Psychological therapies for people with borderline personality disorder (Review)

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[Intervention Review]

Psychological therapies for people with borderline personality disorder

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ABSTRACT

Background

Borderline personality disorder (BPD) is a relatively common personality disorder with a major impact on health services as those affected often present in crisis, often self-harming.

Objectives

To evaluate the effects of psychological interventions for people with borderline personality disorder.

Search strategy

We conducted a systematic search of 26 specialist and general bibliographic databases (December 2002) and searched relevant reference lists for further trials.

Selection criteria

All relevant clinical randomised controlled trials involving psychological treatments for people with BPD. The definition of psychological treatments included behavioural, cognitive-behavioural, psychodynamic and psychoanalytic.

Data collection and analysis

We independently selected, quality assessed and data extracted studies. For binary outcomes we calculated a standard estimation of the risk ratio (RR), its 95% confidence interval (CI), and where possible the number need to help/harm (NNT/H). For continuous outcomes, endpoint data were preferred to change data. Non-skewed data from valid scales were summated using a weighted mean difference (WMD).

Main results

We identified seven studies involving 262 people, and five separate comparisons. Comparing dialectical behaviour therapy (DBT) with treatment as usual studies found no difference for the outcome of still meeting SCID-II criteria for the diagnosis of BPD by six months (n=28, 1 RCT, RR 0.69 CI 0.35 to 1.38) or admission to hospital in previous three months (n=28, 1 RCT, RR 0.77 CI 0.28 to 2.14).

Self harm or parasuicide may decrease at 6 to 12 months (n=63, 1 RCT, RR 0.81 CI 0.66 to 0.98, NNT 12 CI 7 to 108). One study detected statistical difference in favour of people receiving DBT compared with those allocated to treatment as usual for average scores of suicidal ideation at 6 months (n=20, MD -15.30 CI -25.46 to -5.14). There was no difference for the outcome of leaving the study early (n=155, 3 RCTs, RR 0.74 CI 0.52 to 1.04). For the outcome of interviewer-assessed alcohol free days, skewed data are reported and tend to favour DBT. When a substance abuse focused DBT was compared with comprehensive validation therapy plus 12-step substance misuse programme no clear differences were found for service outcomes (n=23, 1 RCT, RR imprisoned 1.09 CI 0.64 to 1.87) or leaving the study early (n=23, 1 RCT, RR 7.58 CI 0.44 to 132.08). When dialectical behaviour therapy-oriented treatment is compared with client centred therapy no differences were found for service outcomes (n=24, 1 RCT, RR admitted 0.33 CI 0.08 to 1.33). However, fewer people in the DBT group displayed indicators of parasuicidal behaviour (n=24, RR 0.13 CI 0.02 to 0.85, NNT 2 CI 2 to 11). There were no differences for outcomes of anxiety and depression (n=24, 1 RCT, RR anxiety BAI >/=10 0.60 CI 0.32 to 1.12; RR depression HDRS >/=10 0.43 CI 0.14 to 1.28) but people who received DBT had less general psychiatric severity than those in the control (MD BPRS at 6 months -7.41 CI -13.72 to -1.10). Finally this one relevant study reports skewed data for suicidal ideation with considerably lower scores for people allocated to DBT. When psychoanalytically oriented partial hospitalization was compared with general psychiatric care the former tended to come off best. People who received treatment in a psychoanalytic orientated day hospital were less likely to be admitted into inpatient care when measured at different time points (e.g. n=44, RR admitted to inpatient 24 hour care >18 to 24 months 0.05 CI 0.00 to 0.77, NNT 3 CI 3 to 10) Fewer people in psychoanalytically oriented partial hospitalization needed day hospital intervention in the 18 months after discharge (n=44, 1 RCT, RR 0.04 CI 0.00 to 0.59, NNT 2 CI 2 to 8). More people in the control group took psychotropic medication by the 30 to 36 month follow-up, than those receiving psychoanalytic treatment (n=44, 1 RCT, RR 0.44 CI 0.25 to 0.80, NNT 3 CI 2 to 7). Anxiety and depression scores were generally lower in the psychoanalytically oriented partial hospitalization group (n=44, 1 RCT, RR >/=14 on BDI 0.52 CI 0.34 to 0.80, NNT 3 CI 3 to 6), as are global severity scores. People receiving psychoanalytic care in a day hospital had better social improvement in social adjustment using the SAS-SR at 6 to 12 months compared with people in general psychiatric care (MD -0.70 CI -1.08 to -0.32). Rates of attrition were the same (n=44, 1 RCT, RR leaving the study early 1.00 CI 0.23 to 4.42).

Authors' conclusions

This review suggests that some of the problems frequently encountered by people with borderline personality disorder may be amenable to talking/behavioural treatments but all therapies remain experimental and the studies are too few and small to inspire full confidence in their results. These findings require replication in larger 'real-world' studies.

PLAIN LANGUAGE SUMMARY

Psychological therapies for people with borderline personality disorder

People with borderline personality disorder, are often anxious, depressed, self-harm, in crisis and are difficult to engage in treatment. In this review of the talking/behavioural therapies for people with borderline personality disorder, we identified seven studies involving 262 people, over five separate comparisons. Dialectical behaviour therapy (DBT) included treatment components such as prioritising a hierarchy of target behaviours, telephone coaching, groups skills training, behavioural skill training, contingency management, cognitive modification, exposure to emotional cues, reflection, empathy and acceptance. DBT seemed to be helpful on a wide range of outcomes, such as admission to hospital or incarceration in prison, but the small size of included studies limit confidence in their results.

A second therapy, psychoanalytic orientated day hospital therapy, also seemed to decrease admission and use of prescribed medication and to increase social improvement and social adjustment. Again, this is an experimental treatment with too few data to really allow anyone to feel too confident of the findings. Even if these are trials undertaken by enthusiasts and difficult to apply to everyday care, they do suggest that the problems of people with borderline personality disorder may be amenable to treatment. More well-designed studies are both justifiable and urgently needed.

BACKGROUND

Borderline personality disorder (BPD) was a condition recognised in the 19th century as existing in the borderland between psychosis and neurosis (Stone 1990). Subsequent psychoanalytic contributions have reaffirmed this distinction emphasising that a persons sense of identity is weak but nevertheless the capacity to test reality remains. There are three main clinical components to this disorder. First, an unstable sense of self with difficulty in interpersonal relationships, second, impulsiveness and third, affective instability. Some believe that borderline personality disorder is a variant of affective disorders (Coid 1993). Despite its controversial nature, BPD is the focus of great interest with more reports and books appearing on the disorder than any other personality disorder (Stone 1993). Bipolar personality disorders importance stems from the significant impact it has on mental health services.

Currently, diagnosis using operational criteria is not straightforward. The Diagnostic Statistical Manual, version 4 (DSM-IV) (APA 1994), stipulates that nine criteria cover the above features, and that for a definite diagnosis five have to be met. Meeting four of the criteria results in a probable diagnosis. The International Classification of Diseases, version 10, refers to the condition of Emotionally Unstable Personality Disorder (F60.3) of which there is an impulsive type (F60.30) and a borderline type (F60.31) (ICD-10 1992). The latter essentially overlaps with the DSM-IV definition. There are special problems in its diagnosis in adolescents and young adults where existential dilemmas may be mistakenly be classified as having BPD (DSM-IV). A significant problem is that with this type of polythetic definition it is possible for two people to satisfy the criteria and yet have very different personalities. This heterogeneity is a major problem in assessing the impact of an intervention. In summary, despite its importance and impact on mental health practice, there are major problems in the definition of BPD; problems that are likely to impact in turn on assessing the efficacy of treatment interventions.

The prevalence of borderline personality disorder is about 2% (DSM-IV) in the general population (APA 1994) but it is present in 20% of in-patients in psychiatric wards (APA 1994). It is a disorder predominantly diagnosed in women (75%). Common co-existing problems include mood disorders, substance misuse, eating disorders and post traumatic stress disorder. BPD is also associated with other personality disorders and has a high rate of suicide when associated with mood disorders or alcoholism (Stone 1990). The problem of deliberate self-harm is prevalent in this group (Linehan 1993).

There is compelling evidence that, while the short to medium-term outcome of BPD is poor (being similar to that of schizophrenia) longer term follow-up shows a more favourable course (Stone 1990, Paris 2003, McGlashan 1986, Plakun 1985). These longer-term studies had almost identical results despite differences in the intensity of treatment and socio-demographic status. Nevertheless, most people still had significant levels of symptoms and disability (Perry 1993). Nine studies found the average suicide rate in BPD to be 6% (range 3-9%) (Perry 1993).

The direct costs of BPD are considerable in that many people so affected make major demands on health professionals. These demands are often so intense that one professional eventually burns out with the same cycle being repeated with another (Benjamin 1993). Hence, it has been suggested that a team, rather than an individual manages, a person with BPD (NIMH(E) 2003).

OBJECTIVES

To evaluate the effects of psychological interventions for people with borderline personality disorder.

METHODS

Criteria for considering studies for this review

Types of studies

We included all relevant randomised control trials with or without blinding. We excluded quasi-randomised trials, such as those where allocation was undertaken on surname. If a trial was described as double blind, but it was implied it had been randomised, these trials would have been included in a sensitivity analysis. If there had been no substantive differences within primary outcomes when these 'implied randomisation' studies were to have been added and included in the final analysis. However, if there had been a substantive difference then only clearly randomised trails were to have been used. Randomised crossover studies were eligible but only data up to the point of first crossover because of the instability of the problem behaviours and the likely carryover effects of all treatments.

Types of participants

Adults (18 years or over) with a diagnosis of borderline personality disorder, however diagnosed.

We classified formal diagnoses of borderline personality disorder, made using operational criteria such as described by DSM-IV (APA 1994), as 'A' grade diagnoses. Grade A also included formal diagnoses of borderline personality disorder where criteria other than DSM had been used but, which nonetheless, had satisfied three or more DSM criteria.

Finally, we also considered diagnoses where no formal label of borderline personality disorder had been made on people who nonetheless satisfied three or more DSM criteria to be 'Grade A' diagnoses. All others were classified as 'Grade B' diagnoses.

We also included personality-disordered people with co-morbid mental health problems other than the major functional mental illnesses (i.e. schizophrenia, schizoaffective disorder or bipolar disorder) and classified these people into Grade A or B diagnoses according to the method described above. The decision to exclude people with co-morbid major functional illness was based on the rationale that the presence of such disorders would confound whatever other psychopathology (including personality disorder) might be present.

Diagnostic criteria for DSM-IV Borderline Personality Disorder are as follows (APA 1994):

- frantic efforts to avoid real or imagined abandonment
- a pattern of unstable and intense interpersonal relationships characterized by alternating between extremes of idealization and devaluation identity disturbance
- markedly and persistently unstable self-image or sense of self impulsivity in at least two areas that are potentially self-damaging (e.g., spending, sex, substance abuse, reckless driving, binge eating)
- recurrent suicidal behaviour, gestures, or threats, or self-mutilating behaviour
- affective instability due to a marked reactivity of mood (e.g. intense episodic dysphoria, irritability, or anxiety usually lasting a few hours and only rarely more than a few days)
- chronic feelings of emptiness
- inappropriate, intense anger or difficulty controlling anger (e.g. frequent displays of temper, constant anger, recurrent physical fights)
- transient, stress-related paranoid ideation or severe disassociative symptoms

Types of interventions

There are numerous psychologically based therapeutic interventions for people with personality disorder. These vary in both their theoretical approach and practical application (e.g. group vs. individual therapy).

The huge number of psychological interventions documented in the literature makes it almost impossible to prescribe an exhaustive list of individual therapies to be included in the review. Therefore we used the following six broad categories to classify treatment interventions: Cognitive Behavioural Therapy (CBT), Behavioural Therapy, Psycho-Dynamic Therapy, Group Therapy, Miscellaneous Therapy and Standard Care.

All therapies and interventions included within the review (irrespective of the category they are subsequently assigned to had to demonstrate the following basic standards to be considered for inclusion: a) have a clarity of purpose (i.e. the anticipated therapeutic gains must be pre-defined); b) have a defined rational for participant inclusion / exclusion; and c) have a detailed description of the intervention process (including setting, duration of sessions and interventions, etc.). Where studies integrate a number of therapeutic approaches the researchers will use the major therapeutic component to classify the intervention.

1. Cognitive behavioural therapy (CBT)

A variety of interventions have been labelled CBT and it is difficult to provide a single, unambiguous definition. Recognising this, we constructed criteria we felt to be both workable and to capture the elements of good practice in CBT.

In order to be classified as 'well defined' the intervention must clearly demonstrate that a component of the intervention: 1) involves the recipient establishing links between their thoughts, feelings and actions with respect to the target symptom; and 2) the correction of the person's misperceptions, irrational beliefs and reasoning biases related to the target symptom. In addition a further component of the intervention should involve either or both of the following: i) the recipient monitoring his or her own thoughts, feelings and behaviours with respect to the target symptom; and ii) the promotion of alternative ways of coping with the target symptom.

All therapies that do not meet these criteria but are labelled 'CBT' or 'Cognitive Therapy' will be included as 'less well defined' CBT. A sensitivity analysis on the primary outcomes of this review (see Types of Outcomes) would have been conducted in order to investigate if this hierarchy of definition makes any difference.

2. Behavioural therapy

We considered any interventions in which the therapist attempts solely to alter specific behavioural components of problems associated with personality disorder in this category.

3. Psychodynamic therapy

In order to be classified as psychodynamic, the intervention must not focus on a specific presenting problem (such as aggression) but rather on the unconscious conflicts that repress the individual and need to be confronted and re-evaluated in the context of the people' adult life. The following two components had to be documented in the therapeutic intervention for the therapy to be included: a) it must explore an element of the unconscious, and b) emphasises the importance of the patient's relational interaction with the therapist.

4. Group therapy

We would include any intervention that extends beyond the individual and specifically uses a group format in this category (e.g. family therapy and psychoanalytic group therapy). We would have included studies of therapeutic communities in this category, mindful of the existing systematic review of this specific intervention (Warren 2001).

5. Miscellaneous

We included any psychological interventions that do not fall into any of the above definitions but that satisfied the general criteria in this category. Examples may include art and music therapy.

6. Standard care

We defined this as the care a person would normally receive had they not been included in the research trial. The category 'standard care' also incorporates 'waiting list control groups', where partici-

pants receive drug or other interventions.

Types of outcome measures

1. Death - Sudden and unexpected death and natural causes
2. Global state
2.1 Relapse*
2.2 Time to relapse
2.3 No clinically important change in global state
2.4 Not any change in global state
2.5 Average endpoint global state score
2.6 Average change in global state scores
3. Behaviour
3.1 General behaviour
3.1.1 No clinically important change in general behaviour
3.1.2 Not any change in general behaviour
3.1.3 Average endpoint general behaviour score
3.1.4 Average change in general behaviour scores
3.1.5 Compulsory administration of treatment**
3.1.6 Use of further doses of medication
3.2 Specific behaviours
3.2.1 Self-harm, including suicide
3.2.2 Injury to others*
3.2.3 Aggression
3.2.3.1 No clinically important change in aggression*
3.2.3.2 Not any change in aggression
3.2.3.3 Average endpoint aggression score
3.2.3.4 Average change in aggression scores
3.2.4 Self care
3.2.4.1 No clinically important change in self care
3.2.4.2 Not any change in self care
3.2.4.3 Average endpoint self care score
3.2.4.4 Average change in self care scores
3.2.5 Compliance
3.2.5.1 No clinically important change in compliance
3.2.5.2 Not any change in compliance
3.2.5.3 Average endpoint compliance score
3.2.5.4 Average change in compliance scores
4. Mental state
4.1 General mental state
4.1.1 No clinically important change in general mental state*
4.1.2 Not any change in general mental state
4.1.3 Average endpoint general mental state score
4.1.4 Average change in general mental state scores
5. Engagement with services
5.1 No clinically important engagement
5.2 Not any engagement
5.3 Average endpoint engagement score
5.4 Average change in engagement scores
6. Adverse effects
6.1 No clinically important general adverse effects
6.2 Not any general adverse effects
6.3 Average endpoint general adverse effect score
6.4 Average change in general adverse effect scores
6.5 No clinically important change in specific adverse effects
6.6 Not any change in specific adverse effects
6.7 Average endpoint specific adverse effects
6.8 Average change in specific adverse effects
7. Prison and service outcomes
7.1 Treatment of people in the community
7.2 Duration of treatment programme
7.3 Changes in services provided by through care/probation teams
7.4 Changes of level of supervision by staff/police (re sex offender registration etc.)
8. Satisfaction with treatment
8.1 Recipient of treatment not satisfied with treatment**
8.2 Recipient of treatment average satisfaction score
8.3 Recipient of treatment average change in satisfaction scores
8.4 Informal treatment provider not satisfied with treatment*
8.5 Informal treatment providers' average satisfaction score
8.6 Informal treatment provider' average change in satisfaction scores
8.7 Professional providers not satisfied with treatment
8.8 Professional providers' average satisfaction score
8.9 Professional providers' average change in satisfaction scores
9. Acceptance of treatment
9.1 Not accepting treatment**
9.2 Average endpoint acceptance score
9.3 Average change in acceptance score
10. Leaving the study early
10.1 For specific reasons (release, parole, move establishment, changes in security status (for example, changes from HMP Category B to Category C levels)
10.2 For general reasons
11. Quality of life
11.1 No clinically important change in quality of life
11.2 Not any change in quality of life
11.3 Average endpoint quality of life score
11.4 Average change in quality of life scores
11.5 No clinically important change in specific aspects of quality of life
11.6 Not any change in specific aspects of quality of life
11.7 Average endpoint specific aspects of quality of life
11.8 Average change in specific aspects of quality of life
12. Recidivism
12.1 Time before re-offence
12.2 Any offence
13. Substance Use
13.1 Change in illicit drug use or in abuse of prescribed drugs
13.2 Change in alcohol use
14. Changes in employment status
14.1 Gaining employment
14.2 Retaining employment
14.3 Losing employment
15 Economic outcomes

15.1 Direct costs
15.2 Indirect costs
We divided outcomes into immediate (within 6 months), short term (>6 months to 24 months) and medium term (>24 months to 5 years) and long term (beyond 5 years).
N.B. Trials that provided data for this review reported outcomes for intervals.
* Primary outcomes for immediate and short term.
** Primary outcomes for medium term.

