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FORMATIVE EVALUATION OF THE IMPLEMENTATION OF UKERU AT WOODS SERVICES:

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ABSTRACT

This document describes the outcomes associated with the implementation of Ukeru restraint reduction strategies in a residential program for individuals who have intellectual disability. During the first year of implementation, adoption of Ukeru strategies was associated with a 31% decrease in the use of emergency restraints. Stage-wise introduction of the Ukeru strategies allowed the conclusion that there may be a causal linkage between the introduction of Ukeru strategies and the reduction in restraint use.

KEYWORDS: intellectual disability; restraint use; management change strategies

INTRODUCTION

The use of restraint to control agitated and disruptive individuals has a long history. Over 200 years ago, Phillipe Pinel (Fisher, 1994) wrote that the superintendent of a psychiatric facility should approach a disruptive patient and sternly direct that patient to stop misbehaving. That directive would be enforced by several large staff if the patient chose to be noncompliant. The use of restraint has continued in the ensuing years, both as an emergency procedure and as part of empirically validated treatment packages.

While there is a considerable, albeit dated, evidence base supporting the use of contingent restraint as part of a variety of treatment packages (Spreat & Stepansky, 1986; Foxx, 1988; Barton, Repp, & Brulle, 1985; Foxx & Dufresne, 1984; Hamilton, Stevens, & Allen, 1967; Matson & Keyes, 1988; Singh, Winton, & Ball, 1984) significant concerns have emerged regarding the safety of restraint procedures. One might reasonably argue that the use of restraint to control disruptive behavior can be construed as a social determinant of traumatic health issues. Of particular interest is the possibility that the risks associated with restraint use may not be outweighed by the benefits of the inclusion of contingent restraint in treatment packages. Many state regulatory authorities have limited the use of restraint to emergency situations in which restraint is necessary to protect humans. Perhaps the only significant exception to this practice is at Kennedy Krieger Neurobehavioral Unit in the United States where restraint contingent upon the emission of designated target behaviors is still retained as part of treatment packages.

ISSN 2581-5148

Vol. 4, No. 04; July-Aug 2021

Initial quantification of restraint related risks was presented by the Developmental Disabilities Research Group at Temple University. Spreat and Baker-Potts (1982) conducted an analysis of injuries incurred by persons with intellectual disability who lived at Temple University's Woodhaven Center. They found that persons who were classified as having mild or moderate intellectual disability were more likely to be injured in restraints than were persons with severe or profound intellectual disability. The authors noted that the overwhelming majority of injuries were minor. Spreat and Stepansky (1986) found that their 29 person cohort of individuals with intellectual disability incurred a total of 119 restraint related injuries over an 18 month period. It should be noted that the data collection process for client injuries in both of these studies ensured that bruises, scratches, and abrasions were all documented; most of the injuries were of this minor nature.

A more extensive study of restraint related injuries was undertaken by Spreat, Lipinski, Hill, & Halpin (1986). They found that over a 12 month period, their sample of 231 individuals (all with intellectual disability and significant behavioral challenges) was restrained a total of 8260 times. There were 240 injuries; all except 22 were minor (scratches, bruises, etc.). The most frequent serious injuries were cuts requiring sutures (n=12) and broken teeth (n=7). The authors found that mechanical restraint (i.e., wrist and ankle cuffs) was approximately three times safer for consumers than personal restraint. This safety factor of three was also found in Hill and Spreat's (1986) research regarding staff safety in restraints. Planned restraint was also found to be safer than emergency restraint, but that may be an artifact of the conditions under which emergency restraint was applied.

In a master's thesis for Temple University, Hock (1994) studied restraint use among 59 persons with intellectual disability who lived in a residential center in Pennsylvania. Most of these individuals were adolescents who were admitted to the program because of significant behavioral disorders. Hock learned that these 59 individuals were restrained 1183 times over a 12 month period of time. These 1183 restraints resulted in177 mild injuries (15% of restraints) and 44 injuries that required some form of treatment (5% of restraints). These latter injuries included injuries as minor as cuts and abrasions. A slightly higher rate of restraint related injury was reported by Tilli and Spreat (2009). They reported that injury of some sort was reported in 33% of 1325 emergency restraints applied to individuals serving children with developmental disorders and severe behavior problems. Tilli and Spreat (2009) noted that 99% of the injuries were minor in nature, typically consisting of just a bruise or abrasion. There were no broken bones, chipped teeth, respiratory problems, or deaths in their study.

Although most of the reported injuries were relatively minor in nature, it is clear that the risk profile associated with restraint use contains serious consequences. Restraint related death was brought to the public and professional consciousness by a series of newspaper articles written by Eric Weiss (1998) of the Hartford Courant. Using an exhaustive sampling methodology, Weiss was able to identify and confirm 142 restraint-related deaths in the mental health and intellectual disability area over a 10-year period of time. The Fox television channel picked up on Weiss' work and produced a related television segment on the topic. These journalistic efforts raised appropriate and significant concern regarding

ISSN 2581-5148

Vol. 4, No. 04; July-Aug 2021

the use of restraint in the related fields of intellectual disability and mental health. Subsequent to the Weiss articles, most states and accrediting agencies have imposed limits on the use of restraint procedures, and the reduction of restraint use has come to be considered to be a somewhat flawed marker of program quality.

