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AGGRESSION AND ITS MANAGEMENT IN ADOLESCENT FORENSIC PSYCHIATRIC CARE

by

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To Staff Members working with adolescents in forensic units

To my Family

Johanna Berg

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ABSTRACT

The overall goal of this study was to explore and identify good aggression management methods and on that basis to produce recommendations for aggression management in the adolescent forensic setting. The study was conducted in three phases. In Phase I, staff's (n = 58) perception of adolescent aggressive behaviour and methods to manage it was examined. In Phase II, staff's (n = 30) perception of treatment settings and treatment interventions available were studied. In Phase III, the effectiveness of an aggression management programme was evaluated. The data were collected during the period 2004-2007.

Participants perceived adolescent aggressive behaviour in a similar way and described aggressive behaviour as being a comprehensible phenomenon. Management methods used to control aggressive situations were alike, although the practical solutions varied between the study units, especially regarding coercive methods. Staff members proposed more time and better opportunities to discuss and evaluate the aggression situation in order to improve the methods used.

The treatment settings were similar in studied forensic units and interventions were primarily focused on psychological aspects, including management of aggressive behavior. A comprehensive aggression management programme proved to be effective in decreasing incidents of violence. The use of coercive methods in aggression situations decreased and injuries to the staff became less frequent.

If staff members intend to apply high quality management methods in aggression situations they have to share a consistent understanding of aggressive behaviour and need to be aware of the various methods available. In addition, they should learn more about assessment methods in order to improve aggression management. International comparison of aggression, methods for managing it and service provision creates a starting point for developing equal care provision and realization within and between European countries.

Keywords: Aggression, violence, adolescent forensic unit, aggression management methods, staff perception, service provision

Johanna Berg

AGGRESSIIVISEN KÄYTTÄYTYMISEN HALLINTA NUORTEN OIKEUSPSYKIATRISESSA HOIDOSSA

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TIIVISTELMÄ

Tutkimuksen tavoitteena oli selvittää hyviä aggressionhallinnan käytäntöjä nuorten oikeuspsykiatrian yksiköissä ja tämän pohjalta ehdottaa suosituksia käytännön aggressionhallintaan. Tutkimus toteutettiin kolmessa vaiheessa. Ensimmäisessä vaiheessa kuvattiin hoitohenkilökunnan (n = 58) käsityksiä nuorten aggressiivisesta käyttäytymisestä ja sen hoitokeinoista. Toisessa vaiheessa selvitettiin hoitohenkilökunnan (n = 30) näkökulmasta nuorten oikeuspsykiatrian yksiköiden peruspiirteitä ja saatavilla olevia hoitokeinoja. Kolmannessa vaiheessa tutkittiin aggressiohallintaohjelman käyttöönoton tehokkuutta. Tutkimusaineisto kerättiin vuosina 2004-2007.

Hoitohenkilökunta määritteli nuorten aggressiivisen käyttäytymisen samansuuntaisesti ja koki nuorten aggressiivisen käyttäytymisen ymmärrettävänä ilmiönä. Aggressiivisen käyttäytymisen hallintakeinot olivat samanlaisia eri yksiköissä, vaikka käytännön sovellukset vaihtelivat erityisesti pakkokeinojen käytössä. Henkilökunta ehdotti enemmän aikaa ja mahdollisuuksia aggressiotilanteiden arvioimiseen, jotta hallintakeinoja voisi kehittää.

Oikeuspsykiatrian yksiköt olivat samankaltaisia toimintaperiaatteiltaan. Hoitokeinot kohdistuivat pääasiassa psykologiseen alueeseen, johon sisältyivät myös aggressionhallintakäytännöt. Aggressionhallintaohjelman käyttöönoton myötä aggressiotilanteet vähenivät osastolla. Pakkokeinojen käyttö aggressiotilanteissa väheni, jolloin myös henkilökuntaan kohdistuvat vahingot vähenivät.

Eettisesti korkeatasoinen ja laadukas aggressionhallinta edellyttää, että hoitohenkilökunnalla on samansuuntainen käsitys aggressiivisuudesta ja että se on tietoinen erilaisista aggressionhallintakeinoista. Lisäksi aggressiivisen käyttäytymisen arviointimenetelmien käyttöönotto tukee aggressionhallinnan kehittämistä. Kansainvälinen vertailututkimus aggressiivisesta käyttäytymisestä, sen hallintakeinoista ja oikeuspsykiatristen palvelujen organisoinnista on ennakkoehto yhtäläisen palvelutarjonnan mahdollistamiselle Euroopassa.

Asiasanat: Aggressiivisuus, väkivalta, nuorten oikeuspsykiatrian yksikkö, aggression hallintakeinot, henkilökunnan näkökulma, palvelutarjonta

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LIST OF ABBREVIATIONS

ADHD	Attention- Deficit Hyperactivity Disorder
CINAHL	Cumulative Index for Nursing and Allied Health Literature
EU	European Union
GAM	General Aggression Model
ICN	International Council of Nurses
ICU	Intensive Care Unit
I.M.	Intra Muscular
ISPN	International Society of Psychiatric- Mental Health Nurses
NICE	National Institute for Health and Clinical Excellence
MAPS	Monitoring Area and Phase System
ODD	Oppositional Deviant Disorder
WHO	World Health Organization

LIST OF ORIGINAL PUBLICATIONS

This thesis is based on the following publications, which are referred to in the text by their Roman numerals I-IV:

I Berg, J., Kaltiala- Heino, R., Löyttyniemi, V., & Välimäki, M. 2012. Staff's perception of adolescent aggressive behaviour in four European forensic units: A qualitative interview study. Nordic Journal of Psychiatry. Early Online. doi: 10.3109/08039488.2012.697190

II Berg, J., Kaltiala- Heino, R. & Välimäki, M. 2011. Management of aggressive behaviour among adolescents in forensic units: a four country perspective. Journal of Psychiatric and Mental Health Nursing 18(9), 776-785.

III Berg, J., Öberg, D., Haack, M.J., Välimäki, M. & Kaltiala-Heino, RK. Provision of interventions in adolescent forensic units – a European perspective. Resubmitted.

IV Kaltiala-Heino, R., Berg, J., Selander, M., Työläjärvi, M. & Kahila, K. 2007. Aggression management in an adolescent forensic unit. International Journal of Forensic Mental Health 6(2), 185-196.

1 INTRODUCTION

Youth aggressive behaviour poses a persistent challenge in societies. Patterns of juvenile crime in Europe show that the nature of crimes committed by adolescents has been changing: the number of violent crimes has increased in many European countries (Stevens et al. 2006). Violence is one of the leading causes of death among young people, particularly in males: an estimated 430 young people aged 10 to 24 years die on daily basis through interpersonal violence in EU Region (Sethi et al. 2010).

In health care settings, patients' aggressive behaviour is a major problem internationally (ICN 2007). Such behaviour is especially current in forensic psychiatric settings, where people are admitted after committing serious violent crimes or for displaying violent and non-compliant behaviour (Ryan et al. 2004, Jacob & Holmes 2011). In adolescent forensic units, staff probably encounter the most aggressive adolescents in psychiatric settings because these severely ill young people lack capability to control their aggressive impulses (Cunningham et al. 2003). This contributes to an even higher frequency of aggressive behaviours and means that staff must be able to react adequately in challenging situations.

Aggressive behaviour is a multifaceted phenomenon. It can be examined from different perspectives (Lewis 2005) causing inconsistencies in the use of the term in clinical practice (Vitiello & Stoff 1997, Rippon 2000). Being a highly emotive and subjective topic, the perception of what constitutes aggressive behaviour varies between care and cultural settings (O'Connel et al. 2000). Various definitions of aggressive behaviour and what causes it also lead to inconsistencies in aggression management, impaired safety in the treatment setting and decrease the quality of care provided (Lawson & Rowe 2009). Thus, the cross-national examination of staff perceptions of adolescent aggressive behaviour helps to create a common knowledge base of the phenomenon studied and may facilitate the choice of interventions in challenging situations.

Efficient management of aggressive behaviour is a prerequisite for high quality inpatient care (Dean et al. 2007) and contributes to safe aggression management. Clinical guidelines highlight early intervention and the use of the least restrictive approaches in managing aggressive behaviour in child and adolescent psychiatric context (Masters et al. 2002). Management of aggressive outbursts should focus on interventions designed to support patients' self-control and self-determination while preserving the safety of others and of property, while also respecting the patient's autonomy. The most restrictive interventions, like seclusion and restraints, should be used as a last resort when less restrictive methods have failed. (ISPN 2001, Masters et al. 2002.) To decrease the use of coercive methods in aggression management, several alternatives have been suggested, such as clearly defined step-by-step protocols and individual aggression management plans that focus on detecting escalated behaviour in its early stages (Dean et al. 2007).

Forensic mental health service provision varies significantly in European countries regarding the number of facilities, beds, diversity of forensic services and quality of care (Salize et al. 2005). In general, forensic units admit patients with a forensic background and/or violent behaviour (Dressing & Salize 2006). Adolescent forensic units provide secure treatment for minors aged 12-18 who are non-compliant and violent in their behaviour and pose a serious risk to others and themselves (Hoare & Wilson 2010). However, the treatment interventions offered in these units are not well enough known. There is a lack of information on how forensic adolescent care services and interventions have been arranged in European countries. Examining service provision internationally would help to develop adequate interventions, help to standardize the interventions used and so facilitate planning the forensic services for adolescents. Further, by examining service provision it would be possible to ensure equality in care provision and realization between the EU countries.

The overall goal of this study was to explore and identify good aggression management methods. In Phase I, staff perceptions of aggressive behaviour among adolescent and methods used to manage it were examined (Papers I, II). In Phase II, the treatment settings, focus of treatment and treatment interventions available in adolescent forensic units were explored (Paper III). In Phase III, the implementation of a comprehensive aggression management programme was described and evaluated (Paper IV). Based on the results of the studies, recommendations for aggression management in adolescent forensic settings are presented.

There is lack of nursing research in adolescent psychiatric nursing field altogether and aggressive behavior in adolescent psychiatric settings is neglected area of research (Hage et al. 2009). In addition, the study topic is important because the cross-cultural examination of adolescent aggressive behaviour and its management may help to identify good nursing practices worth disseminating further and help to develop patient-centred and safe aggression management models (Woods & Ashely 2007, Hamrin et al. 2009). Further, an international service provision comparison would facilitate the exchange of knowledge, would help to set parameters for education (Suhonen et al. 2009), help to develop service provision and to facilitate staff mobility between countries. Moreover, it would help to achieve a commitment to equality and equal rights for all citizens and support efforts to provide adequate mental health or forensic care services throughout the EU. Further, consistent treatment practices between units would enable the comparison of treatment outcomes in future research.

This study focused on adolescent aggressive behaviour in adolescent forensic units. These units offer care for young people who suffer from severe mental health problems and display aggressive behaviour posing a serious threat to others and themselves, and who are at risk of reoffending (Withecombe & Jasti 2007). In these units, adolescent health and wellbeing can be seen as a mental condition which is still in progress. The mental health of a young person can be defined as a relative state of mind in which a person is able to cope with and adjust to the recurrent stress of everyday living on an age-

appropriate level (Walker 2009). Mental health nursing consists of nursing professionals' actions to promote mental wellbeing, functioning ability and personality development, and to alleviate mental health disorders. This should be done in co-operation with the patient and, when needed, with other professionals related to patients' care. (Mental Health Act 1116/1990.) In forensic mental health nursing, the nursing role is further compounded by such issues as custodial concerns, compulsory detention, coercive treatment and the risk to others due to frequent threat of patient's aggressive behaviour (Mason et al. 2008, Timmons 2010, Tenkanen et al. 2011).

In this study, management of aggression refers to methods used to control adolescent aggressive behavior. Adolescent forensic psychiatric units refer to units which offer high security care for patients who are too disturbed to be cared in regular adolescent psychiatric units (Hoare & Wilson 2010). The patient population is characterized by severe mental illness, severe aggression and non-compliant behavior and are being charged with an offence under criminal law (Cashin 2006). In this study, adolescent refer to minors aged 12-18 (Child Welfare Act 417/2007).

2 LITERATURE REVIEW

2.1. Literature search

A literature search was performed in order to explore previous knowledge and to recognize gaps in existing research related to adolescent aggressive behaviour and its management. The search comprised the CINAHL (from 1966), Ovid Medline(r) (from 1966) and PsycINFO (from 1960) databases. The search focused to empirical studies and literature reviews published in English which were available as full texts. Database searches were conducted for the first time in March 2004 and updated in April 2007 and September 2010 using the same search terms.