Search methods for identification of studies

1. Electronic searches
1.1 ASSIA: we searched Applied Social Sciences Index and Abstracts (1987-October 2002) using the phrase:
(de=((antisocial personality disorder) OR (avoidant personality disorders) OR (borderline personality disorder) OR (dependent personality) OR (depressive personality disorders) OR (gender identity disorder) OR (histrionic personality disorder) OR (multi-impulsive personality disorder) OR (multiple personality disorder) OR (narcissistic personality disorder) OR (passive-aggressive personality disorder) OR (sadistic personality disorder) OR (schizotypal personality disorders) OR (self defeating personality disorder) OR (antisocial behaviour))) OR (((parano* NEAR person*) OR ((asocial* OR antisocial* OR dissocial* OR psychopath* OR sadist* OR sociopath*) NEAR person*)or (psychopath OR sociopath OR (moral NEAR insanity) OR dissocial)) OR (diagnostic within 2 statistical manual iii) OR (diagnostic within 2 statistical manual iv) OR (diagnostic within 2 statistical manual ii)) and (ab=(random*) OR ti=(random*) OR de=(randomi?ed controlled trials) OR ab=(double* blind*)or ti=(double* blind*)or de=(double blind studies) OR (single* NEAR blind*))
1.2 BHI: we searched British Humanities Index (1962 to October 2002) using the phrase:
(de=((antisocial behaviour) OR (psychopaths)) OR ((personality NEAR disorder*) OR (gender NEAR identity)) OR ((sadistic OR schizotypal OR selfdefeating OR borderline OR avoidant OR dependent OR depressive OR histrionic OR multi-impulsive OR multiple OR narcissistic OR passive-aggressive) NEAR (person*)) OR ((parano* NEAR person*) OR (asocial* OR antisocial* OR dissocial* OR psychopath* OR sadist* OR sociopath*) NEAR (person*)) OR (psychopath OR sociopath OR (moral NEAR insanity) OR dissocial) OR (diagnostic NEAR statistical NEAR manual*)) and (ab=(random*) OR ti=(random*) OR de=(random) OR ab=(double* blind*) OR ti=(double* blind*)or de=(double* blind*) OR (single* NEAR blind*))
1.3 BIOSIS: we searched BIOSIS (1985 to October2002) using the phrase:
((al: ((randomi* OR crossover OR random-assignment) OR ((singl* OR doubl* OR tripl* OR trebl*) and (mask* OR blind*)))) and (((((((histrionic OR multi-impulsive OR multiple OR narcissistic OR passive-aggressive)) OR ((psychopath* OR sociopath* OR dissocial OR sadis* OR schizotypal OR self-defeating OR borderline OR avoidant OR dependent OR depressive))))) and (person*))) OR (((((((((moral and insanity) OR (moral and insanity)) OR ((asocial* OR antisocial* OR dissocial* OR psychopath* OR sadist* OR sociopath*) and person*)) OR (self and defeating)) OR (parano* and person*)) OR (gender and identity)) OR (personality and disorder)) OR (antisocial and behaviour))))))
1.4 C2-SPECTR (http://128.91.198.137/RIS/RISWEB.ISA#TOPOFREFLIST) (September 2002) SPECTR is a registry of over 10,000 randomised and possibly randomised trials in education, social work and welfare, and criminal justice and we searched this using the phrase:
((antisocial OR avoidant OR borderline OR dependent OR depressive OR histrionic OR impulsive OR multiple OR narcissistic OR paran OR psychopa OR sadistic OR schizotypal OR self-defeating OR sociopath) AND person) OR (gender AND identity) OR (passive AND aggressive) OR (antisocial AND behav) OR (moral AND insanity) OR (asocial OR antisocial OR dissocial OR psychopath OR sadist OR sociopath)
1.5 CareData: we searched this database of social work and social care literature (1985 to November 2002) using the phrase:
(randomi* OR (double* AND blind*) OR (control* AND clinical*))
We downloaded the results into a Procite5 database and searched again using the terms:
(antisocial* OR asocial* OR avoidant OR borderline OR dependent OR depressive OR dissocial OR dissocial* OR histrionic OR moral OR multi-impulsive OR multiple* OR narcissistic OR parano* OR passive-aggressive OR psychopath* OR sadis* OR schizotypal OR self-defeating OR sociopath*)
1.6 CINAHL: we searched (1982 to January 2003) using the phrase:
exp personality disorders/ OR exp antisocial personality disorder/ OR exp borderline personality disorder/ OR exp compulsive personality disorder/ OR exp dependent personality disorder/ OR exp impulse control disorders/ OR exp passive-aggressive personality disorder/ OR (histrionic$ adj2 person$) OR (parano$ adj2 person$).mp. OR (schizo$ adj2 person$) OR ((asocial$ OR antisocial$ OR dissocial$ OR psychopath$ OR sadist$ OR sociopath$) adj2 person$) OR (psychopath OR sociopath OR (moral adj2 insanity) OR dyssocial OR (DSM and (Axis and II)))
1.7 Cochrane CENTRAL Register of Controlled Trials: we searched (October 2002) using the phrase:
[(antisocial-personality-disorder*:me OR personality-disorders*:me OR sexual-and-gender-disorders*:me OR multiple-personality-disorder*:me OR paraphilias*:me) OR (multi-impulsive and personality) OR (parano* NEAR person*) OR (asocial* NEAR person) OR (dissocial* NEAR person) OR (psychopath* NEAR person) OR (sadist* NEAR person) OR (sociopath* NEAR person*) OR (moral NEAR insanity) OR ((personality and disorder*) and ((((avoidant OR multi-impulsive) OR narcissistic) OR self-defeating) OR personality)]

1.8 Cochrane Schizophrenia Groups Register of trials related to Forensic Mental Health Services (2000): we searched this using the phrase:

(psychopath* OR sociopath* OR dissocial OR sadis* OR schizotypal OR self-defeating OR borderline OR avoidant OR dependent OR depressive OR histrionic OR multi-impulsive OR multiple OR narcissistic OR passive-aggressive) AND (person*) OR (antisocial AND behaviour) OR (personality AND disorder*) OR (gender AND identity) OR (parano* AND person*) OR (self AND defeating) OR ((asocial* or antisocial* or dissocial* or psychopath* or sadist* or sociopath*) AND person*) OR (moral AND insanity)

1.9 COPAC: we searched the Consortium of University Research Libraries joint catalogue (October 2002) using the following terms:

randomi* OR ((double OR single OR triple OR treble) and blind) OR prospective OR (clinical and trial)

We then downloaded results into a Procite5 database and searched again using the terms:

(antisocial* OR asocial* OR avoidant OR borderline OR dependent OR depressive OR dissocial OR dissocial* OR histrionic OR moral OR multi-impulsive OR multiple* OR narcissistic OR parano* OR passive-aggressive OR psychopath* OR sadis* OR schizotypal OR self-defeating OR sociopath*)

1.10 CORDIS: we searched the Community Research and Development Information Service (1986 to November 2002) with the phrase:

(randomi* OR (double and blind) OR (controlled and trial).

We read entries on the web page and downloaded relevant records.

1.11 Criminal Justice Periodical Index: we searched (1968 to November 2002) using the phrase:

(((personality-disorder) OR (personality-disordered)) OR ((antisocial-person) OR (antisocial-manipulator) OR (antisociality) OR (antisocially) OR (antisocials)) OR ((psychopath) OR (psychopathic) OR (psychopathic-deviant) OR (psychopathic-deviate) OR (psychopathically) OR (psychopaths-) OR (psychopathy) OR (psychopathy-)) OR (personality-disorder) OR (borderlines) OR (borderlines) OR (histrionicity) OR ((narcissistic) OR (narcissistically)) OR (passive-aggressive) OR ((sadistically) OR (sadists) OR (sado-masochism) OR (sado-masochistic) OR (sadomascochism) OR (sadomasochism) OR (sadomasochistic)) OR (schizotypy) OR (((asocial* OR antisocial* OR dissocial* OR psychopath* OR sadist* OR sociopath*) near person*)or (psychopath OR sociopath OR (moral near insanity) OR dissocial))) and (((single blind OR double blind OR triple blind OR treble blind OR randomi* OR randomised OR randomized OR controlled trial) OR ((random-assignment) OR (random-design) OR (randomization) OR (randomize) OR (randomized) OR (randomized-groups) OR (randomly-selected))) OR (double-blind) OR ((blind-treatment) OR (blinded) OR (blinding)) OR ((controls) OR (controlled)))

1.12 Dissertation Abstracts: we searched (Digital Dissertations 1861 to December 2002) using the phrase:

((randomi? w/2 control?) OR (triple w/1 blind?) OR (double w/1 blind?) OR (treble w/1 blind?) OR (single w/1 blind?) OR ab(double blind?) OR ab(randomi?) OR (controlled clinical trial)) and ((asocial? OR antisocial? OR dissocial? OR psychopath? OR sadist? OR sociopath? OR histrionic OR multi-impulsive OR multiple? OR narcissistic) and person?) OR ((passive-aggressive OR psychopath? OR sociopath? OR dissocial OR sadis? OR schizotypal OR self-defeating OR borderline OR avoidant OR dependent OR depressive OR parano?) and person?) OR ((moral and insanity) OR (self and defeating) OR (gender and identity) OR (personality and disorder) OR (antisocial and behaviour))

1.13 EMBASE: we searched (1980 to January 2003) using the phrase:

exp personality disorder/ OR exp borderline state/ OR exp character disorder/ OR exp compulsive personality disorder/ OR exp delusion/ OR exp dependency/ OR exp depersonalization/ OR exp jealousy/ OR exp kleptomania/ OR exp multiple personality/ OR exp narcissism/ OR exp psychopathy/ OR exp schizoidism/ OR exp sociopathy/ OR (antisoci$ adj2 person$) OR (aggres$ adj2 person$) OR (border$ adj2 person$) OR histrion$ person$ OR paranoid person$ OR (passive adj2 aggressive) OR ((asocial$ OR antisocial$ OR dissocial$ OR psychopath$ OR sadist$ OR sociopath$) adj person$) OR (moral adj2 insan$) OR dyssocial OR (DSM and (Axis and II))

1.14 Federal Research in Progress/CRSP: This is one of the databases within the GRC database. See 1.15 below.

1.15 GOV.Research_Center: we searched (1964 to December 2002) using the phrase:

((randomi* OR (double and blind*) OR (control* and clinical and trial*)) and ((antisocial OR avoidant OR borderline OR dependent OR depressive OR histrionic OR impulsive OR multiple OR narcissistic OR paran* OR psychopa* OR sadistic OR schizotypal OR self-defeating OR sociopath) and person) OR (gender and identity) OR (passive and aggressive) OR (antisocial and behav) OR (moral and insanity) OR (asocial OR antisocial OR dissocial OR psychopath OR sadist OR sociopath))

1.16 IBSS: we searched the International bibliography of the Social Sciences (1951 to October 2002) using the phrase:

(randomi* OR double blind)

We then downloaded results into a Procite5 Database and searched this using the terms:

(antisocial* OR asocial* OR avoidant OR borderline OR dependent OR depressive OR dissocial OR dissocial* OR histrionic OR moral OR multi-impulsive OR multiple* OR narcissistic OR parano* OR passive-aggressive OR psychopath* OR sadis* OR schizotypal OR self-defeating OR sociopath*)

1.17 ISI - Proceedings (instead of ISI-ISTP): we searched (1990 to October 2002) using the phrase:

(double blind OR randomi*) AND ((passive-aggressive OR psychopath* OR sociopath* OR dissocial OR sadis* OR schizotypal OR self-defeating OR borderline OR avoidant OR dependent OR

depressive OR parano* OR asocial* OR antisocial* OR dissocial* OR psychopath* OR sadist* OR sociopath* OR histrionic OR multi-impulsive OR multiple* OR narcissistic) AND personality*) OR ((moral AND insanity) OR (self AND defeating) OR (gender AND identity) OR (personality AND disorder) OR (antisocial AND behaviour))

1.18 ISI-SCI: we searched the Science Citation Index Expanded (1981 to November 2002) using the phrase:

(double blind OR randomi*) AND ((passive-aggressive OR psychopath* OR sociopath* OR dissocial OR sadis* OR schizotypal OR self-defeating OR borderline OR avoidant OR dependent OR depressive OR parano* OR asocial* OR antisocial* OR dissocial* OR psychopath* OR sadist* OR sociopath* OR histrionic OR multi-impulsive OR multiple* OR narcissistic) AND personality*) OR ((moral AND insanity) OR (self AND defeating) OR (gender AND identity) OR (personality AND disorder) OR (antisocial AND behaviour))

1.19 ISI-SSCI: we searched Social Sciences Citation Index (1981 to November 2002) using the phrase:

(double blind OR randomi*) and ((passive-aggressive OR psychopath* OR sociopath* OR dissocial OR sadis* OR schizotypal OR self-defeating OR borderline OR avoidant OR dependent OR depressive OR parano* OR asocial* OR antisocial* OR dssocial* OR psychopath* OR sadist* OR sociopath* OR histrionic OR multi-impulsive OR multiple* OR narcissistic) and personality*) OR ((moral and insanity) OR (self and defeating) OR (gender and identity) OR (personality and disorder) OR (antisocial and behaviour))

1.20 MEDLINE: we searched (1966 to January 2003) using the phrase:

[exp personality disorders/ OR exp antisocial personality disorder/ OR exp borderline personality disorder/ OR exp compulsive personality disorder/ OR exp dependent personality disorder/ OR exp histrionic personality disorder/ OR exp hysteria/ OR exp paranoid personality disorder/ OR exp passive-aggressive personality disorder/ OR exp schizoid personality disorder/ OR exp schizotypal personality disorder/ OR ((asocial$ OR antisocial$ OR dissocial$ OR psychopath$ OR sadist$ OR sociopath$) adj2 person$) OR psychopath OR sociopath OR (moral adj2 insanity) OR dyssocial OR (DSM and (axis and II))]

1.21 National Criminal Justice Reference Service Abstracts Database: we searched (1970 to November 2002) using the phrase:

(randomi* OR double blind) and (antisocial* OR asocial* OR avoidant OR borderline OR dependent OR depressive OR dissocial OR dissocial* OR histrionic OR moral OR multi-impulsive OR multiple* OR narcissistic OR parano* OR passive-aggressive OR psychopath* OR sadis* OR schizotypal OR self-defeating OR sociopath*)

1.22 National Research Register: we searched (Issue 3 2002) using the phrase:

(antisocial-personality-disorder*:me OR (self AND (near3 AND defeating)) OR (antisocial AND behaviour) OR (self AND defeating) OR (parano* NEAR person*) or((((((asocial* OR antisocial*) OR dissocial*) OR psychopath*) OR sadist*) OR sociopath*) NEAR person*) OR (((((asocial* OR antisocial*) OR dissocial*) OR psychopath*) OR sadist*) OR sociopath*) OR (moral NEAR insanity) OR (((psychopath OR sociopath) OR (moral NEAR insanity)) OR dissocial)) AND (randomized-controlled-trials*:me OR double-blind-method*:me OR single-blind-method*:me OR controlled-clinical-trial*:me OR randomi* OR ((double OR single OR triple OR treble) AND blind)

