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Psychological and psychosocial interventions offered to forensic mental health inpatients: a systematic review

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ABSTRACT

Objective To examine the evidence for the use of psychological and psychosocial interventions offered to forensic mental health inpatients.

Design CINAHL, MEDLINE, PsycINFO, ScienceDirect and Web of Science databases were searched for research published in English between 1 January 1990 and 31 May 2018.

Outcome measures Disturbance, mental well-being, quality of life, recovery, violence/risk, satisfaction, seclusion, symptoms, therapeutic relationship and ward environment. There were no limits on the length of follow-up.

Eligibility criteria We included randomised controlled trial (RCT) studies of any psychological or psychosocial intervention in an inpatient forensic setting. Pilot or feasibility studies were included if an RCT design was used. We restricted our search criteria to inpatients in low, medium and high secure units aged over 18. We focused on interventions considered applicable to most patients residing in forensic mental health settings.

Data extraction and synthesis Two independent reviewers extracted data and assessed risk of bias.

Results 17 232 citations were identified with 195 full manuscripts examined in detail. Nine papers were included in the review. The heterogeneity of the identified studies meant that meta-analysis was inappropriate. The results were presented in table form together with a narrative synthesis. Only 7 out of 91 comparisons revealed statistically significant results with no consistent significant findings. The most frequently reported outcomes were violence/risk and symptoms. 61% of the violence/risk comparisons and 79% of the symptom comparisons reported improvements in the intervention groups compared with the control groups.

Conclusions Current practice is based on limited evidence with no consistent significant findings. This review suggests psychoeducational and psychosocial interventions did not reduce violence/risk, but there is tentative support they may improve symptoms. More RCTs are required with: larger sample sizes, representative populations, standardised outcomes and control group interventions similar in treatment intensity to the intervention.

PROSPERO registration number CRD42017067099.

Strengths and limitations of this study

- ► This is the first published review examining psychological or psychosocial interventions that could be accessed by the majority of forensic mental health inpatients.
- ► Good quality randomised controlled trials are able to be undertaken in forensic settings to examine psychological and psychosocial interventions.
- ► Current practice is based on limited evidence with no consistent findings.
- ► Future large-scale trials are necessary to evaluate these interventions.

INTRODUCTION

Forensic mental healthcare is distinct from other psychiatric services.[1] Patients in forensic mental health inpatient services are a complex group with a strong likelihood of presenting with multiple problems and a range of offending behaviours. These patients are generally subject to mental health or criminal justice legislation. Forensic mental health services tasked with the rehabilitation of this group of patients have additional roles to those of generic adult mental health services[2] with a dual rehabilitative role, providing interventions to restore mental well-being while reducing the risk posed by individuals in preparation for discharge to conditions of lower security.[3]

The therapies used with forensic mental health patients are generally based on research with non-offending patients in general mental health settings. The majority of these are not empirically tested in forensic populations. Reviewers have questioned the appropriateness of transposing these treatments[4] with interventions viewed as effective in non-forensic settings having little or no effect in forensic settings.[5] This raises doubts about the efficacy of interventions used in a forensic mental health context.

Previous reviews of interventions in forensic units have focused on specific populations such as patients with personality disorder[6 7] or sex offenders.[8 9] However, there have been no published reviews examining psychological or psychosocial interventions that could be accessed by the majority of forensic

mental health inpatients. Determining whether forensic interventions are effective is imperative to support the principle of evidence-based practice in forensic services. Randomised controlled trials are the preferred option for generating this evidence, and though acknowledging a controlled trial design is hard to achieve in a secure inpatient setting, other specialities have overcome these challenges.[10] This review examines psychological and psychosocial interventions offered to forensic mental health inpatients. We focused on those interventions not specific to one offending type and so considered applicable to most patients residing in forensic mental health settings.

METHODS

This systematic review followed a prespecified protocol and is reported according to Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines.

Intervention and outcomes

We included all studies reporting the results of a psychological or psychosocial intervention. These were defined broadly. Psychological interventions refer to treatments based on a theory of psychological functioning while psychosocial interventions represent less specific interventions designed to improve mental health through general support, advice and encouragement.[11] This includes psychoeducational strategies, cognitive–behavioural therapy, interpersonal psychotherapy, non-directive counselling, supportive interactions and tangible assistance, through individual or group sessions.[12] We were interested in 10 outcomes: disturbance, mental wellbeing, quality of life, recovery, violence/risk, satisfaction, seclusion, symptoms, therapeutic relationship and ward environment. The outcomes were based on the rated importance of outcome domains for forensic mental health research[13] and the suitability of assessing these outcomes in forensic inpatient settings. There were no limits on the length of follow-up.

Study design

We only included randomised controlled trial studies. Pilot or feasibility studies were included if a randomised controlled trial design was used.

Data collection

The title and abstracts of studies identified through the search strategy were screened for eligibility by one reviewer using the inclusion criteria. The second reviewer independently screened a 20% random selection of the studies. Any disagreements were resolved through discussions between the two reviewers. Full-text articles were obtained for all studies meeting the initial eligibility criteria. All full-text articles were then examined independently by both reviewers to determine their eligibility for inclusion in the review. Reference lists of all relevant articles were also searched. A data extraction sheet was developed to enable assessment and synthesis of the included studies.

Registration details

We registered the protocol of our systematic review on 21 May 2017 on the PROSPERO database available at http://www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42017067099.

Search strategy

The focus of the review was to examine psychological and psychological interventions in forensic mental health settings. CINAHL, MEDLINE, PsycINFO, ScienceDirect and Web of Science databases were searched. We searched for peer-reviewed articles, working papers and policy reports, published in English between 1 January 1990 and 31 May 2018. The following search terms were used:

psychiatr* OR mental*
AND
forensic OR secure OR disordered OR offender*
AND
psycholog* OR psychosocial* OR therap*
AND
quality OR wellbeing OR satisfaction OR recovery OR behavio* OR disturb* OR violen* OR seclusion OR abscond* OR symptom* OR environment OR atmosphere
AND
RCT OR random* OR control* OR placebo OR TAU.

Inclusion and exclusion criteria

We included any psychological or psychosocial intervention given as an individual or group treatment in an inpatient forensic setting. We excluded interventions focusing specifically on a specific cohort (ie, sex offenders) as we were interested in examining approaches appropriate for the vast majority of inpatients in secure units.

