



Pergamon

Child Abuse & Neglect 30 (2006) 1333–1342

Child Abuse
& Neglect

Learning from tragedy: A survey of child and adolescent restraint fatalities

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Received 3 March 2005; received in revised form 3 February 2006; accepted 24 February 2006
Available online 15 November 2006

Abstract

Objective: This descriptive study examines 45 child and adolescent fatalities related to restraints in residential (institutional) placements in the United States from 1993 to 2003.

Method: The study team used common Internet search engines as its primary case discovery strategy to determine the frequency and the nature of the fatalities, as well as the characteristics of the children and the adolescents involved.

Results: Male children and adolescents were over-represented in the study sample. Thirty-eight of the fatalities occurred during or after a physical restraint, and 7 fatalities occurred during the use of mechanical restraints. Twenty-eight of the deaths occurred in a prone restraint. In 25 of the fatalities, asphyxia was the cause of death.

Conclusion: In the 23 cases in this study where information is available, none of the child behaviors or conditions that prompted the restraint would meet the standard of danger to self or others: the commonly accepted criteria for the use of a restraint. The study points to deficiencies in fatality reporting, recommends reporting fatalities to established state child fatality review boards, and reinforces that restraints be governed by strict protocol and monitoring. The study also urges caution to policymakers in substituting or changing restraint procedures based on the incomplete data reported in this study.

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Keywords: Restraint deaths; Child deaths in residential care; Deaths in institutions; Fatalities in institutions

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Introduction

The use of restraint as a behavioral management technique with institutionalized children and adolescents is frequently associated with controversy. Restraints are defined as any manual method or physical or mechanical device, material, or equipment attached or adjacent to the patient's body that he or she cannot easily remove that restricts freedom of movement or normal access to one's body (United States General Accounting Office, 1999). Proponents of restraint techniques assert that certain therapeutic benefits can occur with these interventions, arguing, for example, that restraints encourage children to verbalize and act out strong feelings, thus promoting coping skills and internal means of self-control (Millstein & Cotton, 1990; Sourander, Aurela, & Piha, 1996; Steele, 1993). Others maintain that physical and mechanical restraints are necessary options for a safe and therapeutic residential environment (Brown, Genel, & Riggs, 2000; Hastings, 1996; Heilbrun, 1995; Kupfersmid & Monkman, 1988). However, issues discussed in the recent medical, legal, and psychological literatures question the relative benefits and risks of restraints, raise constitutional issues about its legality, and cast doubt on the effectiveness of physical and mechanical restraints for extinguishing or modifying aggressive and violent behavior (Day, 2002; Kennedy & Mohr, 2001; Mohr, Mahon, & Noone, 1998; Mohr, Petti, & Mohr, 2003). The critics of restraints argue that children, especially children with histories of abuse and neglect, perceive these interventions to be aggressive and punitive, creating an environment that may impede effective treatment (Fox, 2004; Goren, Singh, & Best, 1993). In addition, professional organizations, certification boards, and providers of aggression prevention programs for residential institutions have frequently raised concerns about the risk of severe physical and psychological injury and death when restraints are used on children (Holden et al., 2001; Joint Commission on Accreditation of Healthcare Organizations, 1998; National Institute of Nursing Research, 1994; Nunno & Holden, 2003; Paterson, 2000; Paterson & Leadbetter, 1998).

An October 1998 *Hartford Courant* (Weiss, Altimari, Blint, & Megan, 1998) investigative series and a report by the United States General Accounting Office (United States General Accounting Office, 1999) increased public interest in and prompted congressional and state legislative concern about the use of restraints and seclusion among both child and adult populations in residential facilities. These reports provided evidence for restraint reduction initiatives in various states. Although these public reports and the medical literature have documented and identified common elements of deaths when restraints are used in adult populations (O'Halloran & Frank, 2000), few studies have focused on determining the nature and the cause of restraint fatalities in children (Mohr, Petti, & Mohr, 2003).

