

Aggression Management in an Adolescent Forensic Unit

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The present study aimed at describing and evaluating the effectiveness of a comprehensive aggression management program in an adolescent forensic unit. Six-month trends in figures for aggressive behaviors against staff, and rates and characteristics of physical interventions to control aggression were studied over 2 years using irregularity reports from the study unit, and structured forms filled in by the nursing staff immediately after each event. Events of verbal and physical aggression decreased as the implementation of the aggression management program stabilised. Physical interventions became shorter over time. Injuries to the staff became less frequent. A systematic and comprehensive aggression management program allows improvement of aggression management without increasing use of coercion. As the use of coercion decreased, the staff injuries decreased.

Psychiatric patients' aggression is continuously managed by chemical and mechanical restraint and seclusion (Fisher, 1994; Duxbury, 2002) even if these raise professional, ethical and legal considerations (Wright, 1999). Recent recommendations to manage aggression in child and adolescent psychiatry encourage prevention, early intervention with de-escalating techniques and therapeutic anger management programs, with emphasis on enhancing patient autonomy and dignity (AACAP, 2002; dosReis, Barnett, Love, Riddle, & Maryland Youth Practice Improvement Committee, 2003)

Physical holding, therapeutic holding, and physical restraint refer to non-pain inducing techniques of manually preventing the patient from causing damage by violent behavior (Miller, Walker, & Friedmann, 1989; Stirling & McHugh, 1998; Myeroff, Mertlich, & Gross, 1999; West & Abolins, 2001). Therapeutic holding is combined with dialogue that aims at helping the patient to regain self-control, and a gradual release of the hold responding to signs of increasing self-control. Therapeutic discussion afterwards, aiming at increasing the patient's understanding of her/his own behavior and enhancing alternative behaviors, is a significant part of the approach (West & Abolins,

2001; APA, APNA, & NAPHS, 2003). It is most difficult to make a clear-cut distinction between the restraining and therapeutic aspects of a physical holding intervention.

Chemical restraint refers to the use of (major) tranquilizers in order to gain rapid control of a patient's aggressive behavior. It may be difficult to distinguish between appropriate symptom control and the desire to restrain the patient with medication (Currier & Allen, 2000). Emergency medication should be therapeutic regarding the disorder that is assumed to cause the escalation or contribute to it. Therefore, chemical restraint is not always an appropriate expression. PRN medication (pro re nata; as needed) may be a more appropriate term describing the pharmacological behavior and symptom control in an escalated situation.

Seclusion and restraint, perceived more positively by staff than by the patients, are often considered unavoidable in the management of serious aggressive behavior (Norris & Kennedey, 1992; Tooke & Brown, 1992; Fisher, 1994; Martinez, Grimm, & Adamson, 1999). In child and adolescent psychiatry seclusion and restraint have sometimes even been considered therapeutic in themselves (Joshi, Capozzoli, & Coyle, 1988; Antoinette,

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Iyengar & Puig-Antich, 1990; Millstein & Cotton, 1990; Cotton, 1995), even if there is little evidence of their effectiveness beyond immediate helpfulness in aggression control (Sailas & Fenton, 2000). The rate of their use varies vastly across settings (Brown & Tooke, 1992). Given the ethical concerns, weak evidence for optimal use of restraint, and inconsistencies in aggression management practices, programs aiming at reducing the use of seclusion and restraint are increasingly being published. These focus on continuous discussion on ethical issues, multi-disciplinary collaboration, staff education, effective use of preventive and early intervention techniques, rapid medical evaluation of a decision to seclude/restrain, constant supervision of a secluded/restrained minor, continuous evaluation of practices, and stricter administrative reporting procedures (AACAP, 2002; Barnett, dosReis, Riddle, & Maryland Youth Practice Improvement Committee, 2002; Currier & Farley-Toombs, 2002; APA et al., 2003; Donat, 2003; Donovan, Plant, Peller, Siegel, & Martin, 2003; dosReis et al., 2003; Schreiner, Clifford, & Sevin, 2004; Sailas & Wahlbeck, 2005)

Empirical research on aggression management in child and adolescent psychiatric settings is sparse, particularly in child and adolescent forensic settings where aggression is a most dominant problem. There is a need for research on the efficacy of multi-modal aggression management programs as well as research on assaults on staff working in juvenile facilities (Duxbury, 2002; Ryan, Hart, Messick, Aaron, & Burnette, 2004).