1.23 PSYCINFO: we searched (1872 to December 2002) using the phrase:

[(((((personality disorders/ OR exp antisocial personality/ OR exp avoidant personality/ OR exp borderline personality/ OR exp dependent personality/ OR exp histrionic personality disorder/ OR exp narcissistic personality/ OR exp obsessive compulsive personality/ OR exp paranoid personality/ OR exp passive aggressive personality/ OR exp sadomasochistic personality/ OR exp schizoid personality/ OR exp schizotypal personality/) OR (((Personality adj disorders) OR (antisocial adj personality) OR (avoidant adj personality) OR (borderline adj personality) OR (dependent adj personality) OR (histrionic adj (personality AND disorder)) OR (narcissistic adj personality) OR (obsessive adj (compulsive AND personality)) OR (paranoid adj personality) OR (passive adj (aggressive AND personality)) OR (sadomasochistic adj personality) OR (schizoid adj personality) OR (schizotypal adj personality) and combined with the Cochrane Schizophrenia Groups search strategy for controlled clinical trials]

1.24 REGARD: we searched (1980's to November 2002) using the phrase:

(randomi* OR (double AND blind) OR (single AND blind) OR (control* AND trial))

We then downloaded results into a Procite5 Database and searched using the terms:

(personality* OR antisocial* OR avoidant* OR borderline* OR dependent* OR histrionic* OR narcissistic* OR obsessive* OR compulsive* OR paranoid* OR passive* OR aggress* OR sadomasochistic* OR schizo*)

1.25 SIGLE: we searched System for Information on Grey Literature in Europe (1980 - November 2002) using the phrase:

((randomisation) OR (randomised) OR (randomisee) OR (randomises) OR (randomize) OR (randomized) OR (randomly) OR ((double AND blind) OR double-blind OR double* blind* OR randomi?ed controlled trials)) AND ((psychopath* OR sociopath* OR dissocial OR sadis* OR schizotypal OR self-defeating OR borderline OR avoidant OR dependent OR depressive OR histrionic OR multi-impulsive OR multiple OR narcissistic OR passive-aggressive) AND (person*) OR (antisocial AND behaviour) OR (personality AND disorder*) OR (gender AND identity) OR (parano* AND person*) OR (self AND defeating) OR ((asocial* OR antisocial* OR dissocial* OR psychopath* OR sadist* OR sociopath*) AND person*) OR (moral AND insanity))

1.26 Sociological Abstracts: we searched (1963 to November

2002) using the phrase:
(((personality* OR antisocial* OR avoidant* OR borderline* OR dependent* OR histrionic* OR narcissistic* OR obsessive* OR compulsive* OR paranoid* OR passive* OR aggress* OR sadomasochistic* OR schizo*) near disorder) OR ((personality* OR antisocial* OR avoidant* OR borderline* OR dependent* OR histrionic* OR narcissistic* OR obsessive* OR compulsive* OR paranoid* OR passive* OR aggress* OR sadomasochistic* OR schizo*) AND disorder)) AND (AB=randomi* OR TI=random* OR DE=(randomi?ed controlled trials) OR AB=(double* blind*) OR TI=(double* blind*) OR DE=(double blind studies) OR (single* near blind*))
1.27 ZETOC: we searched this database (1993 to November 2002) using the phrase:
(personality* OR antisocial* OR avoidant* OR borderline* OR dependent* OR histrionic* OR narcissistic* OR obsessive* OR compulsive* OR paranoid* OR passive* OR aggress* OR sadomasochistic* OR schizo*)
We then downloaded results into a Procite5 Database and searched using the terms:
(randomi* or blind* or control*)
2. Hand searching
We searched reference lists of included and excluded studies for additional relevant trials. Specific journals not previously hand searched, which gave a high yield of studies were to have been hand searched.
3. Requests for additional data
We contacted authors of relevant studies to enquire about other sources of information and the first author of each included study for information regarding unpublished data.

Data collection and analysis

1. Study selection
CB and TL inspected all electronic reports and these were re-inspected by a second reviewer (LMcC) in order to ensure reliable selection. Where disagreement occurred we resolved this by discussion or, if doubt remained, we acquired the full article for further inspection. Once we obtained the full articles the two reviewers, again working independently, decided whether they met the criteria for inclusion. Again, when disputes arose, we attempted resolution by discussion but if this was not possible we did not enter data and allocated the trial to the list of those awaiting assessment whilst contacting authors. MF re-extracted data, again working independently.
2. Assessment of quality
Again working independently, we allocated trials to three quality categories, as described in the Cochrane Collaboration Handbook (Clarke 2002). When disputes arose as to which category a trial was to be allocated, again, we attempted resolution by discussion. When this was not possible, we excluded studies of possible category C until further details became available. We hoped to include only trials in category A or B in the review.
3. Data management
3.1 Data extraction
CB, LMcC and MF, all working independently, extracted data from selected trials. When disputes arose we resolved this by discussion. When this was not possible and we needed further information to resolve the dilemma, we did not enter data and added this outcome of the trial to the list of those awaiting assessment.
3.2 Intention to treat analysis
We excluded data from studies where more than 50% of participants in any group were lost to follow-up. In studies with less than 50% drop out rate, we considered people leaving early to have had the negative outcome, except for adverse effects such as death.
We analysed the impact of including studies with high attrition rates (25 to 50%) in sensitivity analyses. If inclusion of data from this group did result in a substantive change in the estimate of effect of the primary outcomes, we did not add data from these studies to trials with less attrition, but presented them separately.
4. Data analysis
4.1.1 Binary data
For binary outcomes we calculated a standard estimation of the fixed effects ratio (RR) and its 95% confidence interval (CI). Where possible, for results that reached conventional levels of statistical significance, we calculated the weighted number needed to treat/harm statistic (NNT/H), and its confidence interval (CI).
4.1.2 Valid scales: we included data from rating scales only if the measuring instrument had been previously described in a peer-reviewed journal (Marshall 2000a) and the instrument was either a self-report or completed by an independent rater or relative (not the therapist).
4.2. Continuous data
4.2.1 Skewed data: continuous data on clinical and social outcomes are often not normally distributed. To avoid the pitfall of applying parametric tests to non-parametric data, we applied the following standards to all data before inclusion: (a) standard deviations and means were reported in the paper or were obtainable from the authors; (b) when a scale started from the finite number zero, the standard deviation, when multiplied by two, was less than the mean (as otherwise the mean was unlikely to be an appropriate measure of the centre of the distribution (Altman 1996); (c) if a scale started from a positive value (such as PANSS which can have values from 30 to 210) the calculation described above was modified to take the scale starting point into account. In these cases skew is present if 2SD>(S-Smin), where S is the mean score and Smin is the minimum score. Endpoint scores on scales often have a finite start and end point and these rules can be applied to them. When continuous data are presented on a scale which includes a possibility of negative values (such as change on a scale), there is no way of telling whether data are non-normally distributed (skewed) or not. It is thus preferable to use scale end point data, which typically cannot have negative values. If end point data were

not available, the reviewers would have used change data, but not subjected them to meta-analysis, and reported them in 'Additional data' tables.

4.2.2 Summary statistic: for continuous outcomes we estimated a fixed effects weighted mean difference (WMD) between groups and the 95% CI. Again, if we found heterogeneity (see Section 5) we employed a random effects model.

4.2.3 Valid scales: we included continuous data from rating scales only if the measuring instrument had been previously described in a peer-reviewed journal (Marshall 2000a) and the instrument was either a self-report or completed by an independent rater or relative (not the therapist).

4.2.4 Endpoint versus change data: where possible we present endpoint data and if both endpoint and change data had been available for the same outcomes then only the former would have been reported in this review.

4.2.5 Cluster trials: studies increasingly employ 'cluster randomisation' (such as randomisation by clinician or practice) but analysis and pooling of clustered data poses problems. Firstly, authors often fail to account for intra class correlation in clustered studies, leading to a 'unit of analysis' error (Divine 1992) - whereby p values are spuriously low, confidence intervals unduly narrow and statistical significance overestimated - causing type I errors (Bland 1997; Gulliford 1999). Secondly, RevMan does not currently support meta-analytic pooling of clustered dichotomous data, even when these are correctly analysed by the authors of primary studies, since the 'design effect' (a statistical correction for clustering) cannot be incorporated.

Where clustering was not accounted for in primary studies, we presented the data in a table, with a (*) symbol - to indicate the presence of a probable unit of analysis error. Subsequent versions of this review will seek to contact first authors of studies to seek intra-class correlation co-efficients of their clustered data and to adjust for this using accepted methods (Gulliford 1999). Where clustering has been incorporated into the analysis of primary studies, then we would also have presented these data as if from a non-cluster randomised study, but adjusted for the clustering effect. We have sought statistical advice and have been advised that the binary data as presented in a report should be divided by a 'design effect'. This is calculated using the mean number of participants per cluster (m) and the intraclass correlation co-efficient (ICC) [Design effect = 1+(m-1)*ICC] (Donner 2002). If the ICC was not reported it was assumed to be 0.1 (Ukoumunne 1999).

If cluster studies had been appropriately analysed taking into account intra-class correlation coefficients and relevant data documented in the report, synthesis with other studies would have been possible using the generic inverse variance technique.

5. Test for heterogeneity

Firstly, we undertook consideration of all the included studies within any comparison to estimate clinical heterogeneity. Then we used visual inspection of graphs to investigate the possibility of statistical heterogeneity. We supplemented this by employing, primarily, the I-squared statistic. This provides an estimate of the percentage of inconsistency thought to be due to chance. Where the I-squared estimate included 75% this was interpreted as evidence of high levels of heterogeneity (Higgins 2003). We then reanalysed data using a random effects model to see if this made a substantial difference. If it did, and results became more consistent, falling below 75% in the estimate, the studies were added to the main body trials. We did not summate data if using the random effects model did not make a difference and inconsistency remained high, but presented the data separately and investigated and discussed reasons for heterogeneity.

6. Addressing publication bias

With more included studies we would have entered data from all included studies into a funnel graph (trial effect against trial size) in an attempt to investigate the likelihood of overt publication bias (Egger 1997).

7. Sensitivity analyses

We were to have analysed the effect of including studies with high attrition rates in a sensitivity analysis. Where a trial was described as 'double-blind' but implied that the study was randomised, these trials were also to have been included in a sensitivity analysis. We were to have compared results of studies using Grade A diagnoses with those using Grade B labels (primary outcomes only).

8. General

We entered data in such a way that the area to the left of the line of no effect indicated a favourable outcome for the intervention.

RESULTS

Description of studies

See: Characteristics of included studies; Characteristics of excluded studies.

For substantive descriptions of studies please see Included and Excluded studies tables.

1. Excluded

In a review such as this there is always an issue of what to report in the excluded studies section. Thousands of electronic reports are identified but reporting on the great majority of those in this section would, we feel, do no service to the reader. We selected very few of the studies identified by the searches for closer inspection as abstracts and titles made it quite clear that the work was not relevant for inclusion. We identified 56 reports for further inspection and had to exclude 49. The majority of these were either case study or case series. Dolan 1996, however, is a prospective survey of service usage, after treatment. Eckert 2000 is a follow-up study investigating long-term changes of the symptoms of 14 people with the diagnosis borderline personality disorder (criteria by Kernberg and Rorschach test) and comparing this group with 13 patients with diagnosis schizophrenia and 16 with depression (Kernberg

1967). People with a borderline disorder were treated in client-centred group psychotherapy (twice a week, approximately 100 sessions). James 1996 matched 24 adolescents diagnosed as having borderline personality disorder to psychiatric controls. Joyce 1999 undertook cluster analysis to identify subgroups of a sample of 40 patients with borderline personality disorder. Links 1998 was a prospective cohort study of 57 people with borderline personality disorder, followed up for seven years and reassessed for presence of symptoms. McGlashan 1986 assessed 81 people from the Chestnut Lodge follow-up study and compared them with people from different cohorts diagnosed with schizophrenia (n=163) or unipolar affective disorder (n=44). Meares 1999 was another non-randomised cohort study of participants with borderline personality disorder who received twice weekly psychotherapy sessions over a one year period and compared this group with people on a waiting list control. Munroe-Blum 1995 was a randomised controlled trial of 110 participants with diagnosis of borderline personality disorder. Unfortunately data were not reported by treatment allocation making them impossible touse. Najavits 1995 was a three year prospective naturalistic study of 37 women with borderline personality disorder but involved no control. Sandell 1993 followed up all attendees at a day hospital at three to ten years and compared people who stayed in treatment to those who left by four months and compared then to a group of people who were felt to represent the functional norm. Stanley 1998 is a prospective, matched control study. Stevenson 1992 is a cohort study of 30 people whose cost of care was compared before and after treatment with twice weekly out-patient psychotherapy. Wilberg 1998 was a prospective, naturalistic study designed to evaluate the practice and effectiveness of an outpatient group therapy program following day treatment for people with personality disorders and included 180 participants who were treated in outpatient psychodynamic group therapy. There was, however, no control group in this study. Yeomans 1993 was a pilot study on the process of psychodynamic psychotherapy of borderline personality disorder and was designed to investigate the teaching and application of a model of treatment for borderline patients. The project involved teaching a group of self-selected trainees and faculty manualised therapy and the outcome was adherence to the model. They used no control treatment.

2. Included studies

We identified seven studies for inclusion in this review (Bateman 1999; Koons 2001; Linehan 1991; Linehan 1999; Linehan 2002; Turner 2000; van den Bosch 2002).

2.1 Length of trials

Bateman 1999 randomised people for a maximum of 18 months (average of 1.45 years). Koons 2001 was of six months duration. Linehan 1991, Linehan 1999, Linehan 2002, Turner 2000 and van den Bosch 2002 were all for one year. Linehan 1991 reports limited data on follow-up from 12 months. These data are mostly impossible to use as they are on a sub-set of participants rather than the full group. Bateman 1999 reports data up to three years and is analysing four year data at this time (2004).

2.2 Participants

Two hundred and sixty two people were entered into seven studies, over five separate comparisons

The great majority of people in Bateman 1999, Koons 2001, Linehan 1991, Linehan 1999, Linehan 2002, and van den Bosch 2002 were women with operationally diagnosed borderline personality disorder diagnosed using the SCID-II (Structured Clinical Interview for DSM-III-R for Axis II) or/and the Diagnostic Interview for Borderline Patients or the Personality Diagnostic Questionnaire, Diagnostic Statistical Manual-IV version. Turner 2000 involved predominately men meeting borderline personality disorder criteria using the Diagnostic Interview for Borderlines and Personality Disorders Examination.

Studies often allowed co-morbid conditions such as major depression, dysthymia panic disorder, agoraphobia, sociophobia and bulimia. Participants in Linehan 1991 had a history of at least 2 incidents of parasuicide in the last five years (1 in the last 8 weeks) and did not meet DSM-III criteria for schizophrenia, bipolar disorder, substance dependence or mental retardation. Women in Linehan 1999 also met criteria for substance use disorder for opiates, cocaine, amphetamines, sedatives, hypnotics, anxiolytics, or poly-substance use disorder on SCID-II; 12% of sample diagnosed with antisocial personality disorder; and excluded if met criteria for schizophrenia, another psychotic disorder, bipolar mood disorder or mental retardation. Nineteen of the twenty four were taking psychotropic medication at beginning of the study period. In Linehan 2002 participants also had a diagnosis of current opiate dependence (SCID-I), 52% also met criteria for dependence on cocaine, 13% on sedatives, 8.7% on cannabis and 26% on alcohol. 65% reported at least one suicide attempt self injury. 44% met criteria for antisocial personality disorder. Reasons for exclusion were bipolar disorder, psychosis, seizure disorder or mental retardation. In Turner 2000 everyone was initially treated in hospital following a suicide attempt. Those excluded included those with a diagnosis of schizophrenia, schizoaffective disorder, organic mental disorder and mental retardation. Many participants met criteria for a co-morbid disorder (23/24 [17 dysthymia generalised anxiety disorder; 18 met criteria for 2 additional personality disorders (9 dependent, 6 histrionic, 3 schizotypal, 2 paranoid, 2 antisocial, and 1 compulsive personality disorder]). Nineteen participants were also taking psychotropic medication at the pre-assessment stage of the study. In van den Bosch 2002 there was no one with DSM-IV diagnosis of bipolar disorder or (chronic) psychotic disorder and severe cognitive impairments. Thirty one of the fifty eight participants who started treatment in this study abused substances. Referrals to the study were primarily from addiction treatment and psychiatric services. Seventy five percent of participants within each treatment condition used psychotropic medication (benzodiazepines, antidepressants, mood stabilisers, and neuroleptics

2.3 Setting

Bateman 1999 provided partial hospitalisation in a day hospital, whilst all other studies took place in the outpatient setting.

2.4 Study size

All studies are small (Bateman 1999 n=44, Koons 2001 n=28, Linehan 1991 n=63, Linehan 1999 n=28, Linehan 2002 n=23, Turner 2000 n=24, van den Bosch 2002 n=64).

2.5 Interventions

2.5.1 Psychoanalytically oriented partial hospitalisation

Bateman 1999 randomised people to psychoanalytically oriented partial hospitalisation. They undertook therapy over a five day cycle of once-weekly individual psychoanalytic psychotherapy; thrice-weekly group analytic psychotherapy (1 hour each); once-a week expressive therapy orientated towards psychodrama techniques (1 hour) along with a weekly community meeting (1 hour). Once a month participants met with a case administrator (1 hour) and reviewed medication (antidepressants and antipsychotics as required).

