Restrictive Intervention Data System cohort follow-up study

Senior Practitioner – Disability

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Cover image: Happy Homes, painting by James Barden, Art Prize Winner, VALID Having a Say conference 2016 (Conference theme: Ready, Set Connect)

Background

Previous analyses of the Restrictive Intervention Data System show that some people are reported to be subjected to restrictive interventions over years, while some people who are reported at one time are no longer subsequently reported. Understanding both why people continue to be reported and why some people are reported at one stage and not reported at another time is important to determine the efficacy of different restraint reduction strategies.

No other previous research could be found on this topic in disability services; however, two studies in nursing home residents found that certain individual characteristics are associated with long-term use of physical restraint. Sullivan-Marx , Strumpf, Evans, Baumgarten and Maislin (1999) found that continued physical restraint use in nursing homes most often occurred for individuals with severe cognitive impairment and/or when staff believed the person was at risk of falling. Huizing, Hamers, de Jonge, Candel and Berger (2007) also found nursing home residents' immobility and cognitive impairment were strongly related to the use of physical restraint. The findings of these two studies suggest that client's cognitive and physical characteristics may impact on whether physical restraint is used.

Our own recent work is consistent with the findings of these two studies in showing that some people with an intellectual disability were more likely to be restrained in the long term than other people. People with autism who were subjected to restrictive interventions in 2008–10 were 2 times more likely than people without autism to be subjected to restrictive interventions in 2013–15. In addition, clients who were subjected to seclusion in 2008–10 were found to be 2.5 times more likely than people who were not subjected to seclusion in that time to be subjected to restrictive interventions in 2013–15.

While we know the risk factors for those who are still reported, we do not know the factors that may be working and protective for others, because many services do not communicate the reason for discontinued reporting. In the 2008–10 cohort of residential service clients reported to RIDS 544 people (38 per cent) were no longer reported in 2013–15. Information regarding why the person was no longer reported was provided by services about 181 of these people, but no information has been provided for 363 people.

There are two main reasons people are no longer reported to RIDS: either the client leaves the service or the service provider can provide a service without using restrictive intervention. This latter possibility arises when a) the person no longer requires the restrictive intervention; b) restrictive intervention is no longer classified as a restrictive intervention, because it was incorrectly classified as such previously (e.g., seat belt buckle guard); or c) because the restrictive intervention is now judged to be treating an underlying medical condition (e.g., the person has received a psychiatric diagnosis and the former chemical restraint is now treating a mental health issue).

The Senior Practitioner collects limited data about this. Services are requested to inform the Senior Practitioner if the person is no longer reported and to select one of several reasons why the service is no longer required to report. For example, one option that can be chosen is 'the restrictive intervention has stopped because it is no longer required'. Another option is 'the restrictive intervention has stopped because it has been found to be therapeutic'. However, many services do not report cessation of restrictive intervention and their clients are left as 'active' on the system despite no restrictive intervention reports being received. Unfortunately, there is no way to verify the reliability of this data that is received, or understand how 'therapeutic' is interpreted by different services. With a reasonably large number of people kept 'active' on the system but no longer reported to the Senior Practitioner, it is important to seek clarification as the reasons why they are not currently reported to be subjected to restrictive interventions. Understanding why these people are no longer reported is important as it may inform the Senior Practitioner about the efficacy of the strategies he has put in place over this time and what other information or education services are needed to improve practice and reduce restrictive intervention.

Project objective

To examine the prevalence and correlates of persistent (> 3 years) restrictive intervention among individuals within residential services.

Methods

Design

The cohort selected for inclusion in the study was the 1414 individuals subjected to restrictive intervention in residential services within the two financial years spanning 1 July 2008 to 30 June 2010. The outcome, persistent restrictive intervention, was defined as being present for an individual if they subjected to restrictive intervention within a residential setting in the two-year follow-up period spanning July 1, 2013 to June 30, 2015. Of the 1414 individuals in the cohort, 544 were no longer reported for restraint in the follow-up period. Of these, 181 were known to be deceased or to have moved service. A survey was sent to the 54 services housing the remaining 363 individuals to determine the reason for cessation of restrictive intervention.

Survey

The survey was designed in collaboration with the reference group (see Appendix).

