Non-pharmacological interventions to reduce restrictive practices in adult mental health inpatient settings: the COMPARE systematic mapping review

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Scientific summary

The COMPARE systematic mapping review

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Scientific summary

Background

Incidents involving violence and aggression are a frequent occurrence in adult mental health inpatient settings. They are often managed using restrictive practices, which are defined by the Department of Health and Social Care as:

> *[. . .] deliberate acts on the part of other person(s) that restrict an individual's movement, liberty and/or freedom to act independently in order to: take immediate control of a dangerous situation where there is a real possibility of harm to the person or others if no action is undertaken [. . .]*
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Examples include restraint, seclusion, injection of sedating drugs and constant observation. Growing international consensus suggests that restrictive practices are used too frequently, particularly given the significant risks of physical and psychological harm to both service users and staff.

In the UK, local NHS and private providers have invested significant resources in interventions to reduce restrictive practices. Some, such as *Safewards* (Bowers L, James K, Quirk A, Simpson A, Stewart D, Hodsoll J, SUGAR. Reducing conflict and containment rates on acute psychiatric wards: the Safewards cluster randomised controlled trial. *Int J Nurs Stud* 2015;**52**:1412–22; Cabral A, Carthy J. Can Safewards improve patient care and safety in forensic wards? A pilot study. *Br J Ment Health Nurs* 2017;**6**:165–71), have been evaluated and reported in the literature, but other interventions that are being implemented have not been reported in the research literature and lack empirical support. However, the content of these interventions and the mechanisms through which they might change behaviour are not fully understood. Furthermore, it is not known to what extent those interventions that have shown reductions in the use of restrictive practices have features in common. The development of future interventions to reduce restrictive practices is hampered by these limitations and there have been repeated calls for interventions to be better described and evaluated.

The behaviour change technique taxonomy is a list of 93 behaviour change techniques organised into 16 thematic clusters, for standardised reporting of behaviour change intervention. Developed to improve reporting of interventions, it provides a common language that specifies the content and mechanisms by which behaviour is changed, and can be used prospectively in intervention design and retrospectively in intervention review. Interventions to reduce restrictive practices use a variety of behaviour change techniques; for example, role-playing verbal de-escalation strategies could be coded as 'behavioural practice/rehearsal' involving 'social comparison' and 'feedback on behaviour'.

This study takes an essential first step to future intervention development by identifying the range of interventions that have been implemented, their specific components and how they relate to outcomes.

Aims and objectives

The aims of this study were to identify, standardise and report both the clinical effectiveness and cost-effectiveness of components of interventions that seek to reduce restrictive practices in adult mental health inpatient settings, using the behaviour change technique taxonomy.

The study objectives were to:

- provide an overview of interventions aimed at reducing restrictive practices in adult mental health inpatient settings
- classify components of those interventions implemented in terms of behaviour change techniques and determine their frequency of use
- explore evidence of clinical effectiveness and cost-effectiveness by examining behaviour change techniques and intervention outcomes
- identify behaviour change techniques showing the most promise of clinical effectiveness and cost-effectiveness and that may require testing in future high-quality evaluations.

Methods

Design

This was a systematic mapping study and behaviour change technique analysis incorporating three stages: (1) a broad literature search to identify relevant records, (2) data extraction and (3) analysis, including description and classification of interventions using the behaviour change technique taxonomy, alongside quality assessment of retrieved records and exploration of evidence of effectiveness.

Data sources

It was known that, in addition to well-known interventions reported in the academic literature, there were reports of numerous standalone interventions implemented in individual services. Not all of these would appear in a search restricted to published research literature. Therefore, the search strategy was augmented by an environmental scan to include interventions and programmes that were specific to individual settings. This approach facilitated the identification of a more diverse range of records than could be identified solely from published literature. The databases searched included British Nursing Index (BNI), Cumulative Index to Nursing and Allied Health Literature (CINAHL), Cochrane Central Register of Controlled Trials (CCRCT), Cochrane Database of Systematic Reviews (CDSR), Database of Abstracts of Reviews of Effects (DARE), EMBASE, Health Technology Assessment (HTA) Database, HTA Canadian and International, Ovid MEDLINE®, NHS Economic Evaluation Database (NHS EED), PsycInfo® and PubMed. Databases were searched from 1999 to 2019.

