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Evaluation of the Effectiveness of Cognitive Behavioural Therapy for Patients Suffering From an Adjustment Disorder

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ABSTRACT

Aim: To investigate the effectiveness of a higher initial dose of sessions in 12 weeks of individual CBT (Cognitive Behavioural Therapy) regarding speeded recovery in patients with an adjustment disorder.

Methods: A pre-post intervention trial conducted among 50 adults treated for AD as the primary diagnosis between November 2011 and December 2012. Patients were randomized to a regular treatment condition (one session each week) or an initial intensive treatment condition (two sessions per week over the first four weeks, one session every two weeks thereafter) to investigate a possible dose-response relationship. The primary outcome measure was psychosocial symptoms (OQ-45). Secondary outcome measures were resumption of work and quality of life (RAND-36). Analyses were performed in 2021-2022.

Results: A significant and large reduction in psychosocial symptoms was found across the two conditions over time (B=-4.0; p<0.001; 95% CI=-5.2 to -2.8; d=1.5). Furthermore, resumption of work (B=0.05; p<0.001) and all aspects of health-related quality of life significantly improved as treatment progressed. Although condition by time interactions were not significant for any of the outcome measures, the intensive treatment condition did show a trend towards a more rapid reduction of psychosocial symptoms in the first four weeks of treatment (between-group d=0.6).

Conclusions: CBT was associated with a large reduction in psychosocial symptoms and improvements in resumption of work and health-related quality of life in AD. Results further suggest a more rapid reduction of symptoms when treatment is delivered in a higher frequency.

Introduction

Adjustment disorders (ADs) are described as maladaptive, clinically significant emotional or behavioral symptoms in response to identifiable psychosocial stressors [1]. AD is a common disorder, with prevalence rates ranging from 0.3% to 2.3% in the general population [2-4] to about 11% in patients with psychological complaints seen in community health care [5]. ADs are associated with a risk of developing various severe mental disorders such as anxiety disorders or major depressive disorder [6], suicidality [7-11], and disability in terms of absence from work [12-13]. So far, research into effective treatments for AD is rather limited [14-16].

There are only two systematic reviews on the effects of treatment for AD [17-18]. Studies about psychological treatment for AD were of low quality (i.e., GRADE rankings for the treatment comparisons were low to very low) because of methodological problems such as small sample sizes or lack of appropriate control groups. Despite the scarcity of high quality evidence, some studies do suggest that treatment based on cognitive behavioural principles can be effective in decreasing symptoms of stress and suicidal behaviour and shorten the duration of sickness absence in patients with AD [19-26]. The present study aimed to investigate the effectiveness of individual CBT for patients with AD using an active comparison group. Since untreated AD may increase both the risk of suicide and of developing severe mental disorders, a placebo or waitlist control condition was consid-

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ered unethical. As the existence of a dose-response relationship on speed of recovery might be considered an alternative plausible indication for the causality of a specific treatment and its outcome in the absence of a placebo control condition [27-28], twelve weekly sessions of CBT (Cognitive Behavioural Therapy) were compared to a condition in which the CBT sessions were delivered more frequently in the initial phase. It was expected that CBT would be associated with significant improvements over 12 weeks in psychosocial symptoms (primary outcome measure), return to work and health-related quality of life (secondary outcome measures). It was further hypothesized that patients in the intensive treatment condition would experience a more rapid reduction of psychosocial symptoms, faster return to work and faster improvement in health-related quality in the first four weeks compared to patients in the regular treatment group.

Materials and Methods

Design

A pre-post intervention trial was conducted among 50 adults treated for AD at the HSK Group, a mental health care centre in the Netherlands. Patients were randomly assigned to either a regular treatment condition (one individual CBT session per week over a period of 12 weeks) or an initial intensive treatment condition (two individual CBT sessions per week over the first four weeks, and one session every two weeks in the subsequent 8 weeks). The study was approved by the Independent Review Board Nijmegen (file number IRBN2010025).

Based on an a priori power analysis with G*Power 3 software version 3.1.9.2 [29-30], the original planning was to recruit 119 patients in total. This power analysis was based on a simple pretest-posttest change in mean psychosocial symptoms in the entire group between baseline and 12 weeks of treatment, without taking any intermediate measures into account. The anticipated minimum effect size was conservatively based on historical observational data on CBT treatment for AD from the HSK group. According to this a-priori power analysis, 119 patients were needed to demonstrate at least a small effect (d=0.23) with a power of 80% and a one-sided α of 0.05. Unfortunately, the study had to be stopped early because health insurance companies in the Netherlands decided to exclude AD from reimbursement, as a result of which referral of patients with AD for treatment ended. In the end, 53 patients were included in the study of which sufficient data was available for 50 patients.