Purpose

This study seeks to answer two fundamental questions. Who are the children and young people who die in physical and mechanical restraints, and how do they die? Restraints are safety, therapeutic, or control interventions in children's child welfare, corrections and psychiatric facilities. A death during a safety, therapeutic, or control intervention requires serious scrutiny. Knowing the frequency and nature of, as well as the circumstances surrounding children's restraint fatalities would provide valuable safety and risk information that may prevent future tragedy. Previous studies of adult fatalities ignore the size, anatomical and developmental concerns of children. A secondary goal of the study is to inform the debate on the utility and safety of restraints in children's facilities, especially floor restraints in either the prone or supine position.

Methods

In 1999 the study team mailed surveys to over 160 state agency commissioners and directors within the 50 states responsible for governing or regulating child welfare, juvenile justice, mental health, and mental retardation facilities in their respective states. The 1999 mailed survey uncovered eight fatalities between 1993 and 1999, all of which were previously reported in the Hartford Curreant Series, and are reported here. Since the study resources were limited and the mailed survey discovered no new or additional fatalities, the study team looked to publicly reported news sources to uncover fatalities, and to learn details and circumstances surrounding these deaths.

Starting in 2000 the study team searched common Internet search engines such as Google™ and electronic news archives such as Lexus/Nexus™ to discover child fatalities reported in community, regional, state and national newspapers and national newsgathering organizations.

Keywords *restraint deaths*, *child deaths in residential care*, and *deaths in institutions* were entered to discover child restraint fatalities in the United States from 1993 to 2003. No fatality report was rejected if it described a male or female 18 years or younger who resided in the care of public and private child welfare, mental health, mental retardation, developmental disability, and juvenile corrections facilities. Details, circumstances and characteristics reported in the news articles were taken at face value. There was no verification of the accuracy of news articles. For example, the study team did not interview parents, police, or facility officials to confirm the reported fatality details, or to obtain additional information. Characteristics associated with each fatality were placed in an electronic database according to five domains: child characteristics, staff characteristics, restraint and facility characteristics, circumstances surrounding the event, and type of review mechanism. Follow-up Internet searches on the fatalities using specific child, staff, and facility names revealed additional information such as civil and criminal outcomes. When this information was known, it was entered in the database. If new information contradicted original or previous information, the new information was entered without deleting the original information. Approximately 1 year after the anniversary of the fatality, the study team also requested in writing any public inquiry findings on each fatality from state agency Commissioner's or Director's offices governing or regulating the facility where the fatality occurred.

Results

Forty-five child or adolescent fatalities between 1993 and 2003 were found that involved physical or mechanical restraints to contain or control behavior, movement, or location prior to the child's death (see Table 1). Death often occurred while still in the restraint, but in some cases the child lost consciousness while being restrained and then death occurred days, weeks, or months later.

Children's age and sex

The mean age for this fatality sample was 14.2 years ($SD = 2.92$ years), and ages ranged from 6 to 18 years. The majority of fatalities were males ($n = 32$; 71%), whose ages ranged from 6 to 17 with a mean age of 13.4 years ($SD = 3.09$ years). The female fatalities ($n = 13$; 29%) ranged in ages from 14 to 18 with a mean age of 16.1 ($SD = 1.12$ years). The age difference between males and females was statistically significant ($t = 2.99$, $df = 43$; $p = .005$).

