Description of the Bergen 4-day treatment for Obsessive Compulsive Disorder (OCD), an innovative and effective treatment format with high acceptance and basically no drop-out.

Method: Nineteen patients with OCD underwent the treatment at the Icelandic Anxiety Clinic (Kvíðameðferðarstöðin). Of these, 17 of the patients were classified pretreatment with severe to extreme symptoms and 2 were classified with moderate symptoms. 63% of the patients had previously received treatment for OCD (ERP or CBT).

Results: Mean pretreatment score on Yale-Brown Obsessive Compulsive Scale (Y-BOCS) was 28.79 (SD = 4.42). One week post-treatment mean Y-BOCS score was 9.95 (SD = 3.67). 94.7% of the patients had responded to treatment and 73.7 were in remission according to the international consensus criteria. At 3-month follow-up, the Y-BOCS score was 11.09 (SD = 5.89) where 78.9% of the patients had responded to treatment and 63.2% were in remission.

Conclusions: All patients expressed high satisfaction with the treatment format, and none of the patients would have preferred longer term treatment. The therapists also expressed satisfaction with the treatment format. The Bergen 4-day treatment for OCD is a very promising treatment for OCD, and can be successfully implemented outside Norway.

Key words: OCD, ERP, Bergen 4-day treatment, B4DT, group therapy, intensive treatment, implementation

Declarations of interest: none

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Exposure and response prevention (ERP) along with cognitive behavioural therapy (CBT) are effective treatments for obsessive-compulsive disorder (OCD) (Fisher and Wells 2005, Öst et al. 2015, Skapinakis et al. 2016). Numerous variations in treatment formats have proven to be successful (Jónsson and Hougaard 2009, Vogel et al. 2012) including more concentrated forms than weekly sessions (Abramowitz et al. 2003, Jónsson et al. 2015, Whiteside et al. 2008, Whiteside and Jacobson 2010). Long term gains of those treatments have not been optimal however, with less than 50% of OCD patients obtaining long term recovery (Sunde et al. 2017, Olajutungi et al. 2013, Öst et al. 2015).

A highly concentrated format of ERP has been developed in Bergen, Norway, where the treatment is delivered over four consecutive days in a group of 3-6 patients with the same number of therapists, (the Bergen 4-day treatment [B4DT]). For a detailed description of the approach, see Havnen et al. 2013, Havnen et al. 2017, Hansen et al. in press.

In an effectiveness study by Havnen et al. (2014) where 35 patients received this treatment format 77% were classified as recovered at post-treatment and 11% improved, applying the Jacobson and Truax (1991) criteria. The numbers were 74% and 14% respectively at a six-month follow-up. Over 90% of the patients expressed high contentment with the treatment format and content and only one patient dropped out of treatment. There was a significant improvement in depressive symptoms and positive changes in occupational interference, maintained at follow-up. This study was replicated in 2017 where 42 patients underwent the same treatment format, delivered by different therapists than in Havnen et al. (2014), except for two groups led by the developers of the treatment format. At post-treatment, 74% of the patients were in remission and 60% had recovered at 6-month follow-up (Havnen et al. 2017). Recently the results were replicated in a study with one year follow-up. Among 65 patients that initiated the treatment, 83,1% responded to the treatment and 67,7% were classified as recovered at a 12-month follow-up (Hansen et al. 2018). It has also been shown that the results are maintained up to four years post-treatment with nearly 70% of patients classified as recovered (Hansen et al. 2019).

By now more than 1300 patients in Norway have received the treatment format with good results, but it
remains to be seen whether this treatment format can be applied to other cultures. This study reports on its first implementation outside of Norway. Aims of the study were to replicate findings from Norway and assess the treatment format’s applicability to Iceland. The results will give insight into further application of the treatment format around the world.

In order to ensure dissemination of the 4-day treatment format without reducing quality, procedures for training and certification of therapists as well as online registration of treatment results, have been established by developers of the treatment at Haukeland University Hospital. Since the B4DT is delivered in a group setting where the ratio between patients and therapists is 1:1, this serves as an ideal setting for giving hands-on training to new 4-day therapists. The trainees can observe and learn from experts, and the experts can give feedback to the trainees after having observed them in the actual clinical setting. In order to become a qualified 4-day therapist, it is required that the trainee first participate in one 4-day group to get acquainted with the format, followed by a minimum of two participations in 4-days groups where an expert evaluates the trainee on specified core competencies (Kvale et al. manuscript in preparation). In order to qualify as a 4-day group leader, participation in six groups is required combined with an evaluation of core competencies for group leaders. The first two groups in Iceland were thus led by an Icelandic speaking Norwegian therapist experienced in delivering the treatment format.