The survey asked staff to indicate for which reasons the individual was no longer reported to the Restrictive Intervention Data System. The reasons were that the person:

1. Had moved to another service or other accommodation
2. Had passed away
3. Was no longer reported because restraint and or seclusion was no longer required and whether this was due to:
    (a) The behaviour support the team put in place helped reduce the person's behaviours of concern and that:
        - Environmental changes worked such as staffing changes:
            - Staffing changes – staff–client ratio improved
            - Staffing changes – consistency of staff responses to client
            - Staffing changes – more positive attitudes to client
            - Staffing changes – training made a difference
        - Social changes worked such as:
            - Better compatibility with other clients in house
            - Improved compatibility with staff
            - Difficult relationships with others improved
        - Program changes, such as:
            - Changes to the number of programs the person accesses
            - Changes to the type of programs the person accesses

- The person has skills to use and doesn't need to use the behaviour of concern:
  - The skills replaced the need to use the behaviour of concern
  - The skills helped them cope better with the same stressors
  - The skills lead to greater independence

(b) There was a medical reason for the person's behaviour/s of concern and they were now being treated for:

- Anxiety disorder
- Clinical depression
- Bipolar affective disorder
- Schizophrenia
- Obsessive compulsive disorder
- Epilepsy
- Gynaecological problem
- Attention Deficit Hyperactively Disorder
- Physical health issue, e.g. tooth decay treated
- Other diagnosis (please describe).

Finally, the staff respondents were asked if there were any other reason that restraint and or seclusion was no longer required.

Findings

Prevalence of persistent restraint

Descriptive statistics for the 1414 individuals making up the cohort are presented below. Almost all of the sample had an intellectual disability (96%) and the majority were male (63%). Almost all (97%) were subjected to chemical restraint during the baseline period.

Average age of the cohort: 42.5 years (standard deviation: 13.8)

Average instances of restraint per person in the cohort over the two-year baseline period: 49.4 (standard deviation: 75.4)

Table 1: Number of people in the cohort by gender

Gender	N (%)
Male	894 (63%)
Female	520 (37%)

Table 2: Number of people in the cohort by disability

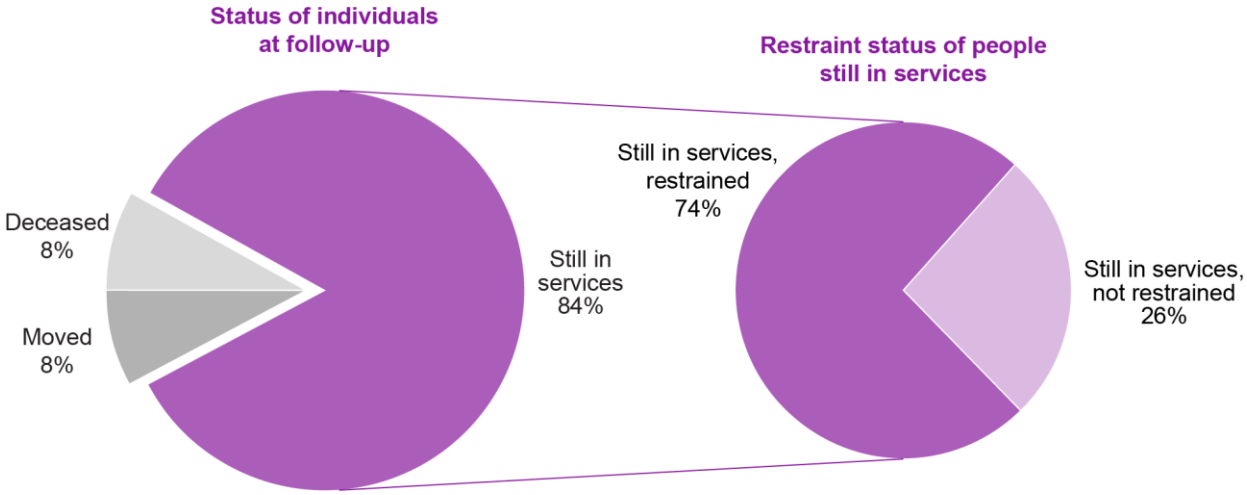
Disability	N (%)
Acquired brain injury	62 (4%)
Autism	416 (29%)
Hearing impairment	444 (31%)
Intellectual disability	1353 (96%)
Neurological impairment	283 (20%)
Physical disability	192 (14%)
Psychiatric condition	321 (23%)
Speech impairment	291 (21%)
Visual impairment	130 (9%)

Table 3: Number of people in the cohort reported to be subjected to different types of restraint

Type of restraint	N (%)
Chemical PRN	430 (30%)
Chemical routine	1248 (88%)
Chemical emergency	471 (33%)
Chemical (all)	1374 (97%)
Mechanical	61 (4%)
Seclusion	86 (6%)

Of the 1414 individuals, 234 were either deceased or no longer at a Victorian residential service at follow-up. Of the remaining 1180, 870 (74%) were still subjected to restraint (see Figure 1). This suggests that most individuals receiving restraint within residential services are likely to be restrained long term.