2.5.2 Dialectical behaviour therapy

Koons 2001 used dialectical behaviour therapy (DBT) which consisted of individual therapy (prioritised hierarchy of target behaviours, telephone coaching with individual therapists between sessions) and groups skills training lasting 90 minutes a week for 6 months. In Linehan 1991, DBT was given weekly individually for one hour. This was along with behavioural skill training, contingency management, cognitive modification, exposure to emotional cues, reflection, empathy, acceptance and group therapy lasting 2.5 hours. The latter consisted of psycho-educational training and teaching of behavioural skills for one year. Linehan 1999 gave dialectical behaviour therapy with core elements of standard manualised DBT modified for a substance abusing population. This consisted of weekly individual psychotherapy for one hour, group skills training for 2 hours 15 minutes, skills coaching, phone calls with individual therapist (as required) and 'transitional maintenance' a replacement medication protocol for stimulant and opiate dependent people, with treatment lasting 1 year. Linehan 2002 gave dialectical behaviour therapy core elements of which were again of standard manualised DBT but this time modified for a substance abusing population. This consisted of weekly individual DBT sessions for 40-90 minutes a week, targeting dysfunctional behaviours, replacing these with skills learned in psycho-educational skills group, phone consultation and crisis intervention as needed plus weekly groups skills training for 150 minutes a week, which contained skills training of mindfulness, interpersonal effectiveness, distress tolerance and regulation of emotion. Each participant also had recommended individual skills coaching (skills strengthening and generalization), the 12-step treatment programme for Alcoholics / Narcotics / Cocaine Anonymous (AA, NA, CA) or other support groups. This was paired with opiate replacement medication (levomethadyl acetate hydrochloride). Turner 2000 gave dialectical behaviour therapy oriented treatment, based on the above, but with modifications which incorporated psychodynamic techniques and no separate DBT skills training group, skills training during individual therapy and six group sessions focusing on significant people in their environment. Finally, van den Bosch 2002 also gave dialectical behaviour therapy which was a manualised 12 month treatment programme, comprising of weekly individual cognitive behavioural psychotherapy to address motivational issues, a weekly group skills training lasting 2-2.5 hours a week, concentrating on self-regulation and change skills and self and other acceptance and phone consultation as needed (coaching in application of new skills.

2.5.3 Comprehensive validation therapy

In Linehan 2002 the comparator programme was comprehensive validation therapy (CVT) and the 12-step treatment programme for Alcoholics / Narcotics / Cocaine Anonymous (CVT+12S). People got individual CVT+12S for 40-90 minutes a week, DBT acceptance-based non-directive strategies and '12-and-12' Narcotics Anonymous (NA) group for 120 minutes a week. They recommended a 12-Step sponsor meeting and 12-Step (AA/NA/CA) meetings. People in the CVT+12S group were also given case management as needed and phone consultation, standard crisis intervention and opiate replacement medication (levomethadyl acetate hydrochloride).

2.5.4 Client centred therapy

Turner 2000 used client centred therapy as comparator to DBT. This consisted of non-directive support to help patients cope with daily stressors and to prevent relapse. There were four phases to treatment; crisis management, problem assessment, and supportive treatment and termination. Treatment was scheduled for two times per week over one year (up to three times a week during crisis management).

2.5.5 Treatment as usual

The comparator in Koons 2001 was treatment as usual. This consisted of being offered 60 minutes per week individual therapy and supportive and psycho-educational groups with treatment lasting 6 months. In Linehan 1991, treatment as usual was referrals to alternative therapy and 73% began individual therapy. In Linehan 1999, treatment as usual consisted of continuing with individual psychotherapists, or being referred to alternative substance abuse and/or mental health counsellors/programmes and meetings with case managers as required. Treatment lasted one year. van den Bosch 2002 used clinical management from original referral source which was addiction treatment (n=11) or general psychiatric services (n=20). Participants did not typically attend more than two sessions per month with a practitioner.

2.5.6 General psychiatric care

Bateman 1999 used regular psychiatric review with senior psychiatrist (average twice per month) as comparator. This involved inpatient admission if required (90% with average stay of ~12 days), discharge to non-psychoanalytic psychiatric partial hospitalisation focused on problem solving (72% for an average of 6 months), and outpatient/community follow-up as standard aftercare (100%, twice weekly visits by Community Psychiatric Nurse).

2.6 Outcomes

2.6.1 Death

Linehan 1999 reports some data for the outcome of death.

2.6.2 Improvement

Bateman 1999 did not state a primary outcome of interest but used acts of self harm, clinical and service measures and psychiatric symptoms for outcomes. Koons 2001 planned their project as a pilot study to see if a trial similar to Linehan 1991 could be replicated. Linehan 1991 set out their primary goal as reduction in parasuicidal behaviour. Linehan 1999 set out to test whether DBT would reduce substance abuse and to adapt the DBT manual for the population of substance abusing women. In Linehan 2002, the primary aim was to test whether DBT was superior to comprehensive validation therapy plus a twelve step programme for women abusing opiates. Turner 2000 did not pre-specify any primary outcome of interest and reported self harm/suicide severity acts, mental state and behaviour as outcomes. van den Bosch 2002 set out to examine whether DBT can be successfully implemented in a mixed population of people with borderline personality disorder, with or without substance misuse problems; whether DBT is equally effective in reducing borderline symptoms for those with and without co-morbid substance misuse and is, primarily, effective in reducing problems secondary to substance misuse.

2.6.3 Global

Koons 2001 dichotomises the number of people still meeting SCID-II criteria and the average number of SCID-II criteria still met at six months.

2.6.4 Behaviour

Bateman 1999 reported on anxiety state and traits using continuous rating scales, whilst also reporting on depression, dichotomising the Beck Depression Inventory (BDI) at 14 points and above, as well as reporting the continuous scale data. Bateman 1999 also reports on general psychopathology using continuous data from the SCL-90 (Symptoms Check List 90). Koons 2001 and Linehan 1991 both report number of self harm or parasuicide events. Turner 2000 also reports six to 12 month data for parasuicide and behavioural indicators.

2.6.5 Mental state

Bateman 1999, Koons 2001, Linehan 1991and Turner 2000 all report mental state outcomes. They use a variety of scales reported in different ways.

2.6.6 Service outcomes

Bateman 1999, Koons 2001 and Turner 2000 report admission to psychiatric hospital. Linehan 1991 reports the average number of days in hospital and Linehan 2002 the average number of nights incarcerated. Bateman 1999 also reports data for the average number of inpatient days, the average number of days partially hospitalised, visits to outpatients and attending community outpatients. Bateman 1999 also reports on the number of people taking psychotropic medication and on the number of people receiving multiple drugs.

2.6.7 Employment outcomes

Linehan 1991 reports continuous outcomes for work performance measured using the SAS-SR (Social Adjustment Scale-Interview - Self report).

2.6.8 Substance use

All results for substance use by 12 to 18 months are reported in van den Bosch 2002. Linehan 1999 reports urinalysis testing and abstinence.

2.6.9 Leaving the study early

Six studies reported numbers of people leaving the study early (Bateman 1999; Koons 2001; Linehan 1991; Linehan 1999; Linehan 2002; van den Bosch 2002).

2.6.10 Quality of life

Bateman 1999 reports on two areas of quality of life, using data from the SAS-SR and the IIP-CV (Inventory of Interpersonal Problems Circumplex Version). Linehan 1991 reports continuous outcomes for an adjusted average score using the LIFE (Longitudinal Interval Follow-up Evaluation) and SAS-I (Social Adjustment Scale-Interview) global measure of change, as well as social adjustment.

2.6.11 Outcome scales - Details of scales that provided usable data are shown below. Reasons for exclusion of data from other instruments are given under 'Outcomes' in the 'Included studies' section.

2.6.11.1 Global Functioning

a. Global Assessment Scale - GAS (Endicott 1976)

Used to evaluate the overall functioning of a person during a specified time period in terms of psychological well-being or sickness. Time period assessed is generally one week prior to evaluation. Scale covers entire range of severity and can be used in any situation or study where an overall evaluation of the severity of the illness or degree of health is needed. The person is rated on a scale from 0-100 which represents a continuum from psychological or psychiatric sickness to health (high = good).

2.6.11.2 Mental state

a. Beck Anxiety Inventory BAI (Beck 1988)

The Beck Anxiety Inventory (BAI) is a self rating scale, and was developed to address the need for an instrument that would reliably discriminate anxiety from depression while displaying convergent validity. The scale consists of 21 items, each describing a common symptom of anxiety. Scoring is on a 4 point scale (0-3) and the participant is asked to rate each symptom according to how much they have been bothered by each symptom over the past week. Ranges from 0 to 63. High score=poor.

b. Beck Depression Inventory BDI (Beck 1961)

The BDI is a self-administered 21 item self-report scale measuring supposed manifestations of depression. The BDI takes approximately 10 minutes to complete, although clients require a fifth sixth grade reading age to adequately understand the questions. The highest score on each of the twenty-one questions is three; the highest possible total for the whole test is sixty-three. The lowest possible score for the whole test is zero. High score= poor.

c. Beck Hopelessness Scale BHS (Beck 1974)

This 20-item self-report instrument assesses the degree to which an individual holds negative expectations towards their future. The underlying assumption is that hopelessness can be objectively measured by defining it as a system of cognitive schemas with a common denominator of negative expectations. High score = poor.

d. Brief Psychiatric Rating Scale - BPRS (Overall 1962)

This scale is used to assess the severity of abnormal mental state. The original scale has 16 items, but a revised 18-item scale is commonly used. Each item is defined on a seven-point scale varying from 'not present' to 'extremely severe', scoring from 0-6 or 1-7. Scores can range from 0-126, with high scores indicating more severe symptoms. The BPRS-positive cluster comprises four items, which are conceptual disorganisation, suspiciousness, hallucinatory behaviour and unusual thought content. The BPRS-negative cluster comprises only three items, which are emotional withdrawal, motor retardation, and blunted affect.

e. Hamilton Depression Inventory - HAM-D (Hamilton 1960)

The HAM-D is a well-established 17-item scale for the measurement of depression and is sensitive to change.

f. Hamilton Anxiety Rating Scale HARS (Hamilton 1959)

The Hamilton Anxiety Scale (HAMA) is a rating scale developed to quantify the severity of anxiety symptoms. It consists of 14 items, each defined by a series of symptoms. Each item is rated on a 5-point scale, ranging from 0 (not present) to 4 (severe). High score = poor.

2.6.11.4 Behaviour

a. Beck scale for suicide ideation BSSI (Beck 1979)

The scale is made up of 21 items, with five screening items reduce the length and the intrusiveness of the questionnaire for patients who are non suicidal. The scale is a clinician-rating scale and is presented in a semi structured interview format. After the interview, the clinician assesses 19 items that evaluate three dimensions of suicide ideation: active suicidal desire, specific plans for suicide, and passive suicidal desire. Each item is rated on a 3-point scale (i.e., 0 to 2). The total score is computed by adding each item score. The range of possible scores is 0 to 38. High score = poor.

b. European Addiction Severity Index EuropASI (Kokkevi 1995)

The EuropASI is used for client clinical assessment and research purposes. The EUROPASI can be used for different purposes in assessing substance abuse clients: a) to assess the problem severity of the interviewee, and b) for periodic repeated administrations to monitor and quantify change in problems commonly associated to substance abuse. The EuropASI consists of 200 items in 6 subscales. Designed to address seven problem areas in substance abusing patients; medical status; employment and support; drug use; alcohol use; legal status; family/social status and psychiatric status. Each of these dimensions include lifetime measures which can serve as predictor variables, and past 30 day measures which can serve as baseline/outcome measures. It also includes clinical and patient reported ratings of problem severity in each problem area.

c. Inventory of Interpersonal Problems Circumplex Version - IIP-C (Alden 1990)

The Inventory of Interpersonal Problems (IIP) is a 127-item questionnaire that was composed from the most common complaints of psychiatric patients at intake interviews. Alden 1990 created a 64-item version of the IIP with eight scales corresponding to the eight octants of the Interpersonal Circle. The IIP-C is a 64-item self-report instrument designed to measure interpersonal deficiencies and excesses. Items request that participants rate themselves using a five-point response format (0 = not at all, 4 = extremely) on phrases beginning "It is hard for me to." or "I am too." Example items from the intrusive (NO) scale are "It is hard for me to stay out of other people's business," and "I want to be noticed too much." High score = poor.

d. Longitudinal Interval Follow-up Evaluation - LIFE (Keller 1987)

LIFE is an integrated system for assessing the longitudinal course of psychiatric disorders. It consists of a semi structured interview; an instruction booklet, a coding sheet, and a set of training materials. An interviewer uses the LIFE to collect detailed psychosocial, psychopathologic, and treatment information for a six-month follow-up interval. The weekly psychopathology measures ('psychiatric status ratings') are ordinal symptom-based scales with categories defined to match the levels of symptoms used in the Research Diagnostic Criteria. The ratings provide a separate, concurrent record of the course of each disorder initially diagnosed in patients or developing during the follow-up. Any DSM-III or Research Diagnostic Criteria disorder can be rated with the LIFE, and any length or number of follow-up intervals can be accommodated. The psychosocial and treatment information is recorded so that these data can be linked temporally to the psychiatric status ratings. High score = poor.

e. Lifetime Parasuicide Count - LPC (Comtois 1999)

The Lifetime Parasuicide Count is a clinician-administered measure that obtains a lifetime overview of parasuicidal behaviour. This measure provides brief information, including suicide intent and medical severity, on the first incident, the most recent incident, and the most severe parasuicidal behaviour. This measure also provides a chart of all methods and indicates the frequency of parasuicidal behaviours by intent (suicide attempt, ambivalent suicide attempt, non-suicidal self-injury) and highest medical severity (none, doctor visit, emergency room, medical unit admission, intensive care admission).

f. Parasuicide History Interview - PHI (Linehan 1989)

The PHI is a 47-item semi structured interview measuring the topography, intent, medical severity, social context, precipitating and concurrent events, and outcomes for single parasuicide episodes. The reasons for parasuicide can also be assessed during the PHI. Specifically, participants are asked to review a 29-item list of potential reasons and to indicate all that were reasons for their parasuicide. These are collapsed into 29 distinct reasons, 22 of which were further clustered by expert consensus to form four rationally

derived scales: Emotion Relief (6 reasons), Interpersonal Influence (8 reasons), Avoidance/Escape (5 reasons), and Feeling Generation (3 reasons). The remaining 7 reasons were each considered unique and thus were not clustered.

g. Structured Clinical Interview for DSM-III-R for Axis II SCID-II (Spitzer 1990)

There are three components to the SCID-II. The interview itself covers the 11 DSM-IV Personality Disorders (including Personality Disorder NOS) and the appendix categories Depressive Personality Disorder and Passive-Aggressive Personality Disorder. After the subject fills out the Personality Questionnaire (which usually takes 20 minutes), the clinician simply circles the numbers to the left of the SCID-II items that correspond to items answered "yes" on the questionnaire. When the SCID-II is administered, the clinician needs only to inquire about the items screened positive on the questionnaire. The assumption is that a subject who responds with a "no" on the questionnaire item would also have answered "no" to the same question had it been read aloud by the interviewer. High score = poor.

h. Social Adjustment Scale-Interview - SAS-I (Weissman 1971)

Measures social functioning in a number of life domains (work, social, extended family, marital, parental, family unit, and economic adequacy) on a scale of 1-7. High score = poor

i. Social Adjustment Scale-Interview - Self report - SAS-SR (Weissman 1976)

The Social Adjustment Scale Self-Report (SAS-SR) is a 42-item self-report questionnaire that measures affective or instrumental performance over the past 2 weeks in seven major areas of social functioning: work (as a worker, housewife or student), social and leisure activities, relationship with extended family, marital role as a spouse, parental role, membership in the family unit, and economic adequacy.

j. Symptoms Check List - SCL90-R (Derogatis 1977)

The Symptoms Check List is a self-rated instrument containing 90 symptom related questions. The subject assesses the degree of severity of each symptom: The scale ranges from: 0 ('Not at all') 1 ('A little bit') 2 ('Moderately') 3 ('Quite a bit') to 4 ('Extremely'). High score=poor.

k. Spielberger State and Trait Inventory - STAI (Spielberger 1970)

This inventory measures adult anxiety as an emotional state, i.e. the anxiety that a person experiences under certain given conditions, and personality trait, i.e. a relatively enduring personality characteristic that reflects the individual's propensity to respond with anxiety to a broad range of conditions. The STAI is a 20 items scale. The STAI scores increase in response to stress and decrease under relaxing conditions. High score = poor.

l. Spielberger Anger Expression Scale STAXI (Spielberger 1985)

The STAXI can be used to assess anger components in detailed evaluations of normal and abnormal personality. The STAXI is a 20-item measure, with fifty seven items measuring the intensity of anger as an emotional state and the disposition to experience angry feelings as a personality trait. Scales include: State Anger, Trait Anger, Anger Expression-Out, Anger Expression In, Anger Control-Out, Anger Control-In and Anger Expression Index. All items are scored on a 4-point scale ranging from 1 (almost never) to 4 (almost always). The STAXI asks about frequency of feeling quick tempered, hot-headed, and flying off the handle. High score = poor.