Although Icelandic and Norwegian cultures are related, it was by no means obvious that B4DT would work in Iceland. Indeed, when the Icelandic therapists observed the B4DT for the first time in Norway, they commented that parts of the psychoeducation, metaphors and the way therapists and patients work in the group, might seem strange in Iceland. Despite this it was decided to make a translation without adaptation. The Icelandic Anxiety Clinic (Kvíðameðferðarstöðin) was also a suitable location for the treatment format in Iceland, being an outpatient clinic with an OCD-team of six psychologists trained in CBT and ERP. Up to the implementation of the 4-day treatment format at the Icelandic Anxiety Clinic, OCD-patients were provided with CBT or ERP weekly or biweekly. The team found it challenging to treat patients with severe OCD on a weekly basis due to risk of relapse between sessions and premature termination of treatment. The Bergen 4-day treatment format seemed appealing with practically no dropout and rapid and long lasting results. It could substantially speed up recovery and suit people in rural areas that have difficulties attending weekly sessions in the city. There is also good experience with intensive therapy at the Icelandic Anxiety Clinic where specific phobia has been treated for years with One Session Treatment (Thompson et al. 2012).

Method

Participants

This study is a part of a standard quality control at an outpatient clinic in Iceland, the Icelandic Anxiety Clinic (Kvíðameðferðarstöðin). Patients either contact the clinic directly or are referred by other professionals. Patients with suspected OCD are referred to the OCD-team at the clinic where treatment is offered if a principal diagnosis of OCD on Mini International Neuropsychiatric Interview (MINI; Sheehan et al. 1998) is confirmed. The 4-day treatment format is not initiated if patients are suicidal, psychotic or in active substance abuse, or do not speak Icelandic. Also, the treatment format is not initiated if patients are unwilling to refrain from the use of anxiety during the 4 days of treatment. A total of 19 patients (53% female) between 17 and 40 years old were offered the treatment ($M = 26.6, SD = 7.4$), they all accepted to participate and all completed treatment. The patients had to pay for the treatment as psychological treatment is not generally reimbursed in Iceland.

**OCD duration, severity and previous treatments**

Mean Y-BOCS score pretreatment was 28.79 (SD = 4.42) with 17 patients (89.5%) classified with severe to extreme OCD (Y-BOCS from 24 to 40) and 2 patients (10.5%) with moderate OCD (Y-BOCS from 16 to 23).

Mean duration of the OCD was 15.84 years (SD = 8.11) and 12 (63.2%) had previously received a psychological treatment, CBT or ERP. 62.2% of the patients were currently being treated with medication for their OCD symptoms. During the treatment patients were instructed not to make any changes in their medication.

**Comorbidity**

68.4% of the patients had comorbid disorders where 36.8% had more than one. The most common was depression, as 52.6% of the patients had comorbid depression, 21% had generalized anxiety disorder, 10.5% panic disorder without agoraphobia, 15.8% had social anxiety disorder, 5.2% had an eating disorder and 5.2% bipolar II. Patients with comorbid disorders did not differ from patients without comorbid disorders on pretreatment Y-BOCS scores ($t(17) = 1.878, p = .078$).

**Procedure**

Referred patients met for an initial interview session for clinician administered MINI and the registration of anonymistic information, and when the OCD-diagnosis was established they met for two additional assessment sessions. The severity of obsessive–compulsive symptoms was assessed with the Yale-Brown Obsessive Compulsive Scale (Y-BOCS; Goodman et al. 1989a, 1989b). The patients were then given an introduction to the 4-day treatment format, and also watched a video with Icelandic subtitles presenting the B4DT https://www.youtube.com/watch?v=nqx8knpy3i4 as well as a video presenting the outline and contents of the treatment format https://www.youtube.com/watch?v=npx8knpy3i4. The patients’ expectations of treatment outcome as well as their evaluation of treatment credibility were assessed with an adapted version of the Borkovec and Nau (1972) Reaction to Treatment Scale, in which four aspects of expectancy and credibility were evaluated on a 0–100% scale, with higher values indicating more positive evaluations. If a patient reported an expectancy or credibility score below 70%, this was taken as an opportunity to clarify possible misunderstandings regarding the treatment format. Patients were told that they would be asked to suggest exposure tasks on the first day of the treatment, and that it was recommended to choose exposures that the “OCD would dislike the most”. When admitted to a group, the patients watched another video explaining the treatment in more detail https://www.youtube.com/watch?v=npx8knpy3i4. The week ahead of the 4-day treatment, the group leader called each participant in order to ensure that they were ready to start treatment and that they had started to think of exposure tasks.
The first day in the group setting is allocated to a manualized psychoeducation and planning of the exposures. Day two and three, the patients do individually tailored and therapist assisted exposure training in as many OCD-relevant settings as possible, with continued self-administered training in the evening. During the exposures, the patients are taught to pay attention to all the temptations to practice subtle avoidance and to use these as opportunities to actively do something that is incompatible with practicing OCD.

