Restrictive Behavior Management Practices

Valdeep Saini and Louis Busch

Introduction

During the early 1900s, acute and long-term psychiatric hospitals segregated individuals with autism spectrum disorder (ASD), pervasive developmental disorder (PDD), or related disabilities, from the general public. One of the purported goals of these institutions was to minimize the risk of harm that people with disabilities were thought to pose to themselves and others (Colaizzi, 2016). Institutionalization and isolation of individuals with ASD and PDD from society became the widespread method to manage challenging behaviors. It was not uncommon for these settings to implement a variety of other restrictive and intrusive behavior management practices including restraint, seclusion and overmedication (Colaizzi, 2016).

Generally, these practices became known as restrictive behavior management practices (RBMP) because they included processes and procedures that impinged upon the rights of individuals by inhibiting freedom of movement or access to specific environments. RBMPs can include strategies of physical or mechanical restraint as well as barriers to prevent accessing specific individuals, environments, or activities (Sturmey, 2015). However, it is important to acknowledge that RBMPs also refer to the use of psychotropic medication administered on *a Pro Re Nata* [PRN ("as required")] basis as a strategy to sedate or quickly pacify individuals engaging in challenging behavior (Poling et al., 2017; Matson & Burns, 2019). Collectively, RBMPs are usually considered high risk, emergency procedures, that are used in response to perceived violent and dangerous situations.

V. Saini (✉)
Department of Applied Disability Studies, Brock University, St. Catharines, ON, Canada
e-mail: vsaini@brocku.ca

L. Busch
Centre for Addiction and Mental Health, Toronto, ON, Canada

J. L. Matson, P. Sturmey (eds.), *Handbook of Autism and Pervasive Developmental Disorder*, Autism and Child Psychopathology Series,
https://doi.org/10.1007/978-3-030-88538-0_47

Contemporary use of RBMPs for individuals with ASD and PDD has been controversial, primarily due to the ethical, legal, and safety concerns that have arisen historically and continue to exist regarding (a) the impingement on an individual's personal rights and freedoms, (b) physical health risks, and (c) potential for long-term psychological harm or trauma (Frueh et al., 2005; Scheuermann et al., 2013; Sourander et al., 2002; Vollmer et al., 2011). In 1998, investigative journalists reported lethal consequences related to the use of RBMPs such as restraint, and found that 142 individuals died as a result of restraint or seclusion in psychiatric hospitals over a decade long period, with 26% of those deaths involving children under the age of 17 years (Weiss et al., 1998). Deaths were hypothesized to be related to RBMPs and included asphyxia, aspiration, major cardiac events, and thrombosis, among others (Mohr et al., 2003). Furthermore, Tilli and Spreat (2009) found that around one in three applications of emergency restraint results in injury, possibly due to misapplication of procedures during emergency situations. Most experts agree that excessive use of RBMPs is undesirable and the outcome of these strategies poses serious risks to individuals with ASD (Vollmer et al., 2019). Despite these concerns, these practices are still often utilized during intervention (LeBel et al., 2012; Mulay, 2012; O'Donoghue et al., 2020). Some reports continue to suggest that the use of RBMPs such as restraint and seclusion are the safest and most effective ways to interact with an aggressive individual with disabilities, despite contrary evidence demonstrating the negative outcomes and serious implications of these strategies (e.g., abuse, trauma, or death; Knox & Holloman Jr, 2012).

Although exact prevalence rates of restrictive interventions are difficult to determine, individuals with intellectual disabilities and ASD are at an increased risk to receive RBMPs to manage challenging behavior with some reports estimating that 30–60% of children with challenging behavior experience restraint or seclusion (Emerson et al., 2000). Up to 75% of individuals with intellectual disabilities are prescribed psychotropic medication and challenging behavior is a significant predictor that PRN medication will be used (Bowring et al., 2017; Delafon et al., 2013). Risk factors associated with RBMP use include severity of disability, intensity and topography of challenging behavior, co-occurring mental health conditions, poor communication skills, and quality of behavior support plans (Holden & Gitlesen, 2006; Richardson et al., 2020; Sturmey et al., 2005; Sturmey, 2015; Webber et al., 2014).

Types of Restrictive Behavior Management Practices

There have been a variety of RBMPs used to manage the challenging behavior exhibited by individuals with ASD including physical and mechanical restraints, overuse of psychotropic medication, and seclusion and isolation from others. These strategies share a common approach to managing challenging behavior by restricting freedoms and impinging on social inclusion. In the next section we describe some of these techniques including risks associated with each.

Restraint and Restriction of Movement

Restraint refers to behavior management strategies designed to restrict or limit one's mobility or ability to move freely through the environment. Restraint generally falls within two categories: physical restraint or mechanical restraint. Physical restraint refers to preventing free movement by applying force to a person's body, usually by another person (Busch & Shore, 2000). Physical restraint can include strategies such as holding an individual's body or appendage as well as placing barriers in the environment that prevent others from accessing their surroundings. In contrast, mechanical restraint introduces tools such as straps, belts, and helmets to restrict free movement (Busch & Shore, 2000). Mechanical restraints are applied to individuals with the sole purpose of restricting movement or softening the intensity with which challenging behaviors occur.

Although restraints can be part of a carefully designed and monitored behavior management plan, they can also be applied in emergency situations, and it is these events that usually pose increased risk of harm to individuals who engage in challenging behaviour. Unplanned restraints are those techniques which are not outlined in a treatment plan (e.g., holding an individual's arm down to prevent head-hitting self-injurious behavior as an emergency response; Matson & Boisjoli, 2009). When restraints are applied in this manner, they are almost always used as a reaction to ongoing challenging behavior. However, when effective behavioural interventions are implemented, the use of restraints should be infrequent and utilized only in situations to prevent serious risk of injury to one's self or others in the environment. That is, there should be a clear plan in place for when restraints are applied as well as clearly defined criteria for removing restraints. In doing so, this approach to restraint usage is proactive instead of reactive. The use of continuous restraint application is strongly discouraged, except under extreme circumstances (e.g., preventing extreme self-injury following surgery).

