

Violence prevention in psychiatry: an umbrella review of interventions in general and forensic psychiatry

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Abstract

Relative risks of violence in psychiatric patients are high compared to the general population and existing evidence in non-psychiatric populations may not translate to reductions in violence in psychiatric populations. We searched ten databases including Medline, EMBASE, CINAHL, and Scopus, from inception until August 2015 for systematic reviews and meta-analyses of violence prevention interventions in psychiatry. Reviews were included if they used a hard outcome measure (i.e. police or hospital recorded violence, or reincarceration) and contained randomized or non-randomized controlled studies. Five reviews met our inclusion criteria (n=8,876 patients in total), of which four received a GRADE rating of ‘low’ or ‘very low’. Three randomized studies (n=636) reported that therapeutic community interventions may reduce reincarceration in drug-using offenders with co-occurring mental illness (‘moderate’ GRADE rating). The lack of intervention research in violence prevention in general and forensic psychiatry suggests that interventions from non-psychiatric populations may need to be relied upon.

Introduction

Relative risks of violence in psychiatric patients are high compared to the general population, with odds ratios of around 7 in patients with schizophrenia-spectrum disorders (Fazel et al., 2014), and 5 in patients with bipolar disorder (Webb, Lichtenstein, Larsson, Geddes, & Fazel, 2014). Although rates of reoffending following discharge from secure hospitals may compare favourably to certain comparative groups including prisoners of similar age and gender, they remain high and range from 273 to 8,403 per 100 000 person-years (Gulati et al., 2016). In Sweden, 40% of forensic psychiatric patients violently offend after their first discharge over a mean follow-up of 9.4 years (Fazel, Wolf, Fimińska, & Larsson, 2016).

The deinstitutionalization movement has seen the number of psychiatric beds decrease in Western countries in the last few decades (Torrey, 2013), and there is some evidence that this has been linked to an increase in the relative risk of violence in patients with severe mental illness compared to the general population and also their unaffected siblings (Fazel, Wolf, Palm, & Lichtenstein, 2014). However, at the same time, the number of forensic beds has increased (Priebe et al., 2008), as have associated costs. In England and Wales, a fifth of the mental health budget goes to forensic psychiatric services (S. Wilson, James, & Forrester, 2011).

Previous work on violence prevention in psychiatry has mostly focused on either risk factors (Bonta, Blais, & Wilson, 2014), or used subjective or intermediate outcomes such as aggression scales (Fitzpatrick et al., 2010). Modifiable risk factors, however, may be genetically confounded (Sariaslan, Larsson, & Fazel, 2015), and thus interventions to alter them may not decrease violence risk. Similarly, a reduction in aggression scores does not necessarily translate into a reduction in violence. Nevertheless, validated risk tools can help identify those at high risk that could benefit from evidence-based interventions to reduce rates of violence (Fazel, Chang, et al., 2016).

In order to assess existing evidence on violence prevention, we conducted an umbrella review of intervention research in forensic psychiatry, as well as two related groups: mentally disordered offenders, and all psychiatric patients. The two main reasons for an umbrella review are: (1) designs, samples and interventions in these samples are heterogeneous, and do not lend themselves to a systematic review; and (2) it allows of identification of broad areas that research is lacking and in systematic reviews. Umbrella reviews can assess multiple interventions by including all relevant systematic reviews and meta-analyses (Tonelli, Zein, Adams, & Ioannidis, 2014), and therefore identify interventions with sufficient evidence for implementation in clinical practice.

Methods

Inclusion criteria

For inclusion, reviews had to evaluate the effectiveness of violence prevention interventions in (1) all psychiatric patients, (2) mentally disordered offenders, or (3) forensic psychiatric inpatients. Reviews focusing on interventions for patients with only diagnoses of intellectual disabilities or substance use disorders were excluded.

Interventions

All types of interventions were included if they examined effects on violence, defined below.