Risk of bias in included studies

1. Randomisation

All reports stated that the studies were randomised. Turner 2000 did not describe the process at all. In Bateman 1999, however, details were obtained from the author who was able to report that randomisation was performed off site and undertaken using computer generated randomisation tables. Koons 2001 also provided further details. Randomisation was undertaken by the research office at the VA Medical Centre, using the computers to generate a random number table from which allocation was worked out. Linehan 1991 matched people entering the study to the number of lifetime parasuicides psychiatric hospitalisations, age and prognosis. We have no further details of the methods used to allocate participants. In Linehan 1999 a minimisation method was used, with similar matching undertaken on four variables of severity of drug dependence, presence or absence of present cocaine abuse, the presence of antisocial personality disorder and a global assessment of functioning. Linehan 2002 used the same procedure. van den Bosch 2002 reports using minimisation to match on age and severity of suicidal behaviour and substance misuse, with no details of how allocation was performed after matching.

2. Blinding

Bateman 1999 and Koons 2001 do not mention blinding. Linehan 1991, Linehan 1999 and Linehan 2002 all used independent clinical interviewers, blinded to allocation but no testing of these rates is reported. Turner 2000 also used blinded independent rater evaluations who were unaware of treatment condition but aware of study purpose. van den Bosch 2002 used independent clinicians blinded to the study, but they are unlikely to be blind to the conditions.

3. Follow-up

In comparison with drug trials, length of follow-up is long and loss to follow-up low. van den Bosch 2002 is included for the outcome of leaving the study early and self mutilating behaviour in the previous six months. This study did have high levels of dropout (37% DBT group vs 77% of treatment as usual group). However, the majority of participants were followed up for the 52 weeks duration of the study (~74%). In Turner 2000, whilst four people left the DBT group (one returned after a five week break), and six from the CCT group, all participants were followed up at 12 months. In Linehan 1991, a third of those who began the study were left out of the final analysis by the trialists. In Linehan 1999, it is unclear whether the last observation carried forward technique was used or participants were actually followed

up. Attempts to contact the trialists for further information have been unsuccessful.

4. Outcomes

In the studies, the reporting of the data was not good and much data were lost to this review.

5. Overall

The overall reporting of methods within the seven studies was not good and leaves all results at moderate risk of bias (Cochrane Category B, Clarke 2002).

Effects of interventions

1. COMPARISON 1. DIALECTICAL BEHAVIOUR THERAPY versus TREATMENT AS USUAL

Three studies were included in this comparison with high dropout (van den Bosch 2002) and differing duration (Koons 2001 - 6 months; Linehan 1991 - 12 months).

1.1 General

Koons 2001 found no statistical difference between people in the DBT group and those in the treatment as usual group for the outcome of still meeting SCID-II criteria for the diagnosis of BPD by six months in this small study (n=28, RR 0.69 CI 0.35 to 1.38). Koons 2001 also reported skewed equivocal data for the outcome of average number of SCID-II BPD criteria by six months in Koons 2001 (n=20).

1.2 Service outcomes

Koons 2001 found no difference between groups for admission to hospital in the previous three months (n=28, RR 0.77 CI 0.28 to 2.14).

1.3 Behaviour

For self-harm Koons 2001 did not find any statistical difference between people receiving DBT and treatment as usual by 6 months (n=28, RR number of people undertaking self harm or parasuicide 0.66 CI 0.25 to 1.75). However, Linehan 1991 does report a small significant difference at 6 to 12 months (n=63, RR 0.81 CI 0.66 to 0.98, NNT 12 CI 7 to 108). For the outcome of displaying self mutilating behaviour in the previous six months, van den Bosch 2002 did not find any difference between groups (n=64, RR self mutilating behaviour 0.69 CI 0.45 to 1.06). Koons 2001 and Linehan 1991 both report skewed data for the average number of parasuicidal acts at 6 months, and Linehan 1991 at 6 to 24 months but their findings were not conclusive. Linehan 1991 (n=35)provides skewed data for the average risk scores for parasuicide episodes by 6 to 12 months that favour the DBT and again reports skewed data, over three time periods of 6 to 12 months, 12 to 18 months and 18 to 24 months for the average number of medically treated parasuicide episodes. Again these figures tend to favour DBT.

1.4 Mental state

No difference was found in the small study undertaken by Koons 2001 for 'anger - in' using the STAXI (n=28, RR no clinically significant change 0.64 CI 0.29 to 1.43) or 'anger - out', again using the STAXI (RR 0.64 CI 0.29 to 1.43); depression using the BDI (RR 0.62 CI 0. 36 to 1.07); dissociation using the DES (RR 0.52 CI 0.25 to 1.11); and suicidal ideation using the BSSI (RR 0.62 CI 0.36 to 1.07). A slight difference was found in levels of hopelessness, with those on DBT reporting less hopelessness, using the BHS (RR 0.53 CI 0.29 to 0.99, NNT 3 CI 2 to 116). Reporting endpoint continuous results using the STAXI for 'anger - in' and 'anger - out', Koons 2001 did not detect differences (n=20, MD 'anger - in' -1.90 CI -6.47 to 2.67, RR anger -out MD -3.40 CI -7.89 to 1.09). Using the HARS, Koons 2001 detected a statistical difference for the outcome of anxiety scores at 6 months for people receiving DBT compared with treatment as usual (n=20, MD average anxiety scores -13.10 CI -22.08 to -4.12). For the outcome of depression Koons 2001 detected a statistical difference in favour of those receiving DBT than those TAU at six months, measured using the HAM-D and reporting continuous end point data (n=20, MD -7.20 CI -13.19 to -1.21) and also reports skewed results for average depression scores using the BDI. The latter tend to favour the DBT but it is unclear if the results are statistically significant.

The dissociation average score by 6 months reported by Koons 2001 are skewed and did not clearly favour wither treatment. Koons 2001s average hopelessness score were also skewed although these did tend to favour the DBT group. Koons 2001 detected statistical difference in favour of people receiving DBT compared with those allocated to treatment as usual for average scores of suicidal ideation at 6 months (n=20, MD -15.30 CI -25.46 to -5.14).

1.5 Leaving the study early

All three studies combined found no difference for the outcome of leaving the study early, with 29/76 in the DBT group leaving early and 41/79 in the TAU group (n=155, 3 RCTs, RR leaving the study early 0.74 CI 0.52 to 1.04).

1.6 Substance use

van den Bosch 2002 reports data for alcohol use (average days >4 drinks past month; average days alcohol problems past month; and average severity of alcohol problems) and drug use (average days drug problems past month; average severity of drug problems; and average days medication use in the past months). All data are skewed and do not convincingly favour either treatment.

2. COMPARISON 2. DIALECTICAL BEHAVIOUR THERAPY - SUBSTANCE USE versus TREATMENT AS USUAL

2.1 Death: sudden / unexpected

Linehan 1999 reports one person dying in the DBT group. This does not reach conventional levels of statistical significance (n=28, RR 3.92 CI 0.17 to 88.67).

2.2 Leaving the study early

Linehan 1999 did not detect a significant difference between people with substance abuse problems receiving DBT (5/12) leaving the study early compared with those with substance abuse problems receiving treatment as usual (5/16) (n=28, RR 1.33 CI 0.50 to 3.58).

2.3 Substance use

For the outcome of interviewer-assessed alcohol free days, skewed data are reported and tend to favour DBT. Linehan 1999 reports skewed but not statistically significant data for the proportion of participants with a clean urinalyses test.

3. COMPARISON 3. DIALECTICAL BEHAVIOUR THERAPY - SUBSTANCE USE versus COMPREHENSIVE VALIDATION THERAPY PLUS 12-STEP

3.1 Service outcomes

For the number of nights in prison Linehan 2002 found no difference between those receiving DBT and those comprehensive validation therapy plus 12-step (n=23, RR 1.09 CI 0.64 to 1.87). Linehan 2002 also reports non-significant skewed data for the average number of nights in prison at 12 to 18 months follow up.

3.2 Leaving the study early

Conventional levels of statistical significance were not achieved between groups for the outcome of leaving the study early (n=23, RR 7.58 CI 0.44 to 132.08).

4. COMPARISON 4. DIALECTICAL BEHAVIOUR THERAPY-ORIENTED TREATMENT versus CLIENT CENTRED THERAPY

4.1 Service outcomes

Turner 2000 found no statistical difference between people receiving DBT and those allocated to client centred therapy (CCT) for the outcome of being admitted to hospital (n=24, RR 0.33 CI 0.08 to 1.33).

4.2 Behaviour

Turner 2000 also recorded self harm / parasuicide behavioural indicators. Fewer people in the DBT orientated therapy group displayed indicators of parasuicidal behaviour (n=24, RR 0.13 CI 0.02 to 0.85, NNT 2 CI 2 to 11).

4.3 Mental state

In the follow up phase of Turner 2000 this group found no differences for outcomes of anxiety and depression (n=24, RR anxiety BAI >/=10 0.60 CI 0.32 to 1.12; RR depression HDRS >/=10 0.43 CI 0.14 to 1.28). However, using the BDI to measure depression these researchers found a statistically significant difference (n=24, RR no clinically significant change - BDI >/=10 0.50 CI 0.28 to 0.88, NNT 3 CI 2 to 9); those on DBT had less depression than people allocated to CCT. Also, Turner 2000 found a statistically significant difference in general psychiatric severity (n=24, RR BPRS >/=15 0.58 CI 0.36 to 0.94, NNT 3 CI 2 to 17). People allocated to DBT also displayed less suicidal ideation (n=24, RR BSSI score >3 0.13 CI 0.02 to 0.85, NNT 2 CI 2 to 11).

Continuous results of the BAI for anxiety (n=24, RR -4.50 CI -8.80 to -0.20), show people allocated to DBT had less anxiety than those on Client Centred Therapy, and also displayed less depression when measured using the BDI (n=24, RR -6.67 CI -11.95 to -1.39). Turner 2000 reports skewed results for anxiety or depression at six months, and in the follow up of 6 to 12 months but both sets of data suggest a more favourable outcome for those allocated to DBT. Turner 2000 also reports skewed data for anxiety (BAI) and depression (BDI) at 6 to 12 months follow up. These data tend to favour DBT.

People in Turner 2000 who received DBT had less general psychiatric severity than those in the control, reported by continuous results from the BPRS at 6 months (MD -7.41 CI -13.72 to -1.10). This was also true at follow up by 6 to 12 months (n=24, MD -7.16 CI -12.15 to -2.17). Finally Turner 2000 reports skewed data for suicidal ideation with considerably lower scores for people allocated to DBT.

4.4 Leaving the study early

Turner 2000 found no difference between groups for leaving the study early (n=28, RR 0.67 CI 0.25 to 1.78).

5. COMPARISON 5. PSYCHOANALYTICALLY ORIENTED PARTIAL HOSPITALIZATION versus GENERAL PSYCHIATRIC CARE

5.1 Service outcome

In Bateman 1999, those who received treatment in a psychoanalytic orientated day hospital were less likely to be admitted into inpatient care than people in general psychiatric care in the previous six months when measured at three different time points (n=44, RR admitted to inpatient 24 hour care >18 to 24 months 0.05 CI 0.00 to 0.77, NNT 3 CI 3 to 10; >24 to 30 months RR 0.10 CI 0.01 to 0.72, NNT 3 CI 3 to 8; >30 to 36 months RR 0.06 CI 0.01 to 0.40, NNT 2 CI 2 to 3). Bateman 1999 also reports data for the average number of days spent in hospital. These are skewed and are reported in the 'other data' tables. All considerably favour the psychoanalytic orientated day hospital care package.

On one from the partial hospitalisation group needed re-admission to the day hospital programme at >18 to 24 months, whereas 13 of those in the general psychiatric care group needed some form of day hospital intervention. This was statistically significant (n=44, 1 RCT, RR of needing day hospital intervention in the 18 months after discharge 0.04 CI 0.00 to 0.59, NNT 2 CI 2 to 8). This was also statistically significant at >24 to 30 months (RR 0.05 CI 0.00 to 0.77, NNT 3 CI 3 to 10). The skewed data for the average number of days partially hospitalised is presented and also significantly favours the psychoanalytic orientated day hospital. There are similar findings for average number of days attending community centre (skewed data).

More people in the control group in Bateman 1999 took psychotropic medication by the 30 to 36 month follow-up, than those receiving psychoanalytic treatment (n=44, RR of receiving a psychotropic medication 0.44 CI 0.25 to 0.80, NNT 3 CI 2 to 7). This one study reports the number of people receiving more than one psychotropic medication at 30 to 36 month follow-up. The control group (16/22) were more likely to receive more than one drug (3/22) (n=44, RR of being on more than one psychotropic drug at 30 to 36 months 0.19 CI 0.06 to 0.55, NNT 2 CI 2 to 4).

5.2 Mental state

Bateman 1999, measuring anxiety using the STAI, did not find

any difference between intervention group and control for the outcome of anxiety state by six months (MD 0.40 CI -6.49 to 7.29). However, at all other time points, up to three years, people receiving psychoanalytic therapy reported less anxiety than those in general psychiatric care (by 6 to 12 months, n=38, MD -9.00 CI -15.01 to -2.99; by 12 to 18 months, n=38, MD -13.00 CI -19.65 to -6.35; by 18 to 24 months follow up, n=36, MD -9.70 CI -16.42 to -2.98; by 24 to 30 month follow up, n=36, MD -14.40 CI -21.74 to -7.06; by 30 to 36 month follow up, n=33, MD -19.80 CI -25.81 to -13.79). However for anxiety trait, again using the STAI, at no other time point other than the 30 to 36 months, was a statistically significant finding found (within six months MD -0.20 CI -5.19 to 4.79; by 6 to 12 months MD -0.20 CI -4.78 to 4.38; by 12 to 18 months MD -4.20 CI -9.53 to 1.13; by 18 to 24 months follow up MD -2.10 CI -8.25 to 4.05; by 24 to 30 month follow up MD -3.40 CI -9.87 to 3.07). Figures for 30 to 36 month follow up demonstrate a difference in anxiety trait favouring people receiving partial hospitalization (MD -8.30 CI -14.01 to -2.59).

For depression, measured using the BDI, at 12 to 18 months and 18 to 24 months, there is no clear difference between those in the experimental and control group (n=44, 1 RCT, RR 0.86 CI 0.73 to 1.02; and 18 to 24 months RR 0.76 CI 0.58 to 1.00). At 24 to 30 months and 30 to 36 months, however, those in the psychoanalytic orientated day hospital report less depression (n= 44, 1 RCT, RR >/=14 on BDI 0.52 CI 0.34 to 0.80, NNT 3 CI 3 to 6; 30 to 36 months, RR 0.45 CI 0.27 to 0.76, NNT 3 CI 3 to 5). For the outcome of depression, reported using continuous data from the BDI, Bateman 1999 found no difference in the first six months (within six months MD -0.20 CI -6.25 to 5.85). However, at every time point thereafter, people receiving psychoanalytic day hospital care showed lower levels of depression than those in the general psychiatric care (by 6 to 12 months MD -8.00 CI -13.66 to -2.340; by 12 to 18 months MD -14.60 CI -19.18 to -10.02; by 18 to 24 months follow up MD -9.70 CI -14.47 to -4.93; by 24 to 30 month follow up MD -8.20 CI 12.85 to 3.55; by 30 to 36 month follow up MD -8.50 CI -13.83 to -3.17).

For the outcome of global severity Bateman 1999 scored using the SCL-90-R. This study found no significant difference between groups at all time points apart from the 18 to 24 months (within six months MD 0.00 CI -0.38 to 0.38; by 6 to 12 months MD -0.20 CI -0.61 to 0.21; by 12 to 18 months MD -0.30 CI -0.78 to 0.18). At the 18 to 24 months follow up, the MD was -0.70 CI -1.13 to -0.27). Finally there are some skewed data at 24 to 30 months and at 30 to 36 month (SCL-90-R). Positive symptoms, scored on this same scale are not statistically significant at six months, 12 months and by 18 months (six months MD 3.20 CI -4.44 to 10.84; by 6 to 12 months MD 3.10 CI -6.64 to 12.84 and by 12 to 18 months MD -2.40 CI -12.70 to 7.90). However, by 18 to 24 months follow up there is a finding statistically significantly in favour of people receiving psychoanalytic day hospital care (MD -12.70 CI -22.18 to -3.22). By 24 to 30 month follow up, the finding remains significant (n=44, 1 RCT, MD -24.10 CI -34.13 to -14.07), as it does for the 30 to 36 month follow up (MD -33.90 CI -43.59 to -24.21).