Table 1
 Restraint and seclusion fatalities, 1993–2003 (*n* = 45)

Year	State	Out of state placement	Age	Gender	Cause of death	Type of restraint	Position of restraint	Seclusion
1993	Texas	Unknown	16	Female	Cardiac arrhythmia	Physical	Prone	
1993	Colorado	No	17	Male	Asphyxia	Physical	Prone	Yes
1993	Pennsylvania	Yes	12	Male	Asphyxia	Physical	Prone	
1994	New York	Unknown	15	Male	Asphyxia	Physical	Unknown	
1994	Kansas	Unknown	17	Male	Asphyxia	Physical	Prone	
1994	Washington	No	12	Male	Hyperthermia	Mechanical	Supine	
1995	Massachusetts	Yes	9	Male	Sudden death	Mechanical	Unknown	
1995	Michigan	Unknown	9	Male	Compression asphyxia	Physical	Prone	
1996	Minnesota	Unknown	17	Female	Unknown	Unknown	Prone	
1996	Minnesota	Unknown	17	Female	Cardiac arrhythmia	Physical	Prone	
1996	Texas	Unknown	17	Male	Compression asphyxia	Physical	Prone	
1996	Texas	No	16	Male	Asphyxia	Mechanical	Unknown	
1997	Texas	Unknown	16	Female	Cardiac arrhythmia	Physical	Prone	Yes
1997	Pennsylvania	Unknown	18	Female	Asphyxia	Physical	Prone	
1997	Iowa	No	13	Male	Unknown	Physical	Unknown	
1997	Texas	Unknown	17	Male	Positional asphyxia	Physical	Unknown	
1997	California	No	6	Male	Mechanical asphyxia	Mechanical	Seated	
1997	Massachusetts	Yes	12	Male	Restraint asphyxia	Physical	Prone	
1998	Arizona	Yes	15	Female	Restraint asphyxia	Physical	Prone	
1998	Florida	No	17	Female	Restraint asphyxia	Physical	Baskethold	
1998	New Jersey	No	17	Female	Restraint asphyxia	Physical	Prone	
1998	Pennsylvania	Yes	14	Male	Compression asphyxia	Physical	Prone	
1998	Kansas	Unknown	16	Male	Unknown	Physical	Unknown	
1998	Connecticut	No	11	Male	Cardiac arrhythmia	Physical	Prone	Yes
1998	Ohio	No	14	Male	Unknown	Mechanical	Supine	
1998	Massachusetts	No	16	Male	Blunt trauma	Physical	Prone	Yes
1998	North Carolina	No	16	Male	Restraint asphyxia	Mechanical	Prone	
1999	California	No	16	Female	Positional asphyxia	Physical	Prone	
1999	North Carolina	Unknown	9	Male	Asphyxia	Physical	Baskethold	Yes
2000	North Carolina	No	15	Female	Cardiac arrhythmia	Physical	Unknown	
2000	Oregon	No	15	Male	Internal bleeding	Physical	Prone	
2000	Wisconsin	Yes	17	Male	Due to exertion	Physical	Prone	
2000	Texas	Yes	9	Male	Cardiac arrhythmia	Physical	Prone	
2000	Florida	No	12	Male	Compression asphyxia	Physical	Prone	
2000	Texas	No	14	Male	Cardiac arrhythmia	Physical	Side	Yes
2001	Texas	Yes	16	Female	Due to exertion	Physical	Unknown	
2001	Maryland	No	17	Male	Cardiac arrhythmia	Physical	Prone	
2001	Iowa	No	11	Male	Cardiac arrhythmia	Physical	Unknown	
2002	Texas	No	15	Female	Mechanical asphyxia	Physical	Prone	
2002	Texas	No	14	Female	Mechanical asphyxia	Physical	Prone	Yes
2002	Nebraska	No	13	Male	Compression asphyxia	Physical	Unknown	
2002	Texas	No	17	Male	Asphyxia	Physical	Prone	
2002	Texas	No	14	Male	Restraint asphyxia	Physical	Prone	
2002	Pennsylvania	No	14	Male	Cardiac arrhythmia	Physical	Unknown	
2003	South Carolina	Yes	9	Male	Positional asphyxia	Physical	Prone	

Reason for placement

All of the children were identified as having behavioral, emotional, psychiatric, or developmental disorders that contributed to their placement in out-of-home care. Nevertheless, the exact diagnosis or reason for placement was difficult to determine for almost all children. At the time of their death, over half of the children ($n = 24$) were placed in facilities located within their home state, while nine children were placed outside of their home state. In the remainder of the fatalities ($n = 13$), the facility location in relation to the child's home state could not be determined.