It is clear that the use of restraint can function as a social determinant of both injury and death. Perhaps less blatant is the fact that restraint is generally not well tolerated in community settings, and that restraint use could actually be a social determinant of social segregation as well. Because of the contemporary social unacceptability of contingent restraint, numerous efforts have emerged in which programs have attempted to eliminate or minimize the use of restraint. A decreased reliance on restraint may reduce the number of injuries, and if accompanied by a decrease in the frequency of dangerous target behaviors, may be associated with higher levels of social integration.

Efforts to Reduce Restraint Use

It is possible to identify five broad approaches to the reduction/elimination of restraint. They are behavioral change strategies, de-escalation strategies, Organizational Behavior Management Strategies, Culture Change Strategies, and Training Packages. Each will be briefly discussed below.

Behavioral Approaches – The logic underlying any of the behavioral approaches is that if an individual no longer emits restraint-worthy behavior, that individual will no longer be restrained. The focus of behavioral strategies is not toward restraint reduction/elimination, per se, but rather towards the elimination/replacement of behaviors that would appear to justifiably invite the use of restraint in most situations. Basic affirmations of this approach are evident in early work by Friman (1980), Foxx (1998), and Jensen, et al. (1982), and supported by more recent meta-analysis by Heyvaert, Saenen, Maes, & Oghena (2014) who reported that contingent restraint was highly effective. The importance of expert clinical consultation was raised by Evans, Wood, and Lambert (2002). This is a strong, evidenced based approach, although the reduction/elimination of restraint was largely viewed as a positive by-product of the efforts to change behavior. More recently, the Australian Psychological Society (2011) affirmed that the use of positive behavior supports was capable of both reducing the frequency of challenging behaviors and the frequency with which staff used restraints.

Luiselli (2008) focused on interventions that identified and eliminated “triggers” for challenging behaviors. A number of studies reported success in reducing both target behaviors and the use of restraints by changing antecedent conditions. He cautioned in subsequent work (Luiselli, 2009) that such an avoidance strategy was a short term effort and that in most cases, the individual would need to be gradually re-introduced to those “triggers.” Reed et al. (2013) identified similar such prevention efforts included cueing, teaching individuals to request a break, allowing choice with regard to matters that had a history of eliciting aggressive behavior. The conclusion was that antecedent interventions were effective in reducing/eliminating restraint use, even if restraint use was not the target of the intervention. It should be recognized that antecedent interventions would also include those environmental strategies that basically make life more pleasing.

Luiselli (2008) also considered one aspect of the restraint itself that was subject to modification. Luiselli imposed a brief time limit to the use of a restraint, with the recognition that is some cases, a second restraint might be necessary. The adoption of a fixed brief time limit to restraint use also reduced the amount of restraint that was used.

De-escalation Strategies – De-escalation strategies focus on the resolution of a brewing crisis situation. How does one best handle or defuse a situation in which an individual is extremely agitated? One must first note that if the individual has reached a state of extreme agitation, antecedent interventions have not proven successful. Literally every training package offer recommendations on how to defuse crisis situations. Most of the recommendations have face validity. CPI (2020) offered ten tips for de-escalating dangerous situations. They were:

1. Be empathic and nonjudgmental
2. Respect personal space
3. Use non-threatening nonverbal
4. Avoid overreacting
5. Focus on feelings
6. Ignore challenging questions
7. Set Limits
8. Choose wisely what you insist upon
9. Allow silence for reflection
10. Allow time for decisions

Organizational Behavior Management - Reed, Luiselli, Miller & Kaplan (2004) described the Organizational behavior Management approach as an administrative approach that typically included a) intensified staff training, b) alternatives to restraint, c) increased supervision by senior staff, d) systematic review of restraint use. The importance of post-restraint debriefing was stressed by Deveau and Leitch (2014), although it is not clear whether post restraint debriefing is an educational intervention or a form of staff punishment for using restraints. Williams and Grosset (2011) used an organizational behavior management approach to increase the use of behavior management plans by 117% and reduce planned mechanical restraints by 80% over 17 months.

Change the Corporate Culture - In this instance, culture refers to the promotion of changed staff behavior. Singh, a behavior analyst by training, has published several studies (Singh, Fancioni, Karazsia, & Myers, 2016; Singh, Lancioni, Winton, Adkins, & Sing, J., 2009; Sing, Lancioni, Karzsia, Myers, Winton, & Latham, 2015) in which he empirically demonstrated that mindfulness training (a combination of meditation and staff training) for staff and consumers was associated with decreased restraint use. It was also linked to reduced staff turnover. Brooker, Julian, Webber, Chan, Shawyer, & Meadows (2012) found that mindfulness did reduce stress and anxiety among staff, and that it

improved interactions with consumers. This study, however, did not address the issue of restraint use. Overall, the articles suggest a significant commitment to staff training, however, the outcome data must make this a promising approach.

Training Packages - LeBel and Goldstein (2005) describe a package approach that was correlated with a 92% reduction in restraint use in a Mental Health program. The package consisted of 1) staff training to focus on building relationships and understanding adolescent needs, 2) pre-crisis intervention planning, 3) de-escalation skill development, 4) increased OT involvement, 5) pet therapy, and 6) debriefing. Riding (2016) used a similar approach in an effort to decrease restraint use in an intellectual disability program. A combination of 1) a training program called Safewards, 2) use of positive behavior supports, and 3) data informed practice was correlated with a 42% reduction in restraint use. The package approach was also endorsed by Azeem, Aujla, Rammouth, Binsfield, & Jones (2011). The reported that the implementation of six core strategies based on trauma informed care were associated with a reduction in restraint and seclusion use. These strategies were 1) Safety, 2) Trustworthiness & Transparency, 3) Peer Support, 4) Collaboration & Mutuality, 5) Empowerment & Choice, and 6) Cultural, Historical, & Gender issues.