Outcomes

The outcome to be examined in this umbrella review is violence using a ‘hard’ or objective outcome measure, such as police or hospital recorded violence, criminal violence, or reincarceration. Aggression or violence scales, or non-violent recidivism were not included. Whilst non-violent offences may lead to reincarceration, the severity threshold is higher than for rearrests or reoffending (Fazel & Wolf, 2015) and it is therefore likely that the majority of events would be relevant.

Types of studies

Systematic reviews and meta-analyses of intervention studies were included. Intervention studies include both randomized and non-randomized controlled designs. Studies without control groups, observational studies, theoretical studies, opinion, and non-systematic reviews were excluded. Meta-analyses were only included if conducted within the context of a systematic review.

Search strategy

The search strategy used is reported in Appendix 1. The following databases were searched from inception to August 5, 2015: Medline, EMBASE, CINAHL, Web of Science, Scopus, the JBI Database of Systematic Reviews and Implementation Reports, the Cochrane Database of Systematic Reviews, DARE, the PROSPERO register, and Epistemonikos. Titles and abstracts were scanned for potentially eligible reviews, before retrieving full articles. No language restrictions were applied.

Assessment of evidence

The strength of evidence for each systematic review was assessed using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) scale (Guyatt et al., 2008) and given a rating of ‘high’, ‘moderate’, ‘low’, or ‘very low’ quality, using GRADEpro 3.6.1. Ratings were based on the review articles and not individual constituent studies. The GRADE rating is not an assessment of the methodological quality of a review, but of the overall quality of evidence presented in that review. Reviews were not excluded based on methodological quality.

Data collection

A data extraction sheet was used by two independent reviewers (xx, xx) to extract information on the citation, type of review, participants, intervention, setting, relevant outcomes, databases searched, date range, number of relevant studies included, instrument (if any) used to assess the quality of those studies, results, and any additional comments. Discrepancies in extraction were resolved by consensus.

Data presentation

Systematic reviews were grouped by population: (1) general psychiatric patients, (2) mentally disordered offenders, or (3) forensic psychiatric inpatients. Descriptive data for each presented for each review. As we included reviews using different study designs (randomized and non-randomized studies), populations (general psychiatry, mentally disordered offenders, forensic psychiatry), and interventions, effect sizes were not calculated as comparisons would likely be misleading. Reviews that included violence outcomes but found no relevant studies are reported separately in Appendix 2.

Results

Three systematic reviews and two meta-analyses met the inclusion criteria for this umbrella review (see Figure 1 for PRISMA diagram). This included fifteen controlled studies (n=8,876 patients in total), of which seven were randomized (n=1,157). Two reviews were found on general psychiatric patients, three on mentally disordered offenders, and none on forensic psychiatric inpatients.

General psychiatric patients

We identified one meta-analysis and one systematic review that included any psychiatric patients and objective violence outcomes (Table 1).

A meta-analysis of adults with severe mental disorders found two randomized studies on compulsory community treatment and found a pooled rate ratio of 0.8 (95% CI 0.6 to 1.2) of being ‘arrested or picked up by police for violence against a person’ when compared to standard care (Kisely & Campbell, 2014).

In adults with schizophrenia spectrum disorders, a review found two non-randomized studies of pharmacological interventions (Victoroff, Coburn, Reeve, Sampson, & Shillcutt, 2014). One found a decrease in assaults, the other no difference.

Mentally disordered offenders

Two systematic reviews and one meta-analysis included interventions targeted at mentally disordered offenders (Table 2). One was a meta-analysis of interventions in adults with mental disorders formally dealt with by the criminal justice system. This included six non-randomized studies that were categorised into two cognitive/social, two medical, and two service linkage interventions. The combined effect size of all six interventions was 0.2 on violent crime (95% CI 0.03 to 0.5) (Martin, Dorken, Wamboldt, & Wootten, 2012). Effect sizes were not reported by intervention type.

In adults with antisocial personality disorder and a previous offence, another review found two randomized studies (Wilson, 2014). Modified Therapeutic Community interventions significantly decreased reincarceration (Odds Ratio [OR] = 0.04, $p < 0.05$); Assertive Community Treatment saw a non-significant decrease (OR=0.6). Confidence intervals were not reported.

