Are recommendations for psychological treatment of borderline personality disorder in current UK guidelines justified? Systematic review and subgroup analysis

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ABSTRACT
Current UK guidelines on the management of borderline personality disorder include specific recommendations about the duration of therapy and number of sessions per week that patients should be offered. However, very little research has been conducted to examine the impact of these aspects of treatment process on patient outcomes. We therefore undertook a systematic review to examine the impact of treatment duration, number of sessions per week and access group-based therapy on general mental health, depression, social functioning and deliberate self-harm. We identified 25 randomized trials for possible inclusion in the review. However, differences in outcome measures used meant that only 12 studies could be included in the analysis. Statistically significant reductions in self-harm and depression and improvement in social functioning were found for treatments that include more than one session per week and those that included group-based sessions but were not found for those that deliver in individual sessions or one or fewer sessions per week. Longer term outcomes of short-term interventions have not been examined. Further research is needed to examine the impact of shorter term interventions and to compare the effects of group-based versus individual therapies for people with borderline personality disorder. Copyright © 2014 John Wiley & Sons, Ltd.

Introduction
Over the last 30 years, a range of psychological treatments have been developed for the treatment of people with borderline personality disorder (BPD). Many of these appear to benefit patients, and national treatment guidelines in several countries have promoted their wider use (American Psychiatric Association, 2001; NICE, 2009; National Health and Medical Research Council, 2012). There has been much debate about whether benefits associated with psychological treatments for BPD are the result of specific ‘active ingredients’ of different treatment approaches or the result of general factors such as providing people with structured and coordinated care (de Groot, Verheul, & Trijsburg, 2008; Livesley, 2004). In 2009, the National Institute for Health and Care Excellence (NICE) highlighted features of psychological treatments that may be most helpful for
people with BPD (NICE, 2009). Based on the observation that studies of relatively long-term multi-modal interventions such as dialectical behaviour therapy and mentalization-based treatment were associated with positive outcomes, this group recommended that short-term therapies (of less than 3-month duration) should be avoided and that twice-weekly therapy should be considered. These recommendations were based on the views of an expert panel of researchers, clinicians and patients; evidence from clinical trials of psychological therapies for people with BPD was not provided in support of these recommendations (Levy, Yeomans, Denning, & Fertuck, 2010; Tyrer & Haigh, 2010). It is therefore unclear whether variation in outcomes associated with different psychological treatments for people with BDP is the result of differences in the length, number of sessions per week or type of treatment that is offered.

Subgroup analysis has been recommended as a means of examining heterogeneity in the results of clinical trials (Oxman & Guyatt, 1992; Yusuf et al., 1991). By comparing treatment outcomes among subgroups of patients or groups of people offered different types of therapy, subgroup analysis can be used to test whether positive outcomes are more likely among some types of people or among those offered particular kinds of treatment (Oxman & Guyatt, 1992; Yusuf et al., 1991). Secondary analysis of data from clinical trials has also been used to examine the impact of treatment process on outcomes of psychological therapies for other mental disorders: Churchill, Hunot and Corney (2001) reported that group-based treatments may be less effective than individual therapy for people with depression. However, to date, this approach has not been used to examine the relationship between process and outcomes of psychological treatments for people with BPD.

In summary, treatment guidelines for people with BPD have attempted to define aspects of the organization and delivery of therapy that are associated with better patient outcomes; however, to date, these have been based on expert opinion and narrative reviews of available evidence. Better evidence about the ‘active ingredients’ of psychological treatments for BPD could help ensure that health care professionals and patients make informed choices about the types of psychological therapy that they should use; it also has the potential to inform modifications to existing treatment approaches and research into new treatments that may help people with this condition. We therefore set out to conduct a systematic search of published trials of the effects of psychological treatments for people with BPD and to examine the impact that three process factors highlighted in previous treatment guidelines (duration of treatment, number of sessions per week and access to group sessions) had on the effectiveness of psychological therapies for people with BPD.

Methods

As a systematic review had been completed by the National Institute for Health and Care Excellence of all randomized trials of psychological therapies for people with BPD up until April 2008, we built on this and searched for new trials published from then until the end of June 2011. This involved searching the same four bibliographic databases (MEDLINE, Excerpta Medica database, PsychINFO and Cumulative Index to Nursing and Allied Health Literature) using terms related to psychological therapies (psychological therapy, psychotherapy, talking therapy, cognitive behavioural therapy (CBT), dialectical behavioural therapy (DBT), cognitive analytic therapy (CAT), cognitive therapy (CT), client-centred therapy (CCT), dynamic deconstructive therapy (DDT), schema-focused therapy (SFT), mentalization-based therapy (MBT) and interpersonal therapy), BPD (borderline, borderline state, borderline personality, cluster b, emotional instability, emotionally unstable, emotional dysfunction, personality disorder and multiple personality) and those related to clinical trials (clinical trials, controlled clinical
trials, crossover procedure/design/studies, double blind procedure/study/design, random allocation, random sampling, random assignment, randomization, random sample and randomized controlled trials). We searched the reference list of all new studies and approached experts in the field at a national conference (in March 2011) in an attempt to identify any recent unpublished trials.