Figure 1: Cohort outcomes at follow-up



Of the 870 individuals subjected to restrictive intervention at follow-up, the average number of instances of restraint was 64.5 (SD=68.3, min=1, max=1,237). 816 of the 870 (94%) were reported for 10 or more instances. Thus, it appears that individuals still subjected to restrictive intervention in the follow-up period tended to be frequently restrained.

Of the 310 individuals still housed within a residential service but not subjected to restraint, the most common reason for cessation of restraint was due to more effective means of addressing behaviours of concern (see Table 4). In just under a third of the cases, it was reported that the individual was no longer restrained as the medication was treating a psychiatric condition. In approximately 16% of cases, cause was unknown by staff responding to the survey.

Table 4: Reasons for restraint cessation

Reason	N (%)
Used to treat medical condition	89 (30.5%)
Alternative means of addressing problematic behaviour	186 (63.7%)
Unknown	46 (15.8%)
Data missing due to survey non-response	18 (–)

Note: more than one reason can be selected so percentages will not add up to 100.

Correlates of persistent restraint

Our past work has suggested that disabilities associated with communication difficulties (e.g., autism, hearing and speech impairment) tend to be associated with greater instance of restraint. The analysis reported below extends what is known by addressing the related question of which client characteristics are associated with persistent restraint among individuals who remain in residential services. Specifically, a logistic regression was used to investigate the associations between client disability, age, gender and restraint during the baseline period among individuals who remained in residential services. The results are detailed in the Table 5 below.

Table 5: Summary of logistic regression analysis for variables predicting persistent restraint

Predictor	B*	SE B	e^B
Age	0.000*	0.006	1.00
Gender	–0.181*	0.158	0.83
Acquired brain injury	0.135*	0.364	1.14
Autism	0.476*	0.191	1.61
Hearing impairment	–0.077*	0.170	0.93
Neurological impairment	0.004*	0.200	1.00
Physical disability	–0.371*	0.223	0.69
Psychiatric condition	–0.663*	0.182	0.52
Speech impairment	0.524*	0.206	1.69
Baseline chemical restraint (PRN)	0.367*	0.191	1.44
Baseline chemical restraint (routine)	0.630*	0.254	1.88
Baseline chemical restraint (emergency)	0.263*	0.170	1.30
Baseline mechanical restraint	0.619*	0.450	1.86
Baseline seclusion	0.141*	0.370	1.15
Instances of baseline restraint	0.019*	0.003	1.02
Baseline use of antipsychotic medication	0.681*	0.172	1.98

* $p<0.05$

Note: table columns: B = coefficient, SE B =standard error of the coefficient, e^B = odds ratio (odds ratios represent the change in odds of being restrained during follow-up for each level of the variable).

Unsurprisingly, the results show that individuals who were subjected to routine chemical restraint during the baseline period were 1.88 times more likely to be restrained in the follow-up period. None of the other restraint types (chemical PRN, chemical emergency, mechanical and seclusion) predicted follow-up restraint[1]. In addition to type of restraint, two other features of the baseline restraint were positively associated with follow-up restraint: instances of baseline restraint and baseline use of antipsychotic medication. Findings showed that for every ten reported instances of restraint at baseline, individuals were 20% more likely to be restrained during follow-up. Individuals restrained using

1 It is worth noting that the effect size for baseline mechanical restraint was similar to that for baseline chemical routine restraint; that is, individuals who were mechanically restrained at baseline were 1.86 times more likely. However, given there were far less individuals mechanically restrained at baseline, there was less statistical power available to detect the effect. Thus, although the current results should not be interpreted as conclusively showing that mechanical restraint is not predictive of persistent restraint.