Keywords in relevant combinations were used in the literature search in each study phase. In Phase I keywords used were as follows: adolescent, aggression, violence, psychiatry, forensic, nursing, perception, factor, cause, management, treatment. In phase II used keywords were: service provision, mental health, forensic, psychiatry, adolescent, juvenile, delinquent, mental health need. In Phase III following keywords were used: adolescent, aggression, management, programme, effectiveness.

In addition, literature search included manual searching of journals and the search of reference lists of relevant research articles. Internet sites of varied organizations, like the National Research Institute of Legal Policy (Fin), National Institute for Health and Welfare (Fin), Ministry of Justice (UK), WHO and the European Union were searched to obtain general information related to study topic.

2.2. Patient's aggressive behaviour in health care settings

2.2.1. Definition of aggression and aggressive behaviour

Aggression is a dynamic and varied phenomenon (Gendreau & Archer 2005, Kempes et al. 2005, Lewis 2005) due to the complexity of human behaviour (Lewis 2005). This results in challenges in defining aggressive behaviour and is reflected in the literature and in clinical practice, where aggression is defined in several different ways (Maguire & Ryan 2007).

As its most simplistic, aggression can be defined as any behaviour that causes painful experience to another person (Gendreau & Archer 2005), or as actions that are destructive to one's self, other people or belongings (Connor et al. 2006). Further, human aggression can be defined as any behaviour directed towards another individual that is carried out with intent to cause harm. However, actual harm is not required. In addition, the aggressor must believe and expect that the behaviour will harm the victim, and the victim

is motivated to avoid the aggressive act. Thus, aggression is not seen as an accidental event. (Geen 2001, Lewis 2005.)

Aggression has been defined from different aspects, such as being a result of a drive aiming to destroy life (psychoanalytical theories), as a learned reaction to frustrating events (psychological theories) (Shaver & Mikulincer 2011), as a behaviour based on biological functioning (biological origins of aggression) (Liu 2004, Lewis 2005, Liu & Wuerker 2005), or as a shared drive to advance different functions (ethological theory) (Lewis 2005). Moreover, aggression can be discussed through various aspects, such as social-learning theory, neoassociationist theory, script theory and social interaction theory, being currently the major theories of aggression in the literature. However, the difficulty of these approaches is that they define aggression through a narrow perspective ignoring other possible explanations when trying to understand the reasons and circumstances where aggression emerges. (Shaver & Mikulincer 2011.) Thus, a general aggression model, GAM, has been proposed to include the common characters of previous theories of aggression (Anderson & Bushman 2002, Shaver & Mikulincer 2011).

Social learning theory considers aggression primarily as a learned form of social behaviour adopted either as a results of experience or by observing others, performed when rewarded, and maintained through positive reinforcement (Bandura 2001, Geen 2001). Thus, aggressive behaviour is acquired in the same manner as other forms of social behaviour. Persons perpetrate in assaults against others because they adopt aggressive responses due to past experience, or they receive or anticipate various forms of reward for carrying out such actions, or they are directly provoked to aggression by specific social or environmental conditions. (Bandura 1978, Bandura 2001.) In contrast to the earlier theories, the social learning perspective does not attribute aggression to one or more causes. It suggest that the roots of such behaviour are varied, involving aggressors past experiences and learning and a wide range of situational factors, like the presence of other people. (Lewis 2005.)

The cognitive-neoassociation theory of aggression proposes that unpleasant incidents and experiences, such as provocations or loud noises produce negative affect. Negative affect in turn stimulates various thoughts, expressive motor reactions and physiological responses resulting either in fight (orientation to injure the target) or flight (orientation to fear and escape the noxious situation) tendencies. Aggressive thoughts, emotions and behaviour propensities are linked together in memory and, when simultaneously activated, develop associations which may lead to aggression. This model provides a causal explanation for why repulsive events compound aggression, i.e. through negative affect. (Anderson & Buchman 2002, Berkowitz 2003.)

The script theory of aggression proposes that when children observe aggression in the mass media they learn aggressive scripts, e.g., aggression related mental representations. According to this theory, the child first selects a script related to the situation and then adopts a role in the script. The script adopted may be retrieved and they define situations

and may direct behaviour. Scripts are sets of well- rehearsed mental representations in memory, often involving causal links, goal and action plans. (Anderson & Buchman 2002, Shaver & Mikulincer 2011.) This approach can be seen as a more detailed version of social learning processes, thus scripting accounts for the occurence of various aggressive behaviours (Geen 2001).

Social interaction theory regards aggressive behaviour as behaviour where an individual uses coercive acts to generate changes in another person's behaviour (social influence behaviour). Coercive acts can be used to obtain something valuable, like money or information, to demand justice for perceived wrongs, or to achieve eligible self-identities, such as competence. Social interaction theory provides a rationale behind aggressive behaviour motivated by ambition of a higher level. According to this theory, aggression is used as an instrument to obtain significant goals, such as a desired social identity. (Anderson & Buchman 2002, Shaver & Mikulincer 2011.)

The general aggression model (GAM) is an integrative framework for domain specific theories of aggression. GAM focuses on three components: inputs, routes and outcomes. First, GAM focuses on the person in the situation and considers personal (personality traits, gender, attitudes, beliefs, values, expectations, goals, history) and situational (aggressive cues, provocation, frustration, pain and discomfort, drugs) inputs that may lead to aggressive acts. Second, these input factors influence the arousal of aggressive behaviour through three internal states they create. Input factors may increase aggression either by affecting through cognition (e.g. triggering hostile thoughts or aggressive scripts), through affect (e.g. pain causes anger) or through arousal (physical/ psychological). The content of these three routes are highly interconnected and may activate each other. Third, outcomes include several complex decision and appraisal processes where a person assesses the situation, and may result either to thoughtful action or impulsive actions. (Anderson & Bushman 2002, DeWall & Andersson 2011.)

Violence is physical aggression at the highest end of the aggression continuum. It usually refers to the most severe types of physical aggression having extreme harm as its goal, such as aggravated assault causing serious physical injuries, or even resulting in death. (Anderson & Buschman 2002, Shaver & Mikulincer 2011.) All violence is aggression, but not all aggression can be defined as violence. According to Dahlberg & Krug (2002) violence is described as the intentional and repetitive use of physical force, threatened or actual, against one's self, another person, or against a group, that results in serious physical injury, death or severe psychological harm.

Aggression can be characterized on dimensions of reactive-proactive. Reactive (affective) aggression is an impulsive, negative act displayed in response to threat or provocation. It aims to injure the provoking person. Reactive aggression is accompanied by high emotional arousal and manifest in self-defensive and hostile actions. By contrast, proactive (instrumental) aggression is controlled, more premeditated and less emotionally reactive. It originates without apparent provocation and occurs with more

forethought. Proactive aggression is initiated in order to obtain specific rewards, like obtaining goods, seeking power or gaining peer group approval. It manifests for example as bullying and coercive behaviours against weaker peers. (Vitiello & Stoff 1997, Geen 2001, Liu 2004, Gendreau & Archer 2005.)

Aggressive behaviour can be examined on the basis of its consequences to others and self. Harm to other people or damage to property commonly reveal that an aggressive act has taken place. Harm may include physical harm, such as physical injuries in assault situations (Omerov et al. 2002, Viitasara 2004), or psychological harm, like emotional distress (Gendreau & Archer 2005, Kempes et al. 2005, Needham et al. 2005, Inoue et al. 2006), as in cases of indirect aggression (Gendreau & Archer 2005). In addition, cognitive and social functioning may be impaired as a consequence of being a victim of aggressive behaviour (Needham et al. 2005, Dean et al. 2010). However, there are challenges regarding the validity of harm as a criterion in defining aggressive behaviours. First, harm has little discriminatory value because it seems to exist in all types of aggression. Second, the evaluation of harm caused is not only related to the nature of the aggressive act, but also depends on the victim's vulnerability. Thus, the assessment of harm is extremely subjective when describing aggressive behaviour. (Grendreau & Archer 2005.)

Aggression can also be defined on the basis of its behavioural expressions. Buss has delineated aggression by dividing it to physical-verbal, active-passive and direct-indirect dimensions (Gendreau & Archer 2005). Physical aggression is described as physical violence towards other people, like kicking, hitting, scratching, spitting, throwing objects, pinching, biting, pulling hair or strangling (Duxbury 2002, Secker et al. 2004, Sukhodolsky et al. 2005, Grassi et al. 2006, Foster et al. 2007) or as self-harm behaviour where patients may use objects to harm themselves (Foster et al. 2007). Verbal aggressive behaviour (Duxbury 2002, Foster et al. 2007, Kisa 2008) is described as verbal abuse, like threats of harm (Farrell et al. 2006, Ferns & Meerabeau 2007), rudeness (Farrell et al. 2006), or swearing (Stone et al. 2010, Stone et al. 2011). Direct forms of aggression include physical assault and various verbal behaviours that may be hostile in content and in tone. These verbal behaviours may appear with or without physical aggressive behaviour. In addition, non-verbal aggressive behaviour, like threatening body posture or facial expressions, may occur in connection with direct forms of aggression. Indirect aggression consists of actions that involve some kind of social distance between the aggressor and the victim, like gossiping which damages peer relationships. The proceeding of behaviours is often delayed and covert because there is no physical contact. The psychological consequences, however, may be substantial and continue for a long time. (Gendreau & Archer 2005.)

2.2.2. Factors associated with aggressive behaviour among adolescents

Multiple factors are associated with patient aggressive behaviours (Johnson 2004, Woods & Ashley 2007). These factors may relate to individuals (adolescent or staff),

interaction and environment and are cumulative and interactional in nature, resulting in an aggressive act (Lewis 2005, Hage et al. 2009).

Adolescents' early experiences and life history are associated with the development of aggressive behaviour (Loeber & Hay 1997). Factors related to childhood family, like inconsistent and inadequate parenting practices and lack of parental warmth (Barnow et al. 2005, Bailey et al. 2007) increase aggressive behaviour in youth. Adolescents witnessing aggressive behaviour and abusive (sexual, physical) behaviour of a significant adult (Farrington 2005, Salzinger et al. 2007, Duke et al. 2010) are linked to aggression among minors. Further, low socio-economic status, parental criminality (Bailey et al. 2007) and parental attitudes favourable to violence (Herrenkohl et al. 2000, Herrenkohl et al. 2007) are factors associated to aggressive acts.

Some psychiatric disorders in adolescence increase the risk of aggressive behaviours (Valois et al. 2002, Rappaport & Thomas 2004). Disorders related to adolescent aggression are typically conduct disorder, attention deficit/hyperactivity disorder, substance abuse disorders, autism (Vitiello & Stoff 1997, Bailey et al. 2007, Fazel et al. 2008) and some disorders related to personality (Johnson et al. 2000a, Bailey et al. 2007). Further, aggressive children and adolescents often have psychological traits identified as specific to aggression. Aggressive adolescents may have more problems in self-regulation, abstract reasoning and problem solving (Valois et al. 2002) than their healthy peers. They often have difficulties in intellectual functioning, especially in verbal expression. Personality traits associated with adolescent aggression include difficult temperament, lack of empathy and guilt, and risk taking behaviour. (Loeber & Hay 1997, Bailey et al. 2007.)

Moreover, antisocial peer group and negative peer relationships are associated with aggressive behaviours among adolescents through reinforcing adolescents' approval of violence. In particular, gang membership has a strong influence on approval of aggressive behaviours. (Daane 2003, Rappaport & Thomas 2004.) In addition, school related issues, like school dropout, poor school-leaving qualifications and low commitment to school may increase the risk of engaging aggressive behaviour among youth (Bailey et al. 2007).

Further, factors related to staff may be linked to the occurrence of aggressive acts in clinical settings. Staff clinical skills are likely to trigger patient aggression or support prosocial behaviour. This is reflected for example in how staff interact with patients (Duxbury 2002, Duxbury & Whittington 2005, Whittington & Richter 2005, Foster et al. 2007). Staff's negative communication style and authoritarian interaction commonly rise irritation in patients and may lead to challenging situations (Spokes et al. 2002). Withdrawal of services and liberty or verbal limit setting of staff are situations that often provoke aggression (Nijman 2002, Ilkiw-Lavalle & Greyner 2003, Ryan et al. 2004). On the other hand, correct verbal interaction and a focus on building up a mutual understanding diminish aggressive acts (Spokes et al. 2002). Moreover, how nurses relate to patients is crucial, e.g. staff's ability to be (emotionally and physically)

present and available to patients declines aggressive acts (Spokes et al. 2002, Carlsson et al. 2004, Meehan et al. 2006). However, lack of staff engagement and particularly an inability to empathize with clients when interpreting their behaviour and responding in a suitable manner contributes to patient violence (Secker et al. 2004, Gildberg et al. 2010). Further, staff members' failure to remain objective and calm in aggressive incidents, not having enough relevant training and lacking experience of inpatient psychiatry are factors associated with aggression (Chou et al. 2002, Spokes et al. 2002, Kindy et al. 2005). On the other hand, team work and staff confidence in using different restraint measures and experience from previous aggressive incidents helps to control aggressive behaviour among patients (Kindy et al. 2005).