Studies of social validity have generally found the use of restraint to be less acceptable than most forms of physical and nonphysical intervention (Kazdin, 1980; Killebrew et al., 1982; Spreat & Walsh, 1994). Acceptability is likely influenced by a number of variables including effectiveness of restraints when combined with other interventions (Cunningham et al., 2003), duration of restraint use, maintenance of treatment outcomes, and negative side-effects such as personal injury or harm. Luiselli et al. (2015) found that caregivers' experience with applying restraints was also a factor in determining social acceptability of these procedures. Despite the low social acceptability of restraint use, and the variables that affect social acceptability, most experts agree that contemporary standards demand that planned and unplanned restraint require specialized training of front-line staff providers, supervision and oversight from qualified personnel, evaluation of outcomes (including emotions and physical distress), and monitoring of procedural integrity (Luiselli, 2011; Reed et al., 2013a, 2013b). Doing so may ensure that restraints are used in the most ethical, humane, and socially valid manner.

Psychotropic Medication

Psychotropic medications are typically prescribed to manage and treat psychopathology (i.e., mental health conditions) in the typically developing population. However, pharmacological intervention such as the prescription of antipsychotic medication to manage challenging behaviors exhibited by individuals with ASD and related disabilities has become common, even when a comorbid diagnosis of mental illness is not provided (Grey & Hastings, 2005; Tsiouris, 2010; Tyrer et al., 2014). Some have suggested that when psychotropic medications are used as PRNs they could be viewed as a type of "chemical restraint" given that pharmacological means are used to control an individual's behavior and movement outside of any standard treatment for an underlying psychiatric or medical condition (Matson & Boisjoli, 2009).

The misuse and potential for overuse of medication could have a harmful impact on individuals with ASD across the lifespan. A recent meta-analysis of published research on psychotropic medication use in children and adolescents diagnosed with ASD found that approximately 16.6% were prescribed an antipsychotic medication (Jobski et al., 2017). Unfortunately, the impact of these medications on cognitive and neurological development of children is not well understood, and there is limited research evaluating how psychotropic medications impact the quality of life in children with disabilities (Moyal et al., 2014). Sadly, some reports suggest that children prescribed higher doses of antipsychotic medication had a 3.5 times greater risk of dying compared with children prescribed a different class of medication (Ray et al., 2019). In adults with intellectual disability, the prevalence of psychotropic medication has been reported as high as 71% of the population (Bowring et al., 2017), with a high rate of polypharmacy (Lunsky & Modi, 2018). It also appears that when a psychotropic medication is prescribed, they are typically not discontinued over the course of an individual's lifetime. In fact, it is not uncommon for a greater range of antipsychotic medication to be prescribed if challenging behaviors do not subside, or grow in intensity (Deb et al., 2015). The over-prescription of antipsychotic medication to manage challenging behaviour, in some cases, may have life-threatening consequences (McQuire et al., 2015; Scheifes et al., 2016).

On the issue of psychotropic medication as a RBMP, perhaps what warrants the most attention is the effectiveness of this strategy to achieve its desired goal (i.e., a socially significant and therapeutic reduction in challenging behavior). The efficacy of such medications in producing long-term reductions in aggression are mixed and there is scant evidence for the efficacy of pharmacotherapy for treating behavior problems in individuals with disabilities including ASD (Matson & Wilkins, 2008; Tsiouris, 2010). For example, studies of effectiveness in children with intellectual disabilities suggest in some cases psychotropic medication can reduce challenging behavior, however, these effects are typically short and have the potential to lead to side-effects (McQuire et al., 2015). One difficulty with determining the effectiveness of psychotropic medication is methodological: many studies collect data about effectiveness through indirect measures such as behavioral questionnaires as

opposed to direct observation and measures of frequency and severity of challenging behavior (Unwin & Deb, 2011). Despite these limitations, pharmacological interventions continue to be a primary component of interventions for challenging behavior exhibited by individuals with disabilities.

One strategy to determine the role of psychotropic medication as a therapeutic tool in behavior management might be to consider whether this strategy is targeting a behavior or psychiatric disorder. Kroese et al. (2001) stressed the importance of distinguishing between these conditions in order to better identify the potential success of using medication. Furthermore, efforts need to be established to fade psychotropic medication over time, as the implications for long-term use is unknown, and it is evident that individuals with ASD and related disabilities are usually medicated across their lifespan (Deb et al., 2015; McGillivray & McCabe, 2006).

Seclusion and Isolation

Seclusion refers to the temporary and involuntary confinement of a person to a room or area where the person is physically prevented from leaving (Friedman & Crabb, 2018). Usually it involves supervision of the isolated individual in a locked, non-stimulating room. Prevalence rates of seclusion as a behavior management strategy vary greatly, however, some estimates suggest up to 11% of individuals in hospital settings experience seclusion, and that the use of seclusion (with or without restraint) can increase with certain comorbid psychiatric conditions (e.g., bipolar and personality disorders; Dumais et al., 2011; Janssen et al., 2008). In general, individuals with intellectual disabilities exhibiting aggressive and challenging behaviour are more frequently secluded compared to individuals with disabilities not exhibiting these behaviours (Allen et al., 2009; Turner & Mooney, 2016).

There are few studies that have evaluated the extent to which seclusion use produces a socially significant reduction in challenging behavior. Sailas and Fenton (2000) found no controlled studies which investigated the value of using seclusion (and restraint) among psychiatric patients, and found that in some cases it could lead to injuries or death. Furthermore, risk to individuals who are restrained and/or secluded can include decreased functioning and longer admissions to restrictive environments (Chan et al., 2012). Notwithstanding the physical health risks associated with seclusion use, this practice has been criticized by some for being unethical. Ethical issues related to seclusion use include unnecessary restrictions on individual liberties, using a potentially ineffective intervention, disproportionate use with certain at-risk groups, and insufficient monitoring or supervision of individuals in seclusion (Scheuermann et al., 2016).