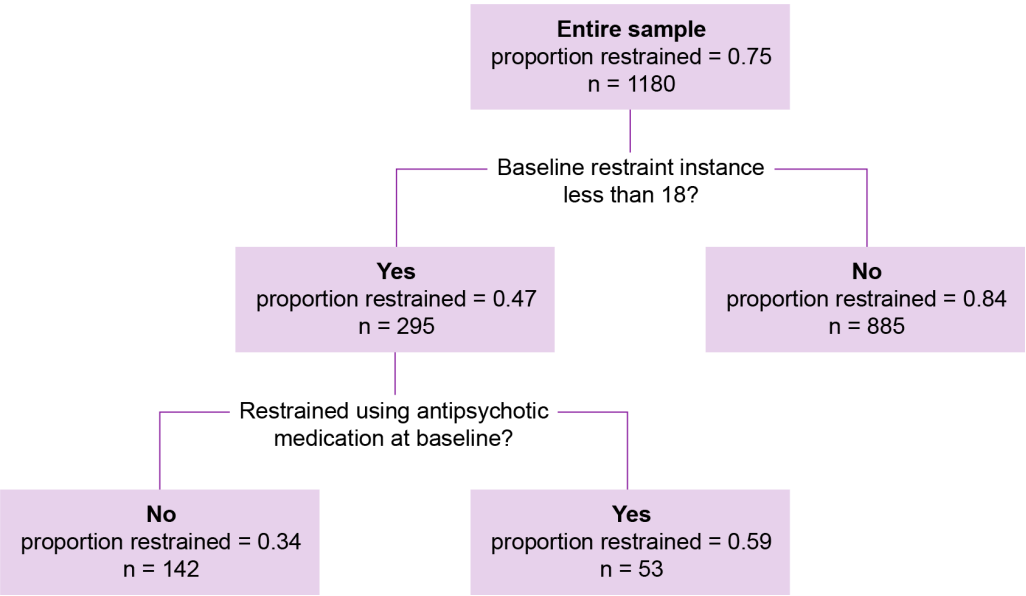
antipsychotic medication were twice as likely to be restrained during follow-up compared to individuals not restrained using antipsychotic medication at baseline.

After controlling for characteristics of baseline restraint, three disability types emerged as significant predictors of follow-up restraint: autism, speech impairment and psychiatric condition. Both autism (1.61 times more likely) and speech impairment (1.69 times more likely) were positively associated with restraint during follow-up. This suggests that not only do communication difficulties predict initial instance of restraint, they are also associated with lower rates of cessation of restraint. In contrast, the presence of a psychiatric condition was negatively associated with restraint during follow-up. Individuals with a psychiatric condition were only half as likely as those without to be restrained. One limitation of the current dataset is that disability was not necessarily measured at baseline. An individual's disability status in RIDS can be updated by service providers as information comes to light. Given that, rather than indicating that psychiatric conditions are protective against long-term restraint, this finding is possibly indicating that some of the individuals being reported for chemical restraint at baseline were receiving the medication to treat an, at the time, undiagnosed psychiatric condition. This condition was subsequently diagnosed at which point the medication is no longer reported as restraint. Somewhat consistent with this, there was a positive association between having a psychiatric diagnosis and having restraint ceased following a diagnosis among individuals no longer restrained at follow-up ($r = 0.13$, $t = 2.20$, $p < 0.05$).

Decision tree analysis

The logistic regression reported above was not able to explore interactions among predictor variables; that is, effects where the effect of one variable depends on the value of another (e.g., antipsychotic medication at baseline may increase the risk of restraint at follow-up but only for males). To investigate interactive effects in logistic regression, explicit interaction terms must be included in the model. Given the large number of predictor variables, there are too many possible interaction terms to include. Instead, to explore the possibility of interactive effects, a decision tree model was used[2]. A decision tree model is an alternative way to explore associations between a set of variables and an outcome that does not require the explicit inclusion of interaction terms. The results of the decision tree analysis for this study are shown below in Figure 2.

Figure 2: Decision tree model predicting restraint at follow-up



2 For an overview of decision tree modelling and its application, see Decision trees: An overview and their use in medicine (PDF download – 350kB) <https://www.researchgate.net/profile/Vili_Podgorelec/publication/11205595_Decision_Trees_An_Overview_and_Their_Use_in_Medicine/links/0912f506e77f1e9d1d000000.pdf>

Similar to the logistic regression, the results indicate that most of the predictor variables were not useful for differentiating the chances of an individual of being restrained at baseline. Specifically, only two variables were useful for differentiating individuals: the number of instances of restraint reported at baseline and whether the individual was restrained using antipsychotic medication at baseline. First, the results suggest that those who were reported for to be restrained 18 or more times during the baseline period were much more likely to be restrained during follow-up (84% compared to 47%). Being restrained using antipsychotic medication at baseline was a further risk factor but only for those not restrained 18 times or more at baseline. That is, among those restrained less than 18 times at baseline, those who were restrained using antipsychotic medication were more likely to be restrained at follow-up compared to those who were not (59% compared to 34%).