Romijn & Frederiks (2012) summarized restraint reduction efforts in Australia, the United Kingdom, and the United States. The suggest four factors as possible contributors to restraint reduction: 1) strong leadership, 2) trained staff, 3) monitoring, and 4) attitudinal change such that restraint is viewed as treatment failure.

Perhaps the most ambitious package approach was developed by staff at Grafton School in Virginia (Craig & Sanders, 2018). The consolidated change efforts under the development of a culture that focuses on support, rather than control. Safety pads are used to redirect (and perhaps extinguish) assaultive behaviors. Staff are trained to focus on supporting individuals and trying to understand the reason for assaultive behaviors. Craig and Sanders (2018) reported an impressive reduction in restraint use, as well as a marked reduction in staff injuries. This hybrid program, named Ukeru, offers an interesting mix of the above mentioned approaches. The use of pads roughly meets the definition of the behavioral treatment called extinction. The emphasis on providing comfort seems consistent with consumer calls for enhanced communication between consumers and staff. The debriefing is consistent with the policing strategies mentioned frequently in the literature. In a sense, it is a hybrid, that could be further enhanced via improvements in clinical programming

The purpose of this study was to attempt to replicate the research conducted at Grafton using the Ukeru approach. The replication took place at a residential treatment facility in Pennsylvania.

ISSN 2581-5148

Vol. 4, No. 04; July-Aug 2021

METHODS

The Ukeru Approach - The Ukeru approach attempts to combine a philosophy of treatment with administrative expectations and a number of behavior change strategies. It emphasizes providing comfort to clients rather than attempting to control their behavior. Dangerous consumer behavior is to be blocked with pads that will generally protect both the staff and the consumer. The use of the pads would seem to have the potential of functioning as an extinction procedure in which the consumer is ultimately denied the reinforcer for his/her aggressive behavior. Perhaps the most significant element of the Ukeru approach involved the training that was necessary to implement the procedure. The training focused on and invited discussion of how dangerous situations are best handled, and in doing so, made absolutely clear that the goal of Woods was to reduce reliance on emergency restraint.

Setting – The study was conducted at a private residential treatment facility in Southeastern Pennsylvania. Approximately 500 individuals with intellectual disability and/or autism live on a 300 acre campus or in small group homes in the nearby town. About half of the individuals live in a treatment programs specifically designed to serve individuals with severe expressions of intrapunitive and extrapunitive forms of aggression.

Training - Training was initiated in November of 2017. Because of the size of the employee base at the residential treatment facility, it was impossible to train all staff at the same time. A stepwise process was employed, with five different groups being sequentially introduced to Ukeru procedures and processes. It was initially hoped that the stepwise introduction would afford the opportunity to evaluate the implementation of Ukeru via the institutional cycle experimental design. In this design, one would anticipate changes immediately subsequent to the introduction of training, while the untrained groups would remain unchanged. The shortcoming of this design is that it relies on a relatively rapid response to the training efforts. We were able to use the design by stretching the period during which we collected data, but the shortcoming of this approach is that it allows the opportunity for alternative factors to explain the observed results.

Data Collection – The residential treatment facility has a long standing practice of filing behavior reports on all incidents of significant behavior. These reports document the individuals involved, the behavior of concern, the responses of staff, and the outcome of the incident (including injuries). For the purpose of evaluating the implementation of Ukeru, it was necessary to modify the form to document the use of Ukeru pads.

In addition to providing a means with which to address a crisis situation, Ukeru requires that staff and consumers involved in an incident undergo a debriefing in which ways to avoid restraint use in the future are discussed. There is an immediate post-incident debriefing of the consumer and second debriefing within 24 hours that involves staff. These debriefings are documented via a debriefing form

ISSN 2581-5148

Vol. 4, No. 04; July-Aug 2021

RESULTS

Data analysis was largely descriptive, focusing on both outcome and process indicators. Given the stated purpose of the Ukeru implementation, the key outcome measures were related to the frequency with which emergency restraint was used at Woods in 2018. Process measures involved the use of Ukeru pads and the implementation of debriefing practices.

Overall Restraint Use

Restraint use at the participating facility declined markedly over 2018, with the greatest reduction occurring in the later months of the year (November and December). There were 182 emergency restraint used in January 2018, and there were 81 emergency restraints used in December 2018. This is a 55% reduction in restraint use, but it may overestimate the effect by focusing on just two data points. Comparing the number of restraints during the first six months of 2018 (910) with the number of restraint during the final six months of 2018 (626) yields a more conservative reduction of 31%. The graph immediately below presents the number of monthly emergency restraints at the facility in 2018. One observes a linear deceleration line, with increasingly fewer restraints being used over time.

