

A Descriptive Study of the Use of Restraint and Seclusion in a Special Education School

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Abstract

Background The literature regarding the use of restraint and seclusion in schools is scant, perhaps due to the controversial nature of the topic. With few exceptions, schools have not published policies or data regarding these procedures even when doing so would further the discussion about standards for staff training, student safety, and benchmarks for ongoing improvement.

Objective The present descriptive study details how a special education school approached the problem of maintaining safety for its lower, middle, and high school students, the majority of whom have autistic spectrum disorders. Its purpose was to describe the monitoring of crisis intervention episodes in a large educational day facility and to report occurrence and duration data of restraint and seclusion.

Methods Data comparing student gender and Federal Census Code classifications in the lower/middle school and high school across two time periods were tabulated. The number and duration of restraint and seclusion episodes from 2002 to 2007 in each school were summarized.

Results Examination of 6 years of aggregate crisis management data revealed that lower/middle school students are restrained more frequently than high school students. Duration rates of both restraint and seclusion were variable regardless of setting, a finding consistent with available studies, mostly from inpatient and residential settings.

Conclusions The authors concluded that most children and adolescents with aggressive and self-injurious behaviors can be safely managed in a day school setting. The present analysis of aggregate crisis intervention data may represent the first benchmarks for comparison with other special education programs.

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Keywords Crisis management · Restraint · Seclusion · School · Special education

Special Education Law and Definitions

The Education for All Handicapped Children Act (1975) proposed to extend free educational opportunities to all handicapped children. The special education milestone has been reauthorized several times as the Individuals with Disabilities Educational Act (IDEA), most recently as the Individuals with Disabilities Education Improvement Act (2004). This federal legislation assures a free and appropriate public education (FAPE) in the least restrictive environment for all students with disabilities from birth through age 21. In 1997, amendments to IDEA addressed procedures to guarantee that:

(a) schools provide for safe and orderly learning environments, (b) school personnel are empowered to prevent and address problem behaviors, (c) there is a balance between the need for safety and need to preserve the rights of students with disabilities, and (d) students with disabilities are afforded an appropriate education that includes effective behavioral intervention plans (Katsiyannis and Smith 2003, p. 410).

With these amendments, schools cannot indefinitely suspend students or expel those with disability-related behaviors. The law required schools to develop methods that would safely manage aggressive or self-injurious children whose behavior was identified as a manifestation of a disability. Denial of services or education due to such behaviors would be a violation of IDEA. Thus, schools, including special education centers, experienced an increased need to train staff to safely manage children and adolescents with aggressive behavior ensuring FAPE for all students.

At about the time that IDEA was being amended in 1997, debate about the role of seclusion and restraint in the treatment of children and adolescents was intensifying. In 1998, the *Hartford Courant*, in a five-part series, reported that there were 142 deaths related to restraint over a 10-year period (Weiss 1998, October 1–15). In 2002, the *American Statesman-Staff*, reported that a 14-year-old male died following a restraint at his school (Rodriguez 2002, March 24).

In response to increasing concern about aggression management, the American Academy of Child and Adolescent Psychiatry (AACAP) published its practice parameters (Masters et al. 2002). This article reviewed the state of the management of children and adolescents in psychiatric institutions, and included indications for the use of seclusion and restraint such as the prevention of dangerous behavior to oneself or others. In addition, AACAP's practice parameters defined *seclusion* as "the involuntary confinement of a person in a room alone so that the person is physically prevented from leaving" (p. 75); *restraint* was defined as "the involuntary immobilization of a person through the use of chemical, physical, or mechanical means" (p. 75). Physical restraint has also been referred to as *ambulatory restraint*, *manual restraint*, *physical intervention*, or *therapeutic holding* (Council for Children with Behavior Disorders 2009a).

Literature Review

The literature on seclusion and restraint is not limited to journal articles. Therefore, this review includes a monograph, the report of a national organization, and several white

papers. One notes that, in order to permit interinstitutional comparisons, summary results of selected studies are expressed in *per 1,000 patient days*, calculated by multiplying enrollment by billable days and dividing by 1,000 (Martin et al. 2008).

Child Welfare League of America Monograph

The Child Welfare League of America (CWLA) has been in the forefront of this topic. In 2004, CWLA published the monograph, *Achieving Better Outcomes for Children and Families: Reducing Seclusion and Restraint* (Child Welfare League of America 2004), in which it outlined the results of the Best Practices in Behavior Support and Intervention Project. This project was a 3-year study of five demonstration sites with numerous goals including the collection of data on the occurrence and duration of restraint and seclusion. One of the sites, The Devereux Glenholme School, is a facility for 95 children and adolescents ranging in age from 5 to 17 with emotional and behavioral problems. Devereux Glenholme reported an average of 4 restraints per 1,000 patient days and 4 seclusions per 1,000 patient days. Duration data were not reported. The other sites were not schools and included a mental health treatment center and a psychiatric hospital for children. Taken together, however, the findings indicated that young children were disproportionately involved in incidents of crisis management. Furthermore, the Executive Summary of the CWLA monograph described existing studies as often contradictory, particularly in the area of efficacy, noting that there are no national benchmarks for restraint and seclusion because there is no data-gathering mechanism.