Despite the fact that (a) there is limited evidence to support the use of seclusion as an effective behavior reduction strategy, and (b) individuals who experience seclusion often perceive it as a strategy with low social acceptability, many healthcare staff report it to be therapeutic and vital for the operation of inpatient psychiatric units (Van Der Merwe et al., 2013). It is unclear what controls these perceptions

given the physical and monetary costs associated with using RBMPs in hospital settings (Chan et al., 2012), however, many experts agree that the use of seclusion as a practice can and should be reduced (Gaskin et al., 2013). In situations in which seclusion cannot be avoided, Van Der Merwe et al. (2013) suggested a number of improvements to this practice including better communication between staff members as well as staff and patients, more frequent contact between staff and patients before, during, and after seclusion, and incorporating seclusion termination or limiting criteria (e.g., limiting the number of times an individual can be secluded).

Implications for Using Restrictive Behavior Management Practices

There are both short-term and long-term implications for using RBMPs. It is clear that many of these practices have obvious short-term side effects including the immediate intrusion on another's well-being, risk of injury to those who experience RBMPs and those applying RBPs, the risk of misapplication without proper supervision, and in some cases death (Luiselli, 2009). Another complication with these procedures is that in some cases, RMBPs could maintain challenging behaviour because it functions as positive or negative reinforcement (Favell et al., 1978; Magee & Ellis 2001). For example, the contingent application restraint could be a positive reinforcer for challenging behavior and the contingent removal of someone from the environment (i.e., seclusion) could serve as negative reinforcement for challenging behavior. As a result, in some cases the use of RBMPs may be contraindicated despite the fact that they are used as emergency procedures. Additionally, there is a societal implication for the use of RMBPs, in that many clinicians and caregivers report poor social acceptability of these practices (Luiselli et al., 2015; McDonnell & Sturmey, 2000). Low social validation ratings could jeopardize intervention integrity during intervention or in the natural environment if the use of RBMPs are implemented inconsistently or erroneously (Luiselli, 2009).

In addition to immediate increased risk of injury or harm associated with using RBMPs, there is also potential for long-term adverse side-effects. Individuals who engage in challenging behavior are more likely to experience RBMPs, which could result in the refusal of certain educational services, children experiencing less instructional time than same-aged peers, and children exposed to fewer learning opportunities than peers (Carr et al., 1991; LeBel et al., 2012). As a result, it is evident that the trajectory of individuals who engage in challenging behaviours, and who experience RBMPs, without appropriate assessment and intervention, is deleterious.

In studies that evaluate the subjective experience of individuals who contact RBMPs, it is clear that these procedures can be traumatic. In a study involving 142 adult psychiatric patients in a day hospital program who experienced restraint or seclusion, Frueh et al. (2005) asked participants to self-assess traumatic and

harmful events that occurred during the course of their intervention. Participants reported a high proportion of posttraumatic stress disorder and lifetime trauma that occurred within settings that used RBMPs. Although evidence of trauma as a function of earlier RBMPs exposure is an emerging area of investigation, these results highlight the importance of re-evaluating administrative policies and procedures regarding seclusion and restraint use, and to be sensitive to issues related to trauma in order to ensure that behavioral management strategies are implemented in a manner that is safe, dignified, and humane.

Considerations for Using Restrictive Behavior Management Practices

Due to the potential risks associated with RBMPs, some individuals and organizations have advocated for the total elimination of these procedures. For example, the Autism National Committee (1999) opposes using physical restraints and seclusion at any time, viewing these practices as restricting the civil and human rights of people with disabilities and arguing that the use of RBMPs is a failure in treatment. However, it is important to recognize that failing to use restraint and seclusion in emergency situations could also result in deleterious outcomes, either to the patient themselves or to others in their environment (e.g., debilitating or irreversible injury, permanent harm due to aggression, flight risks, consuming harmful materials; Recupero et al., 2011). Acknowledging the necessity of RBMPs in certain situations, a number of organizations have related official position statements in support of restraint and seclusion as methods that can be therapeutic or protective for individuals who engage in challenging behavior.

Fortunately, as a result of the studies demonstrating the risks associated with using RBMPs, these procedures are highly controlled in hospital settings and the policies associated with RBMP use are influenced by advocacy and organizational groups who serve individuals with ASD and related disabilities. For instance, the Association for Professional Behavior Analysts (2010) and the Association for Behavior Analysis International (Vollmer et al., 2011) have each adopted official positions. Both organizations differentiate between misuse and misapplication of restraint and seclusion and correct and ethical use of the procedures for safe management of challenging behaviors. Moreover, both specify that RBMPs should only be used as part of a comprehensive intervention plan, with careful monitoring and oversight, and after risks and ethics have been considered.

Vollmer et al. (2011) outlined three guiding principles for when RBMPs need to be considered as part of a behavior management protocol. First, the welfare of the individual served is given the highest priority. All procedures should be in the person's best interest, and take precedence over the agendas of any other institution or organization. Second, individuals (including caregivers and substitute decision makers) have the right to choose whether RBMPs will be experienced, and their

written consent should be obtained prior to intervention. That is, individuals and those that are legally responsible for their care have the right to choose interventions that are necessary, safe, and effective. Last, the approach of least restrictiveness must always be upheld. Priority should be given to interventions that afford the most favourable risk-to-benefit ratio, with specific consideration of probability of treatment success, anticipated duration of treatment, distress caused by the procedures, and distress caused by challenging behaviour itself.