The third review was in adult drug-using offenders with co-occurring mental illness. This found three randomized studies on the effects of therapeutic community and aftercare on reincarceration (Perry et al., 2015). Therapeutic community and voluntary residential aftercare (RR 0.3, 95% CI 0.1 to 0.6) and re-entry modified therapeutic community treatment (RR 0.5, 95% CI 0.3 to 0.9) both significantly decreased reincarceration. Another therapeutic community program found a non-significant decrease (RR 0.7, 95% CI 0.4 to 1.2).

Forensic psychiatric inpatients

We found no systematic reviews examining interventions to reduce violence in forensic psychiatric inpatients.

Quality of evidence

Four of the reviews received a GRADE rating of ‘low’ (Kisely & Campbell, 2014) or ‘very low’ (Martin et al., 2012; Victoroff et al., 2014; H. Wilson, 2014) (Tables 1-2). Only the review on therapeutic community and aftercare interventions in adult drug-using offenders with co-occurring mental illness received a rating of ‘moderate’ (Perry et al., 2015).

Reviews with no studies

We found a further 28 reviews that included violence as an outcome in their protocols but identified no relevant studies: 24 on general psychiatric patients, 4 on mentally disordered offenders, and none on forensic psychiatric inpatients. Some of these reviews only identified studies on aggression scales or other subjective outcomes, or non-controlled studies, and were therefore not eligible for inclusion. The 28 reviews are presented in Appendix 2.

Discussion

This umbrella review summarised the literature on violence prevention in general psychiatric patients, mentally disordered offenders, and forensic psychiatric inpatients. Three systematic reviews and two meta-analyses with a total of 8,876 patients met our inclusion criteria.

However, no reviews were found specifically in forensic psychiatric patient groups.

Four of the reviews received a GRADE quality of evidence rating of ‘low’ or ‘very low’ largely due to lack of randomization (Martin et al., 2012; Victoroff et al., 2014) or limited sample size (Kisely & Campbell, 2014; H. Wilson, 2014). The meta-analysis on therapeutic community and aftercare was rated ‘moderate’, and suggests that it may have some effect in reducing reincarceration rates (Perry et al., 2015).

Due to the limited systematic review evidence, violence prevention in psychiatric populations may need to rely on strategies in general populations and assume that risk factors are shared between target populations. Drug use disorders, previous criminality, and self-harm are risk factors for violence in both clinical and non-clinical populations, suggesting shared mechanisms (Fazel et al., 2014). Violent victimization may be another shared risk factor (Teplin, McClelland, Abram, & Weiner, 2005). Interventions to reduce paranoia may reduce violence risk in clinical and non-clinical populations as symptoms appear to exist on a continuum (Coid, Ullrich, Bebbington, Fazel, & Keers, 2016). However, other specific risk factors like psychotic symptoms or treatment non-adherence (Witt, Van Dorn, & Fazel, 2013) are unlikely to be shared suggesting some prevention strategies may need to be tailored to specific populations.

Limitations

Umbrella reviews are limited by the quantity and quality of available systematic reviews, and existing reviews may not cover all possible research on interventions. However, we found an

additional 28 reviews on interventions including pharmacological management, early intervention services, and monetary incentives, which reported no studies with violence outcomes. Nevertheless, some interventions may have randomized trial evidence without any relevant systematic reviews. For example, there are two RCTs on risk assessment and violence prevention (Abderhalden et al., 2008; Troquete et al., 2013), but we found no reviews on risk assessment as an intervention. As this umbrella review focused only on violence as an outcome, reviews that addressed 'softer' related outcomes such as aggression (which typically includes verbal abuse), and broader clinical, rehabilitation, and social outcomes, were not included (Fitzpatrick et al., 2010). For example, a highly cited review of randomized trials of antipsychotic medication in schizophrenia was excluded as it combined measures of both aggression and violence (Leucht et al., 2012). Nevertheless, it found an overall decrease in violent or aggressive behaviour with a pooled risk ratio of 0.3 (0.2-0.5).