Inclusion and exclusion criteria
Studies were eligible for inclusion if they were the following: randomized controlled trials, involved patients who have a formal diagnosis of BPD according to DSM criteria or ICD criteria for emotionally unstable personality disorder using either clinical judgement or a structured interview assessment, written in English, examined outcomes using validated outcome measures and compared a psychological treatment with a control condition. Studies that compared two or more active treatments without a control group were not included in the subgroup analysis. Trials for people with other types of personality disorder or other mental health problems (such as deliberate self-harm) were included only if they reported separate data on subgroups of patients with a formal diagnosis of BPD.

Participants were adults aged 18 or over from any treatment setting (outpatient, inpatient and primary care). Trials of participants with co-morbid alcohol use or dependence were included, but those that focussed exclusively on people with dependence on other substances were excluded.

Process factors and outcome measures
We examine the impact of three process factors on study outcomes: (1) number of sessions per week (defined dichotomously according to NICE guidelines into those delivered more than once a week and those delivered once a week or less often); (2) duration of treatment (defined dichotomously according to NICE guidelines into those of more and those of less than 3 months); and (3) whether or not a treatment included group-based sessions.

Trials of psychological treatments for people with a BPD use a large range of different outcome measures. For the purpose of this review, we decided to focus on the four outcome measures that have been most widely reported in such trials: general mental health, depression, social functioning and whether study participants self-harmed during the follow-up period. Trials also reported outcomes over a broad range of different time periods. The most frequently reported time point for study outcomes was 12 months after randomization, and we therefore selected outcomes at 1 year. When a study did not report 12-month outcomes but did provide data 4 months either side of this date (i.e. 8 and 16 months), we included these in the subgroup analysis.

Data extraction and analysis
Two independent reviewers (HO and MTA) inspected electronic copies of all papers that were considered for possible inclusion in the review. Where disagreement occurred about whether a trial met the study inclusion criteria, this was resolved on a discussion with a third reviewer (MC). HO and MTA then independently extracted data from selected trials using a pre-prepared data extraction form. This included information on the specific psychological interventions, its comparator, process factors (as described in the previous texts) and demographic data on study participants. Each study was assigned a quality rating using the rating system developed by the Scottish Intercollegiate Guidelines Network (SIGN, 2002). This system is based on a checklist of 10 aspects of study design. Trials are categorized as high quality if the majority of the criteria are met and there is little or no risk of bias, acceptable if most criteria are met but there are some flaws and an associated risk of bias and low quality if either most criteria are not met or there are significant flaws relating to key aspects of study design.
We used the Comprehensive Meta-analysis software (DerSimonian & Laird, 1986) to analyse the data. We made the assumption that there would be heterogeneity across studies and therefore used a random effects model to calculate the standardized mean difference (SMD) with 95% confidence intervals for the impact of different types of psychological treatments on each of the pre-defined outcomes.

Results

Six trials identified in the NICE review met our inclusion criteria. Our search for new trials yielded 1554 titles of which 6 were randomized trials that met our inclusion criteria and contained data on one of the four outcome measures (refer to flow chart in Figure 1). Therefore, the total number of studies included in the meta-analysis was 12. Details of these 12 trials are presented in Table 1. All 12 studies were rated as ‘acceptable’ or higher according to SIGN criteria; four (33.3%) were rated ‘high quality’ (refer to Table 2).

Results of subgroup analysis

The impact of treatment duration on study outcomes could not be explored as only two studies examined interventions of less than 3-month duration (Weinberg, Gunderson, Hennen, & Omar et al. 2014). DOI: 10.1002/pmh