Aims

The present study was designed to

1. Describe a comprehensive aggression management program in a newly established adolescent forensic unit
2. Evaluate the implementation of the aggression management program by studying trends over 2 years in events of aggressive behavior and frequency and characteristics of physical and mechanical restraint
3. Offer clinicians basis for discussion on improvement of therapeutic aggression management in treatment of adolescent forensic psychiatric patients

METHOD

Setting

The study unit (Kahila, Kilkku, & Kaltiala-Heino, 2004; Kaltiala-Heino & Kahila, 2006) provides tertiary level psychiatric services for adolescents with forensic background and/or violent and noncompliant behavior from Finland. The unit has 12 beds divided into 2 modules. The staffing level in the Unit is 2.7 nursing staff per bed. Over the study period, the first two years of the unit's functioning, 23 boys and 8 girls were admitted. At admission, they were 11-17 years old, $M = 14.8$ yrs ($SD = 1.8$). At their first ever psychiatric admission, they had been 11-17 years old, $M(SD) = 12.0(2.9)$ yrs. Of the adolescents admitted, 36% had a main diagnosis of schizophrenia spectrum (f20-29) or affective disorder (f30-39). The main diagnosis was classified to the conduct disorder group (f90-99) in 52%, and to developmental disorders (f80-89) in 13%. 84% had committed violent or other criminal acts serious enough to warrant police investigation. Twenty-nine percent were known to have been seriously victimized in physical or sexual abuse, and 58% displayed serious self-destructive behaviors. Of their parents, 52% had significant psychiatric, substance abuse or criminal problems, and 61% of the adolescents had experienced disruptions of parenting (parental divorce, mother or father not involved in the adolescent's life, parental rights transferred to the social authorities). Neuroleptic medication was used in the treatment of 66% of adolescents admitted, for psychotic symptoms and aggression.

The Aggression Management Program

The aggression management program was primarily created by the unit management. It is continuously monitored and improved in dialogue between the management and whole clinical staff at three times a year scheduled forums. The program is based on the international literature, clinical experience and the ethical principle of minimal restrictive intervention. It covers both clinical and administrative practices, and the activities of all staff groups (Table 1) (AACAP, 2002; Barnett et al., 2002; dosReis et al., 2003; APA et al., 2003).

Table 1
An Overview of the Aggression Management Program in the Study Unit

	Responsibility
1. Relevant physical environment, equipment and written instructions	Chief psychiatrist and nursing director
- safe furniture, electricity, windows, locks etc.	
- metal detector in operation	Ward manager and adolescent psychiatrist
- alarm devices available for all the nursing staff	
- written instructions of all below parts of the program are updated and easily accessible	
- fire safety equipment, plans and skills	Ward manager and head of fire safety
2. Structured violence risk assessment at admission and during assessment period	Adolescent psychiatrist, psychologist, social worker and the nursing team
- collecting information on a new patient in advance (referral, discussions with the referring doctor, latest place of residence and family)	
- at admission: psychotic symptoms, substance use history, suicidality, drug screening	
- during assessment period: SAVRY	
- over the course of treatment: behavioral analyses	
3. Safety with household equipment	Domestic staff, nursing team
- counting of spoons, forks and knives at all meals	
- supervised use of scissors and the like that the adolescents need for schoolwork, and therapeutic and leisure activities	
- ensuring that irregular visiting staff complies to equipment safety (for example, technical staff, constructors)	
4. Elimination of dangerous objects	Nursing staff
- list of objects forbidden in the unit is sent to the adolescent and to her/his carers in advance, presented at admission and available outdoors & in nursing office	
- the young persons' belongings are checked on arrival in co-operation between the young person and a staff member	
- visitors must surrender forbidden objects to the staff if they wish to remain in the unit	
- any objects found by the metal detector are checked and mainly not allowed in the ward	
- the staff may refuse entry to a visitor unwilling to comply with these rules	
5. Predictable and random testing substance use	Nursing staff
- the young people give tests on admission and on return from leaves (holidays, runaways)	
- staff may request random tests at any time	
6. Liaising with families	Ward manager, adolescent psychiatrist, psychologist, social worker, nursing team
- optional preadmission telephone discussion	
- optional preadmission outpatient consultation	
- preadmission written information about the ward rules	
- involving the parents / caregivers in assessment period (interviews about the early development of the young person) and treatment (network meetings, optional more comprehensive family work)	