Facility type and location

Of the 45 fatalities, 36% occurred in psychiatric facilities, 24% in residential treatment centers, 18% in Group or foster homes, 11% in juvenile corrections facilities, 7% in wilderness camps, and 4% in community school programs for developmentally delayed children.

Fatalities from 22 states were included; 13 states had one fatality, and 5 states had two or more fatalities. Four states accounted for 48% of the total fatalities. Texas ($n = 12$) accounted for 27% of the fatalities; Pennsylvania ($n = 4$), North Carolina ($n = 3$) and Massachusetts ($n = 3$) accounted for 22%. Three facilities experienced 2 or more fatalities during the 10-year period. In Texas, two organizations accounted for 3 fatalities each. In Pennsylvania, one facility reported 2 restraint-related fatalities.

Immediate cause of death

The cause of death could be confirmed by a reported autopsy in 41 cases. The cause of death was asphyxia in 25 cases. Asphyxia is "a lack of oxygen or excess of carbon dioxide in the body that is usually caused by interruption of breathing and that causes unconsciousness" (United States National Library of Medicine, 2004). Of the 25 asphyxia-related deaths, subcategories were reported of positional asphyxia ($n = 3$), compression asphyxia ($n = 6$), restraint asphyxia ($n = 6$), mechanical asphyxia ($n = 3$), or unspecified asphyxia ($n = 7$). Cardiac arrest was the cause of death in 10 fatalities. The remaining fatalities were caused by exertion ($n = 2$), blunt trauma ($n = 1$), internal bleeding ($n = 1$), hyperthermia ($n = 1$), or sudden death ($n = 1$).

Type of restraint and position of the child

The type of restraint and the position of the child during the restraint can provide valuable safety information, so it is instructive that children and adolescents died in both physical and mechanical restraints, as well as in the seated, prone, or supine position.

Physical restraints were implicated in 38 of the 45 fatalities. These physical restraints occurred on the floor in a prone position ($n = 27$) or in a seated or basket hold position ($n = 2$). In nine physical restraints, the position of the child was unknown. No physical restraint fatality was described as supine.

In 6 of the 45 fatalities, mechanical apparatus or restraints were used that involved cloth or Velcro™ straps, a mattress, handcuffs, leather straps, or a wheelchair. Of these 6 deaths, 2 occurred in a supine (face-up) position, 1 in a prone position, 1 while the child was seated in a wheelchair, and in 2 fatalities

the position was unknown. In one prone fatality it could not be determined if the restraint was physical or mechanical.

Other factors present in the fatality

Other factors were present in the child and adolescent deaths, although the extent to which they contributed to the fatality cannot be determined. Examples of these factors include child agitation prior to or during the restraint ($n = 27$), multiple adults active in the restraint ($n = 17$), and/or dangerous techniques employed such as choking the child or placing weight or positional pressure on the child's upper torso, neck, chest, or back ($n = 29$). More specifically, of the 27 prone-related deaths related to physical restraints, 7 fatalities involved between 2 and 8 staff lying on the child, 6 fatalities involved staff crossing the child's arms across the child's chest while prone, and 4 of the prone fatalities involved a staff member sitting on the child who was lying on the ground. One prone position death was attributed to a standing hold followed by the staff falling on the child. Two of the prone fatalities were the result of a neck or chokehold.

Further, signs of breathing restrictions or distress were present since in 13 fatalities in which the child is reported to have said "I can't breathe" prior to unconsciousness or death. Vomiting occurred in 6 of the fatalities, and 4 children turned blue during the restraint. Additional details in the fatalities were reported such as the child's medication use ($n = 10$), lack of knowledge about the child's medical condition ($n = 8$), and/or a failure or inability to initiate emergency medical procedures ($n = 7$). Seven of 45 fatalities included physical or mechanical restraints within the confines of seclusion or time-out while 2 occurred during an escort.