We restricted our search criteria to forensic inpatients in low, medium and high secure units aged over 18 years. Our exclusion criteria included community settings where patients received treatment outside of the forensic unit or resided outside of the forensic unit when they were not receiving treatment. However, as detailed in the results section, we decided to include one study where a minority of the participants were residing in the community. We also excluded prison settings that are not deemed places of treatment under the Mental Health Act.

Risk of bias summary

We used the Cochrane Risk of Bias tool[14] to evaluate six domains of bias: selection bias (random sequence of generation and allocation concealment), performance bias (blinding of participants and personnel), detection bias (blinding of outcome assessment), attrition bias (incomplete outcome data), reporting bias (selective outcome reporting) and other bias. The risk of bias for each domain was rated as high (seriously weakens confidence in the results), low (unlikely to seriously alter the results) or unclear. The risk of bias assessment was conducted by the

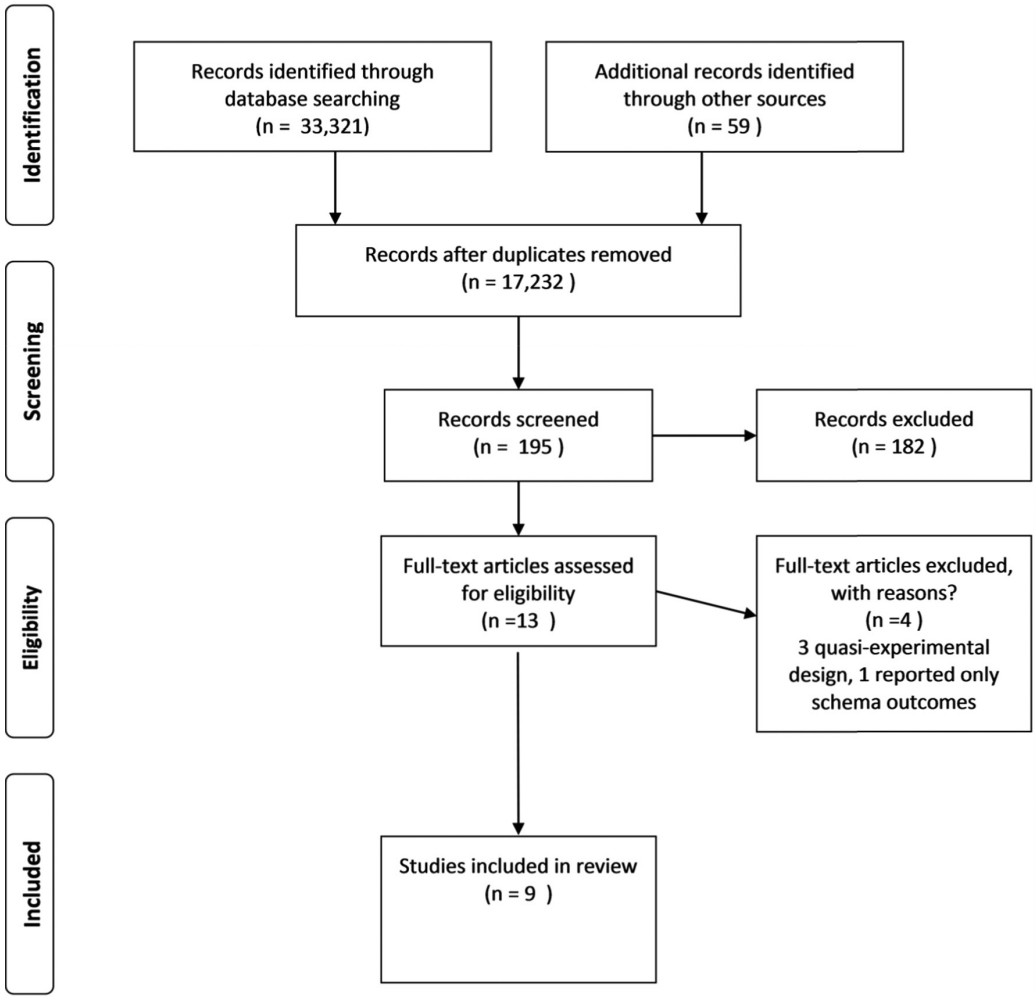

Figure 1 Flow diagram.

authors separately. There was an average of 1–2 domain ratings per study where there was an initial disagreement. In all cases, the reviewers discussed and agreed the ratings without involving a third party reviewer.

Data synthesis

Meta-analysis was initially planned but was considered inappropriate because of the heterogeneity of the identified studies due to: the different characteristics of the participant inpatient populations, the different types of approach used by the intervention and control groups and the different outcome measures being used. We therefore present the results in table form together with a narrative synthesis.

Patient and public involvement

Patients and the public were not involved in the design or analysis of this review.

RESULTS

Our search of the five databases yielded 33321 hits with 17232 hits recorded once duplicates were removed. A flow chart detailing the screening process is shown in figure 1.

The number of hits recorded for each database was:

- CINAHL: 103.
- MEDLINE: 11951.
- PsychInfo: 850.
- ScienceDirect: 2189.
- Web of Science: 18228.

From this number, a total of 195 papers were selected to be examined in more detail for eligibility for inclusion in the review. Of these, 13 full-text papers were considered.[15–27] The other 182 studies retrieved did not meet the inclusion criteria due to: the study not being a RCT, the study population not based in forensic inpatient settings, the intervention not psychological or psychosocially focused or a sex-offending intervention. From the 13 papers we considered in full, four were eventually excluded leaving nine papers chosen for inclusion in the review. Three papers were excluded because a quasi-experimental design was used.[17 20 24] The fourth study was excluded as schema modes were the only outcomes reported.[26]

Study setting and characteristics

The trials' characteristics are shown in table 1. The trials involved 523 participants with a median sample size of 63, ranging from 14 to 112. Five studies included women with