Participants and procedure: Patients were drawn from referrals made by general practitioners to the HSK group. Inclusion criteria were a primary diagnosis of adjustment disorder and age 18-65 [1]. The data was collected from November 2011 to December 2012. Diagnosis was established using the semi-structured Mini International Neuropsychiatric Interview [31-32]. Patients using medication for at least six weeks or longer, were allowed to participate with the requirement to keep the dosage constant in the study period. Only the standard treatment exclusion criteria of the HSK group were maintained, which are: having a psychotic disorder, bipolar disorder, severe substance abuse or severe personality problems (expressed by suicidality or criminality).

All patients participated voluntarily and did not receive financial compensation for their participation. After the diagnosis was established patients were informed about the study by the therapist involved in the intake procedure and received a letter with information. During a second intake interview patients were asked if they were willing to participate. The average time between those two appointments was four days. After signing an informed consent, patients were randomly assigned to one of the two treatment conditions using closed envelopes. Treatment started within two weeks after the second intake interview.

Treatment: Treatments were delivered individually by twelve staff psychologists on six locations of the HSK group. All therapists were master-level psychologists who had received at least a basic training in CBT. All of them had clinical experience in providing manualized cognitive-behavioural treatment. All therapists received additional one-day training in the specific CBT manual for AD by one of the authors (CH) of the treatment manual.

Treatment followed the AD treatment manual consisting of twelve sessions of 45 minutes [33]. During the first phase of treatment (two sessions), information on adjustment disorders and stress reactions is provided, symptoms of stress are monitored as well as the events that trigger increasing levels of stress. Another goal in this first treatment phase is improving lifestyle, by adopting a more healthy lifestyle (e.g., eating pattern, day-night rhythm) and engaging in relaxing and/or social activities. In the second phase (two sessions) a self-control-program is introduced to help patients to better recognize and deal with rising symptoms of tension. Cognitive restructuring is applied in the fifth to seventh session, aimed at addressing and changing dysfunctional automatic thoughts using Socratic questioning and behavioural experiments. The fourth phase (4 sessions) focuses on strengthening problem solving abilities. In the last session treatment progress is evaluated and a relapse prevention plan is developed.
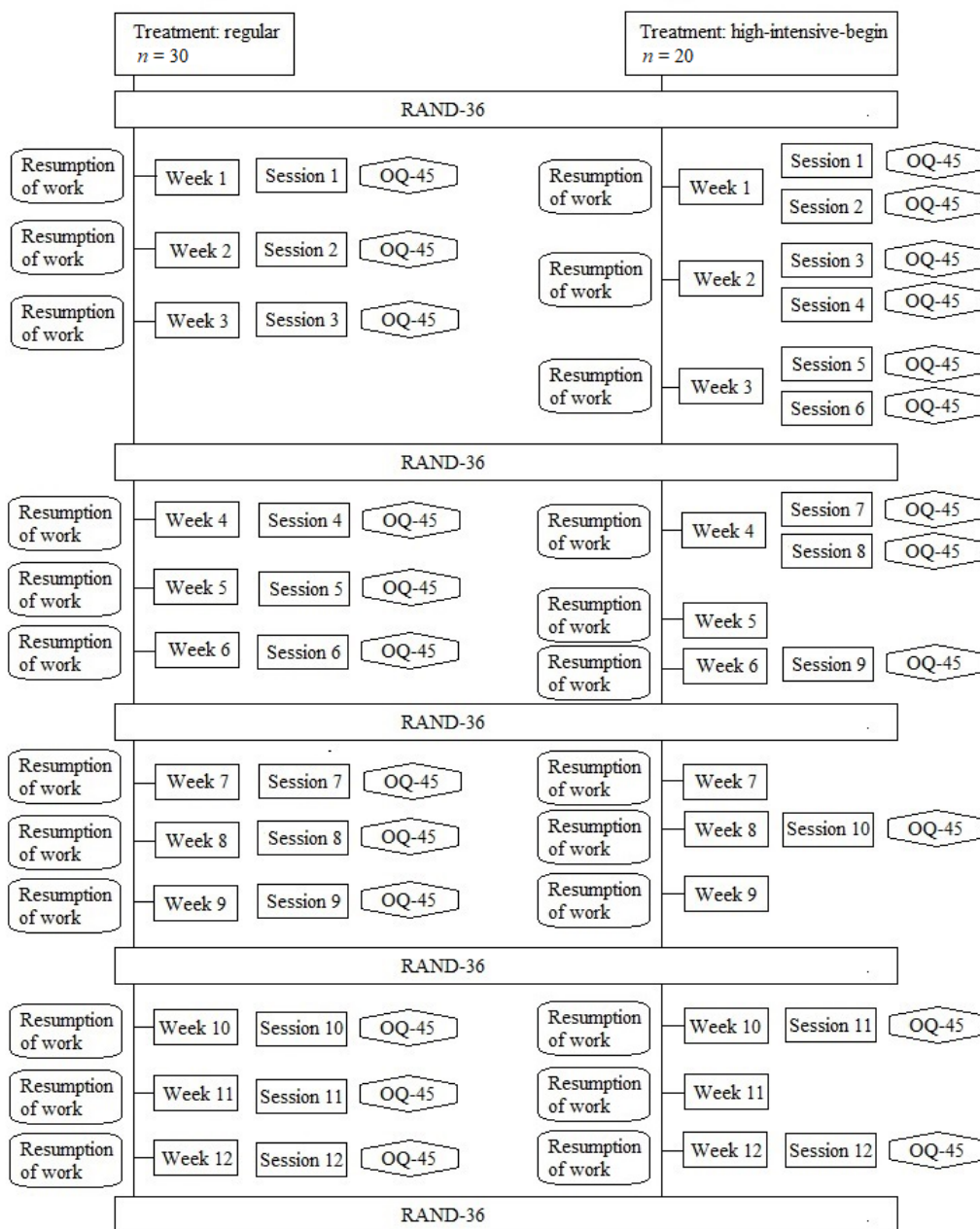
Measures