Staff's personal characteristics, like self-control, having confidence in own abilities and self-awareness are factors in staff that help to control aggressive incidents (Spokes et al. 2002). Several studies have reported staff characteristics to be connected to patient's aggressive behaviour such as personality, age and gender. On the other hand the results are contradictory - in some studies no connection is reported. (Johnson 2004, Gadon et al. 2006, Woods & Ashley 2007.)

Unit environmental and ideological factors are related to patient aggression. Limited space and lack of privacy have been reported to contribute to aggressive behaviours (Nijman & Rector 1999, Meehan et al. 2006, Bowers et al. 2009, Hamrin et al. 2009). Conversely, Daffern et al. (2004) concluded that increased personal space serves to reduce acts of aggression. Further, how the unit is designed has an effect on the occurrence of aggressive incidents: structural resources may or may not support patient observation and may result in confrontations (Nijman & Rector 1999). Ideological factors in inpatient units, like lack of planned activity and structure in treatment settings may lead to aggression (Shepherd & Lavender 1999, Meehan et al. 2006, Hamrin et al. 2009). An appropriate level of stimulation is important: boredom or insufficient ward activities and predictability may contribute to aggression (Hamrin et al. 2009). By contrast, in the study by Duxbury & Whittington (2005) a strict day structure was found to trigger aggressive behaviour. In addition, locked doors (Chou et al. 2002, Omerow et al. 2004, Foster et al. 2007, Bowers et al. 2009) and rules and regulations (Duxbury 2002, Daffern et al. 2004, Foster et al. 2007) restricting patients' behaviour and diminishing patient autonomy and sense of liberty often result in agitation and aggressive behaviour. This is particularly true of adolescents, who are in their developmental state testing aspects relating to autonomy and liberty. In addition, conflicts between patients may also provoke aggressive acts (Ilkiw-Lavalle & Greyner 2003, Hamrin et al. 2009).

2.3. Management methods of adolescent aggressive behaviour

Effective and timely management of aggressive behaviour is a prerequisite for high quality inpatient care (Dean et al. 2007). Especially in adolescent forensic units, where aggressive acts occur daily and often result in injuries, comprehensive aggression

management is essential to ensure a safe and therapeutic unit atmosphere and to ensure patients' and staff's security (Hoare & Wilson 2010).

In a child and adolescent psychiatric context, good clinical practices in managing aggressive behaviour emphasize early intervention and use of the least restrictive approaches. Management should focus on interventions designed to support patients' self-control, to encourage their self-determination and to respect their autonomy. The safety of others and property ought likewise to be ensured. The most restrictive interventions, like seclusion and restraints, should be used as a last resort when less restrictive methods have failed. (ISPN 2001, Masters et al. 2002.) When restraint procedure is applied to control aggression, concerns of safeguarding basic human rights often arise (Niveau 2004). According to the ISPN (2001) patients have the right to appropriate and respectful treatment delivered in the least restrictive manner. The statement recommends the use of alternative interventions to mechanical or chemical restraints.

Anticipating aggressive behaviour is the preferable method to manage aggressive acts (Masters et al. 2002). Creating and maintaining a therapeutic environment in the unit is one aspect when anticipating aggression. This includes unit regulations, rules and protocols which set limits for patient behaviour and are accepted by patients and staff. A structured and clear daily programme which helps to anticipate forthcoming events gives patients a sense of safety and coherence. On the other hand, a strict environment is reported to engender patient violence (Alexander & Bowers 2004). A varied recreational daily programme and purposeful activities allows patients to engage in meaningful activities which decreases the occurrence of challenging situations (NICE 2005). Further, staff co-operation and planning activities beforehand facilitate structure and the predictability of possible aggressive acts. Designing the physical layout of units so as to support observation of patients facilitates daily communication and activities, allows patients to seek solitude when needed and contributes to the anticipation of aggressive situations and is part of safe aggression management. (Masters et al. 2002.)

De-escalation techniques used in a timely manner are suggested to be the primary management of aggressive behaviours (NICE 2005). De-escalation is defined as the process of helping a patient to regain self-control (Masters et al. 2002, Chabora et al. 2003) and to direct him/her to calmer personal space (Johnson & Hauser 2001, NICE 2005). The goal is to restore the patient's emotional stability and to avoid escalation of aggressive behaviour (Cowin et al. 2003). De-escalation techniques include the idea of observing for signs of agitation, approaching the aggressor in a calm and controlled way and maintaining his/her dignity. Further, successful use of de-escalation techniques requires that staff understand the individuality of the patient and the evolving situation. (Johnson & Hauser 2001, NICE 2005, Johnson & Delaney 2007.) Although de-escalation is used as one part of aggression management in mental health settings, there is little research evidence about the effectiveness of different de-escalation techniques when controlling aggressive situations (NICE 2005, Roberton et al. 2012).

However, patient aggressive behaviour in psychiatric settings is still managed by restrictive methods, like seclusion and restraint (Duxbury 2002, Sourander et al. 2002, LeBel et al. 2004, Duxbury & Whittington 2005, Meehan et al. 2006). Seclusion and restraint are outlined as therapeutic methods offering adequate limits to patient violent behaviour in order to protect the patient and other individuals in the unit (Busch & Shore 2000). These methods, however, have been criticised as unethical and not supporting patient autonomy and self-determination. In addition, there is no evidence of the therapeutic effect of restrictive measures (Sailas & Fenton 2000). Further, regarding under-aged patients with histories of trauma, concerns have been raised about possible harmful therapeutic effects of these methods (Finke 2001, Greene et al. 2006). Models of care which highlight respect and empowerment must be prioritized in psychiatric inpatient services (Huckshorn 2007).

Several programmes have been established to reduce and provide alternatives to seclusion and restraint practices in managing aggressive behaviour in both adult and child and adolescent mental health settings (see e.g. Barnett et al. 2002, Taxis 2002, Donat 2003, dosReis et al. 2003, LeBell et al. 2004, Donat 2005, Smith et al. 2005, Greene et al. 2006, Dean et al. 2007). These programmes include methods such as step-by-step protocols for controlling challenging situations and individual aggression management plans focusing on early intervention (Dean et al. 2007). In addition, staff training which focuses on de-escalation techniques and non- violent management skills is important in supporting staff in the safe and non-coercive management of aggressive incidents (Delaney 2001, Cowin et al. 2003, Donat 2003, Jonikas et al. 2004, Donat 2005, Sullivan et al. 2005).

After an aggressive incident, post incident discussions are of vital importance. This is especially the case if coercive measures, like seclusion or restraints, have been applied to manage aggressive situation. (Needham et al. 2010.) Structured discussion of the incident helps both the staff and the patient to learn from the experience and to find ways to avoid extreme escalation in future situations (Masters et al. 2002, dosReis et al. 2003). These post incident discussions should cover the situation before the incident (any trigger factors), what happened during the incident (each person's role) and participants' feelings after the incident and in the near future. For the adolescent, the discussion should lead to better self- control, and for the staff to advanced skills to help the adolescent to control his/her aggression. In addition, the significance of post incident discussion is to ensure the continuity of the therapeutic relationship between the two parties. (Masters et al. 2002, NICE 2005.)

2.4. Adolescent forensic psychiatric services in different European countries

2.4.1. Magnitude of adolescent aggressive behaviour

Aggressive behaviour among young people is an important public health issue in Europe. Interpersonal violence is the leading cause of disability and the third leading cause

of death among people aged 15-29 and accounted for 14, 900 deaths in 2004 (WHO 2008). In addition, every year about 300 000 young people are admitted to hospital with severe injuries and even many more seek help from emergency departments and need the attention of the criminal justice system and social services (Mercy et al. 2002, Sethi 2010).

The costs of violent behaviour in societies are enormous. In addition to physical injury, victims of violence are prone to a variety of behavioural and mental problems ranging from post- traumatic stress disorder to high risk health behaviour, such as alcohol and drug abuse and being future victims and perpetrators of violence. Further, the indirect costs of lost productivity and the inability of the victims to continue with the normal tasks of daily living are significant issues when exploring aggression in young people. (Mercy et al. 2002, Sethi et al. 2010.)

When examining trends in youth violent behavior, several issues must be born in mind. Firstly, the concept of violence may include different behaviours in different societies and even within the same professional group. Second, available statistics (official police records, self- report and victimization studies) may give a different picture of trends in youth violence. Third, recording and reporting practices may vary. (Fizgerald et al. 2004.) Despite these challenges, it seems that violent behavior among young people has increased in the EU in recent decades (Fizgerald et al. 2004, Stevens et al. 2006). This is also apparent in official statistics, which show that juvenile violent crime has been increasing in many EU member states over the last 15-20 years (Stevens et al. 2006).

Regarding individual EU Member States, the official Dutch statistics outline that violent behaviour of young people interviewed by the police more than doubled from 1988 to 2000 (Stevens et al. 2006). An increase in youth violent behaviour is also a fact in Finland, where statistics on juvenile violent behaviour show that violence in minors aged 15-20 has increased in the past twenty years. According to a recent Finnish study, the number of adolescents aged under 15 committing assaults has increased in recent years (Salmi 2010). According to British Youth Justice Annual Workload - report (2008) violence against the person was the second most prevalent form of crime committed by young people aged 12-24 and the trend of violent offences has increased in recent decades (Ministry of Justice 2011).

2.4.2. Treatment settings and treatment needs among adolescents in forensic services

Adolescent forensic psychiatric units provide specialized psychiatric services which focus on mental disorders and risky and offending behaviour. They offer treatment planning, assessment and therapeutic activities in the context of the developmental and family background of the individual patient (Withecomb 2008). The aim of adolescent forensic psychiatry is to minimize harm from mental illness and environmental factors so that future risk to the adolescent him/herself and others is reduced (Withecomb & Jasti

2007, Withecomb 2008, Hoare & Wilson 2010). Special attention is paid to minimizing the risk of violence and other harm to patients, staff and society (Hoare & Wilson 2010).

The patient population consists of young people aged 12-18 who have been involved with the criminal justice system and who have severe mental disorders, posing serious risk to themselves and others (Withecomb & Jasti 2007). They may also be severely delinquent youths under the age of criminal responsibility who are not involved in the criminal justice system despite the severity of their offenses. Because of the country specific differences in service organizations, adolescents may enter forensic units by a variety of routes, e.g. from the juvenile justice or general justice system or through mental health or social services. (Kaltiala-Heino & Kahila 2006.)

There are only few studies describing adolescent forensic services. For example Hoare & Wilson (2010) in their report describe mental health services for "high risk forensic" adolescents in the UK. The seven medium secure units are the most highly specialized units, each having specialized in specific needs of adolescents. For the medium secure units, there is a national referral process with given admission criteria. In general, the units offer secure environment and multidisciplinary assessment and treatment focused to adolescents needs. Challenges among these units are long assessment time, which hampers emergency admissions, limited facilities that can give support to adolescents after discharge from secure units and lack of appropriate provision of services for girls with specific disorders. In addition, the equality of access to services across the country is not realized creating a need for more uniform approach that decreases this problem. (Hoare & Wilson 2010.)

Adolescents in secure care have several mental health and psychosocial needs which are often unmet. Regardless of the diverse findings of mental health needs among these adolescents (Vermeiren et al. 2006), externalizing disorders, such as conduct disorder, ADHD and ODD are common (Vermeiren et al. 2006, Fazel et al. 2008, Colins et al. 2010). Depressive symptoms, anxiety disorders and posttraumatic stress disorder are common internalizing disorders in this patient population (Fazel et al. 2008, Colins et al. 2010). In addition, several studies show considerable psychiatric co-morbidity among juvenile detainees (Kroll et al. 2002, Teplin et al. 2002, Abram et al. 2003, Domalanta et al. 2003, Ståhlberg et al. 2010, Gretton & Clift 2011).