Journal Articles

Consistent with the CWLA monograph (2004), much of the literature on restraint and seclusion involves inpatient and residential settings (Baker and Bissmire 2000; Leidy et al. 2006; Martin et al. 2008; McCue et al. 2004; Mohr et al. 1998). For example, Mohr et al. (1998) examined the experience of inpatients who had been restrained as garnered through postdischarge interviews. Two studies used data from residential schools. Specifically, Baker and Bissmire (2000) improved staff skills through training, but found no decrease in crisis episodes. Leidy et al. (2006) reviewed the restraints that occurred at a residential treatment facility for adolescent females, and found that younger adolescents were restrained more frequently than older adolescents.

Two studies, McCue et al. (2004) and Martin et al. (2008), were conducted in inpatient settings, but only the latter involved children and adolescents. In that investigation, Martin and colleagues (2008) studied the rate and duration of restraint and seclusion before and after the introduction of Collaborative Problem Solving (CPS), a training package designed for children and adolescents. The setting was an inpatient unit for both males and females. Over a 4-year period, there was a marked decline in the use of restraint from 56 per 1,000 patient days in 2003 to 1.7 per 1,000 patient days in 2007. The frequency of seclusion changed from 92 per 1,000 patient days to 33 per 1,000 patient days. The mean duration of restraints declined from 41 min per event (SD = 8) to 18 min (SD = 20). The mean duration of seclusion changed from 27 min (SD = 5) to 21 min (SD = 5). One conclusion of the study was that reducing restraint rather than seclusion may be more achievable as a first target in crisis management procedures.

In contrast to the settings reviewed above, Ryan and Peterson (2004), in a review of the literature regarding physical restraint in schools, identified 26 articles which included 15 experimental studies. Three investigations dealt with the legal aspects of restraint and three

involved children in school settings. The vast majority of the studies concerned either a psychiatric facility or a hospital. One of the school-based investigations was a study of teachers' perceptions regarding strategies to deal with aggressive students (Ruhl and Hughes 1985). The other two studies (Grace et al. 1994; Magee and Ellis 2001) are single-subject designs that assess the efficacy of individually designed behavioral intervention programs.

In work published by CWLA, Nunno et al. (2008) presented current thinking on numerous aspects of restraint and seclusion, including discussion of organizational and cultural change to reduce these interventions. Specifically, case studies of selected mental health facilities concluded that vision and involvement by leadership, without waiting for staff consensus, are crucial factors in not only reducing the use of restraint and seclusion, but also in maintaining any progress made (Colton 2008). A pilot study of 42 students conducted in a public, special day school for students with emotional and behavioral disorders was also included (Ryan et al. 2008). The authors reported a reduction in the number of restraint and seclusion episodes following staff training in conflict de-escalation, noting the growing trend regarding the use of seclusion and restraint in schools yet with "very little information and virtually no formal research currently available about the extent or circumstances of the use of these procedures in educational settings" (Ryan et al. 2008, p. 201).

Fogt et al. (2008) surveyed all residential and day treatment schools serving children with emotional and behavioral disorders, identified through databases maintained by the State Departments of Education in New Jersey, New York, and Pennsylvania. Of the 162 schools surveyed, 72 returned usable surveys. Results showed variability in the use of restraint ranging from zero to more than three instances per day; about one third of respondents reported one to three physical restraints per week. There were no data on duration of restraint or seclusion.

Report from the National Disability Rights Network

During the past 2 years, concern about seclusion and restraint in school settings has been appropriately heightened by reports of mistreatment and deaths of children subjected to restraint nationwide. The National Disability Rights Network (NDRN) drew attention to this concern in its 2010 report, *School is Not Supposed to Hurt: Update on Progress in 2009 to Prevent and Reduce Restraint and Seclusion in Schools* (National Disability Rights Network 2010). This report examined the laws, policies, and guidelines of the United States and its territories and found that

- 39% of states still have no laws, policies, or guidelines concerning the use of restraint or seclusion;
- 87.5% of states and territories still allow prone restraints or restraints that restrict breathing;
- only 45% of states and territories require or recommend that schools automatically notify parents or guardians of restraint or seclusion use (National Disability Rights Network 2010, p. 4).

The NDRN report recommended that the Office of Special Education Programs (OSEP) in the United States Department of Education, which is charged with overseeing the implementation of IDEA, do more to protect children with disabilities from the use of restraint and seclusion.