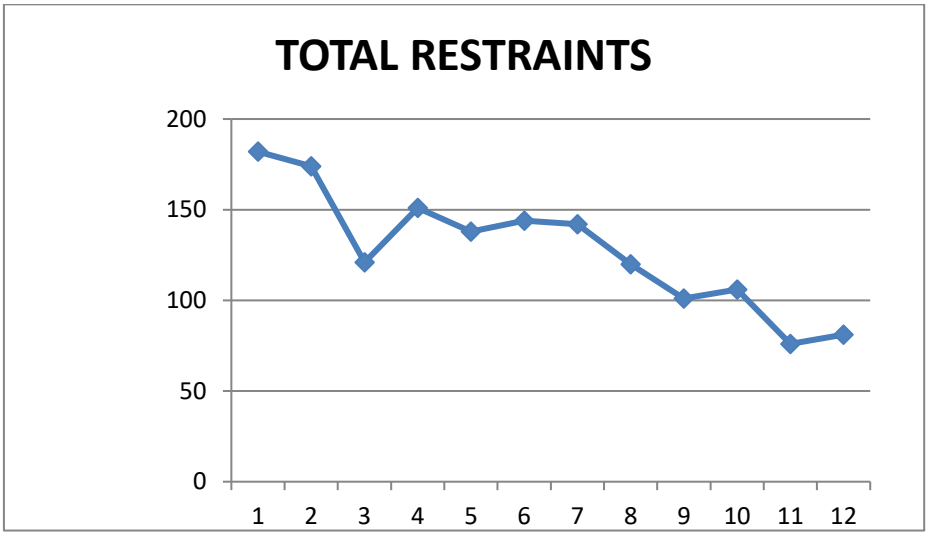

Figure 1. Monthly frequency of restraint use.

That the effect seemed to be more pronounced in later months suggests that the impact of Ukeru may be cumulative, rather than immediate. This, in turn, suggests that the institutional cycle design to assess causality will not be entirely satisfactory.

ISSN 2581-5148

Vol. 4, No. 04; July-Aug 2021

Restraint Opportunities

The rationale for focusing attention on restrain counts is clear, but simple counts of restraints constitute a flawed dependent measure. The use of a restraint is contingent upon the emission of some behavior that is at least potentially warranting of restraint. In this data set, one can estimate these potential restraint opportunities by summing the number of restraints and the number of behavioral incidents (i.e., aggression and/or self injurious behavior) that did not lead to restraint. The figure below plots restraint use simultaneously with restraint opportunities.

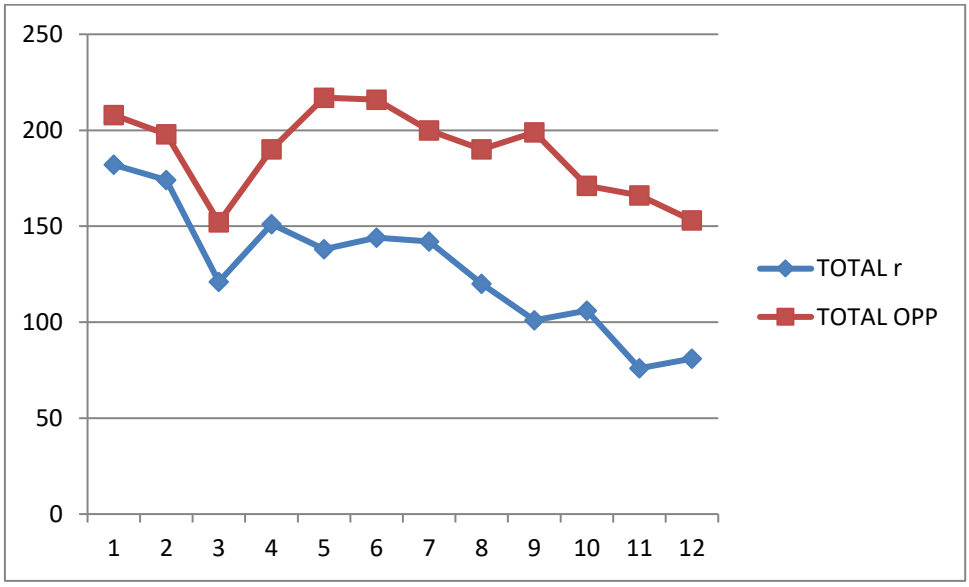

Figure 2. Restraint use and restraint opportunities over time.

The first 3 months, when not all staff had been trained, revealed that restraint use was modestly lower than restraint opportunities. The magnitude of this difference grew over time, becoming a pronounced difference in level after the 4th month. Better perspective derives from the graph depicting percentage of potential restraint opportunities that resulted in actual restraint use, where a decelerative trend is evident.

ISSN 2581-5148

Vol. 4, No. 04; July-Aug 2021

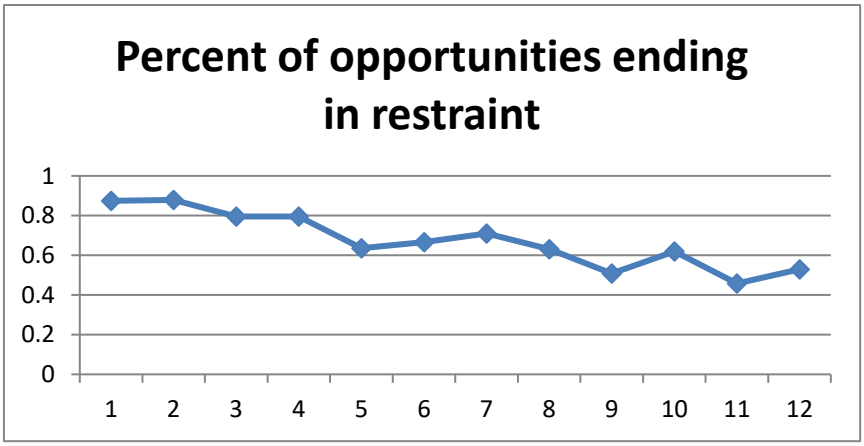

Figure 3. Percentage of opportunities ending in restraint.