Alternatives to Restrictive Behavior Management Practices

Although there are many examples of proprietary training programs aimed at equipping caregivers with verbal de-escalation, self-protection, and physical management techniques (Couvillon et al., 2010; Couvillon et al., 2019), there is a lack of research and consensus on an all-encompassing, best-practice approach to safely managing behavioral crises (Reed et al., 2013b). Instead, there exists many separate studies on the specific components that may contribute to effective management of challenging behavior and a reduction in the use of RBMPs. These include organizational policy and practices, staff training programs, assessment methods for challenging behaviour, function-based treatment alternatives, and focused restraint reduction procedures.

Organizational Policy and Practices

Human service organizations face unique challenges in ensuring that the individuals they serve are safe and well cared for. Limited resources, high rates of front-line turn over, staff experience and competency limitations, departmental silos, inter-department competition, and the complexity of tasks required to support individuals with unique behavioural, psychiatric, medical, family, and community inclusion needs may be more common than not in many human service organizations. These challenges are often exacerbated by the occurrence of severe challenging behaviour (e.g. self-injury, physical aggression, or property destruction) and the use of RBMPs during crises. Although the individual qualities of staff and the challenging behaviour displayed by service users may influence the frequency in which RBMPs are used, organization type and service setting may be more accurate predictors of the use of RBMPs. Organizational strategies to reduce the use of RBMPs include active involvement of leadership, strategic planning that includes clear goals related to restraint reduction and prevention, a system for clearly and honestly defining, measuring and reporting on the use of restraints, mandatory staff training programs, the incorporation of peer roles in training and service delivery, and comprehensive debriefing procedures (Sturmey, 2015). Applications from the subfield of organizational behaviour management (OBM) have demonstrated considerable success in

improving infrastructure and quality of service in human service organizations (DiGennaro Reed et al., 2021). OBM interventions such as systems analysis, employee motivation programs, performance checklists, systematic feedback and reinforcement procedures in staff training and supervision programs can make a considerable contribution to the reduction of RBMPs in human service organizations (Dixon & Loukus, 2013; Williams & Grossett, 2011).

Staff Training

The front-line staff that support individuals in human service organizations may be poorly prepared to perform their duties, and even when training is made available, important skills may not maintain over time (Wooderson et al., 2014). Inadequate or absent staff training programs can have a deleterious effect during crises situations, and pose serious practice and ethical challenges for professionals (Scheuermann et al., 2016). For example, training programs aimed exclusively at the application of restraint techniques may have the unfortunate consequence of increasing the use of restraint by healthcare professionals (Campbell et al., 2008). Conversely, effective and comprehensive staff training programs may have a positive impact on treatment integrity (Brady et al., 2019), the quality of staff/consumer interactions (Finn & Sturmey, 2009), and a reduction in the use of RBMPs (Allen et al., 1997; Craig & Sanders, 2018; Sanders, 2009). Although there is limited research on staff training aimed specifically at reducing the use of RBMPs, there appears to be some consensus that competency-based staff training programs designed for each organization's unique context and applying a variety of training techniques may be best practice (DiGennaro Reed et al., 2013; Sturmey, 2015). Multi-component training that includes written or didactic instruction, expert modeling of skills, opportunities for on-the-job rehearsal, ongoing monitoring and performance feedback, and the use of experienced peer trainers have considerable empirical support (DiGennaro Reed et al., 2013). Training content may include, but is not limited to, instruction on ethical considerations and risks related to the use of RBMPs, a review of relevant organizational values and policy, prevention strategies, self-management techniques, alternatives to RBMPs, and the appropriate use of physical management skills.

Assessing Challenging Behaviour

As severe challenging behaviour often precipitates the use of RBMPs, a comprehensive assessment is a necessary component of effective crisis intervention planning and RBMP reduction. Challenging behaviours are often brought to the attention of medical and social service professionals by caregivers, educators, law enforcement, or other clinicians when the behaviour has begun to disrupt adaptive or social functioning, or poses a risk of harm to the individual and those around them. Prior to

initiating psychosocial assessments, a comprehensive medical examination is typically recommended to rule out the possible contribution of a biomedical issue (e.g. self-injury related to a recurrent ear infection; Neidert et al. 2013). In functional behavioral assessment (FBA), a number of tools and techniques are used to identify variables that may be contributing to challenging behaviour. The goal of an FBA is to determine the relation between behaviour and specific environmental events, in an effort to inform treatment procedures. Interviews, scales, direct observations, and in-vivo environmental assessments are typically followed by an analysis of all available data and the development of a personalized treatment plan (Sugai et al., 2000).

Treatment Alternatives

Alternatives to RBMPs typically include function-based treatment procedures which reduce the likelihood of challenging behaviour occurring through preventative environmental adaptations (antecedent interventions) or through modifying the typical outcomes that challenging behaviour might produce (consequence-based strategies). One well-researched approach to treating severe behavioural challenges is functional communication training (FCT), which focuses on teaching an adaptive communicative response as a replacement for challenging behaviour. Function-based treatment procedures are informed by a complete functional assessment, including a functional analysis (Beavers et al., 2013), which identify the environmental variables that may be evoking and maintaining the dangerous behaviour. Next, skill-building procedures are used to teach the individual how to get their needs met in a safe and socially acceptable way. For example, if an FBA reveals that a non-verbal autistic adult is scratching peers to escape the noisy day room (as scratching has historically led to removal from peers), a function-based approach might include efforts to reduce noise in the day room (e.g. use of noise-cancelling ear phones) while teaching and reinforcing requests to leave the day room through an augmentative communication device.

Focused Restraint Reduction Procedures

Although the most logical approach to reducing the use of RBMPs would appear to be assessment and treatment procedures that address the challenging behaviours that precede their use (Reed et al., 2013a), it may be necessary implement procedures to fade or gradually eliminate intrusive procedures such as physical or mechanical restraints. Restraint fading typically includes a systematic and often gradual reduction in some dimension of the physical or mechanical restraint (arm splints, helmets, straps), and is often applied when restraints themselves have taken on a reinforcing function for an individual (Sturmey, 2015). For example, Lerman

et al. (1994) faded the size and type of clothing used by a young man with profound intellectual disability who used clothing to self-restrain. The clinical team gradually faded the type and placement of the material (i.e., large towel to sweatbands, to a headband, to a bandana) until the item no longer posed a barrier to daily functioning. Luiselli (2008) used a fixed-time release fading procedure to gradually reduce the use of physical restraints by decreasing the time spent in restraints following aggressive behaviour (e.g., 60s to 30s to 15s). Many studies that describe restraint fading procedures have applied very specific fading strategies dependent on the unique results of each patient's functional behavioural assessment and have included reinforcement-based strategies for teaching alternative skills during the fading process (Sturmey, 2015).