Various psychosocial needs and risky and violent behaviour are frequent among adolescent forensic patients. Psychosocial needs are often related to education and social relationships. (Kroll et al. 2002, Chitsabesan & Bailey 2006.) Juveniles have more learning disabilities, like cognitive deficits including difficulties in reading and comprehension (Vermeiren et al. 2002), which may hinder young people's chances of getting decent education and have consequences for their occupational capacity (Chitsabesan & Bailey 2006). School attendance is poor among these young people and may lead to exclusion from school which, in turn, may contribute to social exclusion and direct them to the company of antisocial peers (Chitsabesan & Bailey 2006). Other

social difficulties, such as difficulties with family and peer relationships have also been reported (Kroll et al. 2002, Chitsabesan et al. 2006). Kroll et al. (2002), Ståhlberg et al. (2010) and Gretton & Clift (2011) reported substance abuse disorder to be common in this population (see also Fazel et al. 2008), likewise problems with aggressive behaviour. Further, self harming is frequent among juveniles in forensic setting (Kroll et al. 2002, Wheatley et al. 2004, Chitsabesan et al. 2006, Abram et al. 2008).

The mental health needs of these adolescents are not sufficiently met because of lack of screening, poor access to services and difficulties in engaging young people in treatment (Chitsabesan et al. 2006). According to some studies, young people admitted to secure care need interventions like psychological assessment and cognitive behavioural work (Kroll et al. 2002). Special interventions are needed as well, for example assessment of suicide risk (Abram et al. 2008, Fazel et al. 2008). On the other hand, adolescents' needs change during their treatment time in the unit and this has to be recognized in service planning and provision (Kroll et al. 2002, Harrington et al. 2005). Therefore interventions should not be restricted to treatment units but should also involve guardians and other professionals working with the adolescent (Kroll et al. 2002).

2.5. Summary of the literature review

In recent literature, aggression and aggressive behaviour have been examined from various perspectives, often providing a narrow view and overlapping definitions of this behaviour. In addition, being a highly subjective issue and associated closely with one's previous experiences and cultural background have led to difficulties in constructing a coherent definition of aggressive behaviour. However, in order to manage aggressive behaviour safely and effectively, there is a need for a consistent understanding of what it consists of.

Several factors are associated to aggressive behaviours in psychiatric inpatient settings. These include individual, interactional and environment- related factors. Factors associated with interaction have recently been highlighted in literature pointing out the quality of communication between the staff and patients in challenging situations. Staff's ability to recognize various factors associated with aggressive behaviour is of importance when aggressive behaviour is managed.

Aggressive behaviour among adolescents in forensic settings is managed with various methods. Recommendations on the management of aggressive behaviour among minors include prevention and early intervention techniques with emphasis on supporting patient autonomy and dignity. The most restrictive methods, like seclusion or restraint, should be used if all other methods fail. No studies are available from adolescent forensic settings internationally examining aggressive behaviour or management methods, nor had any research been reported on the effectiveness of aggression management programmes in

forensic settings. Examining management methods in aggressive situations would help to identify best practices.

Research on treatment provision in adolescent forensic settings is lacking. There is no consistent information on the various methods used to manage adolescent forensic patients. The same interventions may go by different names in different countries, an indeed even within a country. It is important to standardize the treatment interventions provided in order to provide high quality service in European countries.

The earlier research shows that there is a need for cross-cultural research in forensic settings in order to identify good aggression management methods across countries and to disseminate knowledge about different management practices across countries. In addition, knowing how service provision is organized in different countries would help to standardize aggression management practices across countries.

3 AIMS OF THE STUDY

The overall goal of the study was to explore and identify good aggression management methods and on that basis to produce recommendations for aggression management in the adolescent forensic setting. The study was conducted in four adolescent forensic units in four European countries: Belgium, Finland, the Netherlands and the UK (Phases I and II). Phase III was carried out in Finland. More specifically, the following phases and research questions of this study were:

Phase I: Staff's perception of adolescent aggressive behaviour and methods used to manage it among adolescents undergoing forensic treatment

1. What kind of behaviours do staff recognize as aggressive acts among adolescents? (Paper I)
2. What factors are associated with aggressive behaviour among adolescents? (Paper I)
3. What methods do staff members use to manage aggressive behaviour among adolescents and what influences the choice of methods? (Paper II)
4. What differences in aggression management methods were described by staff in the different countries? (Paper II)

Phase II: Adolescent forensic psychiatric services

1. What kind of treatment settings are there in adolescent forensic care across the countries examined? (Paper III)
2. What is the focus of treatment interventions across the countries examined? (Paper III)
3. What kind of treatment interventions there are available across the countries? (Paper III)

Phase III: The implementation of an aggression management program

1. What constitutes an aggression management programme in an adolescent forensic unit? (Paper IV)
2. What trends over two years' time were detected in events of aggressive behaviour and in the frequency and characteristics of physical and mechanical restraints? (Paper IV)

Figure 1 illustrates aims, papers and the overall goal of the study in each study phase.

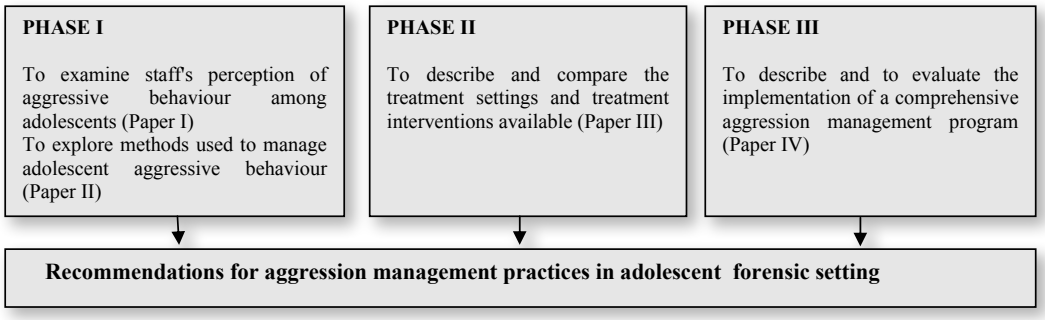

Figure 1. Phases, aims, papers and the overall goal of the study

4 METHODOLOGY

4.1. Methodological approach

In this study, a mixed methods approach was used to examine aggression and its management methods in adolescent forensic settings in order to get better understanding of the study topic (Creswell & Plano Clark 2007). In addition, this approach was chosen because of the complexity of the phenomenon studied (Doyle et al. 2009). Mixed methods approach uses qualitative and quantitative research techniques to answer research questions (Johnson & Onwuegbuzie 2004, Johnson et al. 2007).

4.2. Design

In **Phase I**, an explorative qualitative study design was used to elicit staff's perception of adolescent aggressive behaviour. Qualitative design is applicable when exploring a topic or phenomenon of which little is known (Holosko 2010). The qualitative approach was selected because it makes it possible to ascertain participants' perceptions and descriptions of the study topic under investigation (Denzin & Lincoln 2005, Kvale & Brinkmann 2009, Silverman 2010). Examining staff's perception of adolescent aggression enables the researcher to build a common understanding of adolescent aggressive behaviour which may contribute to consistent nursing practices and safer treatment environment. (Papers I, II.)

In **Phase II,** a qualitative study design was used to gather information from the four participating units regarding the unit's basic characteristics, treatment focus and treatment interventions available. This study design was used because no research is available describing intervention provision internationally in adolescent forensic services (Fontana & Frey 2005). (Paper III.)

In **Phase III,** a prospective, evaluative study design was used in order to examine trends over time (Parahoo 2006, Polit & Beck 2010a) and to evaluate the implementation of an aggression management programme (Parahoo 2006). Trends for aggressive behaviours against staff and rates and characteristics of physical interventions to control aggressive behaviour were studied over a two year period (April 2003-March 2005) using Structured evaluation of physical interventions- forms and Irregularity reports. (Paper IV.)

4.3. Settings, study population and sampling

In **Phase I,** the setting for the data collection was four adolescent forensic units. The units were selected because they offered specialized psychiatric treatment for adolescents with forensic background, severe mental illness and violent and non-compliant behaviour

(Bailey & Williams 2005). Detailed information on the participating units can be found in Papers I (Table 1) and III (Table 1). The study population consisted of staff working in the four adolescent forensic units. Convenience sampling was used to select participants for the study. Convenience samples are useful in exploratory studies and in areas where little research has been conducted (Burns & Grove 2009). Staff members who were available in the unit at the time of data collection, who were able to communicate in English (in Belgium and the Netherlands), who were willing to participate in the interviews, and who attended in the daily activities of the adolescents, were invited to participate in the study. One interviewee dropped out due to staffing shortage in one participating unit. The study sample consisted of 58 participants. (Papers I, II.)

In **Phase II,** the study setting was four adolescent forensic units (see Phase I)**.** The study population consisted of staff working in the four adolescent forensic units. Convenience sampling was used to select participants for telephone interviews (n = 4, one representative of management/unit) and for focus group interviews. A total of 26 staff members participated in focus group interviews (BE n = 12, FI n = 6, the NL n = 2, the UK n = 6). Staff members who were available in the unit at the time of data collection, who worked with the adolescents, who were willing to participate and who represented various occupational positions formed the study sample. (Paper III.)

In **Phase III,** study was conducted in one adolescent forensic unit. The study units consisted Structured evaluation of physical interventions-forms (n = 765) filled immediately after each aggressive incident and of Irregularity-reports (n = 299) reported to hospital central database (Parahoo 2006). All the documents between Apr 2003-March 2005 were included to study sample. (Paper IV.)

4.4. Data collection instruments

In **Phase I,** semi-structured interview was used to elicit staff members' perceptions of adolescent aggressive behaviour (Parahoo 2006). The schedule was developed for the purposes of the study and the themes were elaborated on the basis of the literature. The schedule included eight themes, of which the results of three are reported in this study, i.e. the nature of adolescent aggressive behaviour, factors contributing aggressive behavior and aggression management practices. (Papers I, II.)

In **Phase II**, data collection took place using the MAPS Unit- instrument, which can be used in treatment planning, client/unit matching and quality monitoring in residential and care settings (Öberg 2004). The MAPS instrument is theoretically based on the Transtheoretical Model of Change (Prochaska et al. 1992). This instrument consists of three parts: Base, Treatment Focus and Interventions. The Base module is a structured questionnaire with multi-choice questions and open-ended questions to be filled in by the management of the unit. It concerns the general characteristics of the unit (location, context of care, direction of care, nature of services and client capacity). It is partly based

on categories and definitions derived from the European Service Mapping Schedule (Johnson et al. 2000b). The Treatment Focus module includes a structured schedule to investigate and describe which of the problems of the client population the unit uses its resources for in a two dimensional grid of defined categories (Areas and Phase). The Interventions module comprises also a structured schedule to investigate the actual interventions available in the unit and categorize them in a three dimensional grid (Area, Phase and Type). (Öberg 2004.) (Paper III.)

In **Phase III**, Structured evaluation of physical interventions - forms and Irregularity-reports were used to collect the data. After each aggressive incident requiring physical interventions, a structured evaluation form is completed. This form includes open-ended and structured questions. The form records twelve items related to physical interventions: the development of the situation, approaches attempted before physical intervention, number of staff involved, extremities restrained, position of the adolescent during the episode, use of the duvet, starting and ending times of physical holding, medication given, injuries to the young person or staff, use of mechanical restraints, duration and restraint and de-escalating approaches used during restraint. The report was developed to evaluate individual patient situations as well as the unit functioning in challenging situations. Irregularity reports are structured forms which focus on a variety of events that may compromise safety in the unit. The events are classified into nine different types: disturbance; violence (verbal violence; minor violent behaviour; pain-inducing violent behaviour; violent behaviour causing injury); theft; vandalism, breaking and entering; technical irregularity; fire; data security breach; accident; and threatening crisis. (Paper IV.)

4.5. Data collection

In **Phase I**, the face-to -face interviews started with a general question related to the topic under investigation. The questions were neither strictly structured, nor entirely non-directive in nature. The role of the interviewer was to guide the subject towards certain themes, but not to specific opinions about these themes (Kvale & Brinkmann 2009). During the interviews, prompts were used to clarify the meaning of responses, or to elicit answers (Polit & Beck 2010a). Qualitative interview with semi-structured interview schedule was used because it is an open and flexible research tool and thus gives the interviewer an opportunity to react to interviewees' responses and to elicit more detailed data (Burns & Grove 2009). The contacts with international units were firstly established by the study projects' senior researcher who had earlier visited the adolescent forensic psychiatric units and discussed with management about the study. This was done in order to ascertain that the study would be conducted in culturally appropriate way, to respect the hospital protocols and procedures, like how to apply ethical permission to conduct the interviews, and to get preliminary information about the possible study units. After that, contact persons (gate keepers) in each unit were contacted by e-mail and informed about the study by a letter introducing the researcher, explaining the aim of the study, and estimating the average duration of an interview

(Tong et al. 2007, Hennik et al. 2011). The contact persons informed staff about the study and recruited voluntary participants. In addition, contact persons were asked for assistance in practical issues in carrying out the interviews. (Papers I, II.)