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<table>
<thead>
<tr>
<th>Study</th>
<th>Participants</th>
<th>Experimental and control treatment</th>
<th>Duration of treatment</th>
<th>Sessions per week</th>
<th>Included groups</th>
<th>Outcomes included in the review</th>
<th>Study quality SIGN system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bateman and Fonagy (1999)</td>
<td>38 people with DSM-III-R BPD</td>
<td>Day treatment with MBT versus psychiatric review</td>
<td>18 months</td>
<td>&gt;1</td>
<td>Yes</td>
<td>Depression, Deliberate self-harm, General mental health</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Bateman and Fonagy (2009)</td>
<td>134 people with BPD based on DSM-IV</td>
<td>MBT versus structured clinical management</td>
<td>18 months</td>
<td>&gt;1</td>
<td>Yes</td>
<td>Depression, Deliberate self-harm, Social functioning, General mental health</td>
<td>High quality</td>
</tr>
<tr>
<td>Blum et al. (2008)</td>
<td>124 people with BPD based on DSM-IV</td>
<td>Group-based STEPPS therapy versus medication and case management</td>
<td>20 weeks</td>
<td>1 or less</td>
<td>Yes</td>
<td>Depression, Social functioning</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Bos, van Wel, Appelo and Verbraak (2010)</td>
<td>79 people with BPD based on DSM-IV</td>
<td>Weekly skills training versus monthly mental health follow-up</td>
<td>18 weeks</td>
<td>&gt;1</td>
<td>Yes</td>
<td>Deliberate self-harm, General mental health</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Davidson et al. (2006)</td>
<td>106 people with DSM-IV BPD and recent self-harm</td>
<td>Individual CBT versus treatment as usual</td>
<td>12 months</td>
<td>1 or less</td>
<td>No</td>
<td>Depression, Deliberate self-harm, Social functioning, General mental health</td>
<td>High quality</td>
</tr>
<tr>
<td>Doering et al. (2010)</td>
<td>84 female patients aged 18–45 with BPD based on DSM-IV</td>
<td>Transference-focused psychotherapy versus treatment by psychotherapists</td>
<td>12 months</td>
<td>&gt;1</td>
<td>No</td>
<td>Depression, Deliberate self-harm, Social functioning, General mental health</td>
<td>High quality</td>
</tr>
<tr>
<td>Farrell, Shaw and Webber (2009)</td>
<td></td>
<td>Group-based schema focused therapy versus weekly supportive psychotherapy</td>
<td>8 months</td>
<td>&gt;1</td>
<td>Yes</td>
<td>Depression, Social functioning, General mental health</td>
<td>High quality</td>
</tr>
<tr>
<td>Gregory et al. (2008)</td>
<td>30 people aged 18–45 years with DSM-IV BPD and alcohol misuse</td>
<td>Dynamic psychotherapy versus therapy and mental health care</td>
<td>12 months</td>
<td>1 or less</td>
<td>No</td>
<td>Depression, Deliberate self-harm, Social functioning</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Linehan et al. (1991)</td>
<td>63 patients aged 18–45 years with DSM-III BPD and recent self-harm</td>
<td>Dialectical behaviour therapy versus individual psychotherapy</td>
<td>12 months</td>
<td>&gt;1</td>
<td>Yes</td>
<td>Deliberate self-harm, Social functioning</td>
<td>Acceptable</td>
</tr>
</tbody>
</table>
The results of this review confirm a variety of psychological interventions for people with BPD are associated with small to medium-sized improvements in a broad range of outcomes. However, our ability to combine data from trials was limited by marked differences in both the content and timing of the two conclusions of NICE recommendations for the subgroup analysis. These results support one of the two conclusions of NICE recommendations for psychological treatment for people with BPD, that interventions that are delivered at an intensity of more than one session per week should be considered in preference to those that deliver less often (NICE, 2009). However, all but one of these treatments also include a group-based component, and effect sizes associated with group therapy had effect sizes and included access to group therapy. The methods and findings of the subgroup analyses are presented in Table 2. Interventions delivered twice weekly or more were associated with statistically significant improvements in all outcomes apart from general mental health, and were only often. Interventions that included group therapy were associated with statistically significant improvements in all outcomes, those that did not were not.

### Discussion

The results of this review confirm a variety of psychological interventions for people with BPD are associated with small to medium-sized improvements in a broad range of outcomes. However, our ability to combine data from trials was limited by marked differences in both the content and timing of the two conclusions of NICE recommendations for the subgroup analysis. These results support one of the two conclusions of NICE recommendations for psychological treatment for people with BPD, that interventions that are delivered at an intensity of more than one session per week should be considered in preference to those that deliver less often (NICE, 2009). However, all but one of these treatments also include a group-based component, and effect sizes associated with group therapy had effect sizes and included access to group therapy. The methods and findings of the subgroup analyses are presented in Table 2. Interventions delivered twice weekly or more were associated with statistically significant improvements in all outcomes apart from general mental health, and were only often. Interventions that included group therapy were associated with statistically significant improvements in all outcomes, those that did not were not.