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| <p>7. Structured activities and therapeutic milieu</p> <ul style="list-style-type: none"> - daily and weekly schedules (ward, individual) - staff meetings - community meetings | <p>Ward manager, nursing staff</p> |
| <p>8. Supporting self-control</p> <ul style="list-style-type: none"> - modeling - emphasizing responsibility for one's own behavior - individual behavioral analyses and interventions based thereon - defusing after aggressive events to increase self-understanding (see 13) - aggression replacement therapy groups | <p>Nursing team</p> <p>Psychologist</p> |
| <p>9. Early intervention, structured de-escalation</p> <ul style="list-style-type: none"> - structured consequences of aggressive behavior - individual de-escalation techniques based on behavioral analysis - conversation, focusing on other issues, time out | <p>Nursing team</p> |
| <p>10. Physical intervention</p> <ul style="list-style-type: none"> - physical restraint (therapeutic holding), completed with continuous discussion supporting the adolescent's regaining control - emergency medication according to individual treatment plans - possibly using duvet on the young person to increase safety of holding - gradual release of the hold when the adolescent regains self-control | <p>Nursing team</p> <p>Doctor on call</p> |
| <p>11. Mechanical restraint</p> <ul style="list-style-type: none"> - if safety is severely compromised despite previous actions - therapeutic management of a mechanical restraint situation by intensive nursing | <p>Shift leader and doctor on call</p> <p>Assigned nurse</p> |
| <p>12. Alarm</p> <ul style="list-style-type: none"> - calling in more staff in advance when a young person is anticipated to escalate - all nursing staff carry alarm devices at all times - emergency alarm in threatening situations | <p>Nursing team</p> |
| <p>13. Ending physical or mechanical restraint, defusing</p> <ul style="list-style-type: none"> - observing re-emergence of the adolescent's self-control in dialogue - gradual release - intensive nursing after releasing | <p>Nursing team and doctor on call</p> |
| <ul style="list-style-type: none"> - structured defusing among the staff - psychological debriefing among the staff when needed <p>- structured defusing with the young person, aiming at increasing awareness of one's own emotions, thoughts, reactions and behavior in the situation, and points where one could have chosen a different action</p> <ul style="list-style-type: none"> - optional defusing in community meeting | <p>Adolescent psychiatrist,
Ward manager
Nursing team</p> |
| <p>14. Continuous improvement</p> <ul style="list-style-type: none"> - unit board periodically discusses clinical impressions of the aggression management - biannual evaluation of the quantitative data collected in staff and adolescent defusing of the events - international benchmarking - maintaining physical restraint skills | <p>Chief psychiatrist and nursing director</p> <p>Ward manager</p> |
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The aim of the aggression management program is to ensure the safety of all on the ward, prevent aggressive outbursts, increase the adolescents' understanding of their own aggression and ability to modify their own behavior, and to manage escalating situations in a therapeutic way. The aggression management program can be conceptualized as a process, the positive final outcomes of which are fewer and less severe outbursts of aggression, less damage caused by aggression, and increased motivation and capacity to self-control in the young people. The process actually comprises a number of lower-level processes (Table 1; 1-14) that all have specific outcomes contributing to the outcome of the overall process (Shewhart, 1980).