Council for Children with Behavioral Disorders White Papers

At about the same time that the NDRN was conducting its investigation, the Council for Children with Behavioral Disorders (CCBD) published two position summaries, or white papers, on the use of restraint and seclusion in school settings (Council for Children with Behavioral Disorders 2009a, b). Each summary included a Declaration of Principles specifying the right of children to be treated with dignity, and to be provided with the necessary educational, mental health, and behavioral supports. The principles also highlighted the need for adequate staff levels, mandatory de-escalation training, and functional behavioral assessments followed by behavioral intervention plans for students with a pattern of behavior that interferes with learning. Additionally, the CCBD noted the paucity of information regarding use and outcomes of restraint and seclusion in schools in the face of the current trend toward reliance on evidence-based practices. Suggested areas of future research included information on the crisis management system in place at schools to include training levels of staff, the goals of restraint and seclusion, the efficacy of the procedures, as well as data on injuries and fatalities.

Summary

With the exception of the relatively small Devereux Glenholme School, no studies could be identified which describe longitudinal data regarding the use of restraint and seclusion for crisis management in either general education or special education settings. This is significant especially for special education schools which frequently serve children with a range of developmental disabilities and behaviors. These student populations tend to present disruptive behaviors that may be dangerous to themselves or to others, and with an intensity which may necessitate the use of crisis intervention in order to prevent injury to self or others.

Purpose of the Investigation

The goal of the current study was to describe how a large nonpublic special education day school approached the problem of maintaining safety through a comprehensive staff training model and ongoing quality assurance monitoring. A total of 6 years of crisis management restraint and seclusion data across both a lower/middle school and high school were examined. The data included both frequency of episodes and duration. The research questions for this project were:

1. Can children and adolescents who have aggressive or self-injurious behaviors be safely managed in a day school setting?
2. What will we learn if we monitor the frequency and duration of crisis intervention episodes, that is, seclusion and restraint?

Method

Settings and School Samples

Data were gathered from a large, nonpublic, special education day school, consisting of two campuses, located in a metropolitan area in the mid-Atlantic region of the United

States, to which students are referred through the Individualized Education Program (IEP) process. To be referred, the student's level of need must exceed the services available in the public school setting. Enrollment in a nonpublic school is rare and among the most restrictive in special education. It removes the student from the local school system, and greatly reduces or eliminates the opportunity to participate with general education students. This placement is reserved only for students with the most significant behavioral or learning needs, and is often considered an alternative to residential placement. Their needs may be the result of developmental or acquired conditions which often result in significant cognitive deficits. Behavioral manifestations include elopement, head banging, and aggression toward others.

Kennedy Krieger Institute (KKI) is a comprehensive rehabilitation, research and training institute in Baltimore, MD specializing in disorders of the brain. Among *KKI's* many programs are the *Kennedy Krieger School Programs (KKSP)*, nonpublic, special education programs providing education and related services to students whose emotional and behavioral problems are multiple and complex. These programs are approved by the *Maryland State* Department of Education as a placement in the continuum of special education services. They are regulated under the Code of *Maryland Regulations* which specifies the operations of these types of schools. As with all schools serving public students, they are also subject to IDEA (2004) and No Child Left Behind (2001), the latter being an accountability system based on mandated state-based standards and assessments. While some nonpublic schools also provide residential services, *KKSP* is strictly a day placement.

Although the local school system and other members of the IEP team facilitate the referral to and placement in a nonpublic school, the student remains within the care of the referring local school system which retains the IEP and case management in collaboration with the nonpublic school. The local school system funds the student placement through state-approved tuition, creating oversight at local and state levels.

Students attending these nonpublic school programs receive educational services as defined by regulatory school-matriculation requirements and IEP goals. Progress is measured by curriculum-based assessment, individual assessment, and state-mandated testing. The goal of any placement in a nonpublic facility is the return of the student to a less restrictive environment. Alternately, the student may graduate from the nonpublic school with a diploma or certificate of completion from the local school system. *KKSP* further serve their students by providing career and technology education.

Educational services are delivered by certified special education teachers and paraprofessionals in classrooms with an average of 10 or fewer students. In general, staff-to-student ratios are kept low, approaching one-to-one when all staff members are considered. Classrooms are located near enclosed areas staffed by behavior specialists. Students are accompanied by staff to these areas to take breaks from class and to utilize calming strategies for disruptive behaviors. Seclusion rooms can also be found in these locations.

Licensed clinical professionals include psychiatrists, psychologists, social workers, speech and language pathologists, occupational therapists, physical therapists, and nurses. Each clinical discipline maintains a model of supervision within both the larger institute and school programs. This system enables educators and clinicians to partner at all levels and to share responsibility for a student's progress and the appropriateness of services provided.

While staff members are appropriately credentialed from their respective disciplines, *KKSP* provides training in behavior management and crisis intervention. In accordance with the Code of *Maryland Regulations*, this training must contain elements designed to reduce the use of restraint or other restrictive procedures, and to ensure that these procedures are employed in the safest and most humane way possible.

The Schools' programs from which the current data were collected operate on two campuses, the lower/middle school (LMS) and the high school (HS) in Baltimore, MD. These programs are part of a continuum of services from kindergarten to 21 years, the age at which students exit from eligibility for special education services under IDEA. The students are drawn from multiple local school systems within *Maryland* as well as *Pennsylvania and the District of Columbia*. This geographic area includes urban, suburban and rural settings, and reflects the diverse demographics of the mid-Atlantic region.