Conclusion

The use of RBMPs is fraught with a variety of ethical, legal, and safety risks. Physical, mechanical, and chemical restraint techniques, and the use of seclusion and isolation in response to challenging behaviour can have serious short- and long-term consequences including injury, deleterious impacts on physical health, psychological trauma, and even death. Fortunately, research on alternatives to RBMPs has provided a way forward with initiatives in organizational policy and procedure, comprehensive assessment, function-based behavioural interventions, and focused restraint reduction procedures offering effective options for client safety even in challenging situations. Reactive and standardized approaches to challenging behaviour are seldom effective in the long-term. The use of assessment methods, like the FBA, which provides important information about the specific context and purpose of each person's challenging behaviour can lead to the development of individualized prevention strategies and functional alternatives to RBMPs. When crisis strategies are well-planned, individualized, data-informed, and prioritize the unique strengths, needs, and interests of each individual and their loved ones, they provide opportunities for inclusion over segregation, rights over restrictions, and safety over harm.

References

Allen, D., Lowe, K., Brophy, S., & Moore, K. (2009). Predictors of restrictive reactive strategy use in people with challenging behaviour. *Journal of Applied Research in Intellectual Disabilities, 22*(2), 159–168. https://doi.org/10.1111/j.1468-3148.2008.00484.x

Allen, D., McDonald, L., Dunn, C., & Doyle, T. (1997). Changing care staff approaches to the prevention and management of aggressive behaviour in a residential treatment unit for persons with mental retardation and challenging behaviour. *Research in Developmental Disabilities, 18*(2), 101–112.

Association of Professional Behavior Analysts (APBA). (2010). Position statement on the use of restraint and seclusion as interventions for dangerous and destructive behaviors: Supporting research and practice guidelines.

Autism National Committee. (1999). Myths and facts about Aversives. Autism National Committee. Retrieved from http://www.autcom.org/myths.html

Colaizzi, J. (2016). Seclusion & restraint: A historical perspective. *Journal of Psychosocial Nursing and Mental Health Services, 43*(2), 31–37. https://doi.org/10.3928/02793695-20050201-07

Beavers, G. A., Iwata, B. A., & Lerman, D. C. (2013). Thirty years of research on the functional analysis of problem behavior. *Journal of Applied Behavior Analysis, 46*(1), 1–21.

Bowring, D. L., Totsika, V., Hastings, R. P., Toogood, S., & McMahon, M. (2017). Prevalence of psychotropic medication use and association with challenging behaviour in adults with an intellectual disability. A total population study. *Journal of Intellectual Disability Research, 61*(6), 604–617. https://doi.org/10.1111/jir.12359

Brady, L., Padden, C., & McGill, P. (2019). Improving procedural fidelity of behavioural interventions for people with intellectual and developmental disabilities: A systematic review. *Journal of Applied Research in Intellectual Disabilities, 32*(4), 762–778. https://doi.org/10.1111/jar.12585

Busch, A. B., & Shore, M. F. (2000). Seclusion and restraint: A review of recent literature. *Harvard Review of Psychiatry, 8*(5), 261–270. https://doi.org/10.3109/hrp.8.5.261

Campbell, M. M., Weiss, S., Froman, P., Cheney, P., Gadomski, D., Alexander-Shook, M., & Ernst, A. (2008). Impact of a restraint training module on paramedic students' likelihood to use restraint techniques. *Prehospital Emergency Care, 12*, 388–392.

Carr, E. G., Taylor, J. C., & Robinson, S. (1991). The effects of severe behavior problems in children on the teaching behavior of adults. *Journal of Applied Behavior Analysis, 24*(3), 523–535. https://doi.org/10.1901/jaba.1991.24-523

Couvillon, M. A., Kane, E. J., Peterson, R. L., Ryan, J. B., & Scheuermann, B. (2019). Policy and program considerations for choosing crisis intervention programs. *Journal of Disability Policy Studies, 30*(1), 35–45.

Couvillon, M., Peterson, R. L., Ryan, J. B., Scheuermann, B., & Stegall, J. (2010). A review of crisis intervention training programs for schools. *Teaching Exceptional Children, 42*(5), 6–17.

Chan, J., LeBel, J., & Webber, L. (2012). The dollars and sense of restraints and seclusion. *Journal of Law and Medicine, 20*(1), 73.

Craig, J. H., & Sanders, K. L. (2018). Evaluation of a program model for minimizing restraint and seclusion. *Advances in Neurodevelopmental Disorders, 2*(4), 344–352.