The unit policy states that physical holding and PRN medication should rather be used earlier and with a lower threshold than as a last resort intervention. Mechanical restraint is used as a last resort. Seclusion to isolation room is not used.

Measures

Structured Evaluation of Physical Interventions

All events requiring physical intervention are evaluated with the psychiatrist the next regular workday after an incident, using a structured form filled in by the nursing staff immediately after the event. The form records the development of the situation (open-ended question), approaches attempted before physical intervention (open-ended), number of staff participating (*N*), extremities restrained (names of nurses holding arms, head, legs), positions of the adolescent during the episode (standing, walking, sitting, kneeling, lying face up, lying face down), use of a duvet to increase safety of holding (yes/no), starting and ending times of physical holding, medication given (none, peroral, i.m, both peroral and i.m.), possible injuries to the young person and the staff (choice from a list), and possible use of mechanical restraint (yes/ no; length of restraint; de-escalating approaches used during restraint (open)). Afterwards, a defusing interview with the adolescent is recorded on the same form. In this report, trend over time in physical interventions is studied by calculating one month and half year prevalence. The number and characteristics of physical interventions serve as proxy variables reflecting the frequency and severity of aggression.

Irregularity Reports

All units in the study hospital report into a central database all kinds of events and irregularities that may compromise safety on the wards. Irregularity reports are classified to: 1. Disturbance (disturbing and inappropriate behavior; unauthorized person entering spaces allowed only for professionals); 2. Violence (verbal violence; minor violent behavior; pain-inducing violent behavior; violent behavior causing injury); 3. Theft; 4. Vandalism, breaking and entering 5. Technical irregularity; 6. Fire; 7. Data security breach; 8. Accident; 9. Threatening crisis. In this study, irregularity reports (total number and reports due to violence) are presented in monthly averages calculated for 6-month periods. Irregularity reports from the study unit are available from Oct 03, from beginning of the second of the 6-month periods studied. Irregularity reports reflect the level of disorganization on the ward, and incidences of violence directly measure the occurrence and severity of aggression.

The Study Period

The unit was opened in April 2003, thus the first 6-month period studied (Apr03-Sep03) was characterized by formation of the team. The second 6-month period (Oct03-Mar04) was characterized by reformation of the clinical team with the opening of the second six-bed module. The third 6-month period (Apr04-Sep04) was characterized by increasing stability of the permanent team's working approaches but also by a challenging summer period with first annual leaves of the permanent staff. The fourth period (Oct04-Mar05) was characterized by strengthening the structures of the therapeutic milieu (Kaltiala-Heino & Kahila, 2006).

Statistical Analyses

The characteristics of patients' thresholding physical interventions and the characteristics of the interventions are described. The prevalence of physical holding interventions, mechanical restraints, and irregularity reports due to violence are first presented by month. To study trends over time, prevalence data and characteristics of the episodes are pooled and presented for four 6-month periods. Categorical variables are compared using cross-

tabulations and chi-square test. For continuous data, medians are compared using Kruskal-Wallis test, since the distributions of the continuous variables (length of physical intervention, length of restraint) are skewed.

RESULTS

Physical Interventions

From April 2003 to March 2005 there were 765 physical interventions (on average 1.05/day). Of the interventions, 89% concerned girls and 11% boys. The interventions concerned 17/31 adolescents. Seven adolescents had been held/restrained for less than five times, five for 5-20 times, one for 27 and one 30 times, and three (girls) had multiple episodes (159, 190, and 275). The young person most frequently concerned had thresholded 35% of all the situations, the second most often was 24%, and the third 20%.