The interview schedule was pretested in order to identify problems in the design of the themes and questions, sequencing the questions, or procedure for recording responses (Burns & Grove 2009). Firstly, a pilot study (n = 5) of the interview schedule was conducted in Finland. Thereafter the schedule was translated into English by an expert in adolescent forensic psychiatry and repiloted in the Netherlands (n = 3), which resulted in minor adjustments to the interview questions. No proper back- translation process of the interview schedule was conducted. In qualitative inquiry, interview themes are often suggestive and focus during the interview. In addition, the "same" words may have different connotations across languages making translation problematic (Temple 2006, Larkin et al. 2007). (Papers I, II.)

The tape recorded interviews were conducted in Finnish in Finland and in English in the other participating countries. Data collection was continued in each unit until the data was saturated i.e. until additional interviews no longer yielded new information (Burns & Grove 2009). The interviews lasted 45 minutes on average. The interviews were carried out in the period from November 2004 to October 2005. Demographics included interviewee's age, working experience and occupational position. (Papers I, II.)

In **Phase II**, the data was collected in two parts. First, telephone interviews with a person representing management were conducted in order to gather information on the general characteristics of the respective units (base data). Second, focus groups interviews were carried out in each participating unit to examine treatment focus and interventions available. Before data collection, a contact person was approached by e-mail explaining the purpose and the aims of the study. Thereafter, the contact person informed staff about the interview and recruited participants to focus groups. At the beginning of the interview, participants were informed about the study and introduced to the study methodology. The data was collected in the period 2006-2007. Focus group interviews allow discussions which facilitate the identification and validation of the issues under study (Hennik et al. 2011) and thus contribute to avoiding biases and help to gain the most objective descriptions of phenomenon under investigation (Macnaghten & Myers 2007). (Paper III.)

In **Phase III**, data was collected from Structured evaluation of the physical interventions-forms and Irregularity-reports of one adolescent forensic unit. From each report, essential information related to the aims of the study was extracted and stored in a database. Immediately after aggressive incidents, a structured form is completed by nursing staff. In the study period, 765 physical interventions were reported in study unit. Irregularity reports are used to report all kinds of events and irregularities that may compromise safety on the unit. In the study period October 2003-March 2005, there were 299 irregularities related to violence which were reported in the study hospitals' central database. (Paper IV.)

4.6. Data analyses

In **Phase I**, data was analysed using qualitative content analysis (Polit & Beck 2010a), which progressed from surface level and concrete meaning units to more abstract categories (Graneheim & Lundman 2004). The transcribed data was read bearing in mind the research questions and then transferred and stored in the ATLAS-ti 5.0 - programme, which was applied for data management (Muhr 2004, Lewins & Silver 2007). The interviewees' perceptions of aggressive behaviour and associated factors (Paper I) and management methods of aggressive behaviours (Paper II) were derived from the data while the text was reread in detail and meaning units (words or phrases) carrying a meaning of importance for the phenomena under study (Graneheim & Lundman 2004) were identified and condensed in order to make the text shorter but to retain its core messages (condensed meaning unit). The condensed meaning units were abstracted and labelled with codes. Lastly, the various codes were compared with reference to differences and similarities and sorted into categories to produce a categorization frame. The transcribed data consisted approximately 800 pages of written text. (Papers I, II.)

In **Phase II**, the data was analyzed using qualitative and quantitative methods. The characteristics of units studied were described (base data). The Treatment focus data and Intervention data were firstly coded to indicate the priority of the treatment interventions and to examine nature of interventions available. There after the data was analysed using descriptive statistics (numbers and percentages) in order to compare between the different units. More advanced statistical analysis was not conducted because of the sample size (n = 4) (Polit & Beck 2010a). Data analysis is described in more detail in Paper III.

In **Phase III**, data were analysed using statistical methods. The characteristics of patients thresholding physical interventions and the characteristics of the interventions were described. The prevalence of physical holding interventions, mechanical restraints, and irregularity reports due to violence were first presented by month. In order to study trends over time, prevalence data and characteristics of the episodes were pooled and presented for four six- month periods. Categorical variables were compared using cross tabulation and chi-square test. For continuous data, medians were compared using Kruskall- Wallis test, since the distribution of the continuous variables was skewed (Polit & Beck 2010a). The data consisted of 1067 reports. (Paper IV.)

4.7. Ethical issues

Conducting research in an ethical way requires that the researcher is aware of different requirements which are relevant during the research process (Kvale & Brinkmann 2009). When planning a research project, the approval of ethics committee is required. In this study, the study proposal was examined in the ethics committee for the rights of the individuals involved and the appropriateness of the methods to be used. (The

National Advisory Board of Research Ethics 2009.) Further, ethical principles such as participants' right to self determination, privacy, anonymity and confidentiality and the right to protection against harm were taken into account during the study process (Polit & Beck 2010a). Data collected during the research process was appropriately stored (Kuula 2006). Moreover, this study was conducted in compliance with good scientific practice (Academy of Finland 2003, The National Advisory Board of Research Ethics 2002). The study was carried out in a meticulous way and the results were reported accurately and honestly (Academy of Finland 2003, Raemer 2010).

In **Phase I,** the research proposal was evaluated and accepted by the ethics committees in Finland and in the UK (Raemer 2010). After that, permission to conduct the study was obtained from the participating hospitals in the respective countries following their research administration procedures. Before starting the interviews, written informed consent was obtained from each interviewee after they had been provided with oral and written information about the study (Kvale & Brinkmann 2009, Polit & Beck 2010a, Raemer 2010). The staff members participation was voluntary and they had the right to discontinue the interview at any time (Burns & Grove 2009, Hennik et al. 2011). (Papers I, II.)

Permission for tape-recording was requested and the voluntary and confidential nature of the interviews was highlighted (Burns & Grove 2009). However, maintaining confidentiality and anonymity may be challenging in qualitative research due to the detailed descriptions used to illustrate and report the findings. Confidentiality issues must be addressed in relation to individual participants and in relation to the sites at which the research is conducted. (Houghton et al. 2010.) In this study confidentiality was ensured in that only members of the research team had access to the tape recorded and later transcribed interviews and no unauthorized person could access the data (Burns & Grove 2009, Hennik et al. 2011). Anonymity was ensured by giving each participant a code number and writing up study findings in such a way that participants could not be identified. In addition, the results were reported in a way which made it impossible to recognize the participants or units involved. (Polit & Beck 2010a.) (Papers I, II.)

The interview situation itself is potentially harmful. The right to protection against harm has to be respected, especially when the interview adresses sensitive topics, like threat of aggressive and violent behaviour. (Parahoo 2006.) When interviewees are asked about their perceptions of patient aggressive behaviour, they may have to revisit painful memories or events which can cause emotional distress (Parahoo 2006, Hennik et al. 2011). In this study, the researcher monitored the respondents and in case of a distressing situation reminded participants of their right to withdraw or tried to alleviate the emotion by discussing it with the participant (Parahoo 2006, Polit & Beck 2010a). (Papers I, II.)

When conducting a qualitative cross-cultural study, from an ethical point of view, it may be even more important to ensure that participants have received sufficient information on the study and that they have understood information received. In addition, cultural

sensitivity is demanded from the researcher due to possible different practices in participating in an interview situation. In this study, the researcher was aware of the challenges of conducting cross-cultural study and these were discussed with co-researchers. (Paper I, II.)

In **Phase II**, permission to conduct the study was obtained as in Phase I. After participants had been informed about the study, oral informed consent was obtained. Team members participated in the focus group interviews and telephone interviews on voluntary basis. To ensure that respondents felt free to express their views, the researcher had no connection to the units studied. In this study phase, only the members of the research team had access to the data, which supported confidentiality. (Parahoo 2006, Hennik et al. 2011.) Participants' anonymity was ensured by reporting the study findings in such a way that participants could not be identified (Hennik et al. 2011). (Paper III.)

In **Phase III**, the study proposal was not evaluated in any ethics committee because the study focused on written documents and there was no direct contact with individuals (Polit & Beck 2010a, Hennik et al. 2011). In addition, because the data was collected aiming to develop unit functioning, administrative permission to conduct the study was obtained. The study material was handled only within the research group and no outsider had access to the documents examined, which ensured confidentiality (Burns & Grove 2009, Hennik et al. 2011). Because the study focused on written documents related to aggressive incidents no harm was caused to any individual patient. No identifiable information on adolescents was used in the study, which supported anonymity. (Polit & Beck 2010a.) (Paper IV.)

5 RESULTS

5.1. Description of participants

In **Phase I,** participants comprised staff members from the four study units. Regarding all participants, mean age of the staff was 36 years and the mean working experience was three years. Table 1 presents the participants' characteristics. (Papers I, II.)

Table 1. Characteristics of the participants in Phase I

	Belgium n = 15	**Finland** n = 18	**The Netherlands** n = 16	**The UK** n = 9	**Total** n = 58
Age Mean	36	38	35	36	36
Working years in current unit Mean	6	1	1	5	3
Occupational position	RN 7 Educator 1 Teacher 2 Doctor 1 Psychologist 1 Sports instructor 1 Occupational therapist 1 Social worker 1	RN 9 Practical nurse 8 Youth worker 1	RN 2 Social therapist 8 Doctor 1 Sports instructor 1 Family therapist 1 Teacher 1 Art therapist 1 Social worker 1	RN 5 Support worker 4	Direct care staff n= 43 (RN, practical nurse, educator, social therapist, support worker)

In **Phase II,** participants included staff members for respective study units. In telephone interviews, one representative of management in each unit participated (n = 4). Occupational positions represented were two psychiatrist (Belgium, Finland), one psychologist (the Netherlands) and one ward manager (the UK). In focus groups interviews, total of 26 staff members participated. In Belgium, the sample comprised of nine nurses, a psychologist, a sociotherapist and a psychiatrist. In Finland, the sample

consisted of two nurses, a ward manager, a psychologist, an occupational therapist and a psychiatrist. In the Netherlands, sample comprised of a psychologist and a sociotherapist. In the UK, the sample comprised of two nurses, a ward manager, a social worker, a psychotherapist and a psychiatrist. (Paper III.)

In **Phase III,** the sample consisted of Structured reports of physical interventions in aggressive incidents (n=765) and Irregularity reports (n=299). Structured reports of physical interventions are filled immediately after each aggressive incident by nurses and later evaluated by a multidisciplinary team. Irregularity reports include all episodes that endanger safety in the units in the study hospital and are reported to hospital database. (Paper IV.)

5.2. Staff's perception of adolescent aggressive behaviour and management methods

5.2.1. Staff's perception of aggressive behaviour among adolescents

Staff identified different types of aggressive behaviours displayed by adolescents in the study units. These can be categorized as physical, verbal and non-verbal aggressive behaviours. In addition, participants defined different levels of severity in aggressive acts. Staff members described physical aggressive behaviour as being directed towards objects, other persons, or the adolescent him/herself. Self- harm behaviours were mentioned as the most serious form of physical aggression and were mainly described in the Finnish data. Verbal aggressive behaviour was perceived as the most frequently displayed behaviour in the units. It was identified as verbal resistance, verbal hostility and verbal abuse directed at other people. Non-verbal aggressive behaviour included facial expressions, body postures and inappropriate closeness creating a tense and threatening atmosphere in an interaction. There was, however, no physical contact between two persons. Non-verbal aggressive behaviour was detected both independently and in connection with verbal aggression, where non- verbal aggression reinforced the verbal aggressive behaviour. The three dimensions of aggressive behaviour were closely interrelated. (Paper I.)

Staff recognized different levels of severity in the dimensions of aggressive behaviour. A minor aggressive incident was described as an act which was not directed at anyone in particular and the adolescent had no intention of causing harm. The incident could be resolved with verbal interventions helping the adolescent to calm down. A major aggressive situation erupted when there was a violation of the victim's personal space. The aggressor intended to harm someone, which compromised the safety of the persons being in the situation. To manage major aggression, restrictive methods had to be applied by several staff members. (Paper I.)

5.2.2. Factors associated with aggressive behaviour among adolescents

The participants recognized multiple factors that were associated with aggressive behaviours among adolescents (Figure 2). The factors were related to the adolescent, staff members, interaction between staff and adolescents, interaction within the peer group and unit factors. Participants emphasized adolescent- related factors (family history), whereas factors related to interaction between staff and adolescents were not recognized as primary. This needs attention when educational activities are planned. (Paper I.)