Table 1 Characteristics of included studies

Authors	Country	Setting	Inclusion criteria	Number	Withdraw/dropout	Intervention	Control	Other
Aho-Mustonen *et al*[15]	Finland	High secure	Schizophrenia and schizoaffective.	39 total: 35 men, 4 women.	1 Int. 2 TAU. ITT: unsure.	Psychoeducation programme eight weekly sessions. Therapists: two psychologists who completed 2-day training programme. Fidelity reported.	TAU.	
Bernstein *et al*[16]	The Netherlands	High secure	Personality disorder.	35 All men.	5 not sure which arm. ITT: yes.	Three years of schema therapy usually delivered twice a week. Therapists completed 8-day training programme and 2× monthly supervision groups. Fidelity reported.	TAU. Clinics free to choose. Typically a form of cognitive–behavioural, psychodynamic or humanistic psychotherapy.	Part of a long-term study of 102 patients.
Cullen *et al*.[18] Some outcomes reported in Cullen *et al*.[40]	UK	Medium secure	Schizophrenia, schizoaffective disorder, bipolar disorder or other psychotic disorder; a history of violence; no prior participation in Reasoning and Rehabilitation (R&R) programme previously.	84 All men.	31 Int. 4 TAU. 23 out of 44 (52.3%) did not complete treatment. ITT: yes.	R&R programme structured, manualised programme. Minimum of 36 2-hour sessions (2 or 3 per week). Therapists -experienced staff who received 3–5 days' training from programme authors. Fidelity reported	TAU.	Small sample size and low base rates of violent behaviour reducing likelihood of effect sizes. Randomisation occurred within sites and may have led to contamination across treatment. Possibility of bias as it was not possible to blind researchers to allocation status. 23% of referred patients refused to participate in the study.
Doyle *et al*.[19] Some outcomes reported in Tarrier *et al*.[41]	UK	High secure	Personality disorder	63 total. All men.	At 36 months: 19 Int. 14 TAU. At 24 months 14 Int. ITT : yes.	SFT. Weekly 1-hour sessions for at least 18 months. Therapists were two experienced cognitive therapists who received specialist SFT training with ongoing supervised practice and supervision. Fidelity reported – uncertain therapist competence.	TAU. >14 reported. Group-based enhanced thinking skills and sex offender treatment were the most frequently provided therapies recorded on the TAU logs.	Problems recruiting participants and refusing to be interviewed or filling in forms incorrectly (37 out of initial 136 patients considered – 29.4%). High attrition; poor statistical power; insufficient frequency of ST; and the provision of ST by only two therapists.
Haddock *et al*[21]	UK	High, medium and low secure 48 (62.3%). The other patients were living in the community.	Schizophrenia, schizoaffective and history of violent behaviour.	77 total: 66 men (85.7%), 11 women (14.3%).	9 in total. Unclear regarding which groups. ITT: Yes.	CBT. 25 sessions. Therapists experienced in CBT for people with psychosis, received training in the protocol and supervision. Fidelity assessed.	Social activity therapy. 25 sessions. Fidelity assessed.	108 of whom were identified as meeting initial inclusion criteria. Thirty-one refused to be assessed to determine eligibility (28.7%).
Hakvoort *et al*[22]	The Netherlands	High secure	Personality disorder. Addictions. No previous TBS admission.	14 total. All men.	2 ITT: unsure.	Cognitive–behavioural music therapy and anger management 20×1 hours weekly sessions. Five therapists experienced in CBT music therapy in forensic psychiatry. Trained on a standard protocol. Fidelity assessed.	TAU. Most also received anger management sessions. 3 hours per week.	Six out of 21 identified refused to participate (28.6%).
MacInnes *et al*[23]	UK	Medium secure	Schizophrenia, schizoaffective, bipolar, depression psychosis and personality disorder.	112 total: 91 men (85%), 16 women (15%). Five data missing.	Int: 7 (13%) 6 months. 8 (15%) 12 months. TAU: 15 (26%) 6 months. 15 (26%) 12 months. ITT: yes	Computer-aided solution focused on brief therapy. 6×1 hour monthly session. Staff trained in SFBT techniques. Fidelity assessed.	TAU.	Significantly more women withdrew from the study.

Continued

Table 1 Continued

Authors	Country	Setting	Inclusion criteria	Number	Withdraw/dropout	Intervention	Control	Other
Tomlinson and Hoaken[25]	Canada	Medium secure	Pts experiencing emotional dysregulation. Schizophrenia, schizoaffective, bipolar, depression psychosis and personality disorder.	18 total: 14 men (78%), 4 women (22%).	Int: 3 (33%). TAU: 2 (22%). ITT: unsure.	DBT skills training sessions provided weekly for 1.5hours for 6months (24 total sessions). Followed training manual. 1 hour weekly staff consultation groups. Fidelity not reported.	TAU.	
Walker *et al*[27]	UK	High, medium and low secure.	Schizophrenia, schizoaffective, bipolar, depression and psychosis.	81 total: 79 men, 2 women.	16. Int. 0 TAU. ITT: unsure.	Psychoeducation programme. Two sessions per week for 11 weeks. Therapists: consultant psychiatrist and clinical nurse specialist. Fidelity not reported.	TAU. No psychological interventions but able to attend social and occupational activities.	Recruitment problems 26 out of 107 (24.3%) eligible participants not included. Recorded as not randomised.

CBT, cognitive–behavioural therapy; DBT, dialectical behaviour therapy; Int, Intervention; ITT, intention to treat; SFBT, solution-focused brief therapy; SFT, schema-focused therapy; TAU, treatment as usual.

a total of 37 participants accounting for 7.1% of the overall sample. All participants were individually randomised except for one study[23] where cluster randomisation was used. Eight studies were conducted in the UK, two in the Netherlands, one in Finland and one in Canada. Four studies were conducted in high secure settings and three studies in medium secure settings. The other two studies were conducted in a combination of high, medium and low secure settings including one study where a minority of the participants were living in the community.[21] Four of the studies included participants diagnosed with schizophrenia or a psychotic disorder, three studies included participants with a diagnosis of personality disorder and two studies included participants from both diagnostic groups.

Types of intervention

Five broad types of intervention were undertaken (cognitive–behavioural therapy (CBT), dialectical behaviour therapy (DBT), psychoeducation, schema-focused therapy (SFT) and solution-focused brief therapy (SFBT)).