5.3 Quality of life

Bateman 1999 reports that people receiving psychoanalytic care in a day hospital had better social improvement in social adjustment using the SAS-SR at 6 to 12 months compared with people in general psychiatric care (MD -0.70 CI -1.08 to -0.32). This also applied to the 30 to 36 month follow up (MD -1.30 CI -1.68 to -0.92). At 12 to 18 months, Bateman 1999 reports statistically significant results in favour of people in the experimental group for the outcome of fewer interpersonal problems (MD -0.70 CI -0.89 to -0.51). This too applied at 30 to 36 month follow up (MD -1.00 CI -1.28 to -0.72).

5.4 Leaving the study early

There was no difference for leaving the study early from either the experimental group or those in the control. Only three people from each arm left (n=44, 1 RCT, RR 1.00 CI 0.23 to 4.42).

DISCUSSION

1. Limitation of data

Despite a comprehensive search for randomised controlled trials for psychological therapies for people with BPD, and the increasing prevalence of this approach, this review has only been able to find seven, small studies of moderate quality. This is similar to other reviews. It is possible that we have failed to identify relevant work. We would be grateful for any contact from anyone with knowledge of any relevant trials. This is a difficult area of research but the production of these seven studies does demonstrate that relevant evaluative research is feasible.

The small numbers of included participants in this review make type 1 errors more possible, as well as multiple testing ,using a variety of scales makes it probable that only positive findings are reported in reports of studies, whilst statistically insignificant, or neagtive results, do not get reported, leading to reporting bias.

Data were lost because of unclear reporting. Should the studies we identified have reported as clearly as is now expected after the CONSORT guidelines (Moher 2001) considerably more might have been known on the effects of treatment of people with a borderline personality disorder.

The use of scales may be of value for generating or investigating hypotheses but they are often of little clinical utility. Binary outcomes such as 'improved or not', 'self harm or not' should be possible to collect in this field. In scale data carrying the last observation forward is not altogether useful as this generates such large assumptions about the data that often findings are not sensible to include. Pioneering studies such as van den Bosch 2002, however,

illustrate that following people up after leaving the study early is possible and informative.

2. Applicability

Participants in the included studies were recognisable to most people working in this field and the interventions potentially accessible to a well-funded health service provider. Outcomes such as admission to hospital and abstinence from drugs are also clinically important. The difficulty in interpretation of some of the scale-derived results, however, does limit clinical utility.

Also, the two main professionals in this field are two of the major contributors of studies to this review (Linehan 1991; Linehan 1999; Linehan 2002; Bateman 1999). What effect the presence of these two leaders has, does need to be questioned, especially with such small numbers and such positive responses in the experimental groups.

Finally, studies were undertaken in North America (Koons 2001; Linehan 1991; Linehan 1999; Linehan 2002; Turner 2000) and Europe (Bateman 1999; van den Bosch 2002) and how applicable any findings are to other services has to be a matter of conjecture.

3. COMPARISON 1. DIALECTICAL BEHAVIOUR THERAPY versus TREATMENT AS USUAL

There are few data which could be combined, but the three studies demonstrate that research and follow up of this group of people is possible.

3.1 Global

The finding that there was no clear effect of DBT for a proxy measure of improvement (not meeting SCID-II criteria for BPD at six months) in the one under-powered study (n=28) does not prove that DBT is unhelpful.

3.2 Service outcomes

The DBT group did have a reduction in admission by a considerable degree (n=28, RR 0.77 CI 0.28 to 2.14) and this finding could be very important if replicated and strengthened.

3.3 Behaviour

DBT does seem to offer a small benefit over treatment as usual in preventing people undertaking acts of self-harm or parasucide. This is a consistent finding although it is not always statistically significant in the small trials. In the one larger study (n=63) the finding did reach conventional levels of statistical significance at 12 months with a number needed to treat that may be considered feasible (NNT 12 CI 7 to 108).

3.4 Mental state

For those who receive DBT there may be a benefit. There was less hopelessness (NNT 3 CI 2 to 116) in Koons 2001 (n=28) but no clear benefit in terms of anger, either inward or outward looking in over a 6 to 24 month period. People receiving DBT also report less anxiety at 6 months and less suicidal ideation (n=20, MD -15.30 CI -25.46 to -5.14) but although this last finding could be important we are unclear how to interpret the continuous measure in clinically meaningful terms.

3.5 Leaving the study early

DBT may help keep people in care (n=155, 3 RCTs, RR leaving the study early 0.74 CI 0.52 to 1.04) and it does not seem to put people off continuing in treatment.

3.6 Substance use

The van den Bosch 2002 data are not convincing that DBT has any effect on alcohol use.

4. COMPARISON 2. DIALECTICAL BEHAVIOUR THERAPY - SUBSTANCE USE versus TREATMENT AS USUAL

4.1 Death

One person died in one small study (Linehan 1999, n=28). Of course this rare outcome is important to record and it is likely a sad chance finding (RR 3.92 CI 0.17 to 88.67) but highlights that the talking therapies, just like any other, may have adverse effects that go unrecorded or unreported.

4.2 Leaving the study early

Again, DBT seems no better, and no worse than treatment as usual for holding on to people in trials. About 30% of study participants left early (n=28).

4.3 Substance use

When the DBT is particularly focused on substance misuse and the participants reflect this bias the treatment does not have convincing effects on behaviour.

5. COMPARISON 3. DIALECTICAL BEHAVIOUR THERAPY - SUBSTANCE USE versus COMPREHENSIVE VALIDATION THERAPY PLUS 12-STEP

5.1 Service outcomes.

DBT does not seem to prevent any more people spending the night in prison than comprehensive validation therapy and 12 step programs but the study was too small to be convincing (n=23, 1 RCT, RR 1.09 CI 0.64 to 1.87). It was, however, good to see a study proving trials in this setting are possible and potentially informative.

5.2 Leaving the study early

Again the equivocal findings are impossible to interpret as the one trial was so small (n=23).

6. COMPARISON 4. DIALECTICAL BEHAVIOUR THERAPY-ORIENTED TREATMENT versus CLIENT CENTRED THERAPY

This comparison contains only Turner 2000 (n=24).

6.1 Service outcomes

DBT may considerably reduce admission compared with client centred therapy (RR 0.33 CI 0.08 to 1.33) but confidence intervals are too wide to draw firm conclusions. This finding could be very important but needs replicated.

6.2 Behaviour

Fewer people who receive DBT orientated therapy display fewer indicators of parasuicidal behaviour (NNT 2 CI 2 to 11). This too is an important finding needing replicated in a larger, longer study.

6.3 Mental state

When anxiety or depression is measured using one measure (HDRS) DBT seems to have no effect. When the BDI is the measure there seems an effect on depression favouring DBT (NNT 3 CI 2 to 9) with similar findings for the BAI for anxiety. Also those allocated to DBT had less general psychopathology (NNT 3 CI 2 to 17) and less suicidal ideation (NNT 2 CI 2 to 11). If some of these latter results are replicated these could represent very important findings of great practical value.

6.4 Leaving the study early

DBT does not seem off-putting but the study was too small and too under-powered to be sure of this (n=28, RR 0.67 CI 0.25 to 1.78).

7. COMPARISON 5. PSYCHOANALYTICALLY ORIENTED PARTIAL HOSPITALIZATION versus GENERAL PSYCHIATRIC CARE

All findings are from Bateman 1999 (n=44).

7.1 Service outcome

Those who receive treatment in a psychoanalytic orientated day hospital are less likely to be admitted into inpatient care than people in general psychiatric care by six months. This is also true at 18 to 24 months (NNT 3 CI 3 to 10), 24 to 30 months (NNT 3 CI 3 to 8) and at 30 to 36 months (NNT 2 CI 2 to 3). The NNTs are very small and if this finding would hold across other studies this could be most important. As it stands it is interesting, hypothesis generating, but not conclusive. One swallow does not a summer make. Also, in this one study, people receiving psychoanalytic care had less re-admission at 18 to 24 months compared with those in general psychiatric care. This also holds for the 18 month (NNT 2 CI 2 to 8) and 24 to 30 month follow up (NNT 3 CI 3 to 10). Less surprisingly, people in psychoanalytic orientated day hospital were given less medication than those in general psychiatric care (NNT 3 CI 2 to 7) and were also less likely to receive polypharmacy at 30 to 36 months (NNT 2 CI 2 to 4).

All these findings are most important, clinically meaningful, and if the NNTs hold true, feasible within many health service. The problem remains that this is one study undertaken by an enthusiastic team and should be replicated. Of course, mental health services have reacted to such limited but positive evidence in the past with mixed results (Pharoah 2003; Marshall 2000b; Marshall 2004).

7.2 Mental state

At six months people who receive treatment in psychoanalytic day hospital care are as likely to have symptoms of an anxiety state as those in general psychiatric care. However, at all other time points, those receiving psychoanalytic therapy are less likely to be as anxious. People who receive psychoanalytic day hospital care may also expect to have lower levels of depression compared with those in general psychiatric care (30 to 36 months, NNT 3 CI 3 to 5). The SCL-90-R data on global severity and positive symptoms are less certain. Again, overall the impression is positive for the psychoanalytic day hospital care and well worthy of replication.

7.3 Quality of life

For those in psychoanalytic day care can expect improvement in social adjustment at 6 to 12 months, and at 30 to 36 month follow up and fewer interpersonal problems at 12 to 18 months, and at 30 to 36 months. We, however, find it difficult to determine whether a decline of 0.7 in the SAS-SR as a measure of social improvement, or a declind of 1.0 on the same measure for interpersonal problems is really clinically meaningful.

7.4 Leaving the study early

Psychoanalytic day care does not seem any better, or worse, at keeping people involved with therapy than general psychiatric care, although it is remarkable how little attrition there is compared to drug trials (14% by 36 months). We look forward to more data as trialists are now analyzing four-year follow up data.

8. Missing outcomes

Studies in this area are difficult and long term follow up necessary. It would be good to seem some economic analyses of these interventions and measures of potential adverse effects.

AUTHORS' CONCLUSIONS

Implications for practice

1. For people with borderline personality disorder

This review suggests that some of the problems frequently encountered by people with borderline personality disorder may be amenable to talking/behavioural treatments. Several of the studies showed that the effort invested by the recipient of care in sticking with the care package was rewarded by a decline in anxiety,

depression, self harm, hospital admission and use of prescribed medication. All these therapies remain experimental and the studies are too few and small to have full confidence in their results. People with borderline personality disorder, if offered entry into a randomised study of therapies may wish to consider that the outcomes of both experimental and control groups are probably going to be better than those of the standard care outside of the trial.

2. For clinicians

This review has much good news for the clinician. People with borderline personality disorder may be considered unrewarding to treat. This synthesis suggests that the talking therapies, if available, may have considerable positive effects. Even if the findings are not applicable outside the small studies, often undertaken by enthusiastic pioneers in the field, they may indicate that people with borderline personality disorder are amenable to change. All treatment is not without hope.

3. For policy makers and funders of research

Many findings in this review are, potentially, most important, clinically meaningful. Small numbers needed to treat make implementation feasible within many health services. Several times in the past mental health services have reacted to such limited but positive evidence with mixed results (Pharoah 2003; Marshall 2000b; Marshall 2004). These findings should be replicated in larger real-world studies.

Implications for research

1. General

Of all the included studies only Linehan 1991 preceded the recommendations of the CONSORT statement (Begg 1996, Moher 2001). If the recommendations had been followed more data would have been available from the trials already identified. Included trials often failed to reassure the readers that inclusion of bias was minimised at allocation and well-described and tested blinding could have encouraged confidence in the control of performance and detection bias.

2. Specific

These studies do report many clinically meaningful outcomes but there is still the opportunity at the design stage to cut out redundant effort in recording data from scales that have never been validated. Even if the scales have been validated on this population clinical interpretation of the results would be a most useful addition to the reports.

This review shows that long trials are possible and reports many data that are positive and hypothesis generating. This would seem like a fruitful area for more studies that are large, long and collaborative; participants are common and different interventions are all experimental. Meaningful outcomes can be recorded in everyday follow up notes. The approaches already studied could well be both clinically effective and cost effective.

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* *Indicates the major publication for the study*

CHARACTERISTICS OF STUDIES

Characteristics of included studies *[ordered by study ID]*

Bateman 1999

Methods	Allocation: randomised using a computer away from treatment site. Blinding: none. Duration: maximum 18 months treatment (average 1.45 years) + 18-month follow-up. Setting: outpatient.
Participants	Diagnosis: borderline personality disorder (SCID-II, DIB). N=44. Sex: 22/38 completers were women (58%). Age: mean ~32 (SD ~6). Exclusion criteria: DSM-III-R schizophrenia, bipolar disorer substance misuse, mental impairment or evidence of organic brain disorder. Comorbid Axis I diagnoses included major depression, dysthmia, panic disorder, agoraphobia, sociophobia and bulimia.
Interventions	1. Psychoanalytically oriented partial hospitalization: over five days, once-weekly individual psychoanalytic psychotherapy, thrice-weekly group analytic psychotherapy (1 hour each), once-a week expressive therapy orinted towards psychodrmama techniques (1 hour), weekly community meeting (1 hour). Once a month: meeting with case administrator (1 hour) and medication review (antidepressants and antipsychotics as required). Treatment integrity monitored. N=22. 2. General psychiatric care: regular psychiatric review with senior psychiatrist (average twice per month) , inpatient admission if required (90% with average stay of 11.6 days), and discharge to nonpsychoanalytic psychiatric partial hospitalisation focused on problem solving (72% for an average of 6 months) , and outpatient/community follow-up as standard aftercare (100%, twice weekly visits by Community Psychiatric Nurse). Received no formal psychotherapy. N=22.
Outcomes	Leaving the study early: treatment drop out and lost to follow-up. Mental state: BDI, SCL90-R, STAI. Quality of life: interpersonal problems - IIP-CV, social adjustment - SAS-SR. Service outcomes: psychiatric service utilisation, psychotropic medication use at follow-up. Unable to use - Service outcomes: hospital admissions (no data reported), length of inpatient admissions (data only reported in diagramatic form), taking psychotropic medication (only percentages reported). Behaviour: suicide attempts and self-mutilating behaviour - SSHI (semi-structured interview not validated or published in peer reviewed journal).
Notes	People who crossed over to the partially hospitalised group if the psychiatrist deemed it necessary were classed as leaving the study early. * some missing data. Reviewers assume poor outcome for these people.

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Koons 2001

Methods	Allocation: randomised, unrestricted, computerised random number generation. Blinding: blind assessment interviewers. Duration: 6 months. Setting: outpatient.
Participants	Diagnosis: borderline personality disorder (SCID-II). N=28. Sex: women. Age: mean ~35 years (SD~8), N=20. History: no current diagnosis for schizophrenia, bipolar disorder, substance dependence or antisocial personality disorder.
Interventions	1. Dialectical behaviour therapy: individual therapy (prioritised hierarchy of target behaviours, telephone coaching with individual therapists between sessions) + groups skills training: 90 mins / week for 6 months. N=13.* 2. Treatment as usual: offered 60 mins / week individual therapy, supportive and psychoeducational groups. 6 months treatment. N=15.
Outcomes	Still meeting criteria for BPD: SCID-II. Service outcomes: admissions - THI. Behaviour: parasuicidal acts - PHI. Mental state: BDI, BHS, BSSI, DES, HAM-D, HARS, STAXI. Number of BPD criteria met: SCID-II. Leaving the study early.
Notes	* Reports only completer data (n=20, 10 / group). Reviewers assume poor outcome for people who did not complete.

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

Linehan 1991

Methods	Allocation: matched on number of lifetime parasuicides and psychiatric hospitalisations, age and good vs poor clinical prognosis and randomly assigned to treatment condition. Blinding: research assessors blind to treatment condition. Duration: 1 year treatment + 1 year follow-up. Setting: outpatient.
Participants	Diagnosis: borderline personality disorder (DIB and DSM-III criteria). N=63. Sex: women. Age: 18-45 years. History: at least 2 incidents of parasuicide in the last five years (1 in last 8 weeks), did not meet DSM-III criteria for schizophrenia, bipolar disorder, substance dependence or mental retardation.

Linehan 1991 (*Continued*)

Interventions	1. Dialectical behaviour therapy: weekly individual (1 hour, behavioural skill training, contingency management, cognitive modification, exposure to emotional cues, reflection, empathy, acceptance) and group therapy (2.5 hours, psychoeducational, teaching behavioural skills) for one year. N=32. 2. Treatment as usual: alternativetherapy referrals, via referring agency. 73% began individual therapy. N= 31.
Outcomes	Behaviour: parasuicidal acts and severity: PHI. Leaving the study early. Service outcomes: admissions,THI. Mental state: STAS-T (trait portion only). Quality of Life: social adjustment at follow-up: SAS-I, SAS-SR LIFE (provides GAS score) Unable to use - Mental state: BDI, SSI, BHS, RLISC (data not reported). Influence of therapist characteristics: TI (not a protocol outcome, no data reported, subset of original sample). Quality of life: social adjustment during treatment GAS, LIFE, SAS-SR (subsample of original sample). Mental state: anger: STAS-T (subsample of original study data).
Notes	* Reports only completer data. Reviewers assume poor outcome for people who did not complete.