Knowing about factors associated with aggressive behaviour helped staff to understand adolescents' behaviour and enabled them to react adequately in challenging situations. The participants reported the development of aggressive behaviour as an understandable event. They did not see the adolescents as bad or as exhibiting aggressive behaviour deliberately, but realized them as victims of their life histories: the factors associated with aggressive behaviour were not in the hands of the adolescent. (Paper I.)

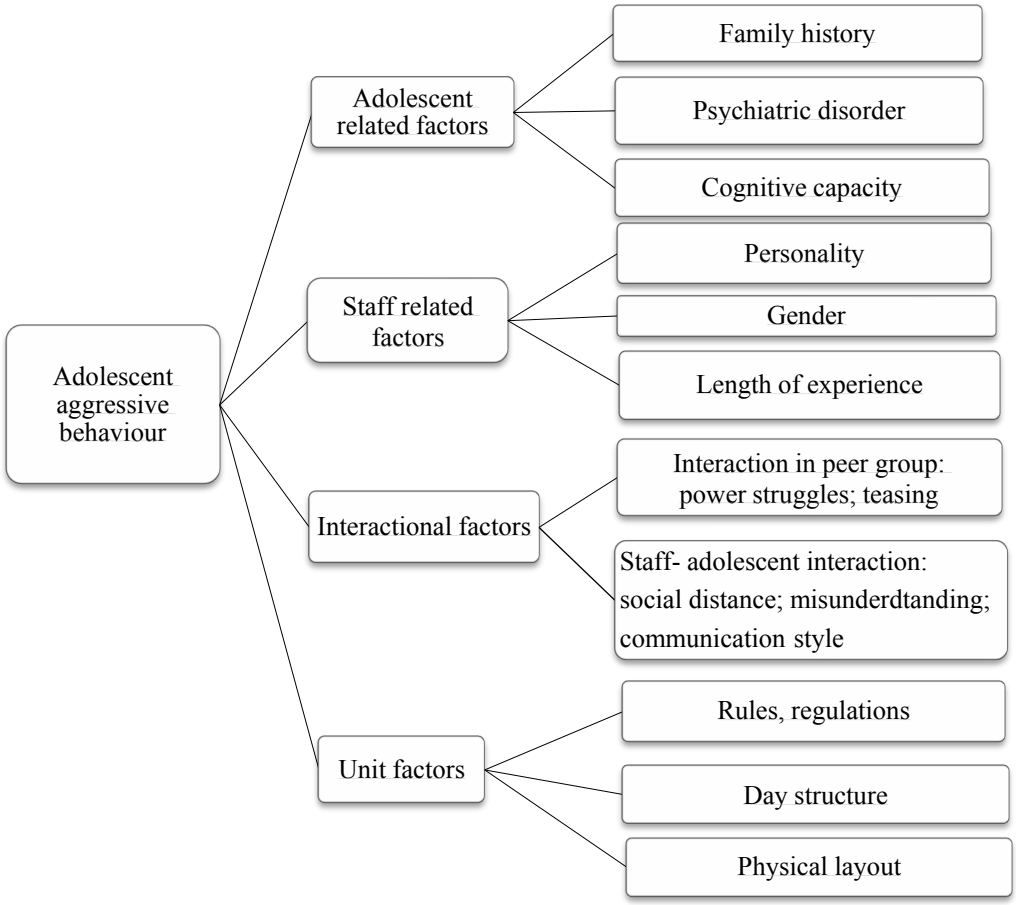

Figure 2. Factors associated with adolescent aggressive behavior

5.2.3. Management methods of aggressive behavior among adolescents

Staff members used different kinds of methods to manage aggressive behaviour. These were verbal interventions, evaluating and planning, isolation, physical restraint, medication and using alarm. Staff perceived verbal interventions as being the most preferred methods to control escalated behaviour. In addition, after an aggressive incident evaluation and reflection of the aggressive situation with the adolescent were perceived to be important in the anticipation and future management of aggressive situations. The use of coercive methods, like seclusion and restraint, was perceived as the last option to control aggressive behaviour. Staff reported that using these methods raised several ethically sensitive questions, such as violating basic human rights. However, coercive methods were recognized as being occasionally the only option in helping severe aggressive adolescents to regain their self- control. A summary of the methods used to manage aggressive behaviour among adolescents is presented in Table 2. (Paper II.)

Table 2. Methods used by staff to manage aggressive behaviour among adolescents

Methods used by staff	Description
Verbal intervention	Talking in a clear and structured way Giving options Giving instructions Verbalizing situations and emotions Debriefing talks after aggressive incident
Evaluating and planning	Assessing situations Planning the daily routines Co-operating
Isolation	Time out 5 to15 min Seclusion ICU
Physical restraint	Restraint bed & five -point leather straps Duveting Manual restraint techniques
Medication	PRN medication Forced medication (i.m. injections)
Alarm	Use of emergency alarm

5.2.4. Factors associated with the choice of management methods

Several factors were associated with the choice of aggression management methods in escalated situations. The better staff knew the adolescent, the easier it was to intervene in a particular situation. Next, staff observed the level of aggressive behaviour and acted

accordingly. In minor aggressive incidents, such as an adolescent displaying verbal hostility, staff most often talked to the young person and accompanied her/him to a calmer space. In major aggressive situations, e.g. when an adolescent was violent towards other persons, staff intervened by using more restrictive methods, like physical restraints or even seclusion. Further, knowing the development of the situation at hand, such as what had happened before and who were involved, helped staff to intervene optimally. Lastly, staff evaluated the resources available in the situation, such as how many staff members were available and what qualifications and experience they had. To facilitate the choice of methods, staff expected to get more time and opportunities to discuss issues related to adolescents, more practical training in aggression management in regular basis and more qualified co-workers. (Paper II.)

5.2.5. Different methods used in aggression management in the four units

Aggression management methods included the same components in the units studied but the practical solutions were different. This was the case particularly regarding the most restrictive methods, such as five- point leather straps on the bed, using duvet and seclusion. In addition, the point of transition to more restrictive methods varied between the units studied. The staff in Finland were quicker to progress to physical restraint techniques, whereas the staff in the Netherlands and the UK continued to use verbal de-escalation to control the situation and accentuated the importance of alerting additional staff from near-by units. Moreover, within each study unit, staff members' distinctive preferences and approaches in managing aggressive situations varied. However, these variations took place within unit's common agreements and practices. Table 3 presents various methods in aggression management regarding the most restrictive methods in the four units. (Paper II.)

Table 3. Differences in aggression management methods - the most restrictive methods

Management method	**BE**	**FI**	**NL**	**UK**
Five point leather straps with restraint bed		X		
Duvet used as a safety measure	X		X	
Duvet used as management method as such		X		
Seclusion, no or partial supervision	X		X	X
Seclusion, constant supervision		X		
ICU				X

X indicates that the method is used in the unit

5.3. Adolescent forensic psychiatric services in different European countries

5.3.1. Treatment settings

Altogether the participating units were fairly similar regarding treatment settings. The services were funded by tax revenues and offered within the public sector and within the national catchment area. The units studied were described as providing residential, round-the-clock services. (Paper III.)

However, there were some differences between the units. The number of beds varied from eight to twelve. In the UK unit various different therapeutic approaches were combined in the treatment of the adolescents, whereas the other units reported basing their operations on mainly one theoretical approach. The main goals of the units were to offer treatment for aggressive behaviour in all units, however, distinctive goals were also mentioned. Only the unit in Belgium operated with acute intake, other units admitted patients by appointment. There were also some variations regarding client intake and exclusion criteria. (Paper III.) The treatment settings of the four countries are described in detail in Table 4.

Table 4. Characteristics of the units studied

Unit	Hospital setting/ nr of beds	Ideological orientation	Goals of the unit	Intake/maximum treatment time	Patient inclusion/exclusion criteria
Be	General hospital/8	Cognitive behavioural	To offer psychiatric treatment for delinquent adolescents	Acute/26 weeks	Males 12-18 years; delinquent behaviour and psychiatric problems; motivation to change./ IQ<65; low motivation; drug abuse as primary problem
Fi	University psychiatric hospital /12	Cognitive behavioural	To offer forensic assessment and treatment for severe mental disorders and aggression	By appointment/ until the age of 18	Males and females 11- 17 years; severe mental disorders and aggression problems. / Mental retardation
Nl	Forensic psychiatric hospital/9	Cognitive behavioural and functional family therapy	To protect society from aggression To offer treatment for aggression and axis 1 psychiatric problems To prevent recidivism in criminal behavior.	By appointment/ 4-6 years	Males 12-18 years; schizophrenia and PDDNOS, problems with aggression and impulse control ; conviction for serious crimes. / IQ<65; primary problem in axis II disorder
UK	Mental health trust /10	Eclectic	To establish the mental health condition To improve mental health to maximum benefit To offer psychiatric care for psychotic disorders, aggressive behaviour, substance use	By appointment/ until the age of 18	Males 12-18 years; mental illness requiring medium security care; severity of illness high; youth in custody. / Severe learning disability; severe complex mental health problems

5.3.2. Focus of treatment interventions

Treatment interventions focused on the psychological life –area in all study units. This is reflected in the interventions available which also concentrated on this life- area. In addition, such a primary focus of the psychological area was supported by unit management's perceptions of the main purpose of the unit. Although the psychological area seemed to be the main focus of the units, staff also worked with other life-areas. The other life- areas had a supportive role in the management process. (Paper III.)

The units in Belgium and in the Netherlands additionally had criminality as a primary focus. Regarding interventions available in the criminal- area in the Belgian unit, however, only few were available. In the Netherlands, staff and management perspectives of treatment focus were different: according to a representative from unit management the focus of the unit was only on the psychological area, whereas staff reported focusing additionally on criminality. According to the results of this study, there seemed to be different views among staff members and units management as regards of the focus of interventions. This may influence how the unit operates. (Paper III.)

When examining the treatment focus regarding stages of change within the life areas, the Belgian unit focused on preparation and action phases, meaning that the interventions used focused on activating the adolescent in daily tasks and alter negative ways of behaviours. The Netherlands unit focused interventions on the earlier stages, e.g. precontemplation and contemplation, concentrating on basic care and motivation of the adolescents. The units in the UK and Finland focused on contemplation in five life-areas whereas precontemplation was perceived as a secondary focus in these units. Staff did not work with maintenance, e.g. after care, in three study units. Only the unit in the Netherlands concentrated slightly on after care in two of the life-areas (crime and addiction). (Paper III.)

Regarding the treatment focus related to phases of care within life –areas, units in Belgium, Finland and the UK focused on the treatment phase of care and only a few interventions were focused on after care, e.g. rehabilitation. The Netherlands unit focused more on basic care, which is consistent with the staff focus on the earlier stages in the clients' change process. (Paper III.)

5.3.3. Treatment interventions available

In the participating units, altogether 231 treatment interventions were available. Most of them, 26%, focused on psychological life- area. Therapy was the most used intervention type and included e.g. use of psychopharmacology and social skills therapy. In this life area, the units in Belgium and Finland offered more interventions than the other units studied. Least interventions (10%) concentrated on the life-area of addiction where counseling was a commonly used type of intervention. Interventions typically comprised group education on addiction and drug tests. In the addiction life- area, the UK unit offered more treatment interventions that the other participating units. (Paper III.)

Counseling and therapy were the most prominent types of intervention used in all units studied. Support was used only rarely to manage adolescent behaviours. Staff in Belgium and the Netherlands units used more counseling than the other two units, whereas the units in Finland and the Netherlands seemed to use more interventions related to environment than other units. (Paper III.)

5.4. Aggression management program in an adolescent forensic unit

5.4.1. The content of an aggression management programme

The aggression management programme includes several simultaneous processes, all of which contribute to reducing aggressive behaviour in study unit. The programme outlines the relevant physical environment, various equipment and written instructions for managing adolescent aggressive behaviour. Structured activities and therapeutic milieu support the disturbed adolescent and offer predictability in everyday events. Attention is also paid to violence risk assessment on admission and during assessment periods. In addition, dangerous objects in the unit and in the adolescent's belongings which might endanger the safety of the unit, are monitored carefully. Further, substance abuse testing is conducted randomly and at predictable timepoints. Co-operation with families before admission and during the assessment period makes it possible to obtain the information needed and supports aggression management. Supporting adolescent's self control, for example trough modeling or with defusing talks after restraining episodes contributes to aggression management. Moreover, the idea of early intervention is supported and physical interventions (physical restraint, medication) and mechanical restraints are applied when other methods to manage aggression have failed. Finally, the alarm to summon additional staff to help in controlling possibly escalated behaviour is used to manage aggression. (Paper IV.)