Cognitive–behavioural therapy

Three studies used this approach. The aim of cognitive/behavioural treatment programmes in forensic mental health settings is to change the criminogenic thinking of offenders.[28]

Cullen *et al*[18] based their intervention on the 'Reasoning and Rehabilitation' programme developed in Canada and sought to teach offenders a range of cognitive and behavioural skills.[29]

Haddock *et al*[21] used a manualised CBT programme including motivational strategies to aid engagement, strategies to reduce the severity and distress of psychotic symptoms and the severity of anger linked to aggression and violence.

Hakvoort *et al*[22] focused on cognitive–behavioural music therapy and focused on minimising risk and addressing the treatment needs of forensic psychiatric patients.

Dialectical behaviour therapy

One study by Tomlinson and Hoaken used this approach. DBT[30] blends validation and acceptance strategies with change-focused CBT.[20] The study focused on DBT skills training to reduce aggression.

Psychoeducation

This was the intervention in two studies. Education is offered to individuals with psychological disorders with interventions varying from the delivery of simple information through leaflets, emails or information websites to active multisession group intervention with therapist guidance and practice exercises.[31]

Aho-Mustonen *et al*[15] used a manualised psychoeducational programme.

Walker *et al*'s intervention[27] was based on a training manual developed by the State Hospital, Carstairs, where the study was based.[32]

Schema-focused therapy

Two studies employed SFT. This integrated therapy was specifically developed for people with personality disorder combining CBT with attachment, gestalt, object relations, constructivist and psychoanalytic approaches.[33]

Bernstein *et al*[16] focused on the emotional states ('schema modes') most common in forensic patients with personality disorders that were hypothesised to play a role in violence and criminality. The goal of the intervention was to reduce the patient's reliance on maladaptive coping modes.

Doyle *et al*'s intervention[19] was an adaptation of Young and colleagues' treatment protocol for patients with personality disorder.[33]

Solution-focused brief therapy

This was used by one study. MacInnes *et al*[23] used a computer-assisted approach using SFBT. The therapy promotes movement towards positive change in individuals and is characterised by a focus on the future exploring what will be different when things are better.[34]

Effect of intervention

The outcomes of the interventions are reported in table 2, while an overview of whether the intervention reported improved or worse outcomes is shown in table 3.

Time points

All studies detailed the baseline assessments with the scores for the intervention and control group comparable at baseline. The studies also reported assessment scores immediately post treatment (except ref [22]), at 3-month post-treatment,[15] 6-month post-treatment[21–23 27] and 1-year post-treatment.[18] Doyle *et al*[19] recorded scores at 6, 12 and 24 months and Bernstein *et al*[16] at 3, 6, 12, 18, 24, 30 and 36 months.

Outcomes

Nine of the 10 outcomes of interest were reported in the studies. Eight studies reported violence/risk outcomes, four reported symptoms outcomes, three reported quality of life outcomes, three studies reported recovery outcome and two studies reported disturbance with one study reporting on therapeutic relationship/engagement, satisfaction, ward environment/atmosphere and seclusion. There were no reported outcomes for well-being.

Two of studies did not report any raw scores. Doyle *et al*[19] reported the outcomes at the three different follow-up times (6, 12 and 24 months) with these analysed simultaneously in a repeated measures analysis using all available data and recording the estimated treatment effects (group differences) and p values. Bernstein *et al*[16] used repeated measures analysis of variance to analyse the effect of SFT versus TAU on Historical Clinical Risk Management- 20 (HCR-20) scores over the course of treatment. They did not analyse other outcome variables because of the low statistical power in the sample.

Overall, there were few significant findings with only 7 reported out of 91 statistical comparisons.

Violence/risk

Seventeen violence/risk outcomes were recorded by eight studies.[16 18 19 21–23 25 27] Four significant findings were reported, which was more than for any other outcome. Two significant outcomes reported an improvement for the intervention group and two for the control group with significant findings only recorded at one time point. Rates of verbal aggression reported by Cullen *et al*[18] were higher in the intervention group during the treatment period with an incident rate ratio (IRR) of 0.48 (95% CI 0.28 to 0.85) though higher in the control group in the 12-month post treatment with an IRR of 0.56 (95% CI 0.34 to 0.91). Haddock *et al*[21] recorded the CBT group had a significantly lower number of incidents of violence or aggression during the treatment period, while Doyle *et al*[19] reported that the intervention scores were significantly lower in the control group with an effect size of −3.43. No other statistically significant findings were found by these two studies using the seven other violence/risk measures. The majority of the studies examining violence/risk outcomes used a CBT or SFT intervention. The information in table 3 suggests an approximately 61% (25 out of 41) improvements were recorded in the intervention groups using these approaches. Tomlinson and Hoaken[25] reported reduced levels of violence self-reported aggressive behaviour using DBT as an intervention but was undertaken with a small sample with several potential risks of bias present. Overall, there does not appear to be any consistency between the significant scores recorded and little difference in the number of improvements reported.

Symptoms

Ten outcomes were recorded by four studies[15 19 21 27] with a wide variety of different symptoms measured. Only one significant finding was reported; the intevention group reported higher levels of self-esteem post-treatment.[15] This difference was not maintained at the 3 months post treatment assessment. The main interventions reporting symptoms as outcomes used a psychoeducational or CBT approach. In table 3, 79% of the outcomes (19 out of 24) show an improvement for those patients in receipt of an intervention. It gives some support to the view that interventions are able to improve symptoms though how much improvement is achieved or whether certain symptoms are more amenable to certain interventions is unclear.

Quality of life

There was little difference in scores between the intervention and control groups recorded in the five outcomes reported by three studies.[15 23 27] The psychoeducational approach was used as an intervention in two studies. All three outcomes reported a slightly lower non-significant quality of life in the intervention. The SFBT study reported improved quality of life scores post-treatment