Day two and three, the group meets in the morning, at lunch and in the afternoon to share the progress and challenges with the exposure training. In the afternoon the third patient, relatives and significant others are invited to a psychoeducation focused on understanding OCD and on how they best might support the patient in their efforts to get rid of the OCD. On the fourth day patients are taught strategies for maintaining change and further self-administered training tasks for the next three weeks are planned. During this period, the patients record online the way they work and their progress without therapist contact. Three months post-treatment, patients are invited for a booster session without any exposures.

**Assessment**

Prior to the first assessment session, patients were sent a number of self-report questionnaires (see below) to be completed before the first visit at the clinic. These questionnaires were also completed at the end of the treatment, as well as at three months after treatment. All patients were informed that data were routinely collected as part of standard quality control procedures at the clinic. The MINI interviews were conducted by psychologists trained in the administration of this structured clinical interview.

The Y-BOCS interviews at pre-treatment were conducted by one of the psychologists in the OCD-team, Y-BOCS at post-treatment as well as at 3-month follow-up were conducted by phone by an independent assessor. The independent assessor was aware that the patients had received concentrated ERP treatment, but was otherwise not involved in the study. Y-BOCS interviews were conducted by clinicians with special training in performing the interview.

**Materials**

The Y-BOCS interview consists of 10 items designed to rate the severity and type of symptoms of patients with obsessive compulsive disorder (OCD). It has good psychometric properties (Goodman et al. 1989a, 1989b). Client Satisfaction Questionnaire 8 (CSQ-8; Larsen et al. 1979, Nguyen et al. 1983) is an 8-item questionnaire which measures patient satisfaction with health services. Each item is scored from 1 (very low satisfaction) to 4 (very high satisfaction), total score ranges from 8 to 32 with higher scores indicating higher degree of satisfaction. The CSQ-8 has sound psychometric properties (Larsen et al. 1979, Nguyen et al. 1983).

Patient Health Questionnaire-9 (PHQ-9; Kroenke et al. 2010) is a self-administered screening instrument containing 9 questions each ranging from 0 to 3, yielding a maximum score of 27. According to Kroenke et al. (2010), a score of 10 or more is indicative of a depressive disorder. The psychometric properties of PHQ-9 are well-established (Titov et al. 2011, Feng et al. 2016).

The 7 item Generalized Anxiety Disorder Scale (GAD-7; Spitzer et al. 2006) measures symptoms of generalized anxiety. The psychometric properties are well-established (Beard and Björngvinsson 2014, Hinz et al. 2017, Kroenke et al. 2010, Rutter and Brown 2017).

**Therapists**

The first two groups of the individualized group treatment were led by an Icelandic speaking Norwegian psychologist, with extensive experience delivering the 4-day format. The third group was led by a psychologist at the Icelandic Anxiety Clinic that has more than 15 years of experience in delivering cognitive behavioural therapy and is a member of the OCD-team. The co-therapists all had extensive training and practice in cognitive behavioural therapy of anxiety disorders and are part of the OCD-team. The developers of the treatment format attended the groups to ensure that the treatment was correctly implemented.

**Statistical analyses**

Statistical analyses were performed with SPSS version 24.0. Repeated measures ANOVA for Y-BOCS, GAD-7 and PHQ-9 were conducted with Greenhouse-Geisser corrections. Effect sizes were calculated with Cohen’s d, defined as \((M_p - M_s)/SD_p\) as recommended by Morris and DeShon (2002). There were no missing data for Y-BOCS, PHQ or GAD-7 pre-treatment. All patients were available for Y-BOCS evaluation post-treatment and 18 of 19 at 3-month follow-up. When less than 25% of a data set is missing and the data is missing at random, which was the case for this data set, the expectation maximization algorithm can be an efficient method of replacing data, as it requires no simulation of data sets (Schafer 1997). For imputing the missing 3-month Y-BOCS data (≤5%), all covariates and outcome variables at each time point were included to impute missing data points, as suggested by Schafer (1997).