Historically, the LMS served approximately 150 students in one building. Given an increasing enrollment in 1999 and a desire to serve students beyond middle school, the program was expanded to serve high school students. By 2008, more than 200 students were enrolled in a comprehensive career and technology high school located on another campus. Both schools remained under the same administrative structure. The leadership staff, responsible for monitoring the education, medical, and psychiatric components of *KKSP*, remained constant over the time period examined. Staff totaled more than 300 across both sites.

With the growth of the program and the changing nature of the student population, the administration identified the need to provide improved training for staff to safely manage the students. There was also a recognition that not only was the population becoming older and physically larger with the addition of the HS, but that the Federal Census Code (FCC) classifications of the students were shifting to include more children with autism.

Training Program Selection

In 2002, there was growing concern that staff was not receiving adequate crisis management training to safely manage the students that the school was now serving. In that context, *KKSP* undertook a review of crisis management programs with the goal of minimizing dangerous behaviors and optimizing the students' availability for education.

KKSP administration, a multidisciplinary group, composed of educators, clinicians, and behavior specialists, looked carefully at two critical dimensions of all training programs: crisis prevention and the actual restraint procedure. The crisis prevention dimension is the program's training in positive behavioral supports, reasonable limits of safety-related behavior, and other strategies which can prevent or de-escalate crisis behaviors. The crucial elements of the restraint procedure include the safety and dignity of the student in crisis and the safety of others. After a review and discussion of these elements, training from the Professional Crisis Management Association (2002), referred to as PCM, was selected for use. Neither the authors nor their employer benefit financially or otherwise from PCM.

The program was chosen for several reasons. First, the 4-day training provides a strong emphasis on prevention and de-escalation. Considerable time is spent training staff on managing disruptive but nondangerous behaviors, something particularly applicable to the classroom setting. Second, it narrowly defines crisis as behaviors which are dangerously disruptive or continuously self-injurious or aggressive. For example, students who continuously engage in head banging often require crisis intervention, as do students who attempt to injure others by kicking and biting. Repetitive, nondangerous behaviors are treated by functional behavioral assessment and the development of behavior intervention plans, an approach consistent with educational goals and special educational law. The training clearly states that restraint is not to be used for discipline or compliance. Restraint and/or seclusion are only to be used to prevent injury to self or to others. Third, the physical component of restraint is both safe and as dignified as possible. It also includes

physical feedback designed to assist the student in learning that the restraint is immediately and systematically reduced to less restrictive procedures as relaxation increases. The safety elements include a restraint procedure on a specifically designed mat to decrease discomfort and to allow a soft cushion in order to facilitate relaxation. The restraint procedure itself is without chest compression, joint manipulation, or pressure on the torso, head, or neck. Fourth, given the level of developmental disability of the population being served, the methods are highly proscribed and predictable with little emphasis on the need for verbal ability. Finally, the training is designed to be utilized and followed with a large staff of over 300.

PCM consists of two levels of training, one for all staff, and a more intensive level for behavior specialists whose role includes the need to manage students with potentially dangerous behaviors. There is an additional instructor's certification course which selected staff members have completed so that they can train others. After training, certification requires passing a written test at either level and a practical examination at the more intensive level. The latter provides an assurance of fidelity to the procedures. The natural cycle of the school year provided an opportunity for training staff in August 2002. Staff hired after August 2002 received PCM training as part of their orientation to the school. Passing the examinations was a condition of employment. Recertification, consisting of both the training course and the examinations, occurs annually.

Data Collection

Kennedy Krieger Institute, the umbrella agency for *KKSP* an affiliate of Johns Hopkins University School of Medicine. Therefore, the School of Medicine Institutional Review Board (IRB) reviewed and approved the procedures for this study consistent with patient dignity and ethical guidelines. The second author takes responsibility for the integrity of the data and the accuracy of the data analysis.

The occurrence and duration rates for restraint and seclusion were collected and placed in aggregate form. The data collection process was an outgrowth of the new training program and the development of a quality assurance committee. The review of behavioral data, behavior intervention plans, and the use of crisis intervention procedures had been occurring prior to the new training program. These reviews occurred during student team meetings where, among other issues, the team engaged in a diagnostic process regarding the student's need for crisis intervention procedures and the appropriateness of behavioral supports in place. These meetings could lead to a functional behavioral assessment (FBA) or review of an existing FBA, and subsequent behavior intervention plans (BIP). Those results and individual student data were maintained in the educational record. Of note, all students with a history of restraint or seclusion were required to have an FBA and a BIP.

The adoption of the new training program initiated another tier of data collection and analysis. The schools' multidisciplinary committee, which had reviewed training programs prior to adopting the new training program, reorganized to become a continuous quality assurance committee. The committee's monthly meetings, comprised of the schools' most senior educational, clinical, and behavior specialist administrators, reviewed episodes of seclusion, restraint, and other critical student issues. The committee's oversight and requests for detailed data grew over time and these requests resulted in the creation of a database for tracking these data. The database underwent nearly constant revision and refinement as the oversight of the committee developed. Data from an ever-broadening range of student crisis interventions were entered daily by staff members trained both in PCM and in the use of the database.