Restraint Avoidance

Restraint avoidance occurs when the Ukeru Pads are used, and the potential restraint opportunity does not progress to the use of a restraint. The chart below illustrates a linear growth in restraint avoidance over the course of the year. That is, given the use of Ukeru pads, events were increasingly less likely to progress to restraint use. Of particular note is the month of November, in which staff were able to avoid using restraint in 90% of the situations in which the pads were used.

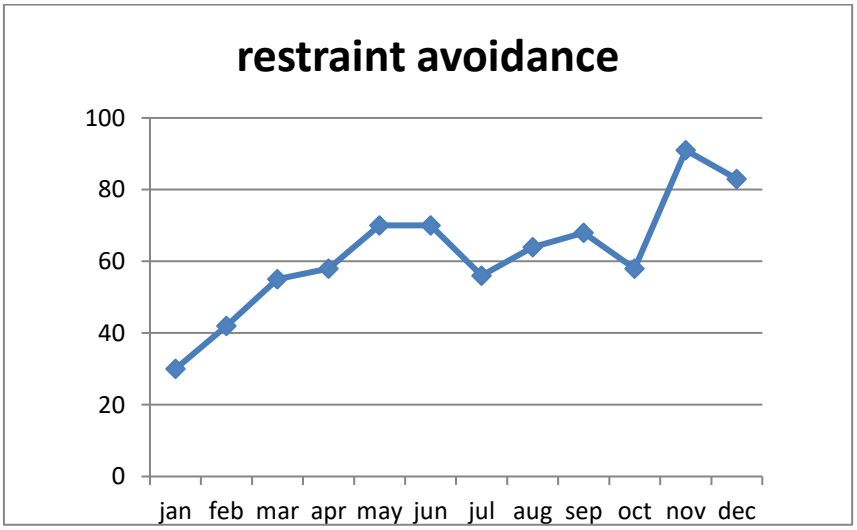

Figure 4. Restraint avoidance over time.

ISSN 2581-5148

Vol. 4, No. 04; July-Aug 2021

Pad Use

Use of the Ukeru pads is perhaps one index of culture change. A new strategy was imposed, and at issue is the extent to which staff have adopted this new strategy in their behavior. The graph below depicts the percentage of potential restraint opportunities in which the pads were used. Note that 100% use is not expected, given that some behavioral incidents occur outside the proximity of Ukeru pads. Also, it appears that some behavioral incidents responded to even less intrusive strategies than the Ukeru pads (such as counseling or hand holding), thus further reducing the percentage of pad use. Note that pad use increased as more staff were trained, but seemed to plateau in the neighborhood of 50% of opportunities post training.

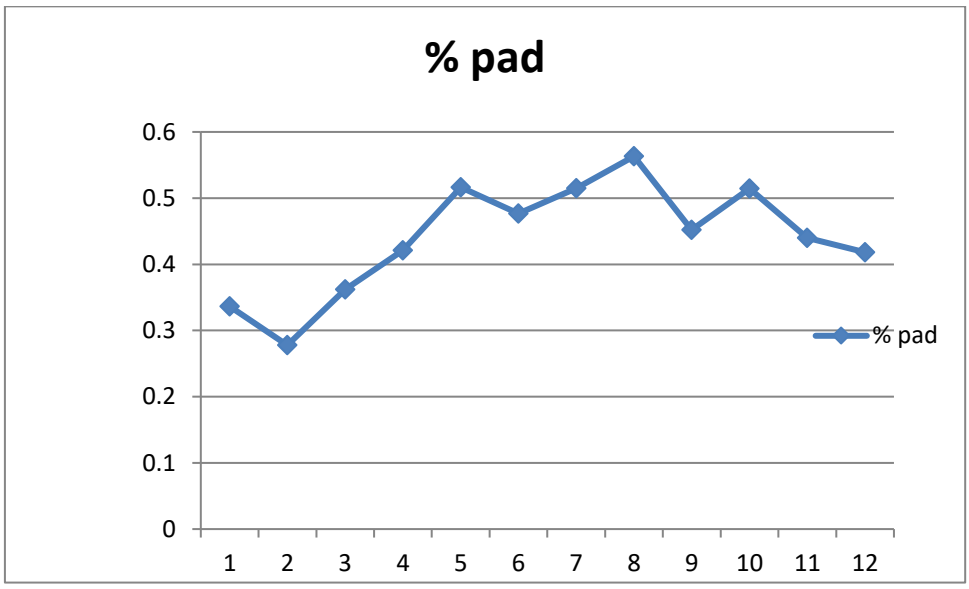

Figure 5. Percent of opportunities in which pads were used.