5.4.2. Implementation of an aggression management programme

In the two- year study period, trends in the occurrence of aggressive behaviour and the frequency and characteristics of the use of physical and mechanical restraints were investigated. There was a decreasing trend in violent incidents in the study unit. In the study periods, aggressive behaviour decreased constantly. From the second study period (Oct03-Mar04), 87,0 violent incidents were detected, whereas in the last period (Oct04- Mar05) 19,5 incidents were recorded. Injuries in situations requiring physical intervention decreased, both among patients and staff during the study period. Duration of interventions - the median length of the physical holding decreased over the four half-year periods. Although there were fluctuations in trends mainly due to organizational changes, the main trend was decreasing. This indicates that the aggression management programme used in the unit was effective as it has been stabilized. (Paper IV.)

6 DISCUSSION

The quality of the research process was evaluated by standards of trustworthiness which parallel the standards of reliability and validity in quantitative research (Polit & Beck 2010a). The trustworthiness of this study was described using the concepts of credibility, conformability, dependability and transferability (Lincoln & Cuba 1985, Polit & Beck 2010a). Next, the standards of trustworthiness within each study phase are considered. After that main results are discussed in relation to the recent research literature. Finally, conclusions and recommendations are presented and suggestions for further research are outlined.

6.1. Trustworthiness of the study

Phase I

Credibility refers to confidence in the truth of the data, particularly from the participants' point of view, and its interpretations (Polit & Beck 2010a). In order to ensure credibility of the data, the study sample was formed from participants with experience of working with severely aggressive young people in adolescent forensic settings (Graneheim & Lundman 2004). Professionals who were willing to participate, who worked with these adolescents on a daily basis and who were working during data-collection formed the study sample. However, sampling may be biased to those who were motivated to participate, thus failing to capture important perspectives from valuable participants (Tong et al. 2007, Burns & Grove 2009). More close co-operation with gatekeepers when recruiting participants might also have reduced bias (Hennik et al. 2011). Further, in Belgium, the UK and the Netherlands, sampling may have been biased by practical issues. Due to the short time spent by researcher in these units, valuable informants may have been missed from the study because they were not working at the time of data collection. (Tuckett 2004.) In addition, the samples in Belgium and the Netherlands comprised also of other professionals than direct care staff, e.g. therapists, teachers and doctors. This may cause sampling bias. To enhance credibility, the interview situation was private and safe in order to encourage interviewees' participation.

In studies involving the use of two languages, where language is a methodological challenge, the term "cross language trustworthiness" may serve to adequately describe the evaluation of the rigor of these studies (Squires 2009). In this study, the interviews in Belgium, in the Netherlands and in the UK were conducted in participants or interviewers second language, which may threaten credibility. Thus, participants and the interviewer discussed unclear meanings or nuances in the language used and sought clarification during and after the interviews. Unclear parts of the interviews were later checked by a native English speaker in order to strengthen credibility. (Parahoo 2006.) In addition, the

data from Belgium, the Netherlands and UK units was collected and analysed in English, whereas the Finnish data was analysed in Finnish and the analysed data was translated to English. Translation process may have affected the credibility of the data. In this study, the researcher's language competence can be described as good, which supports credibility. (Squires 2009.)

Moreover, interviews were conducted until data saturation was reached (Polit & Beck 2010a, Hennink et al. 2011). The interviews were tape-recorded with participants' permission and transcribed verbatim (Tuckett 2005). Finally, after data analysis two participants from the Finnish sample reviewed the results and verified them (Paper I) whereas in Paper II the data analysis was reviewed in a research group of doctoral students (Polit & Beck 2010a).

Conformability is considered to be the objectivity of the data. It is important that findings reflect participants' perceptions and not the biases or motivations of the researcher. (Tong et al. 2007, Polit & Beck 2010a.) To enhance conformability, the process of data analysis was described in detail. Direct expressions from the data were used and an example of data analysis was presented in the research report to support the analysis. (Elo & Kyngäs 2007.) Furthermore, to increase conformability, two participants from the Finnish sample confirmed study findings (Paper I) and data analysis was discussed in the research group (Paper II). The use of two independent researchers for data analysis might have improved conformability (Parahoo 2006, Tong et al. 2007, Polit & Beck 2010a).

Dependability refers to the stability of the data over time and over conditions (Polit & Beck 2010a). In this study, dependability was supported by describing the research process, the study context and related decisions allowing other researchers to follow the research procedures. The interview schedule was piloted first in Finland (n = 5), after which it was translated into English by an expert in adolescent forensic psychiatry and repiloted in the Netherlands (n = 3). In addition, experts in adolescent psychiatry in Finland and the Netherlands reviewed the schedule. (Squires 2009.)

The question of the conceptual appropriateness of a research instrument arises when conducting cross-cultural research (Suhonen et al. 2008, Squires 2009). In this study, no proper back-translation process of the interview schedule was conducted. Although back translation is recommended to ensure appropriateness of an instrument (instrument validation) (Suhonen et al. 2008, Hennink 2011), it does not guarantee the conceptual equivalence or understanding of different nuances and meanings of a particular word (Larkin et al. 2007, Hennink 2011). "Same" words may have different connotations across languages making translation problematic (Temple 2006, Larkin et al. 2007). In addition, the nature of semi –structured interviews makes translation processes problematic: the numbers and types of questions are the same for all respondents but the actual wordings in the interview situation may be varied to ensure that respondents understand the questions. The interviewer may re-word, re-order or clarify the question in the interview situation in order to obtain more complete answers. (Parahoo 2006, Tong et al. 2007.)

Data was stored and managed with Atlas- ti 5.0 (Muhr 2004) computer software. This facilitated the management of the data and made the analysis more systematic and transparent, thereby increasing dependability of the data (Bowling 2004, Lewins & Silver 2007).

Transferability refers to the extent to which the findings can be transferred to or have applicability in other settings or groups (Parahoo 2006, Polit & Beck 2010a). This study was conducted in four adolescent forensic psychiatric units in four European countries. The results are not transferable because they are not representative. However, the results may be applicable to some extent in similar settings in Europe. To facilitate transferability in this study, the study context and selection and characteristics of participants were described. Further, the data collection procedure and data analysis process were explained. (Graneheim & Lundman 2004.) Moreover, the findings were presented rigorously with appropriate quotations. Eventually, the researcher can make suggestions about transferability but it is the reader who decides if the findings are applicable in other contexts. (Graneheim & Lundman 2004, Polit & Beck 2010b.)

Phase II

In order to support *credibility*, the study sample was composed from different professionals working with the severely aggressive adolescents in the four study units. The sample consisted of professionals working as teams in each study unit, working during data collection and willing to participate in focus group interviews. However, this convenience sampling may cause bias because it may not provide the most information rich sources (Burns & Grove 2009, Polit & Beck 2010a). In addition, in the Netherlands only two team members were able to participate in the focus groups interview, which may have affected the credibility of the data. Before data collection, the core concepts of MAPS- instrument were explained to participants to ensure credibility. During the data collection, the atmosphere in the interview situation was made as comfortable as possible to support active discussion. A structured interview schedule was used to collect the data and participants had the opportunity to clarify unclear questions. (Parahoo 2006.) The interviewer took detailed notes during the interview. Two researchers conducted the data analysis and discussed findings and conclusions to increase credibility. In addition, participants reviewed the results and verified them. (Polit & Beck 2010a.) Credibility may have been affected by the fact that participants in two of the focus group interviews were not speaking in their first languages (Squires 2009). However, the interviewees had the opportunity to clarify unclear meanings in the interview situation (Parahoo 2006).

To support *conformability*, interviews were carried out by an expert in psychiatry who was not employed in the study units (Polit & Beck 2010a). Only one researcher coded the data. However, the use of two researcher in coding would have increased conformability. Further, data analysis was conducted by two researchers not involved in data collection, who discussed the analysis and findings. (Parahoo 2006, Tong et al. 2007, Polit & Beck

2010a.) In addition, conformability of the results was verified by participants in each unit (Graneheim & Lundman 2004, Polit & Beck 2010a).

Dependability was ensured by describing the study context and the research process allowing other researchers to follow the research procedures. Further, dependability was supported by the interview schedule which was applied in all four focus groups interviews in order to ensure that the interviews were conducted in the same way. Moreover, the interviews were conducted by the same person, who was an expert in data collection methods. (Graneheim & Lundman 2004.) The interview schedule was not back-translated nor tested for validity and reliability which may affect dependability (Burns & Grove 2009, Polit & Beck 2010a).

Transferability. The results were consistent and similar from the focus groups interviews which supports the applicability of the results in the units studied but are not directly transferable to other similar European units. Transferability was further supported by describing the study context and selection of participants. Further, the data collection procedure and data analysis process were explained. Moreover, the results were presented carefully so the reader may judge their applicability. (Graneheim & Lundman 2004.)

Phase III

The study was conducted in one adolescent forensic unit by collecting Structured evaluations of physical interventions- forms and Irregularity- reports. The data quality can be regarded as reliable/valid because the data was collected as a part of the normal activities in the unit. Staff members completed structured forms immediately after aggressive incidents and errors (false or missing information) may have occurred in the recording situation which may impair the accuracy of the data. (Bowling 2004, Polit & Beck 2010a.) However, the staff routinely completed the evaluation form and the physical interventions were twice discussed and missing information was added. Only a small number of patient documents were included in this study. However, the study focused on unit level and therefore the small number of patients is not a disadvantage. To assess the data quality in longitudinal studies, information could be gathered twice to reveal any discrepancies. (Polit & Beck 2010a.)

6.2. Methodological approach

In this study, a mixed methods approach was used to examine aggression and its management methods in adolescent forensic settings. In the current literature, what includes mixed methods research is widely discussed. Different perception on rationale why to use it, when or where mixing is practiced or the extent of mixing exist in literature (Johnson et al. 2007, Teddlie & Tashakkori 2009). Mixed methods research has been defined for example as a research where qualitative and quantitative research techniques, approaches and concepts are combined in one study or in multiphase inquiry (Johnson &

Onwuegbuzie 2004, Johnson et al. 2007) in order to capture various aspects in the same phenomenon (Sale et al. 2002).

In this study, mixed methods approach was used to better understand adolescent aggressive behaviour (Sale et al. 2002, Creswell & Plano Clark 2007). The study included three phases where qualitative (Phase I, II) and quantitative (Phase III) approaches were used to examine this challenging behaviour (Johnson et al. 2007). Mixed methods approach was used in different study stages: in research question formulation, in data collection and data analysis (Bryman 2006). This study used also multiple data sources to explore adolescent aggressive behaviour (Teddlie & Tashakkori 2009).

6.3. Discussion of main results

6.3.1. Staff's perception of adolescent aggressive behaviour and management methods

In this study, participants recognized different dimensions of aggressive behaviours displayed by adolescents: physical, verbal and nonverbal. These dimensions of aggressive behaviour were closely interrelated: adolescent behaving physically aggressive used nonverbal and verbal aggressive behavior to underline her/his behaviour. On these dimensions of aggression, different levels of severity were found. Minor aggression included changes in body presentation whereas self- harm behavior was perceived as being major aggressive incident because of the severity of the act and the challenge posed to staff members' professional competence. This multifaceted nature of aggressive behaviour is also documented in current literature (Rippon 2000, Grendeau & Archer 2005, Lewis 2005). In the four study units, staff members perceived aggressive behaviour in fairly similar way and a clear conception of adolescent aggressive behaviour was identified. The results do not concur with the earlier literature claiming that staff have difficulty in defining aggressive behaviour or cannot reach consensus on definitions (Morrison 1993, Finnema et al. 1994, Maguire & Ryan 2007) due to cultural or personal reasons (O'Connell et al. 2000). This consistent perception of adolescent aggression in this study may due to similar patient population or similar conception of the studied units. When preventing and anticipating aggressive behaviour it is most important that all parties have the same understanding of a particular behaviour (Maguire & Ryan 2007).