The result of this vigilant review of crisis intervention data was the accumulation of 6 years of increasingly detailed information for individual students and school programs. The data collection became refined and additional data points for review became available. For example, at the start of the 2002 school year, the duration of restraints in minutes at both sites was collected. The following year, *KKSP* began tracking the duration of seclusion, first at the LMS and then at the HS. These data were not collected under experimental conditions. Instead, they are the result of imposing a model of continuous quality assurance on a newly adopted crisis intervention program.

Results

Demographic Characteristics

Data comparing student gender and FCC classifications between 2004 and 2008 are presented in Table 1; these 2 years were chosen to demonstrate the change in the population over time.

In 2004, there were 151 LMS and 169 HS students. In 2008, enrollment at the LMS remained relatively stable at 154; however, at the HS, enrollment increased to 207, an additional 38 students. A majority of the students were male regardless of school or time sampling. Regarding FCC, in 2004, most of the students at either site were classified with Multiple Disabilities, a classification indicating concomitant impairments. However, by 2008, most of the students in the LMS and HS were classified with Autism. Of particular interest was the percentage of change over time regarding Autism. There was a greater than 50% increase at the LMS; at the HS, the increase was more than 100%.

Occurrence Data

The results summarized in Table 2 include the absolute number of restraint and seclusion episodes for each academic year of the LMS and HS from 2002 to 2007. The number of

Table 1 Demographic characteristics of *KKSP* lower/middle school (LMS) and high school (HS) students

Characteristic	LMS		HS	
	2004	2008	2004	2008
Gender (n, %)				
Male	118, 78	132, 86	137, 81	165, 80
Female	33, 22	22, 14	32, 19	42, 20
Primary Federal Census Code (n, %)				
01-Mental retardation	5, 3	6, 4	7, 4	17, 8
06-Emotional disturbance	11, 7	21, 14	41, 24	44, 21
08-Other health impaired	11, 7	16, 10	7, 4	14, 7
09-Specific learning disability	2, 1	1, 1	8, 5	7, 3
10-Multiple disabilities	56, 37	11, 7	64, 38	25, 12
13-Traumatic brain injury	10, 7	5, 3	19, 11	19, 9
14-Autism	51, 34	87, 56	21, 12	77, 37

Total federal census codes do not total 100%. Codes representing less than 5% of the student population in both schools are not displayed

KKSP = Kennedy Krieger School Programs

Table 2 Occurrence of restraint and seclusion events during a 6-year period

Variable	2002–2003	2003–2004	2004–2005	2005–2006	2006–2007	2007–2008
LMS restraint						
Number per year	422.00	276.00	584.00	446.00	353.00	255.00
Per 1,000 student days ^a	12.78	8.56	16.57	13.79	11.02	8.01
LMS seclusion						
Number per year	196.00	334.00	195.00	113.00	60.00	215.00
Per 1,000 student days ^a	5.93	10.23	6.04	3.49	1.87	6.75
HS restraint						
Number per year	64.00	85.00	155.00	55.00	49.00	51.00
Per 1,000 student days ^a	2.07	2.47	4.48	1.42	1.25	1.35
HS seclusion						
Number per year	30.00	21.00	14.00	39.00	65.00	36.00
Per 1,000 student days ^a	0.97	0.61	0.40	1.00	1.66	0.95

The year represents the start of each academic calendar

LMS lower/middle school; HS high school; *n/a* not available

^a Enrollment × 199 billable days/1,000

restraint and seclusion episodes per 1,000 student days was then calculated to permit comparison of data generated from year to year given changing school enrollments and to easily compare the data to inpatient seclusion and restraint data which are customarily reported in this manner.

The LMS restraint and seclusion data show variability without compelling evidence of a trend in the reduction in absolute numbers. For example, there were 422 LMS restraints in the 2002–2003 school year and 255 in the 2007–2008 school year. Between these two time frames, in the year beginning 2004, there was a spike to 584 events. Inspection of the restraint episodes as calculated per 1,000 student days revealed a similar pattern. Initially, there were 12.78 restraints per 1,000 student days, peaking in 2004–2005 at 16.57, and then decreasing to 8.01 in 2007–2008. The LMS seclusion data similarly demonstrate variability, with a high of 334 episodes of seclusion and a low of 60 episodes over the 6-year reporting period examined.

In contrast, the HS data demonstrate lower rates for both seclusion and restraint, yet variability over the 6-year time period. Specifically, with few exceptions, comparison of the rates at which restraint and seclusion were needed indicate noticeably lower rates in the HS. For instance, in the 2003–2004 school year, the rate for restraint in the LMS was 8.56 per 1,000 student days as compared to 2.47 for HS students. Similarly for seclusion, in 2004–2005, the LMS seclusion rate was 6.04 per 1,000 student days versus the HS rate of 0.40.