The decision tree did not completely replicate the results of the logistic regression. The disability predictors of autism, speech impairment and psychiatric condition did not meaningfully differentiate individuals in terms of the outcome.

Conclusion

This project investigated the prevalence of persistent restraint and its predictors among individuals with a disability accessing residential services in Victoria. Results show that three quarters of individuals who are restrained in a residential service, tend to keep being restrained in the long-term (> 3 years). Approximately two thirds of restraint cessation is explained by effective behaviour support and alternative means of addressing behaviours of concern. One third of cessation is explained by medical diagnoses (where the medication is actually being used to treat rather than restrain).

Predictors of persistent restraint were examined using both logistic regression and decision tree analysis. Taken as a whole, the findings from both analyses suggest that greater instance of restraint as well as the use of antipsychotic medication are important correlates of persistent restraint. Other individual characteristics, in particular a diagnosis of autism and the presence of a speech impairment, are also likely predictors of on-going restraint.

One caveat should be taken into considering when applying these results to new cohorts and that is that the initial cohort were defined by reporting of restraint in 2008–2010. In the years since then, practice has changed considerably. Reporting is more accurate and the quality of behaviour support planning has improved. For these reasons, it is possible that the prevalence of persistent restraint will have changed for subsequent cohorts and that different variables will predict persistent restraint.

Appendix: The survey information and questions sent to services

The Senior Practitioner was established by the Disability Act 2006 to monitor and evaluate the rights of people with a disability who are subjected to restrictive interventions.

The Senior Practitioner is undertaking a project to follow up the outcome of a group of people who were reported during the years 2008–10, but who are no longer reported.

The aim of this project is to find out what happened to people with a disability who were reported to be subjected to restrictive interventions in the past, but who are no longer reported to the Senior Practitioner.

This information will help the Senior Practitioner understand how well restraint reduction strategies are working in Victoria.

Below are a number of questions about a person with a disability who was reported to be subjected to restrictive interventions in 2008–10 in your service, but who is no longer reported.

Please answer the questions by selecting a response or where appropriate writing a response.

The Department of Health and Human Services is committed to protecting client's privacy, so please do not provide any information that could identify the person, such as their name.

The information you provide will be kept confidential and only group data will be described in any reports, so that an individual client cannot be identified.

If you have any questions do not hesitate to contact the Office of Professional Practice or the privacy team on privacy@dhhs.vic.gov.au.

1. The person moved to another service or other accommodation

   If yes, please provide the name of the service the person moved to

2. The person has passed away

   If yes, please provide the date the person passed away

3. The person is no longer reported because restraint and or seclusion no longer required

3a. The behaviour support the team put in place helped reduce the person's behaviours of concern

   (i) Environmental changes worked

   - Staffing changes – staff–client ratio improved
   - Staffing changes – consistency of staff responses to client
   - Staffing changes – more positive attitudes to client
   - Staffing changes – training made a difference

   (ii) Social changes

   - Better compatibility with other clients in house
   - Improved compatibility with staff
   - Difficult relationships with others improved

(iii) Program changes

- Changes to the number of programs the person accesses
- Changes to the type of programs the person accesses

(iv) The person has skills to use and doesn't need to use the behaviour of concern

- The skills replaced the need to use the behaviour of concern
- The skills helped them cope better with the same stressors
- The skills lead to greater independence

Other (please describe, but do not include any identifying information)

3b. There was a medical reason for the person's behaviour/s of concern and they are now being treated for:

(i) Anxiety disorder

(ii) Clinical depression

(iii) Bipolar affective disorder

(iv) Schizophrenia

(v) Obsessive compulsive disorder

(vi) Epilepsy

(vii) Gynaecological problem

(viii) Attention Deficit Hyperactively Disorder

(ix) Physical health issue, e.g. tooth decay treated

(x) Other diagnosis (please describe)

3c. Other reason that restraint and or seclusion is no longer required (please describe, but do not include any identifying information)

Thank you for completing the survey. We will send you a copy of the findings of this project.