Rationale for restraint

Staff rationale for restraint usually described the child's behavior prior to the restraint. The staff rationale for the use of restraint was available in only 23 of the 45 fatalities. In these 23 fatalities, restraints were initiated because the child refused to comply with staff or program requests while in an isolation or time-out room ($n = 7$) and because the child exhibited a combination of aggressive and noncompliant behavior ($n = 12$), such as refusing to give up an object, refusing to put shoes on or to take them off, running away, or leaving a program or a facility location such as a classroom or a gym. Restraints were also initiated while children were fighting with peers ($n = 2$).

Legal or regulatory actions

Of the 45 fatalities, 14 resulted in civil suits: 8 settled out of court, and 6 civil suits were pending (or outcome unknown). In 6 fatalities, criminal charges were filed against staff with 1 conviction, 2 resulted in acquittals, and the dispositions were unknown in 3 fatalities. A determination of institutional abuse was indicated in one fatality but unfounded in another. Five of the residential facilities were eventually closed, but whether the closing was a direct or indirect result of the fatality is unknown.

One fatality had the benefit of a public child advocacy commission independently investigating and publicly reporting on the death (State of Connecticut, 1998). Another state, New York, has a procedure for reviewing all deaths in out-of-home care but these reports were not public. In all other instances, fatalities were reviewed or investigated by local or state police officials, regulatory bodies, or child protective

officials. There was no state fatality review panel that we found that examined any death in this study sample, and issued a public report.

Discussion

In this fatality sample, the children and young people were primarily males and in early adolescence. All were diagnosed as having a range of physical, emotional and developmental disorders. Child psychiatric and residential treatment centers accounted for 60% of the fatalities. Four states accounted for 48% of the total fatalities. Asphyxia was the cause of death in 25 of the 45 case sample over a 10-year period. Children died in both physical and mechanical restraints with the prone position accounting for more than 60% of our restraint sample. A major limitation of these findings is they provide only partial assistance when measuring risk. The study does not present on the overall child population in care, the ratio of males to females in care, or the actual rate and frequency of restraint use. Yet, the immediate causes of death in this study are consistent with the literature that reports adverse effects of restraint and seclusion in adult populations (O'Halloran & Frank, 2000). Prior to this study the frequency of restraint deaths due to asphyxia or/of deaths in a prone restraint or on the floor have not been documented in children (Mohr, Petti, & Mohr, 2003).

The number of fatalities involving floor restraints needs further study and analysis. Thirty-one of the 45 fatalities in our sample occurred on the floor, a flat surface such as a bed or the bare ground with the child either prone ($n = 28$), supine ($n = 2$) or on the side ($n = 1$). Although we cannot compare the fatality rate by prone, supine or side body position from our study, some believe floor restraints, especially prone restraints, hold a higher risk of injury and death and have banned them from use (MacIntyre & Bramer, 2005). This positional restraint risk question needs to be answered empirically by establishing prone, supine and side restraint rate usage before the field can determine risk via body position.

Only fatalities that reached the public's attention through the news media were reported in this study. Although a follow-up survey was mailed to state agencies asking for official investigation findings, there was a minimal response to the follow-up survey. The sample reported here leaves unanswered the actual frequency of restraint-related deaths over this 10-year period, and with it our ability to determine more precise risk and cause to specific populations. For example, separate restraint fatality data from the insurance industry may place female children at additional risk due to obesity and body size (Block, 2004).

Use of restraint

Even with these limitations, the manner and the circumstances surrounding these deaths reinforces that restraints should be applied strictly in accordance with policies and procedures, using an approved method, and according to the child's behavior support plan (Holden et al., 2001). When we examined the rationale for these fatal restraints in the 23 cases where it is available, none of the child behaviors or conditions would meet the standard of danger to self or others: the commonly accepted criteria for the use of a restraint in any circumstance.