Duration Data

The means and standard deviations of duration are presented in Table 3. Overall, the duration of restraint was shorter than that of seclusion regardless of site. However, inspection of school data longitudinally requires a review of aggregate data with an understanding that individual differences in students enrolled may have a powerful effect on the data. Specifically, the measures of dispersion, or standard deviation, for both types

Table 3 Mean duration and SD in minutes for restraint and seclusion events during a 6-year period

Variable	2002–2003	2003–2004	2004–2005	2005–2006	2006–2007	2007–2008
LMS restraint						
M	9.38	9.16	6.84	4.90	4.50	3.80
SD	8.34	9.41	7.10	4.63	5.00	4.21
LMS seclusion						
M	n/a	21.13	17.07	7.12	8.90	10.53
SD	n/a	23.59	15.80	8.02	7.45	9.10
HS restraint						
M	7.37	4.56	3.93	5.70	7.55	7.04
SD	7.20	3.68	4.47	8.68	6.27	7.36
HS seclusion						
M	n/a	n/a	22.64	15.15	8.85	12.02
SD	n/a	n/a	21.59	16.86	7.85	11.66

The year represents the start of each academic calendar

LMS lower/middle school; *HS* high school; *n/a* not available

of events regardless of site were high relative to the means. Even taking this finding into account, the duration of restraint data for the LMS remained quite low with a mean duration leveling off during the last 3 years of data at between 3 and 5 min. The HS mean duration of restraint was slightly longer, generally between 5 and 7 min. The duration of seclusion episodes at either site was longer than restraint episodes, but decreased over time, appearing to level off at around 10 min for the LMS and about 12 min for the HS.

Also of note, during this 6-year period of data collection, there were no LMS or HS student injuries other than minor bruises or abrasions. All student injuries were assessed by a nurse or a physician. Parents were notified the same day of any incident of seclusion or restraint. This outcome must be considered in the context of the intensity of the behaviors managed and the potential injury that would occur without intervention. Staff injury was similarly infrequent, except for occasional back strain or knee injury. In addition, therapists were informed of all episodes, regardless of whether there was injury or not, and were available to process the incident consistent with the student's developmental ability.

Discussion

This descriptive study provides longitudinal data from a school setting across the age spectrum from lower school through high school. The current collection and analysis of aggregate data offer a unique opportunity to monitor efficacy and present what may be the first benchmarks by which special education programs might make comparisons and judgments regarding their own crisis intervention data. This is a first step in addressing the CCBD's concern that there is a lack of data from schools on this topic (Council for Children with Behavior Disorders 2009a, b). Secondly, the paper describes how crisis management was monitored over time using a quality assurance model and multidisciplinary staff.

Special education settings differ from hospitals to residential treatment centers in that medication for periodic agitation, both oral and intramuscular, generally are not given.

Despite aggressive or self-injurious behaviors, students must be available to attend class and ride safely to and from home on a school bus or other means of transportation. Although crisis behaviors may be similar regardless of site—hospital, residential treatment center, or school—the management of dangerous behaviors in a school setting is different. The selection of a crisis management training program must be tailored to address the unique aspects of schools, consider the population being served, and match the educational goals of the school.

Thus, the evolution of *KKSP*' quality assurance committee, which ultimately was the source for the data presented, was an outgrowth of a hospital model superimposed on a special education school. This clinical model led by special educators, child psychiatry staff, psychologists, and behavior specialists produced rigorous, ongoing scrutiny of the data and procedures. The process was consistent with Colton's conclusion (2008) that vision and direction from leadership are required to effect change in crisis management procedures.

The first research question related to safe management of children and adolescents with aggressive and/or self-injurious behavior in a day school setting. Our conclusion is that if staff are well trained and data are monitored for quality assurance, students who display aggressive behavior can be safely managed in this kind of setting. However, we would caution that students who are outliers vis-à-vis disruptive behavior warrant careful review.

The second research question relates to what can be learned by monitoring the frequency and duration of restraint and seclusion. Examination of the data, collected over 6 years and drawn from nearly 195,000 student days, suggests numerous conclusions.

First, younger students were more likely than high school students to be restrained or secluded. This is consistent with the findings of several reports that age is correlated with implementation of restraint and seclusion procedures (Child Welfare League of America 2004; Leidy et al. 2006). Many students in this nonpublic school program have developmental disabilities rendering them functionally at the behavioral level of a much younger child. This observation is most pronounced in the students enrolled in the LMS and is consistent with behavior that may be seen in young children with similar delays (Mcintyre 2004). Their chronological age imposes expectations for educational classroom behavior, yet they are impulsive, have low frustration tolerance, and limited attention span. In addition, these students may also have receptive and expressive language problems. Their behavioral outbursts often resemble tantrums, but with the potential for serious self-harm given aggressive behaviors which include biting, hitting, or throwing objects. As individuals mature and progress through school, their ability to tolerate frustration, manage their impulses and delay gratification may improve. They also become more comfortable with the demands of school which have been gradually adjusted over time to better accommodate any disabilities. By high school, students who have significant developmental disabilities have a greater likelihood of being socialized to understand the rules of school and be able to manage with fewer behavioral outbursts.