After the opening of the second 6-bed module, the number of interventions per bed increased vastly for 3 months (from 1.2-3.2/ bed/ month to 5.4-7.3/ bed/month) to decrease after that (into level 1.5-3.8/ bed/month) (Table 2).

The interventions were most often carried out by three staff members ($M(SD)$ number of participants 3.4(0.05), median 3). Of the episodes, 7% required alerting help from other wards. The distribution of length of the episodes of physical holding was skewed to the left (short holds). $M(SD)$ length of the holding episodes was 55.1(3.6) minutes, 5% trimmed M 42.2 minutes, median 33 minutes. The positions of the young person concerned during a physical holding/restraint episode are presented in Table 3. More than one position is most frequently used during an episode.

In 64% of the physical holding situations, no PRN medication was given. In 22%, peroral medication, in 11% i.m. medication, and in 3% both were used.

Of the physical interventions, 19% were followed by mechanical restraint. Mechanical restraints were applied to 10 adolescents (58% of those who had experienced physical holding/restraint). Mechanical restraint episodes had a $M(SD)$ duration of 2 hours 42 minutes (13 min), median 2

hours. Mechanical restraint episodes per bed had a monthly rate between 0.08 and 0.8 except in three months when the rate rose above 1. In all the three peaking months, a special cause influenced the process: exceptionally high patient turnover, the Christmas period causing great anxiety in the adolescents, and the admission of a seriously self-destructive adolescent who had a surgical wound that could not always be protected without restraining the patient.

The length of physical holding/restraint episodes did not differ by sex. The positions were mainly used similarly when holding a girl or when holding a boy, but sitting on the bed was more frequently used with girls (47% vs. 25%) Mechanical restraints were used equally frequently and the length of mechanical restraint episodes was similar among girls and boys. There was a borderline significant tendency for situations with boys to be managed more often without PRN medication (76% vs. 62%) and situations with girls more often with peroral medication only (24% vs. 9%) ($p = 0.053$).

Trends Over Time

The number of episodes managed with physical intervention was highest during restructuring after opening the second module (second period, Oct03-Mar04). The need to alert extra resources decreased at the same time, even if there was a slight increase again in the third (Apr03-Sep03) period extending over the summer holiday period when a number of temporary staff was present. The number of staff participating in the physical interventions increased from the first 6-month period to the following periods. The median length of physical holds decreased over the four half-year periods (Table 4).

The positions used in physical holding/restraint underwent slight changes over time. The use of sitting positions decreased, and so did use of the position "on the floor facing up", but the position facing up on the bed became more frequently used. The use of mechanical restraint first increased and then decreased, and the length of mechanical restraint episodes also peaked in the period when their proportion of all interventions was highest. Injuries to the staff in situations requiring physical intervention decreased (Table 4).

Table 2
Physical Holding Episodes Month by Month in the Study Unit Over the First Two Years of Operation, Absolute Figures and Episodes per Available Bed

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2003												
N episodes				2	15	7	7	19	19	65	65	88
Episodes in relation to number of beds*				0.33**	2.5	1.2	1.2	3.2	3.2	5.4**	5.4	7.3
2004												
N episodes	45	45	34	25	20	32	23	36	19	18	42	30
Episodes in relation to number of beds	3.8	3.8	2.8	2.1	1.7	2.7	1.9	3.0	1.6	1.5	3.5	2.5
2005												
N episodes	41	21	38	23								
Episodes in relation to number of beds	3.4	1.8	3.2	1.9								

* Apr03 - Sep03 number of beds is 6, from Oct03 12

** in Apr03 and Oct03 the beds were not all in use from the beginning of the month, and thus the standardized figures for these two months are actually too low

Table 3

Position of the Young Person During Physical Holding/Restraint in 765 Episodes. (%)*

Standing	52%
walking	52%
sitting on bed	45%
lying on the floor, face down	37%
lying on the floor, face up	17%
sitting on a chair / sofa	8%
kneeling	7%
sitting on the floor	5%
lying on the bed, face down	4%
lying on the bed, face up	3%

* more than one position is possible during one episode

Irregularity Reports

Irregularity reports are available from Oct03. Over the study period total number of irregularities decreased, and most importantly, irregularities related to violence constantly decreased over the three 6-month periods studied. This was true both for verbal and minor, pain-inducing and injury-inducing violent behaviors (Table 5).