Staff members identified several factors that were associated with aggressive incidents, including those related to individuals (patients and staff), interaction and environment. These findings are consistent with earlier findings (Nijman 2002, Duxbury & Whittington 2005) indicating various factors that explain inpatient aggressive behaviour. Patient related factors, such as negative childhood experiences, were perceived as underlying adolescents' aggressive behaviour. This is in line with other studies (Farrington 2005, Salzinger et al. 2007, Duke et al. 2010) showing, for example, that inconsistent parenting and parental criminality may contribute to adolescent aggressive behaviour. On the

other hand, participants also perceived that aggression was a learned behaviour which helped the adolescent to control challenging situations or to cope to those situations. This perception concurs to theories that explain aggressive acts as a learned behaviour, adopted due to past experiences (Shaver & Mikulincer 2011). In our study, interactional factors between adolescent and staff were not identified as primary factors for aggressive behaviour. This is not in line with earlier results, which consider staff -patient interaction to be one of the most important factors leading to aggression in inpatient settings (Chou et al. 2002, Nijman 2002, Spokes et al. 2002, Carlsson et al. 2004, Omerow et al. 2004, Carlsson et al. 2006). If staff members don't recognize the importance of their own role in interactions it is possible that it increases patient aggressive acts and decreases safety in the unit. Therefore it is important that the role of staff members in interaction situations is acknowledged in educational programmes intended for staff. A consistent perception of what constitutes aggressive behaviour and what may be the factors associated with this behaviour in adolescent forensic setting facilitates staff to recognize the manifestation of aggression at an early stage and to implement appropriate and more individual and consistent interventions to control it. Reduced occurrence of aggressive situations enhances the therapeutic milieu of the unit and strengthens staff's occupational health.

Staff managed adolescent aggressive behaviours with various methods. They preferred using verbal interventions to control aggressive incidents, which is in line with other studies (Rask 2002, Foster et al. 2007). Verbal interventions was a starting point in the management of aggression and it was used in the context of all management methods. This result is confirmed in Rask & Levander (2001) study, where verbal interventions were used as main instrument in the care process. The staff in this study pointed out that verbal interventions were the most suitable method in minor aggressive incidents. However, verbal interventions were used also in major aggressive incidents as a supporting or calming method. Staff also emphasized the importance of post incident discussions with adolescents to complete the aggression situation. Importance of post incident discussions are also recognized useful in other studies, although it is not a standard practice (Needham et al. 2010, Kontio 2011). In the literature, verbal interventions are suggested to be the primary methods when controlling aggressive patients (Masters et al. 2002, NICE 2005).

Coercive methods, like seclusion and mechanical restraint, were used as the last resort in major aggressive incidents where the adolescent was unable to control his/her behaviour. Recommendations related to child and adolescent psychiatric care suggest to use the least restrictive methods in managing aggression in minors (Masters et al. 2002). However, in Hottinen et al. (2012a) study staff in adolescent psychiatric units had strong positive attitudes to containment methods which is often reflected in management methods used. This does not concur in our study, where coercive methods were perceived as last options and raised several ethically sensitive questions among staff, such as violating basic human rights. The staff in adolescent forensic units encounter severe aggression on daily basis and have to debate between different aggression management methods.

However, coercive methods were recognized at times the only options to help severely aggressive adolescents to regain control. In those situations, staff seemed to work with a high ethical standard. They aimed to co-operate with adolescent and searched other methods, without endangering the safety of others involved. These results are in line with the literature, where the ethical aspects of patient restraint and seclusion procedures and alternatives to these are widely discussed (see for ex Barnett et al. 2002, Donat 2003, dosReis et al. 2003, LeBel et al. 2004, Donat 2005, Smith et al. 2005, Greene et al. 2006, Dean et al. 2007, Moran et al. 2009, Kontio et al. 2010).

Regarding the four units studied, aggression management methods included the same elements in all four units, but differences emerged in clinical practice. Particularly in use of coercive methods, such as seclusion and mechanical restraints, there was variation, which concurs with earlier research (Bowers et al. 1999, Bowers et al. 2007). These variations are partly due to differences in legislations between the countries (Bowers et al. 1999) and may also reflect the psychiatric care culture in a unit or staff's attitudes to use of coercive methods (Bowers et al. 2004, Hottinen et al. 2012a). Further, units with longer history of treatment experience seemed to use less physical restraints and less often. This may be due to the longer experience of staff who are able to anticipate adolescent aggressive behaviour earlier and intervene before aggression escalate to major aggression.

6.3.2. Adolescent forensic psychiatric services in different European countries

The units included in this study were alike regarding unit settings, treatment focus and interventions available. When considering the unit characteristics the results differ from Salize et al. (2005) study where forensic service provision vary significantly in quality and quantity between the EU Member States. The similarity of the units studied in this study may be due to the fact that study focused on the adolescent forensic setting, where the patient population and patients' needs are fairly homogeneous and the units studied organized in similar ways.

The studied units focused primarily on the psychological life area. This may be due to the special nature of this patient population with primary psychiatric problems related to aggression and criminal behavior (Teplin et al. 2002, Domalanta et al. 2003, Vermeiren et al. 2006). NL and UK, however, also focused on the criminal area. The differences in treatment focus may partly be explained by patient population characteristics. For example, in the NL the focus on criminality may be due to the fact that all adolescents had criminal convictions on entering the unit and were detained under criminal law. In all units studied, regarding phases of care, aftercare was not a primary focus due to the fact that relapse prevention is mostly done outside inpatient treatment facilities.

The adolescents in the units studied were managed with a variety of treatment interventions. When exploring the interventions offered and specific needs of this patient population, it seems that the units in this study were able to provide treatment

interventions addressing the various known needs of these adolescents. This is not in line with previous studies (Harrington et al., 2005, Chitsabesan et al., 2006) reporting difficulties in meeting the needs of this patient population. In addition, observing suicide risk and acknowledging co-morbidity in the adolescent demands special interventions (Fazel et al. 2008). On the other hand, adolescents' needs change during their stay in the unit and is reflected in intervention provision (Kroll et al. 2002, Harrington et al. 2005). Although the study units showed some differences in the interventions supplied to this patient population, the focus of the areas showed that the interventions were tailored to the clients' problems, especially in the area of psychological care, in which the treatment interventions for aggression were similar.

6.3.3. Implementation of an aggression management programme

There are only few studies reporting effectiveness of comprehensive aggression management programme in child and adolescent psychiatric setting, although aggressive behaviour is common during inpatient admission (Sukhodolsky et al. 2005, Greene et al. 2006) and requires effective management to ensure safety in the unit (Barnett et al. 2002). This is particularly true in adolescent forensic units where the aggressive behaviour is highly frequent and poses a treatment challenge to staff (Withecomb 2008). In this study, over the two year study period, aggressive behaviours in adolescents decreased, physical interventions became shorter over time and injuries to staff became less frequent, which indicates that aggression management programme enabled improvements in aggression management, without increasing the use of restrictive methods. This concurs with Dean et al. (2007) study where broad based aggression management program was implemented in child and adolescent psychiatric unit. In addition to significant decrease in incidents of aggressive behaviour, staff injuries, use of physical restraint and duration of seclusion decreased (Dean et al. 2007). These results approach also the recommendations suggesting comprehensive aggression management which strives to the minimum use of restrictive methods in controlling aggressive behaviours (Masters et al. 2002, dosReis et al. 2003).

In this study, the number of physical interventions decreased under study period. This may be due to the aggression management program but also to other variables, such as the increased skills of the staff in aggression management in general and the recommendation to use early interventions which leads to use of less restrictive methods. Physical interventions, especially physical restraints, are controversial management methods of aggression and they raise various reactions in staff and in patients (see for ex. Bonner et al. 2002, Hoekstra et al. 2004, Meehan et al. 2004). Especially for maltreated adolescents, physical intervention may be a traumatizing experience due to adolescent's previous experiences (Greene et al. 2006). Nevertheless, even today, coercive methods are used frequently to control aggressive behaviour in psychiatric settings (Duxbury 2002, Lewis 2002, Duxbury & Whittington 2005) although alternatives are suggested. However, information about the use of physical restraint, seclusion and mechanical restraint in child and adolescent psychiatry is sparse. In this study, 55% of the adolescent

had experienced physical interventions and 31% mechanical restraint. These percentages are higher than in other studies (Sourander et al. 2002, Hottinen et al. 2012b) examining coercive practices in regular child and adolescent psychiatric units and are expectable because of the differences of the patient populations.

6.4. Conclusions

This study produced new international knowledge about how staff members perceive and manage adolescent aggressive behavior in forensic settings. A consistent perception of aggressive behaviour was identified. Adolescent aggressive behavior was perceived as multidimensional behavior with various levels of severity and various factors were identified to be associated with aggression. However, factors related to patient –staff interaction was vaguely identified, which has to be acknowledged when educational programmes are planned.

Staff members managed aggressive behaviour with diverse methods. They offered high ethical care to disturbed adolescents in terms of aiming to avoid the most restrictive methods and aspiring to intervene as early as possible. The common understanding of aggressive behaviour provides opportunities to implement more individual and consistent aggression management methods which lead to increased safety in the units and may strengthen staff's occupational well-being. In addition, the differences detected in aggression management methods can be of use in the development of aggression management in adolescent forensic settings. To support the development of consistent perception of aggression and how aggressive incidents should be managed, staff has to have opportunities to meet and discuss these issues.

Working in adolescent forensic psychiatric environment is challenging for staff members due to severe aggressive behavior displayed frequently by the adolescents. Staff members in such units must firstly focus on how to maintain safety in the units for other staff and adolescents. Achieving safe environment liberates staff resources for therapeutic activities where staff's role is to support normal development of the adolescent as far as it is possible by supporting them in everyday activities. This balancing between safe environment and supporting age –appropriate development and skill building is one of the main competencies in adolescent forensic psychiatric care.

Adolescent forensic psychiatric services were fairly similar regarding the four study units. Treatment settings shared similar components and treatment focus and interventions available were alike between the units. The comparison of services produced new knowledge regarding service provision in adolescent forensic setting and can be used to develop services which helps in providing more equal and similar care in forensic settings in the EU region.

A complete aggression management programme resulted improvements in aggression management. This was attained without increasing the use of coercive methods.

Improvements in aggression management contributes to more safe treatment milieu where aggression is not a threat for staff or patients and where staff can focus to therapeutically work with the adolescents.

6.5. Recommendations

The overall goal of the study was to explore and identify good aggression management methods and on that basis to produce recommendations for aggression management in adolescent forensic settings. The three phases in this study contributed to this goal as follows: In study phase I, staff's perception of aggression and its management methods were explored. In order to manage aggressive behavior it is important to establish a consistent understanding of what this behavior includes and how it should be managed. Consistent knowledge of a certain phenomenon allows staff to understand situations in a similar way which is a prerequisite to good aggression management. Staff perception of aggressive behavior and it's management methods was used to produce recommendations. In phase II, adolescent forensic psychiatric services were examined from the staff perspective. In order to offer good aggression management it is of vital importance to be able to offer adequate interventions meeting adolescent needs within proper treatment setting. On the basis of staff perception in phase II, recommendations were produced. In phase III, effectiveness of an aggression management programme was evaluated. Distinctive feature of good practice is that it is evaluated and found to be effective.

Following recommendations to manage aggressive behaviour in adolescent forensic settings are suggested based on the results of this study:

1. To manage aggressive behavior, a consistent understanding of the nature of aggression and the factors associated with it should be defined. This definition is a prerequisite for recognizing aggressive behaviour and for implementing appropriate methods in a timely manner to manage this challenging behavior.

2. Early intervention and the use of least restrictive methods to manage aggression are recommended. Verbal interventions used as such and along with other methods are suggested as primary management of aggression. Post incident discussions with adolescents should be incorporated in aggression management regularly. Moreover, the threshold of using physical restraint should be low in order to prevent aggression to escalate to major aggressive incident.

3. To further advance the aggression management skills of staff, opportunities and time for regular conversation and de-fusing talks among staff should be provided. In addition, regular aggression management training and education must be offered. When planning training and educational programmes, the focus should be on interactional aspects in aggressive incidents. In addition, cross-country educational and work- related exchange of knowledge is recommended for advancement of skills and knowledge in staff.

4. To best meet the various needs of adolescents in forensic units and to ensure safe and therapeutic treatment milieu, adequate resources and tailored treatment methods has to be offered.

6.6. Suggestions for further research

1. More research is needed on patient perspective on aggression and its management. Especially the perspective of minor patients should be explored in order to get more thorough understanding of this behavior.

2. More research on the effectiveness of different aggression management methods is needed. This will help to implement appropriate management methods in each individual situation and ensure safety in treatment settings. Effectiveness of aggression management methods could be studied by using methods of impact study.

3. Future research should focus on service provision – how best to meet the needs of this juvenile patient population and how to optimally match the treatment needs of these patients.

4. More international research collaboration must be supported in aggression management in psychiatric settings. Cross national assessment of aggression management practices could improve aggression management and produce evidence – based knowledge to further develop safe and effective practices.

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