Second, crisis episodes requiring intervention for the HS students were less frequent, but slightly longer in duration for both restraint and seclusion. It is the hypothesis of the authors that the behavioral outbursts of these older students could represent recalcitrant symptoms of a comorbid psychiatric disorder with accompanying symptoms of decreased frustration tolerance, increased irritability, and impulsivity. Hallucinations or delusions may also be present. As such, relatively prolonged crisis management may be needed for these students. This hypothesis warrants further exploration which was not undertaken as part of this descriptive study.

Third, inspection of these data also shows notable variability in the rates of duration for both restraint and seclusion. This variability in duration was consistent with the

observations of staff who routinely commented that individual students skewed the aggregate data. These outliers were not removed because they represent the population and the events that comprise the crisis management data. Individual student data are critical to the success of reducing or eliminating crisis management procedures. During continuous quality assurance monitoring, the use of these data remained vital to *KKSP*'s ability to gauge efficacy. Concerns about individual students who were outliers were directed to the treatment team for review of programming and treatment needs. For example, recommendations for some of the outliers included psychiatric hospitalization or residential care.

When these findings are compared to existing data, primarily from inpatient and residential treatment centers, there appears to be overall consistency (Martin et al. 2008; McCue et al. 2004). In our cases, careful program implementation and quality assurance procedures have been able to reduce restraint and seclusion to relatively low levels. Of particular interest is the marked variability in the duration of both restraint and seclusion regardless of setting—hospital, residential treatment center, or school.

The duration rates for both restraint and seclusion represent *brief containment* for the prevention of self-injury or injury to others, guiding principles of the staff training. When seclusion and restraint are used for crisis intervention, the episodes were nearly uniformly brief. The state of Colorado, for example, limits its definition of restraint to holding beyond 5 min per its Rules for the Administration of the Protection of Persons from Restraint Act (2009). Applying a similar definition would further reduce our rates of restraint. The authors believe that duration data are important and should be a part of all future discussions of restraint and seclusion. The goal of preventing injury to self or others may be attained by interrupting the behavior during crisis for a brief time through restraint or seclusion that is carefully done and monitored continuously. These interventions must always be done while considering that without such intervention the risk of injury to self or others would be greater.

If restraint and seclusion are used, nursing and medical oversight is imperative. Restraint and seclusion are procedures that heretofore were rarely used outside of the confines of psychiatric hospitals with readily available nursing and medical staff, and ongoing regulatory oversight from the Joint Commission on Accreditation of Hospital Organizations. Residential treatment programs are similarly regulated and require medical and psychiatric evaluation for admission. Special education day schools, however, do not have comparable requirements, yet serve many children and adolescents who are quite similar to those needing residential care. When students have a persistent pattern of unsafe behavior which interferes with learning and does not respond to behavioral interventions, then underlying psychiatric or medical problems should be considered. There may also be medical conditions, such as asthma or seizure disorders, that contraindicate physical restraint and/or require the presence of nursing for assessment if restraint is ultimately necessary. In addition, the authors suggest that special education day settings adopt the medical model of continuous quality assurance which addresses ongoing intensive staff training and the collection of seclusion and restraint data. Regulatory oversight of special education day schools should include review of seclusion and restraint data, with particular attention to duration of restraint and seclusion, and methods for management of students who are either in need of frequent restraint or who require restraint longer than brief containment.

Future research should focus on further analysis of students who are considered to be outliers and who therefore contribute to the variability in implementation of both seclusion and restraint. For example, diagnoses found in the *Diagnostic and Statistical Manual of Mental Disorders, 4th edition, text revision (DSM-IV-TR)*; American Psychiatric Association

2000), not a routine part of school information, might be useful in further defining these students and how they might be helped. Data could also be examined by comparing gender and/or disability coding. In addition, although the authors' experience with PCM has shown it to be an effective approach for staff training in crisis management procedures, another training program may be equally effective if implemented and followed with the same rigor.

The limitations of this study include its descriptive nature. However, a large-scale controlled study of restraint and seclusion is not feasible. Furthermore, the dearth of published information from other special education schools does not provide benchmarks for comparison of results.