A Hint of Causality

The inference of causality is always a challenge in real world situations where many factors are simultaneously in play, so the following analysis must be viewed with a modest degree of skepticism. Because of the stage wise introduction of Ukeru strategies, it is possible to compare restraint use before and after Ukeru training across three groups. This approximates an institutional cycle design, a quasi-experimental design from which one might cautiously propose some degree of causality. Comparing restraint use before and after training, a consistent pattern of decreased restraint use was observed post training. Group 1 decreased from 14 restraints per month before training to 7.3 restraints per month post training. Group 2 decreased from 41 restraints per month before training to 32.3 restraints per month post training. Group 3 decreased from 57 restraints per month pre-training to 40.1 restraints per month post training. These data afford a weak inference of causality, suggesting that exposure to Ukeru training and the availability of Ukeru pads was causally related to the reduction of restraint use.

ISSN 2581-5148

Vol. 4, No. 04; July-Aug 2021

Of course, this observation is to be taken cautiously because other factors may have come into play to explain the decreased use of restraints. The published literature would suggest that administrative attention to restraint use could be a significant contributing factor.

Longer Term Perspective

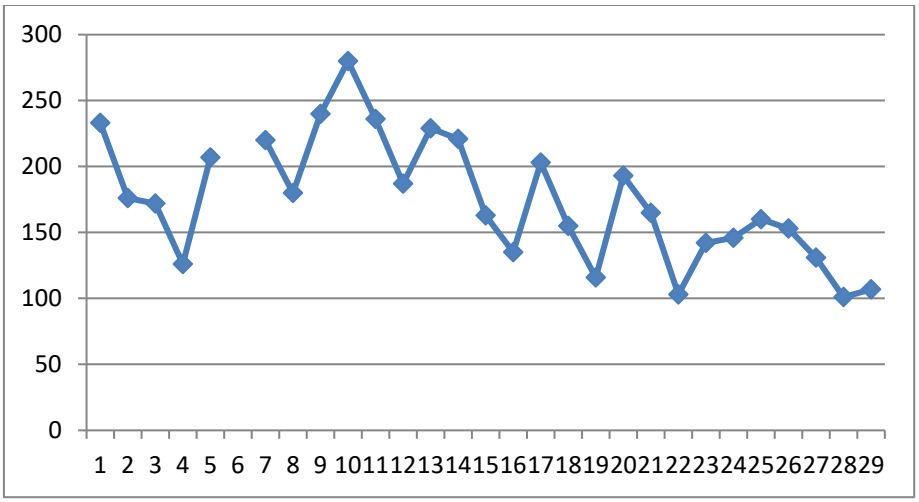

Figure 6. Long term restraint reduction.

The graph above affords a longer term perspective on restraint use at the participating facility. Earliest data point presented is June 2016, and latest is December 2018. An appreciable decline in restraint use is evident in these data. It becomes more impressive when 2017 (pre-Ukeru) and 2018 (post Ukeru) data are presented together as in the graph below. Only January data are similar. 11 of the months from 2018 had lower restraint use than the comparable period in 2017. This finding is equivalent to flipping a coin 12 times and getting 11 heads. The probability of that outcome is .0029. This unlikely outcome would be considered to be statistically significant.

ISSN 2581-5148

Vol. 4, No. 04; July-Aug 2021

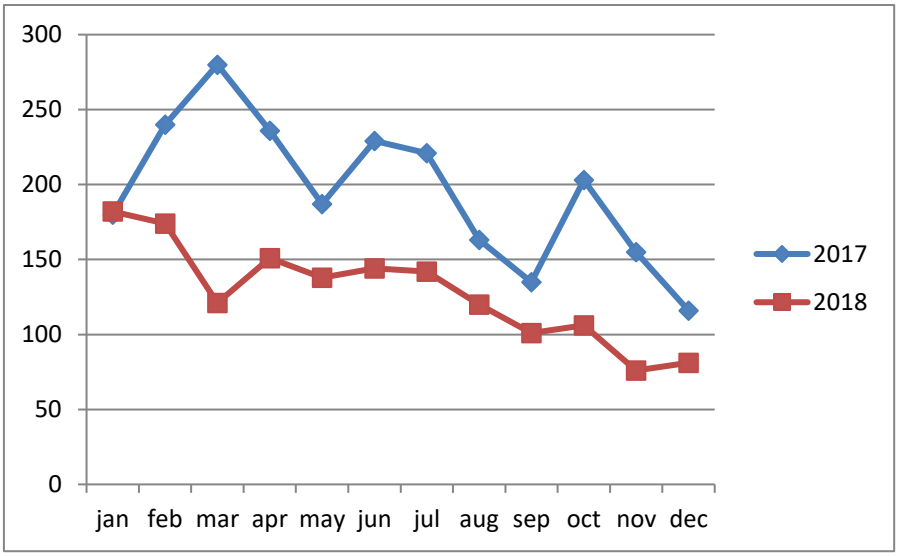

Figure 7. Restraint use before and after Ukeru introduction.

Injuries

Tilli and Spreat (2015) reported that the rate of injury associated with restraint use was approximately 33%. That is, one out of every three restraints was associated with some sort of mild client injury. Those authors stressed that the agency over-reported injuries, and that no serious injuries (i.e.,, death, respiration difficulties, fractures, or chipped teeth) were noted in 1126 applications of restraint. The data collected in this study followed the same reporting rules, meaning that redness, abrasions, and bruises were considered to be client injuries. The current data set suggest that absent the use of pads, the probability of a restraint related injury was about 20%. The use of pads did not change this metric; the probability of a pad related injury was 20%. Chi-square analysis could not detect a significant difference.