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Linehan 1999

Methods	Allocation: minimisation randomisation (matched on age, severity of drug dependence, readiness to change and global adjustment). Blinding: independent clinical interviewers. Duration: 1 year treatment + 4 months follow-up. Setting: outpatient.
Participants	Diagnosis: borderline personality disorder (SCID-II and PDE). N=28. Sex: women. Age: mean ~30 years (SD 7). History: also met criteria for substance use disorderfor opiates, cocaine, amphetamines, sedatives, hypnotics, anxiolytics, or polysubstance use disorder on SCID-II; 12% of sample diagnosed with antisocial personality disorder; and excluded if met criteria for schizophrenia, another psychotic disorder, bipolar mood disorder or mental retardation. 19/24 taking psychotropic medication at beginning of study.
Interventions	1. Dialectical behaviour therapy: core elements of standard manualised DBT modified for substance abusing population, weekly individual psychotherapy (1hour), groups skills training (2hours 15mins), skills coaching phone calls with individual therapist (as required), and 'transitional maintenance' replacement medication protocol for stimulant and opiate dependent individuals. Treatment lasting 1 year. N=12. 2. Treatment as usual: continue with individual psychotherapists, or referred to alternative substance

Linehan 1999 (*Continued*)

	abuse and/or mental health counsellors / programmes. Meetings with case manager as required. Treatment lasting one year. N=16.
Outcomes	Leaving the study early. Death. Substance use: time-line follow-back assessment, clean urinalyses. Unable to use - Behaviour: parasuicidal acts - PHI (data not reported). Mental state: anger - STAXI (data not reported). Service outcomes: medical / psychological treatments received - THI (data not reported). Quality of life: social adjustment - SHI, GSA, GAS (no N values).
Notes	

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Linehan 2002

Methods	Allocation: minimisation randomisation (matched on severity of DSM-IV drug dependence, presence / absence of current cocaine abuse / dependence, presence / absence of DSM-IV antisocial personality disorder, and global assessment of functioning - DSM-IV Axis V). Blinding: independent clinical interviewers. Duration: 1 year treatment + 4 months follow-up. Setting: outpatient.
Participants	Diagnosis: borderline personality disorder (SCID-II and PDE). N=23. Sex: women. Age: mean ~36 (SD 7). History: diagnosis of current opiate dependence (SCID-I), 52% also met criteria for dependence on cocaine, 13% on sedatives, 8.7% on cannabis and 26% on alcohol. 65% reported at least one suicide atttempt / self injury. 44% met criteria for antisocial personality disorder. Exclusion criteria: bipolar disorder, psychosis, seizure disorder, mental retardation.
Interventions	1. Dialectical behaviour therapy: core elenents of standard manulaised DBT modified for substance abusing population, weekly individual DBT (40-90 mins/week, targetting dysfunctional behaviours, replacing these with skills learned in psychoeducational skills group, phone consultation and crisis intervention as needed) + weekly groups skills training (150mins/week, skills training:mindfulness, interpersonal effectiveness, distress tolerance, emotion regulation). Individual skills coaching (skills strenghtening and generalization), 12-step (e.g. Alcoholics / Narcotics / Cocaine Anonymous; AA,NA,CA) or other support groups recommended, opiate replacement medication (levomethadylacetate hydrochloride). N=11. 2. Comprehensive validation therapy + 12-step (CVT+12S): Individual CVT+12S (40-90 mins/week, DBTacceptance-based strategies, but non-directive) + '12-and-12' Narcotics Anonymous (NA) group (120 mins/week). 12-Step sponsor meeting and 12-Step (AA/NA/CA) meetings recommended. CVT+12S

Linehan 2002 (*Continued*)

	case management as needed and phone consultation and standard crisis intervention. Opiate replacement medication (levomethadylacetate hydrochloride). N=12.
Outcomes	Leaving the study early. Prison and service outcomes: time spent in prison. Unable to use - Substance use: self-report abstinent days and proportion clean urinalyses (time-line follow-back assessment): reported as probabilities and mean percentages (not usable data). Behaviour: parasuicidal acts - PHI (no data by treatment group). Mental state: BSI (no data by treatment group). Quality of life: social adjustment: SHI, GAS, GSA (no data by treatment group).
Notes	

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

Turner 2000

Methods	Allocation: randomised. Blinding: blinded, independent rater evaluations (unaware of treatment condition, but aware of study purpose). Duration: 1 year. Setting: outpatient.
Participants	Diagnosis: borderline personality disorder (DIB, PDE). N=24. Sex: 19 women, 5 men. Age: average 22 (range 18-27). History: initially treated in hospital for suicide attempts. 23/24 met criteria for a comorbid Axis I disorder (17 dysthmia and generalised anxiety disorder), 18 for 2 additional personality disorders (9 dependent, 6 histrionic, 3 schizotypal, 2 paranoid, 2 antisocial, and 1 compulsive personality disorder). 19 taking psychotropic medication at preassessment. Exclusion criteria: included a diagnosis of schizophrenia, schizoaffective disorder, organic mental disorder and mental retardation.
Interventions	1. Dialectical behaviour therapy-oriented treatment: based on Linehan approach but with modifications (incorporated psychodynamic techniques and no separate DBT skills training group). Skills training during individual therapy and six group sessions focusing on significant people in their environment. N=12. 2. Client centred therapy: schedules for two times per week over one year (up to three times a week during crisis management), clinicians provide support to help patients cope with daily stressors and prevent relapse in non-directive manner, 4 phases to treatment: crisis management, problem assessment, supportive treatment and termination. N=12.

Turner 2000 (*Continued*)

Outcomes	Mental state: BDI, BAI, BSSI, BPRS, HRSD. Service outcomes: admissions. Unable to use - Behaviour: parasuicide rating - TBR, parasuicidal acts, impulsiveness rating - TBR (scale not validated or published in peer reviewed journal). Mental state: anger rating - TBR. Helping alliance: HRQ (not a protocol outcome).
Notes	* Does not report data for all participants randomised to treatment. Reviewers assume poor outcome for these people.

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B - Unclear

van den Bosch 2002

Methods	Allocation: minimisation randomisation (to ensure comparability across groups in age, severity of suicidal behaviour, substance abuse (drug and alcohol), and social problems). Blinding: research assessors not informed of treatment condition, but could have been given information by participants. Duration: 12 months. Setting: outpatient.
Participants	Diagnosis: borderline personality disorder (PDQ-DSM-IV, SCID-II). N=64. Sex: women. Age: mean ~35 (SD 8). History: DSM-IV diagnosis of bipolar disorder, (chronic) psychotic disorder and severe cognitive impairments were exclusionary criteria. 31/ 58 who started treatment were substance abusers (>/= 5 on drug/ alcohol section of EuropASI). Clinical referrals primarily from addiction treatment and psychiatric services. 75% of patients within each treatment condition used psychotropic medication (benzodiazepines, antidepressants, mood stabilisers, and neuropleptics).
Interventions	1. Dialectical behaviour therapy: manualised 12 month treatment programme comprising: weekly individual cognitive behavioural psychotherapy (motivational issues) , weekly group skills training (2-2.5 hours/week, self-regulation and change skills, self and other acceptance) and phone consultation as needed (coaching in application of new skills). N=31. 2. Treatment as usual: clinical management from original referral source (of those starting treatment: addiction treatment n=11, psychiatric services n=20). Typically did not attend more than two sessions per month with a practitioner. N=33.
Outcomes	Substance use: EuropASI items. Leaving the study early. Behaviour: parasuicidal behaviour (BPDSI) and self-mutilating behaviour (LPC).

van den Bosch 2002 (*Continued*)

Notes		
Risk of bias		
Item	**Authors' judgement**	**Description**
Allocation concealment?	Unclear	B - Unclear

BAI - Beck Anxiety Inventory
BDI - Beck Depression Inventory
BHS - Beck Hopelessness Scale
BPDSI - Borderline Personality Disorder Severity Index
BPRS - Brief Psychiatric Rating Scale
BSI - Brief Symptom Inventory
BSSI - Beck Scale for Suicide Ideation
DES - Dissociative Experiences Scale
DIB - The Diagnostic Interview for Borderlines
EuropASI - Addiction Severity Index - European Version
GAS - Global Adjustment Scale
GSA - Global Social Adjustment
HAM-D - Hamilton Depression Scale
HARS - Hamilton Anxiety Rating Scale
HRDS - Hamilton Rating Scale for Depression
HRQ - Helping Relationship Questionnaire
Inventory of Interpersonal Problems - circumflex version
LIFE - Social Adjustment Scale - Longitudinal Interview Follow-up
LPC - Lifetime Parasuicide Count.
PDE - International Personality Disorders Examination
PDQ-DSM-IV - Personality Diagnostic Questionnaire, DSM-IV version
PHI - Parasuicide History Interview
RLISC - The Reasons for Living Inventory, Survival and Coping Scale.
SAS-I - Social Adjustment Scale - Interview
SAS-SR - Social Adjustment Scale-Self-Report
SCID-I - Structured Clinical Interview for Axis I DSM-III-R
SCID-II - Structured Clinical Interview for DSM-III-R / DSM-IV Axis-II Personality Disorder
SCL90-R - Symptom Check List 90 - Revised
SHI - Social History Interview
SSHI - Suicide and Self Harm Inventory
SSI - Scale for Suicide Ideators
STAI - Spielberger State Trait Anxiety Inventory
STAS-T - State-Trait Anger Scale
STAXI - Speilberger Anger Expression Scale / State Trait Anger Expression Inventory
TBR - Target Behaviour Ratings
THI - Treatment History Interview
TI - Therapist Interview

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Antikainen 1995	Allocation: not randomised, case series.
Bloxham 1993	Allocation: not randomised, case study.
Blum 2002	Allocation: not randomised, case series.
Bohus 2000	Allocation: not randomised, case series.
Clarkin 1994	Allocation: not randomised, case series.
Corwin 1996	Allocation: not randomised, review and case study.
Cuevas 2000	Allocation: not randomised, case series.
de Zulueta 2000	Allocation: not randomised, review and case studies.
Dimeff 2000	Allocation: not randomised, case series.
Dolan 1996	Allocation: not randomised, prospective survey of service usage.
Dungee-Anderson 1992	Allocation: not randomised, case study.
Eccleston 2002	Allocation: not randomised, case series.
Eckert 2000	Allocation: not randomised, prospective cohort study.
Feeny 2002	Allocation: random. Diagnosis: chronic PTSD primary diagnosis. 17% of participants met criteria for BPD.
Freeman 2002	Allocation: not randomised, case study.
Gunderson 1989	Allocation: not randomised, case series.
Hafner 1996	Allocation: not randomised, case series.
Heller 1996	Allocation: not randomised, case studies.
Hengeveld 1996	Allocation: not randomised, case series.
Hoffman 1998	Allocation: not randomised, case study.
Hull 1993	Allocation: not randomised, case series.
James 1996	Allocation: not randomised, case control.

(*Continued*)

Joyce 1999	Allocation: not randomised, cluster analysis.
Kern 1997	Allocation: not randomised, case studies.
Kerr 1999	Allocation: not randomised, case study.
Kretsch 1987	Allocation: not randomised, case series.
Links 1998	Allocation: not randomised, prospective cohort study.
Low 2001	Allocation: not randomised, case series.
Marcoux 2000	Allocation: not randomised, case studies.
McGlashan 1986	Allocation: not randomised, cohort study.
Meares 1999	Allocation: not randomised, case controlled study.
Mishne 1991	Allocation: not randomised, review and case studies.
Munroe Blum 1988	Allocation: not randomised, case study.
Munroe-Blum 1995	Allocation: block randomisation with allocation concealment. Participants: people with borderline personality disorder. Intervention: interpersonal group psychotherapy vs. individual dynamic psychotherapy. Outcomes: leaving the study early, social functioning, mental state (no usable data - data not presented by treatment group), group cohesion, alliance (not protocol outcomes).
Najavits 1995	Allocation: not randomised, follow-up study.
Pollock 1998	Allocation: not randomised, case studies.
Quaytman 1997	Allocation: not randomised, case studies.
Ryle 1995	Allocation: not randomised, case studies.
Ryle 2000	Allocation: not randomised, case series.
Sandell 1993	Allocation: not randomised, retrospective, cross-sectional study.
Schimmel 1999	Allocation: not randomised, case study.
Stanley 1998	Allocation: not randomised, matched, controlled study.
Stevenson submitted	Allocation: not randomised, prospective cohort study.
Stone 1987a	Allocation: not randomised, case series.

(*Continued*)

Stone 1987b	Allocation: not randomised, case control.
Tucker 1987	Allocation: not randomised, case series.
Waldinger 1984	Allocation: not randomised, case series.
Wheelis 1998	Allocation: not randomised, case study.
Wilberg 1998	Allocation: not randomised, unmatched, controlled.
Wildgoose 2001	Allocation: not randomised, case series.
Yeomans 1993	Allocation: not randomised, process study.

DATA AND ANALYSES

Comparison 1. DIALECTICAL BEHAVIOUR THERAPY vs TREATMENT AS USUAL

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Global: 1. Still meeting SCID-II criteria for BPD - by 6 months	1	28	Risk Ratio (M-H, Fixed, 95% CI)	0.69 [0.35, 1.38]
2 Global: 2. Average number of SCID-II BPD criteria met - by 6 months (skewed data)			Other data	No numeric data
3 Service outcomes: 1. Admission to psychiatric hospital in previous 3 months - by 6 months	1	28	Risk Ratio (M-H, Fixed, 95% CI)	0.77 [0.28, 2.14]
4 Behaviour: 1a. Self harm - parasuicide / self-harm (PHI)	2		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
4.1 within 6 months	1	28	Risk Ratio (M-H, Fixed, 95% CI)	0.66 [0.25, 1.75]
4.2 > 6 months to 12 months	1	63	Risk Ratio (M-H, Fixed, 95% CI)	0.81 [0.66, 0.98]
5 Behaviour: 1b. Self harm - self-mutilating behaviour in previous 6 months (LPC)	1	64	Risk Ratio (M-H, Fixed, 95% CI)	0.69 [0.45, 1.06]
5.1 > 6 months to 1 year	1	64	Risk Ratio (M-H, Fixed, 95% CI)	0.69 [0.45, 1.06]
6 Behaviour: 1c. Self harm - average number of parasuicidal acts (PHI, skewed data)			Other data	No numeric data
6.1 within 6 months			Other data	No numeric data
6.2 > 6 to 12 months			Other data	No numeric data
6.3 > 12 to 18 months follow-up			Other data	No numeric data
6.4 > 18 to 24 months follow-up			Other data	No numeric data
7 Behaviour: 1d. Self harm - average risk scores for parasuicide episodes - by >6-12 months (PHI, skewed data)			Other data	No numeric data
8 Behaviour: 1e. Self harm - average number of medically treated parasuicide episodes (PHI, skewed data)			Other data	No numeric data
8.1 by >6 months to 12 months			Other data	No numeric data
8.2 by >12 months to 18 months follow-up			Other data	No numeric data
8.3 by >18 months to 24 months follow-up			Other data	No numeric data
9 Mental state: 1. No clinically significant change - by 6 months	1		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only

9.1 anger - in (STAXI)	1	28	Risk Ratio (M-H, Fixed, 95% CI)	0.64 [0.29, 1.43]
9.2 anger - out (STAXI)	1	28	Risk Ratio (M-H, Fixed, 95% CI)	0.64 [0.29, 1.43]
9.3 depression (BDI)	1	28	Risk Ratio (M-H, Fixed, 95% CI)	0.62 [0.36, 1.07]
9.4 dissociation (DES)	1	28	Risk Ratio (M-H, Fixed, 95% CI)	0.52 [0.25, 1.11]
9.5 hopelessness (BHS)	1	28	Risk Ratio (M-H, Fixed, 95% CI)	0.53 [0.29, 0.99]
9.6 suicidal ideation (BSSI)	1	28	Risk Ratio (M-H, Fixed, 95% CI)	0.62 [0.36, 1.07]
10 Mental state: 2a. Anger - average scores - by 6 months (STAXI, high = poor)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
10.1 anger - in	1	20	Mean Difference (IV, Fixed, 95% CI)	-1.90 [-6.47, 2.67]
10.2 anger - out	1	20	Mean Difference (IV, Fixed, 95% CI)	-3.40 [-7.89, 1.09]
11 Mental state: 3a. Anxiety - average score - by 6 months (HARS, high = poor)	1	20	Mean Difference (IV, Fixed, 95% CI)	-13.10 [-22.08, -4.12]
12 Mental state: 4a. Depression - average score - by 6 months (HAM-D, high = poor)	1	20	Mean Difference (IV, Fixed, 95% CI)	-7.20 [-13.19, -1.21]
13 Mental state: 4b. Depression - average score - by 6 months (BDI, high = poor, skewed data)			Other data	No numeric data
14 Mental state: 5. Dissociation - average score - by 6 months (DES, high = poor, skewed data)			Other data	No numeric data
15 Mental state: 6. Hopelessness - average score - by 6 months (BHS, high = poor, skewed data)			Other data	No numeric data
16 Mental state: 7. Suicidal ideation - average score - by 6 months (BSSI, high = poor)	1	20	Mean Difference (IV, Fixed, 95% CI)	-15.3 [-25.46, -5.14]
17 Leaving the study early	3	155	Risk Ratio (M-H, Fixed, 95% CI)	0.74 [0.52, 1.04]
18 Substance use - by 12 to 18 months follow up (EuropASI, high = poor, skewed data)			Other data	No numeric data
18.1 alcohol - average days >4 drinks past months (0-30)			Other data	No numeric data
18.2 alcohol - average days alcohol problems past months (0-30)			Other data	No numeric data
18.3 alcohol - average severity of alcohol problems (0-9)			Other data	No numeric data
18.4 cannabis - average days cannabis use past months (0-30)			Other data	No numeric data
18.5 drug problems - average days drug problems past months (0-30)			Other data	No numeric data
18.6 drug problems - average severity drug problems (0-9)			Other data	No numeric data