References

- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text revision). Washington, DC: Author.
- Baker, P. A., & Bissmire, D. (2000). A pilot study of the use of physical intervention in crisis management of people with intellectual disabilities who present challenging behavior. *Journal of Applied Research in Intellectual Disabilities, 13*(1), 38–45. doi:10.1046/j.1468-3148.2000.00004.x.
- Child Welfare League of America. (2004). *Achieving better outcomes for children and families: Reducing restraint and seclusion*. Washington, DC: Child Welfare League of America.
- Colton, D. (2008). Leadership's and program's role in organizational and cultural change to reduce seclusions and restraints. In M. A. Nunno, D. M. Day, & L. B. Bullard (Eds.), *For our own safety: Examining the safety of high-risk interventions for children and young people* (pp. 143–166). Arlington, VA: Child Welfare League of America.
- Council for Children with Behavior Disorders. (2009a). *CCBD position on the use of physical restraint procedures in school settings*. Retrieved 13 July 2009, from <http://ccbd.net/documents/CCBD%20Position%20on%20Use%20of%20Restraint%207-8-09.pdf>.
- Council for Children with Behavior Disorders. (2009b). *CCBD position on the use of seclusion procedures in school settings*. Retrieved 13 July 2009, from <http://ccbd.net/documents/CCBD%20Position%20on%20Use%20of%20Seclusion%207-8-09.pdf>.
- Education for All Handicapped Children Act of 1975, Pub. L. No. 94-142, §§ 1400–1461, 89 Stat. 773 (1975).
- Fogt, J. B., George, M. P., Kern, L., White, G. P., & George, N. L. (2008). Physical restraint of students with behavior disorders in day treatment and residential settings. *Behavior Disorders, 34*(1), 4–13.
- Grace, N. C., Kahng, S. W., & Fisher, W. W. (1994). Balancing social acceptability with treatment effectiveness of an intrusive procedure: A case report. *Journal of Applied Behavior Analysis, 27*(1), 171–172. doi:10.1901/jaba.1994.27-171.
- Individuals with Disabilities Education Improvement Act of 2004, Pub. L. No. 108-446, §§1400 et seq, 118 Stat. 2647 (2004).
- Katsiyannis, A., & Smith, C. R. (2003). Disciplining students with disabilities: Legal trends and the issue of interim alternative settings. *Behavioral Disorders, 28*(4), 410–418.
- Leidy, B. D., Haugaard, J. J., Nunno, M. A., & Kwartner, J. K. (2006). Review of restraint data in a residential treatment center for adolescent females. *Child & Youth Care Forum, 35*(5–6), 339–352. doi:10.1007/s10566-006-9021-z.
- Magee, S. K., & Ellis, J. (2001). The detrimental effects of physical restraint as a consequence for inappropriate classroom behavior. *Journal of Applied Behavior Analysis, 34*(4), 501–504.
- Martin, A., Krieg, H., Esposito, F., Stubbe, D., & Cardona, L. (2008). Reduction of restraint and seclusion through collaborative problem solving: A five-year prospective inpatient study. *Psychiatric Services, 59*(12), 1406–1412. doi:10.1176/appi.ps.59.12.1406.
- Masters, K. J., Bellonci, C., Bernet, W., Arnold, V., Beitchman, J., Benson, R. S., et al. (2002). Practice parameter for the prevention and management of aggressive behavior in child and adolescent psychiatric institutions, with special reference to seclusion and restraint. *Journal of the American Academy of Child and Adolescent Psychiatry, 41*(2 Suppl), 4S–25S.
- McCue, R. E., Urcuyo, L., Liliu, Y., Tobias, T., & Chambers, M. J. (2004). Reducing restraint use in a public psychiatric inpatient service. *The Journal of Behavioral Health Services and Research, 31*(2), 217–224. doi:10.1097/00075484-200404000-00009.

- McIntyre, L. L. (2004). The transition to school: Adaptation in young children with and without developmental delays. ProQuest Information & Learning. *Dissertation Abstracts International Section A: Humanities and Social Sciences*, 64(7) (2004-99001-107).
- Mohr, W. K., Mahon, M. M., & Noone, M. J. (1998). A restraint on restraints: The need to reconsider the use of restrictive interventions. *Archives of Psychiatric Nursing*, 12(2), 95–106.
- National Disability Rights Network. (2010). *School is not supposed to hurt: Update on progress in 2009 to prevent and reduce restraint and seclusion in schools*. Washington, DC: Author.
- No Child Left Behind Act. Public Law No. 107-110, § 115 Stat. 1425 (2001).
- Nunno, M. A., Day, D. M., & Bullard, L. B. (Eds.). (2008). *For our own safety: Examining the safety of high-risk interventions for children and young people*. Arlington, VA: Child Welfare League of America.
- Professional Crisis Management Association. (2002). *A cognitive-behavioral approach: Instructor manual*. Sunrise, FL: Publisher.
- Rodriguez, E. (2002). Autopsy: Pressure killed student. *American-Statesman Staff*.
- Ruhl, K. L., & Hughes, C. A. (1985). The nature and extent of aggression in special education settings serving behaviorally disordered students. *Behavioral Disorders*, 10(2), 95–104.
- Rules for the Administration of the Protection of Persons from Restraint Act, Col. §§26-20-101 to -109 (2009).
- Ryan, J. B., & Peterson, R. L. (2004). Physical restraint in school. *Behavioral Disorders*, 29(2), 154–168.
- Ryan, J. B., Peterson, R. L., Tetreault, G., & van der Hagen, E. (2008). Reducing the use of seclusion and restraint in a day school program. In M. A. Nunno, D. M. Day, & L. B. Bullard (Eds.), *For our own safety: Examining the safety of high-risk interventions for children and young people* (pp. 201–215). Arlington, VA: Child Welfare League of America.
- Weiss, E. M. (1998). Deadly restraint: A nationwide pattern of death. *Hartford Courant*.