Our umbrella review found one promising intervention, namely therapeutic community treatments. Therapeutic communities attempt to address drug and alcohol use disorders and related issues through structured daily regimens and a focus on self-help and self-reliance (De Leon, 2000). The reduction in reincarceration may therefore be mediated by substance use treatment as over a quarter of prisoners are estimated to have been under the influence of drugs at the time of their offence (Mumola & Karberg, 2006). However, as the review did not provide data on the types of offences leading to reincarceration, a number of these could be due to non-violent drug related offences.

The lack of research in violence prevention is likely due in part to the associated costs, and difficulties in recruiting patients and conducting randomized controlled trials in forensic psychiatry (Hillbrand, 2005). Research in general psychiatric populations requires larger sample sizes and longer follow-ups to detect differences in police or hospital recorded violence compared to aggression scales as it is a rarer outcome. To overcome this, future

research should consider novel designs involving linkage of randomized intervention data and register-based data (Lauer & D'Agostino Sr, 2013), and improve identification of high-risk groups through validated risk tools (Fazel, Chang, et al., 2016) and monitoring of dynamic risk (Gulati et al., 2016). Furthermore, risk tools can be used to create enriched samples for intervention research by including only high risk groups. Finally, RCTs with primary outcomes on relapse, symptomatic improvement, and rehospitalisation should consider including secondary outcomes specific to violence, in particular as risk often guides treatment decisions. Even if statistical power may be low for individual RCTs, having such information available could be the basis of collaborative meta-analyses.

In conclusion, our umbrella review found an overall lack of evidence for interventions to prevent violence in psychiatric patients, and interventions from non-psychiatric populations may need to be relied upon until higher quality and more research becomes available.

Implications for practice

- Therapeutic community and aftercare interventions may be effective in reducing reincarceration in mentally disordered offenders, possibly mediated by treating substance use disorders.
- Despite the lack of high quality evidence in general and forensic psychiatric populations, violence prevention in psychiatry should continue to focus on modifiable and dynamic risk factors.
- Future research in psychiatry should include objective violence outcomes such as violent convictions, and consider novel designs.

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Figure 1. PRISMA Flow Diagram