### Table 1: (continued)

<table>
<thead>
<tr>
<th>Study</th>
<th>Participants</th>
<th>Experimental and control treatment</th>
<th>Duration of treatment</th>
<th>Sessions per week</th>
<th>Included groups</th>
<th>Outcomes included in the review</th>
<th>Study quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linehan et al. (2006)</td>
<td>101 women aged 18–45 years with DSM-IV BPD and at least two suicidal attempts.</td>
<td>Dialectical behaviour therapy versus community treatment by experts</td>
<td>12 months</td>
<td>&gt;1</td>
<td>Yes</td>
<td>Depression</td>
<td>High quality</td>
</tr>
<tr>
<td>McMinn et al. (2009)</td>
<td>180 patients aged 18–60 years with DSM-IV BPD and self harm</td>
<td>Dialectical behaviour therapy versus general psychiatric management</td>
<td>12 months</td>
<td>&gt;1</td>
<td>Yes</td>
<td>Depression</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Verheul et al. (2003)</td>
<td>58 women with DSM-IV diagnosis of BPD aged 18–70</td>
<td>Dialectical behaviour therapy versus follow-up from mental health services</td>
<td>12 months</td>
<td>&gt;1</td>
<td>Yes</td>
<td>Deliberate self-harm</td>
<td>High quality</td>
</tr>
</tbody>
</table>
as or greater than those associated with treatments of higher intensity. Clear positive outcomes found in a trial of a low-intensity group-based intervention—Systems Training for Emotional Predictability and Problem Solving (‘STEPPS’) (Blum et al., 2008)—provide additional support for the hypothesis that it is the exposure to group-based treatment rather than the intensity of treatment that contributes to the benefits of interventions for people with BPD.

This is the first study to our knowledge that has attempted to systematically study the impact of the process of delivering psychological therapies on outcomes of treatment for people with BPD. This was achieved through a subgroup analysis using potential moderators that had been highlighted in previous reports. We used a comprehensive search strategy to build on a previous high-quality review to ensure that all studies that met our inclusion criteria were included in the review. Previous studies based on subgroup analysis have been criticized for not stating a priori hypotheses that increases the potential to generate type I error (Sun et al., 2012). One of the strengths of this study was that process variables and outcome measures were selected before any analysis of outcomes was undertaken. Process variables were selected on the basis of factors identified as important by experts working on national guidance for BPD, and outcome variables were selected according to how often they had been used in previous trials.

However, the study has a number of important limitations, notably the small number of trials that we were able to be included in the subgroup analysis. While over 30 trials of psychological treatments for people with BPD had been published up until June 2011, most of these had to be excluded, either because they did not include a control condition or because they did not report one of the outcome measures that we focussed on between 6 and 18 months after randomization. As a result, of the small number

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Table 2: Standardized mean differences (SMDs) associated with different types of psychological treatment for people with borderline personality disorder

<table>
<thead>
<tr>
<th>Outcome measure</th>
<th>Number of sessions per week</th>
<th>Group-based component</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Less than two per week N</td>
<td>Two or more sessions per week N</td>
</tr>
<tr>
<td></td>
<td>SMD (95% CI) p-value</td>
<td>SMD (95% CI) p-value</td>
</tr>
<tr>
<td></td>
<td>Does not include group N</td>
<td>Includes group N</td>
</tr>
<tr>
<td></td>
<td>SMD (95% CI) p-value</td>
<td>SMD (95% CI) p-value</td>
</tr>
<tr>
<td>General mental health</td>
<td>N = 1</td>
<td>N = 6*</td>
</tr>
<tr>
<td></td>
<td>-0.052 (0.337 to 0.233)</td>
<td>-0.425 (0.805 to 0.044)</td>
</tr>
<tr>
<td>Depression</td>
<td>N = 3</td>
<td>N = 5</td>
</tr>
<tr>
<td></td>
<td>-0.166 (0.431 to 0.073)</td>
<td>-0.269 (0.447 to 0.09)</td>
</tr>
<tr>
<td></td>
<td>to 0.051) 0.121 to 0.073</td>
<td>to 0.100) 0.221</td>
</tr>
<tr>
<td>Deliberate self-harm</td>
<td>N = 2</td>
<td>N = 5</td>
</tr>
<tr>
<td></td>
<td>-0.035 (0.345 to 0.270)</td>
<td>-0.558 (0.847 to 0.001)</td>
</tr>
<tr>
<td></td>
<td>to 0.231) 0.383 to 0.052</td>
<td>to 0.275) 0.825</td>
</tr>
<tr>
<td>Social functioning</td>
<td>N = 3</td>
<td>N = 4</td>
</tr>
<tr>
<td></td>
<td>-0.137 (0.402 to 0.270)</td>
<td>-1.527 (2.669 to 0.355)</td>
</tr>
<tr>
<td></td>
<td>to 0.780) 0.331 to 0.202</td>
<td>to 0.128) 0.311</td>
</tr>
</tbody>
</table>