Table 2 Table of outcomes

Outcome	Authors	Measure	Intervention Time point Mean scores (SD) OR Number of events*	Control	Estimated effect (and p value if recorded)
Disturbance	Cullen *et al*[18]	Mean no. of leave	Post treat 0.33 (0.82)	Post treat 0.83 (2.25)	Mean diff: −0.5, p=0.02
		Violations	12 months post 0.52 (0.99)	12 months post 0.60 (1.19)	Mean diff: −0.08, p=0.74
	MacInnes *et al*[23]		6 months post.	6 months post	
		No. of absconsions	2	7	Diff: −5
		No. of physical restraints	22	35	Diff: −13
Quality of life	Aho-Mustonen *et al*[15]	Sintonen's 15D health-related quality of life	Post treat 0.9 (0.08)	Post treat 0.91 (0.06)	Mean diff: −0.,1 p=0.5
			3 months post 0.9 (0.06)	3 months post 0.94 (0.08)	Mean diff: −0.2, p=0.09
	MacInnes *et al*[23]	Manchester Short Assessment of Quality of Life	Post treat 4.5 (0.4)	Post treat 4.3 (0.1)	Mean diff: 0.2
			6 months post 4.7 (0.2)	6 Months post 4.3 (0.3)	Mean diff: 0.4
	Walker *et al*[27]	Schizophrenia Quality of Life Scale Revision 4	Post treat 30.7 (19.1)	Post treat 30.6 (16.1)	Mean diff: 0.1, p=0.20
			6 months post 29 (16.6)	6 months post	
				Not reported	
Recovery	Aho-Mustonen *et al*[15]	Scale to assess	Post treat 4.1 (0.9)	Post treat 4.7 (1.0)	Mean diff: −0.6P=0.67
		Unawareness of mental disorder	3 months post 3.8 (1.1)	3 months post 4.8 (0.8)	Mean diff: 1.0 p=0.09
	MacInnes *et al*[23]	Process of recovery questionnaire	Post treat	Post treat	
		Interpersonal	66.4 (2.0)	64.1 (2.0)	Mean diff: 2.3
		Intrapersonal	18.9 (0.4)	19.0 (0.7)	Mean diff: −0.1
			6 months post	6 months post	
		Interpersonal	65.6 (1.0)	63.9 (1.1)	Mean diff: 1.7
		Intrapersonal	18.9 (0.7)	19.7 (0.9)	Mean diff: −0.8
	Walker *et al*[27]	Schedule for assessment of insight	Post treat	Post treat	Mean diff: 1.5, p=0.13
			12.2 (5.4)	10.7 (5.1)	
			6 months post 13.5 (4.5)	6 months post	
				Not reported	
Satisfaction	MacInnes *et al*[23]	Forensic Satisfaction Scale	Post treat 3.3 (0.2)	Post treat 3.3 (0.3)	Mean diff: 0
			6 months post 3.3. (0.1)	6 months post 3.3. (0.1)	Mean diff: 0
Seclusion	MacInnes *et al*[23]	No. of seclusions	6 months post	6 months post	Diff: −28
			9	37	

Continued

Table 2 Continued

Outcome	Authors	Measure	Intervention Time point Mean scores (SD) OR Number of events*	Control	Estimated effect (and p value if recorded)
Symptoms	Aho-Mustonen *et al*[15]	Beck Depression Inventory-II	Post treat 8.1 (5.7)	Post treat 11.2 (4.5)	Mean diff: −3.1, p=0.46.
			3 months post 6.4 (6.2)	3 months post 13.1 (7.9)	Mean diff: −6.7, p=0.30.
	Aho-Mustonen *et al*[15]	Brief Psychiatric Rating Scale	Post treat 27.9 (7.5)	Post treat 28.1 (5.4)	Mean diff: −0.2, p=0.57.
			3 months post 26.5 (8.0)	3 months post 28.5 (4.6)	Mean diff: −2.0, p=0.76.
	Aho-Mustonen *et al*[15]	Rosenberg Self-Esteem Scale	Post treat 29.7 (3.6)	Post treat 29.3 (2.9)	Mean diff: 0.4, p=0.03.
			3 months post 29.4 (2.8)	3 months post 29.5 (4.3)	Mean diff: −0.1, p=0.06.
	Aho-Mustonen *et al*[15]	Nurses' Observation Scale for Inpatient Evaluation-30	Post treat 100.6 (3.7)	Post treat 101 (4.3)	Mean diff: −0.4, p=0.77.
			3 months post 99.2 (3.8)	3 months post 100.8 (3.9)	Mean diff: 1.6, p=0.31.
	Doyle *et al*[19]	Brief Psychiatric Rating Scale	No raw scores reported		24 months post*
					0.29, p=0.74
	Haddock *et al*[21]	Global Assessment of Functioning	Post treat 41.86 (15.63)	Post Treat 33.34 (14.64)	Mean diff: 8.52
			6 months post 42.94 (19.30)	6 months post 40.93 (22.06)	Mean diff::2.01
	Haddock *et al*[21]	Positive and Negative Syndrome Scale	Post treat	Post treat	
		Positive	14.79 (5.95)	11.66 (3.67)	Mean diff: 3.13
		Negative	15.75 (5.70)	13.50 (5.59)	Mean diff: 2.25
		General	55.24 (12.47)	58.68 (16.14)	Mean diff: −3.44
			6 months post	6 months post	
		Positive	15.03 (6.97)	12.06 (4.91)	Mean diff: 2.97
		Negative	15.88 (5.66)	14.31 (6.08)	Mean diff: 1.57
		General	53.97 (20.27)	57.73 (16.31)	Mean diff: −3.76
	Haddock *et al*[21]	Psychotic Symptom Rating Scales	Post treat	Post treat	
		Auditory	9.74 (13.92)	11.38 (15.13)	Mean diff: −1.64
		Delusions	4.90 (6.55)	11.04 (6.70)	Mean diff: −6.14
			6 months post	6 months post	
		Auditory	9.36 (12.72)	10.83 (16.63)	Mean diff: −1.47
		Delusions	7.60 (8.25)	8.38 (8.03)	Mean diff: −0.78