**Results**

**OCD symptoms**

Means, standard deviations and effect sizes for changes in Y-BOCS score pre- and post and pre- and 3-month follow-up are presented in Table 1 and in figure 1. We examined Y-BOCS scores using repeated measures ANOVA with Greenhouse-Geisser correction. The results showed a significant change on Y-BOCS (F(1.57, 28.26) = 86.48, p < .0001), η² = 0.887. There was a significant reduction in Y-BOCS from pre- \((M = 28.79, SD = 4.42)\) to post-treatment \((M = 9.59, SD = 3.67)\), of 18.84 points (95% CI, 15.51 to 22.17), \(p < 0.001\). The increase in Y-BOCS from post-treatment to 3-month \((M = 11.09, SD = 5.89)\), of 1.14 (95% CI, -1.39 to 3.67), was not significant \(p = 0.356\).

**Table 1. Means and standard deviations on Y-BOCS**

<table>
<thead>
<tr>
<th>Y-BOCS</th>
<th>M</th>
<th>SD</th>
<th>d</th>
</tr>
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<tbody>
<tr>
<td>Pre-treatment</td>
<td>28.79</td>
<td>4.42</td>
<td></td>
</tr>
<tr>
<td>Post-treatment</td>
<td>9.95</td>
<td>3.67</td>
<td>4.26</td>
</tr>
<tr>
<td>3-month follow-up</td>
<td>11.09</td>
<td>5.89</td>
<td>4.01</td>
</tr>
</tbody>
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measures ANOVA showed a significant decrease in symptoms of generalized anxiety, $F(1,18) = 24.826, p < 0.001, \eta^2 = 0.580$. Repeated measures ANOVA showed also a significant decrease in symptoms of depression, $F(1,18) = 17.336, p < 0.001, \eta^2 = 0.491$.

Table 2. Means, standard deviations and effect sizes for change in depressive symptoms and generalized anxiety

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>d</th>
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</thead>
<tbody>
<tr>
<td>PHQ 9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-treatment</td>
<td>12.32</td>
<td>5.16</td>
<td></td>
</tr>
<tr>
<td>Post-treatment</td>
<td>7.47</td>
<td>4.50</td>
<td>0.94</td>
</tr>
<tr>
<td>GAD 7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-treatment</td>
<td>12.58</td>
<td>4.35</td>
<td>1.26</td>
</tr>
<tr>
<td>Post-treatment</td>
<td>7.11</td>
<td>3.93</td>
<td></td>
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</tbody>
</table>
Treatment response

The international consensus criteria was applied to determine the percentage of patients that showed clinical improvement (Mataix-Cols et al. 2016). The criteria requires a 35% reduction of the pre-treatment Y-BOCS score in order to be classified as a clinically relevant response, and remitted if the post-treatment Y-BOCS score is 12 points or lower. 1 week post-treatment 94.7% had responded and 73.7% were in remission. At 3-month follow-up 78.9% had responded and 63.2% were in remission.

Comparison with results from Norway

Comparison between treatment response in patients in Iceland and Norway can be seen in Table 3. The severity of OCD symptoms was greater in the Icelandic patients pretreatment. Post-treatment and 3 months after treatment there is no difference between the symptom severity in patients in Norway and Iceland.

Table 3. Comparison between treatment response in Iceland and in Norway (Havnen et al. 2014)

<table>
<thead>
<tr>
<th>Y-BOCS</th>
<th>Bergen 4 day in Iceland</th>
<th>Bergen 4 day in Norway</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>M(SD)</td>
<td>N</td>
</tr>
<tr>
<td>Pre</td>
<td>19</td>
<td>28.79 (4.42)</td>
<td>34</td>
</tr>
<tr>
<td>Post</td>
<td>19</td>
<td>9.95 (3.67)</td>
<td>34</td>
</tr>
<tr>
<td>3 month</td>
<td>19</td>
<td>11.09 (5.89)</td>
<td>34</td>
</tr>
</tbody>
</table>

Note. * = significant at 0.05 level.

Discussion

The aim of the study was to assess the applicability of the Bergen 4-day treatment format (B4DT) for OCD in Iceland. The results show that the implementation and quality ensurance project. Here, the treatment is highly effective and seems to be transportable to a new culture.

Further researches on this treatment are clearly needed but the results nevertheless indicate that the treatment is highly effective and seems to be transportable to a new culture.

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