It is likely that a clearer picture would emerge from an analysis that was limited to serious injuries, but to impose this limitation would essentially lose almost all data. There were not many serious injuries associated with either approach. It should also be noted that some of the injuries occur independent of either pad use or restraint use. For example, a client might injury his/her hand punching a wall prior to a restraint, but this action is typically recorded as a restraint-related injury.

Staff experienced a lower rate of injury than clients, perhaps because staff tend to not report minor injuries. Staff had an 8% probability of an injury with pads and a 10% probability of injury when pads were not used. Again, chi square analysis could not detect a significant difference.

ISSN 2581-5148

Vol. 4, No. 04; July-Aug 2021

Have We Witnessed Culture Change?

Culture is perhaps most objectively defined as consistent patterns of behavior. These data revealed that at least one form of staff behavior has changed over the past year. The combination of training and provision of Ukeru pads has resulted in an increased use of this method to avoid restraint use. Note that in November of 2018, approximately 90% of potential restraint opportunities were addressed at least initially with the use of pads. Pads were not always successful, but it is clear that staff have come to rely on them. It is clear that the use of emergency restraint is not the first alternative to dangerous situations, and this is a significant change in how staff approach dangerous behavior.

It is much more difficult to ascertain whether the Ukeru catch phrase of "comfort not control" has truly been ingrained in staff. The term is perhaps too vague to invite objective measurement, and one must look for alternative indicators. One does note that in the final eight months of the year, potential restraint opportunities was on a consistent decline, perhaps suggesting that staff behavior in terms of promoting comfort was having some impact. Of course, there are dozens of other viable explanations for that shift in data, but one is clearly promotion of comfort.

What about Debriefing?

It appears that the immediate debriefing of consumers, a long standing practice at the participating facility, has continued. Some program areas were better able to complete these reviews in a timely manner, perhaps because the rate of restraint use was relatively low. Other program areas lagged behind in the use of the secondary team debriefings. The frequency of restraint use in these program areas requires a high number of secondary debriefings, and it is reported that these debriefings are not occurring to the extent that is expected.

DISCUSSION

The imposition of a clinical change strategy on an entire program is a challenge for a program evaluator. Experimental design limitations, consistent with real world considerations, will ultimately limit the ability to draw true cause-effect inferences about the package. Nevertheless, subsequent to the introduction of the Ukeru package, restraint use at Woods declined by about 50%.

Note also that Ukeru implementation was clearly a package combining clinical treatment, staff training, data monitoring, consequences for the use of restraint, and strong administrative support for the implementation. Each of these components alone has some empirical support in the literature; we cannot say which, if any, of the components were responsible for the change. Yet, change in the rate of restraint use was evident. Avoidance of restraint increased over time, as did the use of Ukeru blocking pads.

Does it matter from a practical perspective that we cannot draw a cause-effect relationship and that we cannot isolate contributory factors? From a health perspective – no. Safety was enhanced subsequent

to the introduction of Ukeru. From an administrative perspective every element of the package has costs, and it certainly be preferable to avoid any costs that do not contribute to outcome.

This study proffers additional evidence that the use of emergency restraint procedures may be reduced in frequency through a package consisting of staff training, redirection, extinction, debriefing, and possibly cultural change.

REFERENCES

Australian Psychological Society Work Group. (2011). Evidence-based guidelines to reduce the need for restrictive practices in the disability sector.

Barton, L., Repp, A., and Brulle, A. (1985). Reduction of stereotypic behaviours using differential reinforcement procedures and momentary restraint. *Journal of Mental Deficiency Research*, 29(1), 71-79.

Azeem, M., Aujla, A., Rammouth, M., Binsfield, G., and Jones, R. (2010). Effectiveness of six core strategies based on trauma informed care in reducing seclusion and restraint at a child and adolescent psychiatric hospital. *Journal of Child and Adolescent Psychiatric Nursing*, 24(1), 11-15

Brooker, J., Julian, J., Webber, L, Chan, J, Shawyer, F. & Meadows, G. (2012). Evaluation of an Occupational Mindfulness program for staff employed in the disability sector in Australia. *Mindfulness*, DOE 10:1007/s12671-012-7

CPI. (2020). CPI's Top 10 De-Escalation Tips. Crisisprevention.com/Blog/CPI-s Top-10-De-Escalation-Tips-revisited. Accessed 11/17/20.

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

Deveau, R. & Leitch, S. (2014). The impact of restraint reduction meetings on the use of restrictive physical interventions in English residential services for children and young people. *Child Care, Health, and Development*, 41(4), 587-592,

Evans, D., Wood, J., & Lambert, L. (2002). A review of physical restraint minimization in the acute and residential care setting. *Journal of Advanced Nursing*, 40(6), 616-625.

Fisher, W. (1994). Restraint and seclusion: A review of the literature. *Journal of Psychiatry*, 151(11), 1584-1591.

Foxx, R. (1998). A comprehensive treatment program for inpatient adolescents. *Behavioral Interventions*, 13(1), 67-77.