Continued

Table 2 Continued

Outcome	Authors	Measure	Intervention Time point Mean scores (SD) OR Number of events*	Control	Estimated effect (and p value if recorded)
	Walker *et al*[27]	Positive and Negative Syndrome Scale	Post treat	Post treat	
		Positive	12.8 (3.9)	14.3 (6.2)	Mean diff: −1.5
		Negative	15.2 (6.2)	17.9 (6.9)	Mean diff: −2.7
		General	27.2 (7.2)	30.4 (9.8)	Mean diff: −3.2
			6 months post	6 months post	
		Positive	12.5 (7.2)	Not reported	
		Negative	14.1 (6.3)	Not reported	
		General	27.8 (10.8)	Not reported	
	Walker *et al*[27]	Calgary Depression Scale for Schizophrenia	Post treat 1.8 (4.4)	Post treat 2 (3.46)	Mean diff: −0.2, p=0.32
			6 months post 1.8 (3.6)	6 months post	
				Not reported	
Therapeutic relationship	MacInnes *et al*[23]	Helping Alliance Scale	Post treat 6.6 (0.6)	Post treat 6.3 (0.5)	Mean diff: 0.3
			6 months post 7.0 (0.8)	6 months post 6.7 (0.2)	Mean diff: 0.3
Violence/risk	Bernstein *et al*[16]	Historical, Clinical, Risk Management-20	No raw scores recorded		Higher scores in control group. No statistically significant p values reported.
	Cullen *et al*[18]	Mean acts of aggression per patient	Post treat	Post treat	
		Verbal	3.95 (8.42)	3.53 (6.44)	Mean diff: 0.42, p=0.01
		Physical	0.55 (1.38)	0.68 (1.33)	Mean diff: −0.13, p=0.11
			1 year post	1 year post	
		Verbal	7.33 (10.83)	8.23 (15.71)	Mean diff: −0.9, p=0.02
		Physical	0.90 (1.96)	0.88 (2.00)	Mean diff: 0.02, p=0.65
	Cullen *et al*[18]	Novaco Anger Scale	Post treat	Post treat	
		Cognitive	28.5 (5.0)	27.3 (4.9)	Mean diff: 1.2
		Arousal	24.9 (5.2)	25.5 (5.4)	Mean diff: −0.6
		Behavioural	23.8 (5.3)	25.6 (5.7)	Mean diff: −1.8
			1 year post	1 year post	
		Cognitive	28.6 (5.4)	27.7 (4.9)	Mean diff: 0.9
		Arousal	27.5 (6.3)	24.7 (5.3)	Mean diff: 0.8
		Behavioural	25.1 (5.4)	24.2 (4.8)	Mean diff: 0.9

Continued

Table 2 Continued

Outcome	Authors	Measure	Intervention Time point Mean scores (SD) OR Number of events*	Control	Estimated effect (and p value if recorded)
	Doyle *et al*[19]	Mean acts of physical, verbal or property aggression	Post treat 2.32	Post treat 1.32	 Mean diff: 1.0
	Doyle *et al*[19]	Novaco Anger Scale			24 months post*
		Cognitive			−0.57, p=0.47
		Arousal	No raw scores reported		−0.92, p=0.35
		Behavioural			0.44, p=0.65
		Total			0.27, p=0.91
	Doyle *et al*[19]	Historical, Clinical, Risk Management 20			24 months post*
		Risk	No raw scores reported		0.12, p=0.73
		Clinical			−0.19, p=0.69
	Doyle *et al*[19]	Violence risk	No raw scores reported		24 months post*
		Scale total			−3.43, p=0.04
	Haddock *et al*[11]	No. of incidents of aggression	Post treat	Post treat	
		Verbal	31	103	Diff: −72, p=0.15
		Physical	2	46	Diff: −44, p=0.039
			6 months post	6 months post	
		Verbal	34	80	Diff: −46, p=0.765
		Physical	5	22	Diff: −17, p=0.594

Continued

Table 2 Continued

Outcome	Authors	Measure	Intervention Time point Mean scores (SD) OR Number of events*	Control	Estimated effect (and p value if recorded)
	Haddock *et al*[21]	Ward Anger Rating Scale B	Post treat 4.03 (4.19)	Post treat 6.36 (6.79)	Mean diff: −2.33
			6 months post 4.2 (4.65)	6 months post 6.3 (8.00)	Mean diff: −2.1
	Haddock *et al*[21]	Novaco Anger Scale	Post treat 88.13 (16.88)	Post treat 82.36 (20.12)	Mean diff: 5.77
			6 months post	6 months post	Mean diff: 1.1
			85.51 (17.33)	84.41 (22.62)	
	Haddock *et al*[21]	Novaco Provocation Inventory	Post treat 59.75 (18.51)	Post treat 55.63 (17.51)	Mean diff: 4.12
			6 months post 61.65 (13.15)	6 months post 58.32 (18.01)	Mean diff: 3.33
	Haddock *et al*[21]	Historical, Clinical, Risk Management 20	Post treat	Post treat	
		Risk	Not reported	Not reported	
		Clinical	Not reported	Not reported	
			6 months post	6 months post	
		Risk	4.00 (3.96)	4.23 (2.83)	Mean diff: −0.23
		Clinical	3.57 (2.54)	4.03 (2.64)	Mean diff: −0.46
	Hakvoort *et al*[22]	Social Dysfunction and Aggression Scale	6 months post 2.56	6 months post 2.4	Mean diff: 0.16, p=0.34
	Hakvoort *et al*[22]	Atascadero Skills Profiles Scale 4	6 months post 2.51	6 months post 2.01	Mean diff: 0.5, p=0.86
	MacInnes *et al*[23]	No. of violent incidents	6 months post 50	6 months post 96	Mean diff: −46
	Tomlinson and Hoaken[25]	Buss-Perry Aggression Questionnaire -SF	Post treat	Post treat	
		Overall	2.05 (0.47)	2.14 (0.88)	Mean diff: −0.09
		Physical	2.13 (0.90)	2.87 (1.87)	Mean diff: −0.74
		Verbal	2.07 (0.43	1.67 (0.47)	Mean diff: 0.4
		Hostility	2.20 (0.96)	2.26 (0.95)	Mean diff: −0.06
		Anger	1.80 (0.56)	2.26 (0.89)	Mean diff: −0.46
	Tomlinson and Hoaken[25]	Impulsive/Premeditated Aggression Scale	Post treat	Post treat	
		Overall	2.23 (0.21)	2.94 (0.59)	Mean diff: −0.71
		Premediated aggression	2.00 (0.27)	2.75 (0.91)	Mean diff: −0.75
		Impulsive aggression	2.40 (0.20)	3.09 (0.57)	Mean diff: −0.89
	Walker *et al*[27]	Behaviour Status Index	Post treat 572 (99.1)	Post treat 535.7 (96.2)	Mean diff: 34.3, p=0.41
			6 months post 559 (86.3)	6 months post	
				Not reported	