Study selection

The inclusion criteria were broad: English-language records dating from 1999 to 2019 of interventions aiming to reduce the use of restrictive practices by staff in adult (including older people) inpatient mental health services (including psychiatric intensive care units, acute and forensic services). Interventions may or may not have been implemented. The starting date of 1999 was decided by the date of introduction of the UK National Service Framework for Mental Health, which precipitated new quality standards and a significant shift in the orientation of services. Because of the research team's prior knowledge of the paucity of the evidence base, there were no restrictions on study design and no quality threshold was imposed. Searches were conducted from February to June 2018, and re-run in April 2019.

Data extraction and analysis

We extracted data on whether participants were staff or service users, number of participants, study setting, intervention type, procedures and fidelity, and the Mixed Methods Appraisal Tool was used to establish whether or not the intervention had been evaluated. Where available, outcome measures and findings were extracted. The Mixed Methods Appraisal Tool was used to assess the quality of all the included records.

The behaviour change technique taxonomy was applied to all of the interventions identified in the included records. Intervention data were examined for content, including the range and frequency of procedures, as well as overarching patterns. Behaviour change technique data were analysed by reporting overall percentages of behaviour change techniques across the interventions, then by behaviour change

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technique cluster, for example 'goals and planning'. Procedures used within interventions, for example training, audit and review, or service user involvement, were then described and classified in terms of behaviour change techniques. Outcomes were related back to behaviour change technique content.

Results

The searches identified 18,451 records in the published literature and 1985 in the grey literature, including 99 from social media. A further 31 were identified from forward searching and contact with authors. Free online artificial intelligence software Abstrackr beta version (Center for Evidence Synthesis in Health, Brown University, Providence, RI, USA) was used to assist with screening. From the records identified, 426 full texts were retrieved and 175 were included. These 175 records varied in type (e.g. research report, journal article, slides, video).

This study identified 150 unique interventions, the majority of which aimed to reduce the use of seclusion or restraint (or both). Eleven aimed to reduce the use of pro re nata medication. None targeted rapid tranquillisation. Most interventions comprised multiple procedures (range 2–10 procedures); the most common procedures were training/education and changes to nursing approaches (e.g. implementing *Trauma-Informed Care*).

Based on the Mixed Methods Appraisal Tool screening questions, there were 109 evaluations. A non-randomised design was reported in 103 evaluations and there were six randomised controlled trials. Several evaluations were not considered to have reported complete outcome data and only two-thirds adequately accounted for confounders. There was very little reporting of modifications and fidelity to the intervention protocol. There were six randomised controlled trials, of which five reported complete outcome data, four did not describe any deviation from the protocol, three had comparable groups at baseline and described rigorous randomisation processes, two reported blinding and four were cluster randomised controlled trials.

Seventy of the 109 evaluations reported multiple outcome measures (e.g. number of restraints and use of pro re nata medication). Studies used 40 standardised measures, in addition to non-standardised measures and routine data. Service users were involved in 48 interventions, with the type and extent of involvement varying greatly. Eighteen interventions reported some cost data.

The 150 identified interventions were coded for behaviour change technique content using the behaviour change technique taxonomy. They contained 43 of a possible 93 behaviour change techniques and the number of behaviour change techniques identified per intervention ranged from 1 to 33 (mean 8 techniques).

The identified behaviour change techniques were contained within 14 of the behaviour change technique taxonomy's 16 clusters. Behaviour change technique 4.1 (behaviour change technique 1 in cluster 4 of the taxonomy), 'instruction on how to perform the behaviour', was detected in 137 interventions. However, the first four clusters contained over two-thirds of the behaviour change techniques. These clusters were:

- 'Goals and planning' – solving problems by identifying actions required, and setting and reviewing goals.
- 'Shaping knowledge' – including instructions on performing the behaviour and information about antecedents.
- 'Antecedents' – including factors that could influence whether or not restrictive practices can be avoided, typically in terms of preventing situations where service users might become distressed and conflict occur, by strategies such as restructuring the physical environment, adding objects to the environment and restructuring the social environment via stakeholder involvement, improving interaction between staff and service users, and promoting social contact.

- 'Feedback and monitoring' – including the monitoring of ward data, and whether or not and how feedback was given. Both feedback and monitoring related primarily to outcomes, such as de-escalation or reduced restrictive practices, although there was some indication of monitoring of behaviour at individual, ward or system level.

