care practices, leading to differences in retrieval at the end of a shift when coercive measures were recorded (Frederiks et al., 2017). These potential explanations do not apply to the heightened prevalence according to the registrations by colleague support staff.

The need to have a broad definition of coercive measures and to have a registration that is as broad as possible was underscored by the relative independence of the use of the 57 different coercive measures. Only nine measures were found to be associated with other coercive measures. To some extent, this incoherent pattern can be explained by the low interrater reliability, which attenuated correlations. But the number is still small relative to the 25 coercive measures that were registered with adequate agreement between support staff members and independent observers. Even for these nine coercive measures, it is possible that these correlations are the result of similarly worded items. As few categories of coercive measures are broadly accepted on the basis of empirical clustering or underlying factors, one could use a priori defined categories on the basis of specific characteristics of coercive measures such as physical or mechanical measures, as proposed by Matson and Boisjoli (2009). Concerning registration of coercive measures, this could lead to a clear grouping of measures and perhaps a way to recognize coercive measures more easily.

The second part of the study raises the concern that a mandatory and structural registration system which is part of the residents' electronic personal file may yield an unreliable and incomplete picture, even after training of support staff and professionals as this was found important by the group of stakeholders. Insufficient registration risks persistent use of coercive measures despite policies to reduce their use. Consensus on whether particular care measures were coercive measures or not by the team of professionals and support staff was conditional on the registration in the system. About 84% of coercive measures were identified and talked through during training; agreement was reached on 46% of coercive measures. In their reflections, stakeholders emphasized the importance of awareness of coercive measures. However, systematic identification and training on awareness of coercive measures did not lead to consensus on coercive measures and a complete registration of all measures. Moreover, only four measures (7.0%) had a reasonable reliability in part one and were registered as a coercive measure in part two of the study, underscoring that reliability may come to the expense of coverage.

Stakeholders also suggested that the meaning of the context in which a measure is applied is part of the determination of coercive measures by support staff. This could be in line with difficulties defining coercive measures described by Matson and Boisjoli (2009). A measure can be both restrictive and nonrestrictive depending on the context in which it is applied. Elements within the context which affects the interpretation of measures can be the aim and intention on which coercive measures are applied, organizational policies or culture, or the value

which is assigned to self-determination by caregivers or residents. The way in which these contextual factors affect the interpretation of measures is not clear and possibly personal or determined by different interests. Results of Niemeijer et al. (2014) show that support staff members value safety more than the value of self-determination. Support staff may consider the registration of these coercive measures as less important and give it less attention than policy makers may assume, especially when registration has to lead to a reduction of coercive measures.

Limitations

Concerning the first step of the study, two limitations have to be mentioned. First, the observers may not have been able to notice all coercive measures applied, especially when multiple support staff members were present during the observation and coercive measures may have been applied out of sight or hearing distance. Second, shifts registered by the colleague staff members were not selected randomly but by the second staff members themselves, which may have led to a selection bias. Regarding the second part of the study, the selection of participants of the panel of stakeholders was partly done by a broad and then direct invitation of persons who were professionally or personally related to the organization, which may have led to a selection bias. In addition, no specific methods on qualitative data processing were used in processing the reflections of the panel. Therefore, results should be interpreted with caution and seen as an indication of outcomes of a mandatory and structural registration of coercive measures.

Implications

In both parts of the study, consensus on whether a measure is restrictive or not was limited across a wide range of coercive measures. A complete, according to a list of standardized coercive measures, and reliable registration of coercive measures in day to day care appears, therefore, to be only partly feasible. Considering the several goals of registration on improvement and justification of the use of coercive measures, it should not be assumed that routine registrations are a reliable and valid reflection of actual care practice. Which coercive measures are included in the registration system is an outcome of the process of consideration by support staff and professionals whether a measure is restrictive in a specific context or not. Implications for policies on improvement of registration and reduction of the use of coercive measures, therefore, focus on this process in two ways. First, as indication and registration of coercive measures is an outcome of a group process, interventions on improvement should focus on this process. Outcomes will be improved when information obtained from the registration system is used to support caregivers (Hucksorn, 2004). A registration system should serve and challenge support staff members to provide the best care and, therefore, use as few as possible coercive measures. Also, independent observers can be used to test these registrations and contribute to the development of a reliable and full registration of coercive measures. Second, clarification is needed how contextual factors affect the identification of coercive measures. In the current Psychiatric Hospitals (Compulsory Admissions) Act (Wet Bopz) and also the Care and Coercion Act (in Dutch: Wet Zorg en dwang) the justification for coercive measures should be very clear: to reduce harm for a resident. The context in which coercive measures are used, however, is not taken into account. Therefore, further research should focus on addressing important context factors in using coercive measures. Also, focus has to be on how registration can serve multiple goals, such as support for staff members, professionals, and management to improve quality of care. Finally, it should be clear how registration contributes to the explanation and justification of the use of coercive measures, especially in designing and adapting (new) legal frameworks about coercive measures. Preventing violation of rights of people with intellectual disabilities by unnecessary use of coercive measures should be the goal of registration of coercive measures and developments in policies and legal frameworks.

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