Continued

Table 2 Continued

Outcome	Authors	Measure	Intervention Time point Mean scores (SD) OR Number of events*	Control	Estimated effect (and p value if recorded)
Ward environment	MacInnes *et al*[23]	Essen Climate Evaluation Schema	Post treat	Post treat	
		Patient cohesion	8.8 (1.0)	9.3 (0.7)	Mean diff: −0.5
		Experienced safety	15.4 (1.2)	16.3 (2.4)	Mean diff: −0.9
		Therapeutic hold	10.7 (1.5)	11.6 (1.2)	Mean diff: −0.9
			6 months post	6 months post	
		Pt cohesion	10.6 (0.2)	9.3 (0.7)	Mean diff: 1.3
		Experienced safety	16.3 (2.3)	15.4 (2.7)	Mean diff: 0.9
		Therapeutic hold	11.7 (1.0)	12.2 (0.5)	Mean diff: −0.5

Notes: Aho-Mustonen *et al*.[15] The p values relate to the differences in mean change scores from baseline at post-treatment and 3-month follow-up on outcome measures between the groups.
*A positive estimate indicates that the mean effect size for that variable is higher in the control group. A negative estimate (–) means that it is lower.

Table 3 Type of intervention content and number of interventions effective for each outcome (n=9 studies)

	Psychoeducation		CBT		SFT		SFBT		DBT	
	Better	Worse	Better	Worse	Better	Worse	Better	Worse	Better	Worse
Disturbance	n/a	n/a	2 (1)	0	n/a	n/a	2	0	n/a	n/a
Quality of life	0	3	n/a	n/a	n/a	n/a	2	0	n/a	n/a
Recovery	2	1	n/a	n/a	n/a	n/a	2	2	n/a	n/a
Therapeutic relationship	n/a	n/a	n/a	n/a	n/a	n/a	2	0	n/a	n/a
Satisfaction	n/a	n/a	n/a	n/a	n/a	n/a	0	0	n/a	n/a
Seclusion	n/a	n/a	n/a	n/a	n/a	n/a	1	0	n/a	n/a
Symptoms	11 (1)	1	8	4	1	0	n/a	n/a	n/a	n/a
Ward environment	n/a	n/a	n/a	n/a	n/a	n/a	2	4 (1)	n/a	n/a
Violence/risk	1	0	13 (2)	11 (1)	3	5 (1)	1	0	7	1

The values in parentheses record the number of statistically signficant differences.
CBT, cognitive–behavioural therapy; DBT, dialectical behaviour therapy; n/a, not applicable as no comparison undertaken; SFBT, solution-focused brief therapy; SFT, schema-focused therapy.

and 6-month post-treatment giving cautious support to the view this approach may be effective.

Recovery

Three studies recorded three recovery outcomes.[15 23 27] This outcome was reported for psychoeducational and SFBT interventions with no significant differences noted. The psychoeducational outcomes reported better scores for those in the intervention group tentatively suggesting the psychoeducational approach may help recovery. The SFBT results were more equivocal.

Disturbance

Two studies recorded three different types of disturbance outcome.[18 23] A CBT intervention[18] reported less leave violations during the treatment period and remained lower (though non-significant) in the year following the end of treatment. The SFBT study[23] reported lower levels of absconsions and less physical restraints for the intervention group. These findings give initial indications these approaches may reduce levels of disturbance

Other outcomes

Four further outcomes (satisfaction, seclusion, therapeutic relationship and ward environment/atmosphere) were assessed by one study.[23] Better therapeutic relationships were reported for the intervention group at both time points suggesting a potential improvement using this approach. There were also reduced numbers of seclusions for the intervention group during the 6-month follow-up period. No differences were reported in the satisfaction scores between the intervention and control groups, while the ward environment scores suggest a better atmosphere in the control group including one statistically significant result (patient cohesion) post treatment.

Risk of bias of evidence

The majority of domains had a low risk of bias (figure 2). In relation to the potential of performance bias, we determined that participants and staff would be aware of which arm of the trial they have been allocated but any performance bias would be minimal. We, therefore rated these studies as having a low risk. There were difficulties with recruitment and attrition adding to the limitations of the small sample sizes of the studies. Five of the studies reported problems with recruitment with between 23% and 29.4% of patients deemed as eligible refusing to participate. Three studies were rated as high risk of attrition bias due to incomplete outcome data[18 19 27] with two studies reporting over 50% of their intervention group not completing the sessions.[18 19]

Six studies were able to limit detection bias through ensuring the blinding of the raters of the outcome assessments. One study where blinding was not performed acknowledged the participants may have shown social desirability bias,[25] while another used raters who were blind to patients' treatment condition status double-scored a subset of these assessments with good levels of inter-rater agreement recorded.[13]

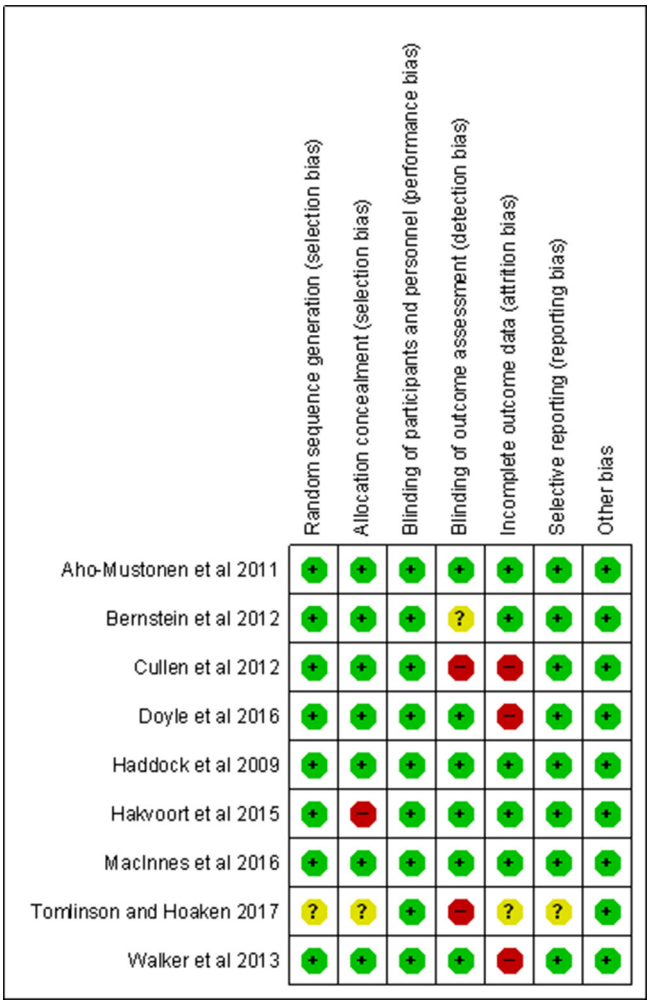

Figure 2 Risk of bias table.