Foxx, R. and Dufresne, D. (1984). "Harry": The use of physical restraint as a reinforcer, timeout from restraint, and fading restraint in treating a self-injurious man. *Analysis and Intervention in the Developmental Disabilities*, 4(1), 1-13.

Friman, P. (1990). Nonaversive treatment of high-rate disruption: Child and provider effects. *Exceptional Children*, 57(1), 64-69.

Hamilton, J., Stevens, L., and Allen, P. (1967). Controlling aggressive and destructive behavior in severely retarded institutionalized residents. *American Journal of Mental Deficiency*, 71, 852-856.

Heyvaert, M., Saenen, L., Maes, B., & Onghena, P. (2014). Systematic review of restraint interventions for challenging behavior among persons with intellectual disability: focus on effectiveness in single case experiments. *Journal of Applied Research in Intellectual Disability*, 27(6), 493-510.

Hill, J. and Spreat, S. (1987). Staff injury rates associated with the implementation of contingent restraint. *Intellectual disability*, 25(3), 141-145.

Hock, B. (1994). Factors associated with the occurrence of injuries during the use of restraints in a large residential facility for the mentally retarded. Master's Thesis presented to the faculty of Temple University, Philadelphia, Pennsylvania.

Jensen, C., et al. (1983). Changing patterns of residential care: A case study of administrative and program changes. *Journal of Organizational Behavior Management*, 5(3-4), 155-174.

LeBel, J. & Goldstein, R. (2005). The economic cost of using restraint and the value added by restraint reduction or elimination. *Psychiatric Services*, 56(9), 1109-1114

Luiselli, J. (2008a). Physical restraint of people with intellectual disability: a review of implementation reduction and elimination procedures. Journal of Applied Research in Intellectual Disabilities, 22, 126-134.

Luiselli, J. (2009). Physical restraint of people with intellectual disability: A review of implementation of redirective and elimination procedures. *Journal of Applied Research in Intellectual Disability*, 22(2), 126.134.

Luiselli, J. (2008b). Effects of fixed time release (FTR) fading on implementation of physical restraint. *Mental Health Aspects of Developmental Disabilities*, 11(4), p.127+, accessed 11/17/20.

Matson, J. and Keyes, J. (1988). Contingent reinforcement and contingent restraint to treat severe aggression and self-injury in mentally retarded and autistic adults. *Journal of the Multihandicapped Person*, 1(2), 141-153.

Matson, J. and Keyes, J. (1990). A comparison of DRO to movement suppression time out and DRO with two self-injurious and aggressive mentally retarded adults. *Research in Developmental Disabilities*, 11(1), 111-120.

Reed. D., Luiselli, J., Miller, J., & Kaplan, B. (2013). Therapeutic Restraint and Protective Holding. In D. Reed (eds.) Handbook of crisis intervention and developmental disabilities, *Issues in Clinical Child Psychology*, DOI 10. 1007/978-1-4614-6531-7_7.

Riding, T. (2016). Exorcising restraint: reducing the use of

restrictive interventions in a secure learning disability service. *Journal of intellectual disabilities and offending behavior*, 7(4), 176-185.

Romijn, A. & Frederiks, B. (2012). Restriction of restraint in the care for people with intellectual disability in the Netherlands: Lessons learned from Austrailia, UK, and United States. *Journal of Policy and Practice in Intellectual Disability*, 9(2), 127-133.

Singh, N., Francioni, G., Karazsia, B., & Myers, R. (2016). Caregiver training in mindfulness-based positive behavior supports: Effects on caregivers and adults with intellectual and developmental disabilities. *Frontiers in Psychology*, 9, 1-23.

Singh, N., Lancioni, G., Winton, A., Singh, A., Adkins, A., & Singh, J. (2009). Mindful staff can reduce the use of physical restraints when providing care to individuals with intellectual disabilities. *Journal of Applied Research in Intellectual Disabilities*, 22, 194-202.

Singh, N., Lancioni, G., Karazsia, B., Myers, R., Winton, A. Latham, L., (2015). Effects of training staff in MBPBS on the use of physical restraints, staff stress, and turnover, staff and peer injuries, and cost effectiveness in developmental disabilities. *Mindfulness*, 6, 926-937.

Singh, N., Winton, A., and Ball, P. (1984). Effects of physical restraint on the behavior of hyperactive mentally retarded persons. *American Journal of Mental Deficiency*, 89(1), 16-22.

Spreat, S. and Baker-Potts, J. (1983). Patterns of injury in institutionalized residents. *Intellectual disability*, 21, 23-29.

Spreat, S., Lipinski, D., Hill, J., and Halpin, M. (1986). Safety indices associated with the use of contingent restraint procedures. *Applied Research in Intellectual disability*, 7(4), 475-481.

Spreat, S. and Stepansky, D. (1986). The effectiveness of contingent restraint o aggression, self-injury, and property destruction of institutionalized mentally retarded persons. *Behavioral Residential Treatment*, 1, 57-71.

Tilli, D. & Spreat, S. (2009). Restraint Safety in a Residential Setting for Persons with Intellectual Disabilities. *Behavioral Interventions*, 24 (2), 127-136.

Weiss, E. (1998). A nationwide pattern of death. *Hartford Courant*, October 11, 1998.

Williams, D. & Grossett, D. (2011). Reduction of restraint of people with intellectual disabilities: An organizational behavior management (OBM) approach. *Research in Developmental Disabilities*, 32, 2336-2339