Child treatment and corrections providers and regulators should require any safety, therapeutic, or control intervention, including restraints, to lower the physical or emotional risk to the child. If a restraint is employed that harms or places the child at higher risk than the behavior it is designed to contain or

control, or if an inappropriate or unapproved intervention technique is used, the restraint could likely be considered abusive. Without increased vigilance and monitoring in their use, the legal, ethical, and clinical appropriateness of floor restraints (especially prone restraints) will remain in question, and they likely will be prohibited through legislation, regulation or certification boards (MacIntyre & Bramer, 2005).

Case finding and systematic review

Case finding of child and adolescent restraint fatalities is a serious concern and hampers learning about the risk of restraints. This study indicates the necessity for mandatory reporting of fatalities to a centralized authority, as well as independent and systematic review by a legally sanctioned body on the state or Federal level. Restraints are high-risk safety interventions with fatal consequences if applied incorrectly. One valuable mechanism for independent, systematic review would be the child fatality committees established in each of the 50 states. These committees are generally interdisciplinary, have access to the expertise to undergo an in-depth forensic investigation, and have the necessary authority and stature to report findings and recommendations for regulatory and practice changes. Utilizing existing statewide and multidisciplinary child fatality review committees would help ensure that learning necessary to inform practice takes place within an environment that is nonconfrontational and nonaccusatory (Carson, 1994).

Implications

This study documents serious safety hazards with restraints. Yet the study also points to a multitude of unknown factors and incomplete information that makes using this knowledge to build safer environments for children difficult. It was troubling that the actual frequency of restraint-related deaths may be higher than is reported in this study. Accurate rates of the use of mechanical and physical restraints, or positional restraints, hamper the ability to measure the true risk of death by type of restraint and position. We can speculate that organizational factors of climate and culture play an important and essential role in these fatalities yet we have insufficient information to generalize from the limited cases where we have full access to reports, interviews and data. Some organizations where fatalities have occurred have “individualized” the responsibilities for the incident, often holding the child’s condition as the contributing cause. Few have undertaken a serious self-examination or root cause analysis of the systemic contributions to the fatality even when two or more fatalities have occurred in their care. The necessity for organizational self-assessment and analysis postincident is evident, and it is a staple of all major industries where safety is paramount.

This lack of access and complete information is exemplified by our finding that only one state reported any standard procedure for reviewing child fatalities in treatment facilities, and only one fatality received the benefit of an independent investigation free of criminal or civil sanctions. These findings point to a serious deficiency in the case finding and review process. One wonders whether the cloud of civil litigations or criminal prosecutions hindered independent review, whether appropriate bodies even knew of these fatalities, or whether civil regulatory and advocacy agencies saw these fatalities as appropriate to their jurisdiction or review.

Despite this incomplete information, states and facilities that have suffered these fatalities have made radical changes in their restraint policy and procedures by banning certain types of restraint or certain restraint positions. Our caution to policy makers concerned about lowering the risk of serious injury

and deaths due to these restraints and building safer therapeutic environments for children is that they may legislate or regulate solutions that give a false sense of safety while actually producing greater risk. Safety might be better served if risk reduction efforts focused on eliminating adverse environmental causes for aggression and violence, eliminating dangerous staff practices (sitting on children, choking or lying on them, placing weight on their upper torso, and ignoring their distress signals), and strictly enforcing the restraint application standard of self-harm or harm to others. All restraint positions were represented in this sample and all positions can be lethal, especially when misapplied or misused.

Acknowledgments

Susan Metosky, Taylor Glenn, Brianna Sinon, Joanna Garbarino, Elizabeth Dunning, and Allison Condon, all Cornell undergraduates, uncovered and catalogued these child fatalities. Dorothy Forbes mailed, collated and tabulated the initial survey.

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Résumé

French language abstract not available at time of publication.

Resumen

Spanish language abstract not available at time of publication.