Cunningham, J., McDonnell, A., Easton, S., & Sturmey, P. (2003). Social validation data on three methods of physical restraint: Views of consumers, staff and students. *Research in Developmental Disabilities, 24*(4), 307–316. https://doi.org/10.1016/S0891-4222(03)00044-1

Deb, S., Unwin, G., & Deb, T. (2015). Characteristics and the trajectory of psychotropic medication use in general and antipsychotics in particular among adults with an intellectual disability who exhibit aggressive behaviour. *Journal of Intellectual Disability Research, 59*(1), 11–25. https://doi.org/10.1111/jir.12119

Delafon, V., Kiani, R., Barrett, M., Vahabzadeh, A., Vaidya, H., Walker, G., & Bhaumik, S. (2013). Use of PRN medication in people with intellectual disabilities. *Advances in Mental Health and Intellectual Disabilities, 7*(6), 346–355. https://doi.org/10.1108/AMHID-05-2013-0032

Dixon, M. R., Loukus, A. K. (2013). Importance of Organizational Infrastructure. In: Reed D., DiGennaro Reed F., Luiselli J. (eds) Handbook of Crisis Intervention and Developmental Disabilities. Issues in Clinical Child Psychology. Springer, New York, NY. https://doi.org/10.1007/978-1-4614-6531-7_2

Dumais, A., Larue, C., Drapeau, A., Ménard, G., & Giguere Allard, M. (2011). Prevalence and correlates of seclusion with or without restraint in a Canadian psychiatric hospital: A 2-year retrospective audit. *Journal of Psychiatric and Mental Health Nursing, 18*(5), 394–402. https://doi.org/10.1111/j.1365-2850.2010.01679.x

Emerson, E., Robertson, J., Gregory, N., Hatton, C., Kessissoglou, S., Hallam, A., & Hillery, J. (2000). Treatment and management of challenging behaviours in residential settings.

Journal of Applied Research in Intellectual Disabilities, 13(4), 197–215. https://doi.org/10.1046/j.1468-3148.2000.00036.x

Favell, J. E., McGimsey, J. F., & Jones, M. L. (1978). The use of physical restraint in the treatment of self-injury and as positive reinforcement. *Journal of Applied Behavior Analysis, 11*(2), 225–241. https://doi.org/10.1901/jaba.1978.11-225

Finn, L. L., & Sturmey, P. (2009). The effect of peer-to-peer training on staff interactions with adults with dual diagnoses. *Research in Developmental Disabilities, 30*(1), 96–106. https://doi.org/10.1016/j.ridd.2007.11.004

Friedman, C., & Crabb, C. (2018). Restraint, restrictive intervention, and seclusion of people with intellectual and developmental disabilities. *Intellectual and Developmental Disabilities, 56*(3), 171–187. https://doi.org/10.1352/1934-9556-56.3.171

Frueh, B. C., Knapp, R. G., Cusack, K. J., Grubaugh, A. L., Sauvageot, J. A., Cousins, V. C., Yim, E., Robins, C. S., Monnier, J., & Hiers, T. G. (2005). Special section on seclusion and restraint: Patients' reports of traumatic or harmful experiences within the psychiatric setting. *Psychiatric Services, 56*(9), 1123–1133. https://doi.org/10.1176/appi.ps.56.9.1123

Gaskin, C. J., McVilly, K. R., & McGillivray, J. A. (2013). Initiatives to reduce the use of seclusion and restraints on people with developmental disabilities: A systematic review and quantitative synthesis. *Research in Developmental Disabilities, 34*(11), 3946–3961. https://doi.org/10.1016/j.ridd.2013.08.010

Grey, I., & Hastings, R. (2005). Evidence based practice in the treatment of behaviour disorders in intellectual disability. *Current Opinion in Psychiatry, 18*, 469–475.

Holden, B., & Gitlesen, J. P. (2006). A total population study of challenging behaviour in the county of Hedmark, Norway: Prevalence, and risk markers. *Research in Developmental Disabilities, 27*(4), 456–465. https://doi.org/10.1016/j.ridd.2005.06.001

Janssen, W. A., Noorthoorn, E. O., De Vries, W. J., Hutschemeakers, G. J. M., Lendemeijer, H. H. G. M., & Widdershoven, G. A. M. (2008). The use of seclusion in the Netherlands compared to countries in and outside Europe. *International Journal of Law and Psychiatry, 31*(6), 463–470. https://doi.org/10.1016/j.ijlp.2008.09.002

Jobski, K., Höfer, J., Hoffmann, F., & Bachmann, C. (2017). Use of psychotropic drugs in patients with autism spectrum disorders: A systematic review. *Acta Psychiatrica Scandinavica, 135*(1), 8–28. https://doi.org/10.1111/acps.12644

Kazdin, A. (1980). Acceptability of aversive procedures and medication as treatment alternatives for deviant child behavior. *Journal of Abnormal Child Psychology, 12*, 289–302.

Killebrew, J., Harris, C., & Kruckeberg, K. (1982). A conceptual model for determining the least restrictive treatment-training modality. *Hospital and Community Psychiatry, 33*, 367–370.

Knox, D. K., & Holloman, G. H., Jr. (2012). Use and avoidance of seclusion and restraint: Consensus statement of the American association for emergency psychiatry project Beta seclusion and restraint workgroup. *Western Journal of Emergency Medicine, 13*(1), 35–40. https://doi.org/10.5811/westjem.2011.9.6867

Kroese, B., Dewhurst, D., & Holmes, G. (2001). Diagnosis and drugs: Help or hindrance when people with learning disabilities have psychological problems? *British Journal of Learning Disabilities, 29*(1), 26–33. https://doi.org/10.1046/j.1468-3156.2001.00085.x

LeBel, J., Nunno, M. A., Mohr, W. K., & O'Halloran, R. (2012). Restraint and seclusion use in US School settings: Recommendations from allied treatment disciplines. *American Journal of Orthopsychiatry, 82*(1), 75–86. https://doi.org/10.1111/j.1939-0025.2011.01134.x

Lerman, D. C., Iwata, B. A., Smith, R. G., & Vollmer, T. R. (1994). Restraint fading and the development of alternative behaviour in the treatment of self-restraint and self-injury. *Journal of Intellectual Disability Research, 38*(2), 135–148. https://doi.org/10.1111/j.1365-2788.1994.tb00369.x

Luiselli, J. K. (2009). Physical restraint of people with intellectual disability: A review of implementation reduction and elimination procedures. *Journal of Applied Research in Intellectual Disabilities, 22*(2), 126–134. https://doi.org/10.1111/j.1468-3148.2008.00479.x

Luiselli, J. K. (2011). Therapeutic implementation of physical restraint. In *The handbook of high-risk challenging behaviors in intellectual and developmental disabilities* (pp. 243–256). Brookes Publishing.