DISCUSSION

The decreasing trend in incidences of violence reported to the irregularity report indicates that the program has been effective once it has been stabilized. Aggressive behaviors decreased constantly during the period studied even if the clients of the unit are most challenging from the aggression management viewpoint. Most of the adolescents had experienced multiple episodes of seclusion and restraint during multiple inpatient treatments and placements before admission to the study unit. Previous treatment episodes had mostly been discontinued because of the severity of the patient's aggressive behavior.

The number of physical interventions cannot be solely expected to decrease with the stabilization of the aggression management program. Early intervention with therapeutic holding is likely to decrease the need to use more restrictive measures, and therefore a low threshold for physical intervention is also encouraged. However, the peaking of physical

holding/restraint episodes during the period of the restructuring of the team and their stabilisation on a lower level suggests stability of the process after a learning period. Support for this assumption is also found in the slightly decreasing duration of physical holding episodes. Even though the statistical significance of the decreasing trend remained at a borderline level of 0.073, we want to emphasize this finding as clinically meaningful since a decrease of almost 10 minutes also represents a decrease of about a fourth of the initially observed mean length in absolute time. Median duration being around half an hour, and the majority of interventions being managed without PRN medication suggest that in physical holding intervention, therapeutic aspects are dominating over control and coercion.

The changes over time in positions in which the young people were restrained are likely to indicate what approaches the staff has found most effective in preventing harm. Injuries to staff decreased over the period studied. This reflects increasing skills both in aggression management in general and in techniques of physical holding. Injuries to the adolescent concerned in escalated situations fluctuated around 10%, but it is noticeable that the data does not reveal what share of the injuries were inflicted by the holding/restraint itself. Severe self-harming behavior may often be the reason to initiate physical intervention. Decreasing need to alert extra resources also reflects the increasing skills of the team, and better aggression management overall.

In the unit's care philosophy mechanical restraint is understood as a measure of control in severe safety

Table 4
Changes Over Time in Frequency and Characteristics of Physical Holding/Restraint Episodes and use of Mechanical Restraint

	Apr03- Sep03	Oct03- Mar04	Apr04- Sep04	Oct04- Mar05	<i>p</i>
Number of episodes	69	343	163	190	
Episodes per bed	11.5	25.6	13.6	15.8	
Episodes concerning girls	95%	86%	91%	91%	NS
External resources alerted	23%	3%	11%	2%	<0.001
Number of staff involved (<i>M</i>)	2.8	3.5	3.5	3.3	0.001
Positions					
Sitting on a chair / sofa	15%	6%	11%	4%	0.003
Sitting on the bed	52%	50%	44%	36%	0.02 (0.002)*
Sitting on the floor	12%	2%	6%	6%	0.004
Kneeling	8%	8%	8%	5%	NS
On bed, face up	2%	2%	6%	4%	0.04
On bed, face down	6%	2%	5%	4%	NS
On the floor, face up	19%	23%	9%	12%	<0.001
On the floor, face down	34%	41%	34%	34%	NS
Standing	40%	54%	48%	51%	NS
Walking	55%	47%	53%	58%	NS
Use of duvet	28%	33%	32%	63%	<0.001
Mechanical restraint	9%	13%	41%	14%	<0.001
Duration of interventions					
Physical holding/restraint 5% trimmed <i>M</i> (<i>SD</i>)	48 min (62.3)	45 min (103)	38 min (86)	41 min (106)	
Median	38 min	35 min	30 min	30 min	0.073
Mechanical restraint 5% trimmed <i>M</i> (<i>SD</i>)	1:45 (1:19)	1:31 (1:04)	3:07 (2:55)	1:59 (0:42)	
Mechanical restraint, median	1:30	1:12	2:15	2:00	<0.001
Frequency of injuries					
to the patient	12%	10%	14%	8%	NS
to the staff	26%	13%	10%	8%	0.001