18.7 medication - avereage days medication use past months (0-30)	Other data	No numeric data	

Comparison 2. DIALECTICAL BEHAVIOUR THERAPY - SUBSTANCE USE vs TREATMENT AS USUAL

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Death: sudden / unexpected	1	28	Risk Ratio (M-H, Fixed, 95% CI)	3.92 [0.17, 88.67]
2 Leaving the study early	1	28	Risk Ratio (M-H, Fixed, 95% CI)	1.33 [0.50, 3.58]
3 Substance use: Abstinent from drugs / alcohol - proportion days (interviewer assessed)			Other data	No numeric data
3.1 within 6 months			Other data	No numeric data
3.2 by >6 to 12 months			Other data	No numeric data
3.3 by >12 to 18 months follow-up			Other data	No numeric data
4 Substance use: Urinalyses clean - proportion			Other data	No numeric data
4.1 within 6 months			Other data	No numeric data
4.2 by >6 to 12 months			Other data	No numeric data
4.3 by >12 to 18 months follow-up			Other data	No numeric data

Comparison 3. DIALECTICAL BEHAVIOUR THERAPY - SUBSTANCE USE vs COMPREHENSIVE VALIDATION THERAPY PLUS 12-STEP

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Service outcomes: 1a. Prison - at least one night incarcerated - by >12 to 18 months follow up	1	23	Risk Ratio (M-H, Fixed, 95% CI)	1.09 [0.64, 1.87]
2 Service outcomes: 1b. Prison - average number of nights incarcerated - by >12 to 18 months follow up			Other data	No numeric data
3 Leaving the study early	1	23	Risk Ratio (M-H, Fixed, 95% CI)	7.58 [0.44, 132.08]

Comparison 4. DIALECTICAL BEHAVIOUR THERAPY-ORIENTED TREATMENT vs CLIENT CENTRED THERAPY

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Service outcomes: Admitted to psychiatric hospital - by 6 to 12 months	1	24	Risk Ratio (M-H, Fixed, 95% CI)	0.33 [0.08, 1.33]
2 Behaviour: Self harm - parasuicide and behavioural indicators - no clinically significant change (self-report)	1	24	Risk Ratio (M-H, Fixed, 95% CI)	0.13 [0.02, 0.85]
2.1 >6 months to 12 months	1	24	Risk Ratio (M-H, Fixed, 95% CI)	0.13 [0.02, 0.85]
3 Mental state: 1. No clinically significant change - by 6 to 12 months	1		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
3.1 anxiety (BAI >/=10)	1	24	Risk Ratio (M-H, Fixed, 95% CI)	0.6 [0.32, 1.12]
3.2 depression (BDI >/=10)	1	24	Risk Ratio (M-H, Fixed, 95% CI)	0.52 [0.30, 0.91]
3.3 depression (HDRS >/=10)	1	24	Risk Ratio (M-H, Fixed, 95% CI)	0.43 [0.14, 1.28]
3.4 general psychiatric severity (BPRS >/=15)	1	24	Risk Ratio (M-H, Fixed, 95% CI)	0.6 [0.37, 0.97]
3.5 suicidal ideation (BSSI >3)	1	24	Risk Ratio (M-H, Fixed, 95% CI)	0.13 [0.02, 0.85]
4 Mental state: 2a. Anxiety / depression - average score - by 6 months	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
4.1 anxiety (BAI, high = poor)	1	24	Mean Difference (IV, Fixed, 95% CI)	-4.50 [-8.80, -0.20]
4.2 depression (BDI, high = poor)	1	24	Mean Difference (IV, Fixed, 95% CI)	-6.67 [-11.95, -1.39]
5 Mental state: 2b. Anxiety / depression (HDRS, high = poor, skewed data)			Other data	No numeric data
5.1 within 6 months			Other data	No numeric data
5.2 by >6 to 12 months			Other data	No numeric data
6 Mental state: 2c. Anxiety / depression - average score - by >6 to 12 months (high = poor, skewed data)			Other data	No numeric data
6.1 anxiety (BAI)			Other data	No numeric data
6.2 depression (BDI)			Other data	No numeric data
7 Mental state: 3. General psychiatric severity (BPRS, high = poor)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
7.1 within 6 months	1	24	Mean Difference (IV, Fixed, 95% CI)	-7.41 [-13.72, -1.10]
7.2 by >6 to 12 months	1	24	Mean Difference (IV, Fixed, 95% CI)	-7.16 [-12.15, -2.17]
8 Mental state: 4. Suicidal ideation (BSSI, high =poor)			Other data	No numeric data
8.1 within 6 months			Other data	No numeric data
8.2 by >6 to 12 months			Other data	No numeric data
9 Leaving the study early	1	24	Risk Ratio (M-H, Fixed, 95% CI)	0.67 [0.25, 1.78]

Comparison 5. PSYCHOANALYTICALLY ORIENTED PARTIAL HOSPITALIZATION vs GENERAL PSYCHIATRIC CARE

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Service outcome: 1a. Admitted for inpatient treatment - past 6 months	1		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
1.1 >18 to 24 months follow-up	1	44	Risk Ratio (M-H, Fixed, 95% CI)	0.05 [0.00, 0.77]
1.2 >24 to 30 months follow-up	1	44	Risk Ratio (M-H, Fixed, 95% CI)	0.1 [0.01, 0.72]
1.3 >30 to 36 months follow-up	1	44	Risk Ratio (M-H, Fixed, 95% CI)	0.06 [0.01, 0.40]
2 Service outcome: 1b. Average number of inpatient days (skewed data)			Other data	No numeric data
2.1 >18 to 24 months follow-up			Other data	No numeric data
2.2 >24 to 30 months follow-up			Other data	No numeric data
2.3 >30 to 36 months follow-up			Other data	No numeric data
3 Service outcome: 2a. Partial hospitalisation	1		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
3.1 >18 to 24 months follow-up	1	44	Risk Ratio (M-H, Fixed, 95% CI)	0.04 [0.00, 0.59]
3.2 >24 to 30 months follow-up	1	44	Risk Ratio (M-H, Fixed, 95% CI)	0.05 [0.00, 0.77]
4 Service outcome: 2b. Average number of days partially hospitalised (skewed data)			Other data	No numeric data
4.1 >18 to 24 months follow-up			Other data	No numeric data
4.2 >24 to 30 months follow-up			Other data	No numeric data
4.3 >30 to 36 months follow-up			Other data	No numeric data
5 Service outcome: 3. Average number of visits to psychiatric outpatients (skewed data)			Other data	No numeric data
5.1 >18 to 24 months follow-up			Other data	No numeric data
5.2 >24 to 30 months follow-up			Other data	No numeric data
5.3 >30 to 36 months follow-up			Other data	No numeric data

6 Service outcome: 4. Average number of days attending community centre (skewed data)			Other data	No numeric data
6.1 >18 to 24 months follow-up			Other data	No numeric data
6.2 >24 to 30 months follow-up			Other data	No numeric data
6.3 >30 to 36 months follow-up			Other data	No numeric data
7 Service outcome: 5a. Medication - taking psychotropic medication (cumulative)	1	44	Risk Ratio (M-H, Fixed, 95% CI)	0.44 [0.25, 0.80]
7.1 >30 to 36 months follow-up	1	44	Risk Ratio (M-H, Fixed, 95% CI)	0.44 [0.25, 0.80]
8 Service outcome: 5b. Medication - receiving polypharmacy (cumulative)	1	44	Risk Ratio (M-H, Fixed, 95% CI)	0.19 [0.06, 0.55]
8.1 >30 to 36 months follow-up	1	44	Risk Ratio (M-H, Fixed, 95% CI)	0.19 [0.06, 0.55]
9 Mental state: 1a. Anxiety - state (STAI, high = poor)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
9.1 within 6 months	1	38	Mean Difference (IV, Fixed, 95% CI)	0.40 [-6.49, 7.29]
9.2 > 6 months to 12 months	1	38	Mean Difference (IV, Fixed, 95% CI)	-7.00 [-15.01, -2.99]
9.3 > 12 months to 18 months	1	38	Mean Difference (IV, Fixed, 95% CI)	-13.0 [-19.65, -6.35]
9.4 >18 to 24 months follow-up	1	36	Mean Difference (IV, Fixed, 95% CI)	-9.70 [-16.42, -2.98]
9.5 >24 to 30 months follow-up	1	36	Mean Difference (IV, Fixed, 95% CI)	-14.40 [-21.74, -7.06]
9.6 >30 to 36 months follow-up	1	33	Mean Difference (IV, Fixed, 95% CI)	-19.80 [-25.81, -13.79]
10 Mental state: 1b. Anxiety - trait (STAI, high = poor)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
10.1 within 6 months	1	38	Mean Difference (IV, Fixed, 95% CI)	-0.20 [-5.19, 4.79]
10.2 > 6 months to 12 months	1	38	Mean Difference (IV, Fixed, 95% CI)	-0.20 [-4.78, 4.38]
10.3 >12 months to 18 months	1	38	Mean Difference (IV, Fixed, 95% CI)	-4.20 [-9.53, 1.13]
10.4 >18 to 24 months follow-up	1	37	Mean Difference (IV, Fixed, 95% CI)	-2.10 [-8.25, 4.05]
10.5 >24 to 30 months follow-up	1	37	Mean Difference (IV, Fixed, 95% CI)	-3.40 [-9.87, 3.07]
10.6 >30 to 36 months follow-up	1	37	Mean Difference (IV, Fixed, 95% CI)	-8.30 [-14.01, -2.59]
11 Mental state: 2a. Depressed (BDI scores >/=14)	1		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
11.1 > 12 months to 18 months	1	44	Risk Ratio (M-H, Fixed, 95% CI)	0.87 [0.72, 1.04]
11.2 >18 to 24 months follow-up	1	44	Risk Ratio (M-H, Fixed, 95% CI)	0.76 [0.58, 1.00]
11.3 >24 to 30 months follow-up	1	44	Risk Ratio (M-H, Fixed, 95% CI)	0.52 [0.34, 0.80]

11.4 >30 to 36 months follow-up	1	44	Risk Ratio (M-H, Fixed, 95% CI)	0.45 [0.27, 0.76]
12 Mental state: 2b. Depression - average score (BDI, high = poor)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
12.1 within 6 months	1	38	Mean Difference (IV, Fixed, 95% CI)	-0.20 [-6.25, 5.85]
12.2 > 6 months to 12 months	1	38	Mean Difference (IV, Fixed, 95% CI)	-8.00 [-13.66, -2.34]
12.3 >12 months to 18 months	1	38	Mean Difference (IV, Fixed, 95% CI)	-14.60 [-19.18, -10.02]
12.4 >18 to 24 months follow-up	1	38	Mean Difference (IV, Fixed, 95% CI)	-9.7 [-14.47, -4.93]
12.5 >24 to 30 months follow-up	1	38	Mean Difference (IV, Fixed, 95% CI)	-8.2 [-12.85, -3.55]
12.6 >30 to 36 months follow-up	1	38	Mean Difference (IV, Fixed, 95% CI)	-8.50 [-13.83, -3.17]
13 Mental state: 3a. Global severity - average score (SCL90-R, high = poor)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
13.1 within 6 months	1	38	Mean Difference (IV, Fixed, 95% CI)	Not estimable
13.2 > 6 months to 12 months	1	38	Mean Difference (IV, Fixed, 95% CI)	-0.20 [-0.61, 0.21]
13.3 >12 months to 18 months	1	38	Mean Difference (IV, Fixed, 95% CI)	-0.30 [-0.78, 0.18]
13.4 >18 to 24 months follow-up	1	36	Mean Difference (IV, Fixed, 95% CI)	-0.70 [-1.13, -0.27]
14 Mental state: 3b. Global severity - average score (SCL90-R, high = poor, skewed data)			Other data	No numeric data
14.1 >24 to 30 months follow-up			Other data	No numeric data
14.2 >30 to 36 months follow-up			Other data	No numeric data
15 Mental state: 4. Positive symptoms - average score (SCL90-R, high = poor)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
15.1 within 6 months	1	38	Mean Difference (IV, Fixed, 95% CI)	3.20 [-4.44, 10.84]
15.2 > 6 months to 12 months	1	38	Mean Difference (IV, Fixed, 95% CI)	3.10 [-6.64, 12.84]
15.3 > 12 months to 18 months	1	38	Mean Difference (IV, Fixed, 95% CI)	-2.40 [-12.70, 7.90]
15.4 >18 to 24 months follow-up	1	36	Mean Difference (IV, Fixed, 95% CI)	-12.70 [-22.18, -3.22]
15.5 >24 to 30 months follow-up	1	36	Mean Difference (IV, Fixed, 95% CI)	-24.1 [-34.13, -14.07]
15.6 >30 to 36 months follow-up	1	36	Mean Difference (IV, Fixed, 95% CI)	-33.9 [-43.59, -24.21]
16 Quality of life: 1. Social adjustment - average score (SAS-SR, high = poor)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
16.1 > 12 months to 18 months	1	39	Mean Difference (IV, Fixed, 95% CI)	-0.70 [-1.08, -0.32]
16.2 >30 to 36 months follow-up	1	39	Mean Difference (IV, Fixed, 95% CI)	-1.30 [-1.68, -0.92]

17 Quality of life: 2. Interpersonal problems - average score (IIP-CV, high = poor)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
17.1 > 12 months to 18 months	1	40	Mean Difference (IV, Fixed, 95% CI)	-0.70 [-0.89, -0.51]
17.2 >30 to 36 months follow-up	1	40	Mean Difference (IV, Fixed, 95% CI)	-1.0 [-1.28, -0.72]
18 Leaving the study early	1	44	Risk Ratio (M-H, Fixed, 95% CI)	1.0 [0.23, 4.42]

WHAT'S NEW

Last assessed as up-to-date: 26 August 2005.

Date	Event	Description
10 November 2008	Amended	Converted to new review format.

HISTORY

Review first published: Issue 1, 2006

Date	Event	Description
12 January 2006	Feedback has been incorporated	The editorial base of the Cochrane Developmental, Psychosocial and Learning Problems Group would like to extend its sincere thanks to the Cochrane Schizophrenia Group, particularly Mark Fenton and Clive Adams, who did so much to make this review happen. The first version of this review is being published at Issue 1, 2006, whilst new authors are preparing an update to incorporate new data, which should be published shortly.
14 November 2005	Amended	Minor update:
27 August 2005	New citation required and conclusions have changed	Substantive amendment

CONTRIBUTIONS OF AUTHORS

Clive Adams - sought funds, helped write the protocol, helped formulate searches, formatted the review and wrote the dicussion.

Claire Binks - helped select studies, extract data and write the report.

Conor Duggan - sought funds, helped write the protocol, helped formulate searches, read selection of abstracts, corrected final report.

Mark Fenton - helped find funds, helped write the protocol, helped formulate searches, undertook and formatted the electronic searches, helped select studies, extracted data, and helped write the report.

Tracy Lee - helped write the protocol, formulate searches and obtained papers.

Lucy McCarthy - sought funds, helped write the protocol, helped formulate searches, read selection of abstracts, corrected final report.

DECLARATIONS OF INTEREST

The reviewers all work in either academic departments or forensic psychiatric units, some have had a psychodynamic training (MF), and CD works psychodynamically in clinical practice; CB, LMcC, CEA have no known conflicts of interest.

SOURCES OF SUPPORT

Internal sources

- University of Leicester, UK.
- Univerity of Leeds, UK.

External sources

- NHS National R&D Programme on Forensic Mental Health, UK.

INDEX TERMS

Medical Subject Headings (MeSH)

Behavior Therapy; Borderline Personality Disorder [psychology; *therapy]; Psychoanalysis; Psychotherapy [*methods]; Psychotherapy, Group; Randomized Controlled Trials as Topic

MeSH check words

Humans