Behaviour change techniques were identified on 1160 occasions within the 150 interventions. Of these 1160, 22% ($n = 257$) were in the categories 'goals and planning', 17% ($n = 193$) in 'shaping knowledge', 15% ($n = 171$) in 'antecedents' and 11% ($n = 133$) in 'feedback and monitoring'. Behaviour change techniques relating to 'self-belief' and 'covert learning' were not detected.

The same 43 behaviour change techniques, in the same ranking (1–9), were detected in interventions that had been evaluated and found to have statistically significant findings. Procedures within interventions were disaggregated and their behaviour change techniques identified. The most commonly used procedures were training, audit and feedback and nursing changes. Training was mapped onto the behaviour change techniques 'instruction on how to perform the behaviour' and 'reframing perspectives'. Audit and feedback were mapped onto the behaviour change techniques 'feedback on outcomes of behaviour' and 'problem-solving'. Nursing changes were mapped onto the behaviour change techniques 'restructuring the social environment' and 'problem-solving'.

The literature around behaviour change interventions to reduce restrictive practices in adult mental health inpatient settings is diverse in scope, format and quality. Owing to the similarity of behaviour change techniques used across all interventions with those that had been evaluated and reported positive findings, it was not possible to identify specific behaviour change techniques that show most promise of effectiveness. The findings describe the evidence, detailing what interventions consist of in terms of different procedures, and what behaviour change techniques are used within those procedures. This supports future work to develop more testable theory-driven interventions.

Limitations

The search strategy combined traditional search techniques for retrieving research and grey literature with a scanning approach to identify potential alternative sources of relevant material. This had the advantage of enabling the retrieval of diverse records that reported intervention content and was useful for mapping the number and range of interventions; however, the diverse quality of reporting in some records retrieved in this way presented a challenge for the meaningful assimilation of findings. For example, a lack of detailed description of interventions may have masked the presence of behaviour change techniques that, consequently, were not detected. The finding that the evidence was weak restricted the scope of the study to examine the effectiveness of behaviour change techniques used in interventions. The literature search was restricted to English-language records.

Implications for policy and practice

Service providers have an urgent need for high-quality evidence regarding the effectiveness of interventions to reduce restrictive practices. At present, these findings suggest that there is a tendency for individual providers to develop and deliver ad hoc untested interventions or to implement known interventions inconsistently. The evaluations of such interventions often report positive findings that imply that they are effective. The trustworthiness of such claims is undermined, however, by poor reporting of intervention content, poor reporting of measurements of fidelity, lack of a theoretical basis, testing using the least robust methodologies, and few studies showing statistically significant results. Without reliable evidence, service providers may be using scarce resources to implement ineffective intervention components.

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Research recommendations

Existing evaluations reveal little about which aspects of an intervention are effective. There are commonly occurring behaviour change techniques identified across interventions. Without testing individual intervention components, it remains unclear which components – or combination of components – might be effective and whether that effect is limited to the incidence or duration of one or all restrictive practices. Rigorous, theory-driven testing of individual components is required.

The evaluations identified in this review used a variety of outcome measures that were reported in different ways, for example incidents per service user or per day. This heterogeneity makes it difficult to compare studies and meta-analyse outcome data. Despite this, one gap that remains is the underuse of service user-reported outcome measures. The development of such outcome measures could add a useful dimension that may shed further light on intervention effectiveness.

Conclusions

Despite numerous policy initiatives, there are ongoing concerns about the use of restrictive practices in inpatient mental health settings, and their impact on the psychological and physical welfare of service users and staff. Unlike previous reviews, this study was broad in scope, not limited to a single restrictive practice or type of intervention. It is, therefore, the first, to our knowledge, to comprehensively map the procedures and effectiveness of interventions available to reduce restrictive practices, and to describe their content in terms of behaviour change techniques. It revealed that many interventions have been implemented over the past two decades targeting multiple restrictive practices, using multiple procedures and, where they have been evaluated, multiple outcome measures. Very few were theory based and most reported positive findings. The synthesis revealed that many of these interventions have clusters of behaviour change techniques in common, suggesting that these interventions have been developed based on an unstated set of assumptions of how they are intended to work and through what mechanisms. Making these assumptions explicit through the use of theory would enable the testing, measurement and refinement of interventions to maximise their effectiveness. Future interventions should test individual procedures (and their constituent components) in isolation and be thoroughly described.

Study registration

This study is registered as PROSPERO CRD42018086985.

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