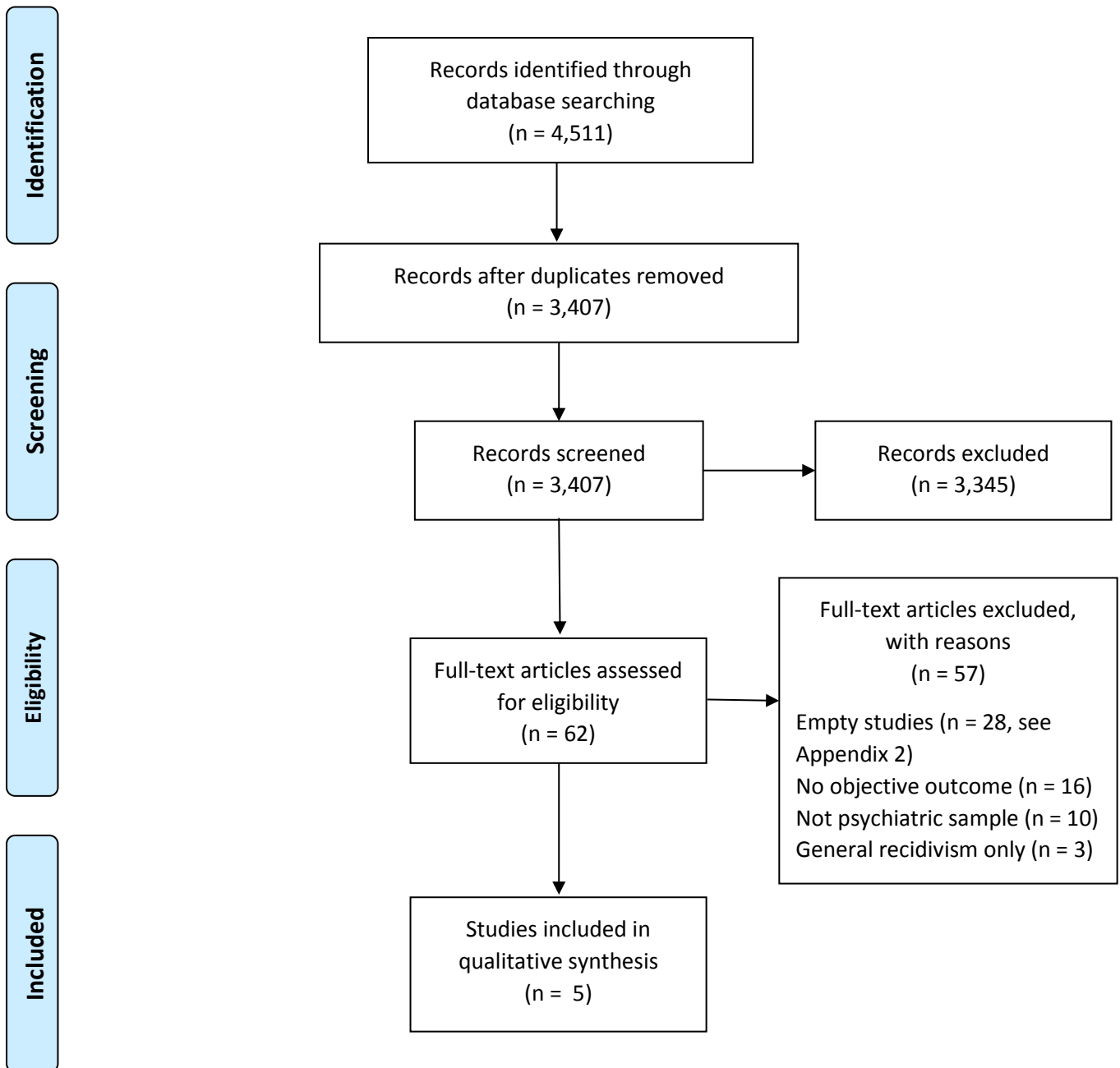


Table 1. Systematic reviews on general psychiatric patients

Citation	Studies	Population	Intervention	Outcome	Findings	GRADE
Kisely (2014)	2 randomized studies, n=416	Adults with severe mental disorders	Compulsory community treatment vs standard care	Arrested/picked up by police for violence against a person	Pooled Rate Ratio of 0.8 (95% CI 0.6 to 1.2)	Low
Victoroff (2015)	2 non-randomized studies, n=42	Adults with schizophrenia spectrum disorders	Pharmacological interventions	Assaults	One study found a decrease in assaults following treatment, the other found no difference.	Very low

Table 2. Systematic reviews on mentally disordered offenders

Citation	Studies	Population	Intervention	Outcome	Findings	GRADE
Martin (2012)	6 non-randomized studies with 7 effect sizes, n=7,677	Adults with mental disorders formally processed by the criminal justice system	2 cognitive/social, 2 medical, and 2 service linkage interventions*	Violent crime	Overall pooled Effect Size of 0.2 (95% CI 0.03 to 0.5)	Very low
Wilson (2014)	2 randomized studies, n=105	Adults with antisocial personality disorder and a previous offence	1 Assertive Community Treatment (ACT), 1 Modified Therapeutic Community (MCT)	Reincarceration	Non-significant decrease in reincarceration for ACT (OR=0.6), significant decrease for MCT (OR=0.04, p<0.05)	Very low
Perry (2015)	3 randomized studies, n=636	Adult drug-using offenders with co-occurring mental illness	Therapeutic community and aftercare	Reincarceration	Personal Reflections therapeutic community and voluntary residential aftercare versus mental health programme (Rate Ratio [RR] 0.3, 95% CI 0.1 to 0.6). Re-entry modified therapeutic community treatment versus parole supervision case management (RR 0.5, 95% CI 0.3 to 0.9). Therapeutic community program versus cognitive behavioural intervention (RR 0.7, 95% CI 0.4 to 1.2,)	Moderate

*Groupings from Martin et al.