DISCUSSION

Main findings

This systematic review found a total of nine published RCTs examining psychological and psychosocial interventions in forensic mental health inpatient settings deliverable to any patient residing in a forensic mental health inpatient setting. The studies were heterogeneous resulting in a narrative review of the main findings. There were few statistically significant findings reported; only 7 out of the 91 comparisons analysed, and none of these significant findings revealed a consistent result. This indicates the current evidence base for supporting any psychological or psychosocial intervention is limited. Table 3 gives some indication of areas where particular interventions may have a positive benefit, though with the lack of significant differences recorded, these findings need to be treated with caution. In general, psychoeducational approaches reported improvements in recovery and symptom outcomes and poorer findings for quality of life outcomes. The CBT interventions noted improved findings for absconding and symptoms outcomes, though the impact on violence/risk was more equivocal. A similar finding is noted in relation to the SFT

intervention with an equal amount of better and worse outcomes recorded for measures of violence/risk. The DBT intervention show promising results for reducing violence/risk, while the SFBT approach reported improved quality of life, therapeutic relationships and reduced disturbed behaviour. However, the results of both interventions are based on single small-scale studies indicating more extensive studies are required to produce clearer evidence. This review suggests that psychological and psychosocial interventions do not reduce violence/risk in this group of patients, though there is some tentative support that the interventions may improve mental health symptoms.

A number of other factors may have contributed to these findings: individual study designs were quite different, a variety of different secure settings were included with two studies recruiting from different levels of security[21 27] and most studies were recruited from multiple sites. The interventions may have had different impacts due to differences in the therapeutic uses of security and related legal governance systems.[2] The study sample sizes were small ranging from 14 to 112 participants. This lack of statistical power limited the ability of the study to detect treatment differences.[21] The representativeness of the findings was reduced through most studies only including participants with either a diagnosis of psychosis or personality disorder and by the small number of women participating. The paucity of women participants in forensic research has been viewed as indicative of the realities of research undertaken in this area where basic services to women were often poor or lacking.[35] One study noted the significant number of women withdrawing from the study when compared with men and suggested examining reasons for higher dropout rates and whether specific support was required during the intervention.[23] The time line of the intervention varied considerably from eight weekly sessions of psychoeducation[15] to twice weekly sessions of schema therapy for 3 years.[16] The recording of the control group intervention varied greatly and consisted of widely differing approaches. There were also differences between the number of treatment sessions offered to the intervention and control groups. Only one study offered both groups the same number of therapy sessions.[21] It is possible that the different treatment intensity may have influenced the outcomes.[16] The lack of standardised outcomes was also problematic. Thirty-one outcomes measures were used, with only five measures used more than once, making it difficult to draw conclusions across studies.[13]

Other reviews of research in forensic mental health settings have reported similar difficulties preventing a homogenous dataset[36–39] with few studies with enough similarities to each other to draw firm conclusions regarding the impact of interventions.[36] Continuing with small-scale research with mentally disordered offenders (MDOs) is questionable due to these studies being underpowered and unlikely to detect differences.[37] Future studies would benefit from larger sample sizes that include representative groups of the forensic inpatient population. It is likely that multisite studies will need to be undertaken with the impact of different environments reviewed as part of the study. To increase the homogeneity of studies, future studies also need similar participants, interventions and outcome measures.[36] Using measures that are familiar in practice might be a productive way of developing standardised outcomes.[13]

Strengths

The majority of studies included in the review had a low risk of bias, indicating it is possible to conduct well-designed RCTs in forensic mental health inpatient settings.[10] RCTs remain the gold standard for investigating the effectiveness of treatments and are needed to determine beneficial interventions for this group of patients.[16] The randomisation procedures worked well in the majority of the studies. Seven studies reported on the fidelity of the intervention approach with staff trained in the specific procedures. The intervention approaches were competently performed with only one study[19] noting that therapists providing the intervention may not have met relevant standards. Most studies were also able to blind researchers to allocation status when assessing outcomes.

Limitations

The review excluded non-English language publications that may have led to some relevant research not being included in the review. Some limitations were noted with recruitment and attrition. Five studies reported that approximately 25% or more of the patients approached declined to participate. It was likely the patients who declined to participate were more unwell and/or antisocial, and these factors might have influenced treatment outcomes.[40] Attrition was also a problem, which is not surprising considering the high levels of anti-social behaviour and non-compliance prevalent in this cohort.[41] Overall, 25% of participants withdrew or dropped out of the studies. Those limitations that took longer to complete or that required a high level of weekly committment were more likely to record a greater number of dropouts and withdrawals.

CONCLUSIONS

This is the first review to specifically examine psychological or psychosocial interventions (A) accessible to the majority of patients in forensic mental health inpatient settings and (B) focusing only on RCTs to evaluate the effectiveness of the interventions. Nine RCTs were found. The current evidence from these studies suggests current practice is based on limited evidence with no consistent significant findings. These

interventions may have the potential to improve some outcomes, particularly symptoms, using CBT or psychoeducational approaches. The individual DBT and SFBT studies also report promising results. However, the limitations in the conduct of the studies mean specific psychological or psychosocial interventions cannot be supported at present. The studies' low risk of bias assessments supports the view that good quality RCTs are able to be undertaken to evaluate the effectiveness of these interventions. If more RCTs are undertaken, the evidence base will become clearer. As highlighted in our analysis, the existing evidence base is too diverse for it to be reliable. A key priority for the future is that efforts are placed in devising a standardised framework of reference for study protocols. More specifically, future trials would benefit from: a larger sample size, ensuring participants are representative of the overall forensic inpatient population, using standardised outcomes and clearly detailing control group interventions that are similar in treatment intensity to the intervention. Further work would also be helpful to look at ways of addressing problems concerning rates of recruitment and attrition.

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