Table 5

Changes Over Time in Irregularity Reports. Monthly Average of Incident in Total, and Reports Due to Violence (Total Violence, and Separately Verbal, Minor, Pain-Inducing and Injury Inducing Events of Violence), Calculated for 6-Months Periods

	Oct03-Mar04	Apr04-Sep04	Oct04-Mar05
Incident in total	171.2	64.0	64.5
Incidents of violence	87.0	28.2	19.5
Verbal aggression	17.2	10.2	8.7
Minor violent behavior	26.8	11.6	7.2
Pain-inducing violent behavior	33.3	4.2	3.6
Violent behavior causing injury	7.8	3.0	1.3

compromising situations and not a therapeutic intervention in itself. The increasing proportion of mechanical restraint and duration of these episodes over the first 1.5 years suggest that the aggression management program was not optimally balanced then. Decline in mechanical restraint without increase in injuries to the staff, and without increase in aggressive behaviors reported in irregularity records, indicate increasingly successful aggression management as the program consolidates.

When attempting to reduce variation in a process, it is important to distinguish between variation due to special causes and common causes. Common causes arise from the process itself. In all of the three months when use of mechanical restraint rose clearly above the baseline, a special cause influenced the process. From the viewpoint of process control, the special causes should be removed before the process can become fully predictable (Shewhart, 1980). Quite many special causes can indeed be removed with careful planning of emotionally stressful time periods and turnover, but turmoil in acute admission situations cannot always be avoided. It is therefore the more important to improve the routine parts of the aggression management program, to make the unit less vulnerable.

Little information is available on the extent of use of physical restraint, seclusion and mechanical restraint in child and adolescent psychiatry in general. In an earlier Finnish study covering 504 child and adolescent psychiatric inpatient admissions over 2 years, 26% of the patients had experienced physical holding, 9% seclusion and 4% mechanical

restraint (Sourander, Ellilä, Välimäki, & Piha, 2002). In the present sample, 55% of the adolescents experienced physical intervention and 31% mechanical restraint. Higher figures are expectable since the study unit admits only aggressive adolescents with considerable behavioral problems, the main diagnoses of the adolescents admitted to the study unit fall largely within those most associated with aggression (Loeber & Hay, 1997; Vitiello & Stoff, 1997), and the adolescents admitted to the study unit share multiple characteristics associated with greater risk of being restrained (Earle & Forquer, 1995; Delaney & Fogg, 2005). In a US study (Donovan et al., 2003), seclusion and restraint were studied in C&A psychiatric treatment at a state hospital over 2 years. Length of seclusion and restraint episodes were compared between 2 time points. Seclusions had a mean duration of 45-40 min (T1-T2), mechanical restraint episodes 73-63 min (T1-T2). Physical holdings in the present data were essentially shorter than those US figures, but mechanical restraint, when initiated, was applied for longer. However, mechanical restraint episodes in the study unit were essentially shorter than in Finnish psychiatry in general (Keski-Valkama et al., 2007). There is a need for internationally comparable information on the use of seclusion and restraint in C&A psychiatric treatment.

The strengths of this study include that data were collected prospectively as a part of the normal activities of the unit. The staff had a constant routine in filling in the evaluation form and the physical interventions are twice discussed in the team and missing details are added. A weakness is that only a

small number of patients were included. However, the study focuses on unit level, and therefore a small number of different patients are not a disadvantage as it would be in clinical trials assessing outcome on the level of an individual patient.

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