*Subgroup analysis not conducted as insufficient studies in each group.
of trials that we were able to include, confidence limits around SMDs were wide resulting in a lack of precision in the estimate of true effect sizes associated with different types of treatment. Differences in trial design, choice of outcome measures and study quality are likely to have had a bearing on differences in effect sizes across trials. The content of control treatments also varied considerably between studies. In some, this consisted of occasional reviews from a mental health professional, while in others, it involved more intensive and structured support. We cannot rule out the possibility that some of the differences seen in the subgroup analysis are the result of differences in control treatment rather than the active treatments that were studied. We also found differences in study quality, and these could have had an impact on study findings. However, all studies were randomized and were of sufficient quality to be included in the subgroup analysis.

Finally, findings from subgroup analyses are observational in nature and are not based on randomized comparisons. The differences that we found should not be considered as evidence of their effect but only as a basis for generating hypotheses for future research.

Major variation in both the type and timing of outcomes that were assessed limited the number of trials that we could include in the subgroup analysis. There does not appear to be an empirical basis for these differences. While there is a tendency to assess only short-term outcomes of brief psychological interventions, BPD is a long-term disorder and information about outcomes over months rather than weeks are needed to properly examine the impact of interventions. Previous research has shown that there is a good deal of agreement among patients, clinicians and researchers about the most important outcomes to use when examining the impact of treatment for personality disorder (Crawford et al., 2008). Future trials should focus on measuring these key elements of mental health, quality of life, social functioning and risk of harm to self and others. This would make comparisons between trials easier to make and help build the evidence of which aspects of treatment process are most likely to bring about positive change for people with BPD.

While we were not able to do a subgroup analysis comparing the impact of short treatments delivered over less than 12 weeks with longer interventions, it is noteworthy that the two trials of short-term interventions that have been published both reported positive effects. Weinberg et al. (2006) examine the impact of adding six sessions of manual-assisted cognitive therapy to treatment as usual and reduced the incidence of deliberate self-harm (but not the proportion of those that self-harmed—hence, it has been excluded from the subgroup analysis). Zanarini and colleagues examined the impact of adding a single session of psychoeducation to the treatment of people with BPD and reported greater reductions in general impulsivity and relationship problems 3 months later. People with BPD have a fear of abandonment and often find treatment endings difficult (Lieb et al., 2004). While this may have led some to be cautious about the use of short-term treatments, it is possible that if clear information is given about the length and scope of psychological treatment, it may be possible to minimize these problems. At present, treatments for BPD last far longer than those for other mental disorders, and while these may be associated reductions in the overall costs of care, the development of effective shorter term interventions for people with BPD may help ensure that psychological treatments became more widely available.

The results of this subgroup analysis lend support to NICE recommendations that people with BPD are offered multi-modal interventions. It is difficult to disentangle which process element(s) of these interventions gives rise to positive outcomes. Both MBT and DBT include more than one session per week and combine individual with group-based sessions. The results of this study provide as much support for the notion that these treatments are effective because they provide opportunities for supporting and being supported by
peers as they do for the recommendation that people with BPD should receive interventions based on more than one session a week. Further evidence to support the value of group-based therapy for people with BPD comes from the study by Blum and colleagues that tested group-based cognitive therapy and delivered less than two sessions per week. Weekly group-based therapy may also help improve mental health and social functioning of people with other forms of personality disorder (Huband et al., 2007). Qualitative data collected from people with PD in receipt of psychosocial interventions also highlight the importance placed on group-based treatment (Price et al., 2009). This finding contrasts with those from studies examining individual versus group-based treatments for other types of mental disorder in which generally either no difference or that individual therapy is more effective (Churchill et al., 2001; McRoberts, Burlingame, & Hoag, 1998; Selwood, Johnston, Katona, Paton, & Livingston, 2005). Problems with interpersonal functioning are central to personality disorder, and it may be that group-based therapy offers opportunities for improving interpersonal functioning that individual therapy may not provide.

Future research is needed to better understand the active ingredients of complex interventions for people with BPD; the results of this study highlight the need to standardize outcome measures in such studies, to examine the impact of short-term treatments and to compare the effects of group-based versus individual therapies.

Conflict of interest

The authors have declared no conflicts of interest.

References


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