Luiselli, J. K., Sperry, J. M., & Draper, C. (2015). Social validity assessment of physical restraint intervention by care providers of adults with intellectual and developmental disabilities. *Behavior Analysis in Practice, 8*(2), 170–175. https://doi.org/10.1007/s40617-015-0082-z

Luiselli, J. K. (2008). Effects of fixed-time release (FTR) fading on implementation of physical restraint. *Mental Health Aspects of Developmental Disabilities, 11*, 1–6.

Lunsky, Y., & Modi, M. (2018). Predictors of psychotropic polypharmacy among outpatients with psychiatric disorders and intellectual disability. *Psychiatric Services, 69*(2), 242–246. https://doi.org/10.1176/appi.ps.201700032

Magee, S. K., & Ellis, J. (2001). The detrimental effects of physical restraint as a consequenc for inappropriate classroom behavior. *Journal of Applied Behavior Analysis, 34*(4), 501–504. https://doi.org/10.1901/jaba.2001.34-501

Matson, J. L., & Boisjoli, J. A. (2009). Restraint procedures and challenging behaviours in intellectual disability: An analysis of causative factors. *Journal of Applied Research in Intellectual Disabilities, 22*(2), 111–117. https://doi.org/10.1111/j.1468-3148.2008.00477.x

Matson, J. L., & Burns, C. O. (2019). Pharmacological treatment of autism spectrum disorder. In S. M. Evans & K. M. Carpenter (Eds.), *APA handbook of psychopharmacology* (APA handbooks in psychology® series) (pp. 373–396). American Psychological Association. https://doi.org/10.1037/0000133-017

Matson, J. L., & Wilkins, J. (2008). Antipsychotic drugs for aggression in intellectual disability. *The Lancet, 371*, 9–10. https://doi.org/10.1016/S0140-6736(08)60046-X

McDonnell, A. A., & Sturmey, P. (2000). The social validation of three physical restraint procedures: A comparison of young people and professional groups. *Research in Developmental Disabilities, 21*(2), 85–92. https://doi.org/10.1016/S0891-4222(00)00026-3

McGillivray, J. A., & McCabe, M. P. (2006). Emerging trends in the use of drugs to manage the challenging behaviour of people with intellectual disability. *Journal of Applied Research in Intellectual Disabilities, 19*(2), 163–172. https://doi.org/10.1111/j.1468-3148.2005.00251.x

McQuire, C., Hassiotis, A., Harrison, B., & Pilling, S. (2015). Pharmacological interventions for challenging behaviour in children with intellectual disabilities: A systematic review and meta-analysis. *BMC Psychiatry, 15*(1), 303. https://doi.org/10.1186/s12888-015-0688-2

Mohr, W. K., Petti, T. A., & Mohr, B. D. (2003). Adverse effects associated with physical restraint. *The Canadian Journal of Psychiatry, 48*(5), 330–337. https://doi.org/10.1177/070674370304800509

Moyal, W. N., Lord, C., & Walkup, J. T. (2014). Quality of life in children and adolescents with autism spectrum disorders: What is known about the effects of pharmacotherapy? *Pediatric Drugs, 16*(2), 123–128. https://doi.org/10.1007/s40272-013-0050-4

Mulay, D. A. (2012). Keeping all students safe: The need for federal standards to protect children form abusive restraint and seclusion in schools. *Stetson Law Review, 42*, 325.

Neidert, P. L., Rooker, G. W., Bayles, M. W., & Miller, J. R. (2013). Functional analysis of problem behavior. In Handbook of crisis intervention and developmental disabilities (pp. 147–167). Springer, New York, NY.

O'Donoghue, E. M., Pogge, D. L., & Harvey, P. D. (2020). The impact of intellectual disability and autism spectrum disorder on restraint and seclusion in pre-adolescent psychiatric inpatients. *Journal of Mental Health Research in Intellectual Disabilities*, 1–24. https://doi.org/10.1080/19315864.2020.1750742

Poling, A., Ehrhardt, K., & Li, A. (2017). Psychotropic medications as treatments for people with autism spectrum disorder. In *Handbook of treatments for autism Spectrum disorder* (pp. 459–476). Springer. https://doi.org/10.1007/978-3-319-61738-1_25

Ray, W. A., Stein, C. M., Murray, K. T., Fuchs, D. C., Patrick, S. W., Daugherty, J., Hall, K., & Cooper, W. O. (2019). Association of antipsychotic treatment with risk of unexpected death among children and youths. *JAMA Psychiatry, 76*(2), 162–171. https://doi.org/10.1001/jamapsychiatry.2018.3421

Recupero, P. R., Price, M., Garvey, K. A., Daly, B., & Xavier, S. L. (2011). Restraint and seclusion in psychiatric treatment settings: Regulation, case law, and risk management. *Journal of the American Academy of Psychiatry and the Law, 39*(4), 465–476.

Reed, F. D. D., Hirst, J. M., & Howard, V. J. (2013). Empirically supported staff selection, training, and management strategies. In Handbook of crisis intervention and developmental disabilities (pp. 71–85). Springer, New York, NY.

Reed, D. D., Luiselli, J. K., Miller, J. R., & Kaplan, B. A. (2013a). Therapeutic restraint and protective holding. In *Handbook of crisis intervention and developmental disabilities* (pp. 107–120). Springer.

Reed, D. D., Reed, F. D. D., & Luiselli, J. K. (Eds.). (2013b). *Handbook of crisis intervention and developmental disabilities*. Springer.

Reed, F. D. D., Pellegrino, A. J., Blackman, A. L., Erath, T. G., Ruby, S. A., Harbison, M. J., & Maguire, H. (2021). Advancing OBM Practice and Research. In Organizational Behavior Management Approaches for Intellectual and Developmental Disabilities (pp. 291–314). Routledge.

Richardson, B., Webber, L. S., & Lambrick, F. (2020). Factors associated with long-term use of restrictive interventions. *Journal of Intellectual & Developmental Disability, 45*(2), 159–166. https://doi.org/10.3109/13668250.2019.1639895

Sailas, E. E., & Fenton, M. (2000). Seclusion and restraint for people with serious mental illnesses. *Cochrane Database of Systematic Reviews, 1*. https://doi.org/10.1002/14651858.CD001163

Sanders, K. (2009). The effects of an action plan, staff training, management support and monitoring on restraint use and costs of work-related injuries. *Journal of Applied Research in Intellectual Disabilities, 22*(2), 216–220.

Scheifes, A., Walraven, S., Stolker, J. J., Nijman, H. L., Egberts, T. C., & Heerdink, E. R. (2016). Adverse events and the relation with quality of life in adults with intellectual disability and challenging behaviour using psychotropic drugs. *Research in Developmental Disabilities, 49*, 13–21. https://doi.org/10.1016/j.ridd.2015.11.017

Scheuermann, B., Peterson, R., Ryan, J. B., & Billingsley, G. (2016). Professional practice and ethical issues related to physical restraint and seclusion in schools. *Journal of Disability Policy Studies, 27*(2), 86–95. https://doi.org/10.1177/1044207315604366

Scheuermann, B., Ryan, J. B., Peterson, R. L., & Billingsley, G. (2013). Ethical issues in the use of restraint and seclusion. In R. L. Peterson, J. B. Ryan, & M. Rozalski (Eds.), *Physical restraint and seclusion in schools* (pp. 31–49). Council for Exceptional Children.

Sourander, A., Ellilä, H., Välimäki, M., & Piha, J. (2002). Use of holding, restraints, seclusion and time-out in child and adolescent psychiatric in-patient treatment. *European Child & Adolescent Psychiatry, 11*(4), 162–167. https://doi.org/10.1007/s00787-002-0274-2

Spreat, S., & Walsh, D. (1994). Impact of treatment efficacy and professional affiliation on ratings of treatment acceptability. *Mental Retardation, 32*, 227–233.

Sturmey, P. (2015). *Reducing restraint and restrictive behavior management practices*. Springer.

Sturmey, P., Lott, J. D., Laud, R., & Matson, J. L. (2005). Correlates of restraint use in an institutional population: A replication. *Journal of Intellectual Disability Research, 49*(7), 501–506. https://doi.org/10.1111/j.1365-2788.2005.00703.x

Sugai, G., Lewis-Palmer, T., & Hagan-Burke, S. (2000). Overview of the functional behavioural assessment process. *Exceptionality, 8*, 149–160. https://doi.org/10.1207/S15327035EX0803_2

Tilli, D. M., & Spreat, S. (2009). Restraint safety in a residential setting for persons with intellectual disabilities. *Behavioral Interventions, 24*(2), 127–136. https://doi.org/10.1002/bin.280

Tsiouris, J. A. (2010). Pharmacotherapy for aggressive behaviours in persons with intellectual disabilities: Treatment or mistreatment? *Journal of Intellectual Disability Research, 54*(1), 1–16. https://doi.org/10.1111/j.1365-2788.2009.01232.x

Turner, K. V., & Mooney, P. (2016). A comparison of seclusion rates between intellectual disability and non-intellectual disability services: The effect of gender and diagnosis. *The Journal of Forensic Psychiatry & Psychology, 27*(2), 265–280. https://doi.org/10.1080/14789949.2015.1122822

Tyrer, P., Cooper, S. A., & Hassiotis, A. (2014). Drug treatments in people with intellectual disability and challenging behaviour. *British Medical Journal, 349*, g4323. https://doi.org/10.1136/bmj.g4323

Unwin, G. L., & Deb, S. (2011). Efficacy of atypical antipsychotic medication in the management of behaviour problems in children with intellectual disabilities and borderline intelligence: A systematic review. *Research in Developmental Disabilities, 32*(6), 2121–2133. https://doi.org/10.1016/j.ridd.2011.07.031

Van Der Merwe, M., Muir-Cochrane, E., Jones, J., Tziggili, M., & Bowers, L. (2013). Improving seclusion practice: Implications of a review of staff and patient views. *Journal of Psychiatric and Mental Health Nursing, 20*(3), 203–215. https://doi.org/10.1111/j.1365-2850.2012.01903.x

Vollmer, T. R., Deshais, M. A., & Pizarro, E. M. (2019). Restraint and seclusion. In *Handbook of intellectual disabilities* (pp. 263–274). Springer. https://doi.org/10.1007/978-3-030-20843-1_16

Vollmer, T. R., Hagopian, L. P., Bailey, J. S., Dorsey, M. F., Hanley, G. P., Lennox, D., Riordan, M. M., & Spreat, S. (2011). The Association for Behavior Analysis International position statement on restraint and seclusion. *The Behavior Analyst, 34*(1), 103–110. https://doi.org/10.1007/BF03392238

Webber, L. S., Richardson, B., & Lambrick, F. (2014). Individual and organisational factors associated with the use of seclusion in disability services. *Journal of Intellectual and Developmental Disability, 39*(4), 315–322. https://doi.org/10.3109/13668250.2014.937326

Weiss, E. M., Altimari, D, Blint, D. F., & Megan, K. *Deadly restraint: A nationwide pattern of death. A Hartford Courant investigative report.* Hartford Courant, October 11, 1998.

Williams, D. E., & Grossett, D. L. (2011). Reduction of restraint of people with intellectual disabilities: An organizational behavior management (OBM) approach. *Research in Developmental Disabilities, 32*(6), 2336–2339. https://doi.org/10.1016/j.ridd.2011.07.032

Wooderson, J. R., Cuskelly, M., & Meyer, K. A. (2014). A systematic review of interventions for improving the work performance of direct support staff. *Research and Practice in Intellectual and Developmental Disabilities, 1*(2), 160–173. https://doi.org/10.1080/23297018.2014.941967