The primary outcome was psychosocial symptoms as measured with the total score of the Outcome Questionnaire 45 [34-35]. Patients filled in the OQ-45 prior to each session with respect to how they were doing in the preceding week (Figure 1). All 45 questions are answered on a five point Likert-type scale from "never" to "almost always". The total score is computed by adding the sum scores of the three subscales "Symptom Distress" (SD; symptoms associated with anxiety and depression), "Interpersonal Relationship" (IR; symptoms associated with feelings of loneliness and social conflicts and difficulties) and "Social Role" (SR; difficulties in occupational settings) with higher scores indicating more severe symptoms. The reliable change index (RCI) for the total score in a patient population is 18 and the best cut-off for discriminating between a normal and patient population is 56 [36]. The OQ-45 has been found to be a psychometrically sound measure to assess treatment effects [37-38].

Secondary outcome measures were resumption of work and health-related quality of life.

Patients' resumption of work was measured each week as the percentage of hours under contract that a patient had actually worked in a given week, by asking: "How many hours of your contract hours have you been able to work in the past week?". Health-related quality of life was measured every three weeks using the RAND 36-item Health Survey (RAND-36) [39-40].

Figure 1. Flowchart measurements

Abbreviations: RAND-36: RAND 36-item Health Survey; OQ-45: Outcome Questionnaire 45.

This questionnaire assesses eight aspects of health: physical functioning (10 items), social functioning (2 items), role limitations caused by physical health problems (4 items), role limitations caused by emotional problems (3 items), emotional wellbeing (5 items), energy/fatigue (4 items), pain (2 items), and general health perceptions (5 items) and health change (1 item). Psychometric properties of the RAND-36 have been shown to be satisfactory [40-42].

Statistical analysis

Statistical analyses were performed in 2021-2022 with SPSS, version 27 (International Business Machines Corporation IBM, New York, 2020). The balance of background characteristics at baseline across both treatment groups was explored by means of t-tests and chi-square tests as appropriate. Outcome analyses were performed on a modified intention-to-treat basis including all randomized patients who did not withdraw from the study within the first four weeks of treatment.

Treatment effects over time and differences in effects between the two conditions were tested using a series of repeated measures Linear Mixed Models (LMMs) with Restricted Maximum Likelihood (REML) estimation. For patients randomized to the initial intensive group, each second administration of the OQ-45 questionnaire in the first four weeks was used for analysis.

For each outcome measure, a LMM analysis was performed with a random intercept for participants allowing baseline scores to vary between patients. Group, time (week 1-12), and group by time interaction were entered as fixed effects. All models were estimated with an autoregressive AR (1) covariance structure for the repeated measurements as this structure demonstrated the best fit for most outcome measures according to the Akaike and Bayesian information criteria. Assumptions of linearity, normality and homoscedasticity of the residuals were checked using QQ-plots, residual histograms and residuals vs. fitted values plots. The assumptions of homoscedasticity and normality were violated for the secondary outcome measures resumption of work and three RAND-36 subscales (physical functioning, role limitations caused by physical health problems and role limitations caused by emotional problems. Resumption of work was dichotomized into full return to work vs. no full return to work. The three RAND-36 subscales could not be transformed in a meaningful way and their model results need to be interpreted with caution.

For the primary outcome measure (OQ-45 psychosocial symptoms), the proportions of responders (pre-post improvement ≥ 18) and remitters (posttest score ≤ 56) in both conditions together were additionally estimated based on available data of study completers.
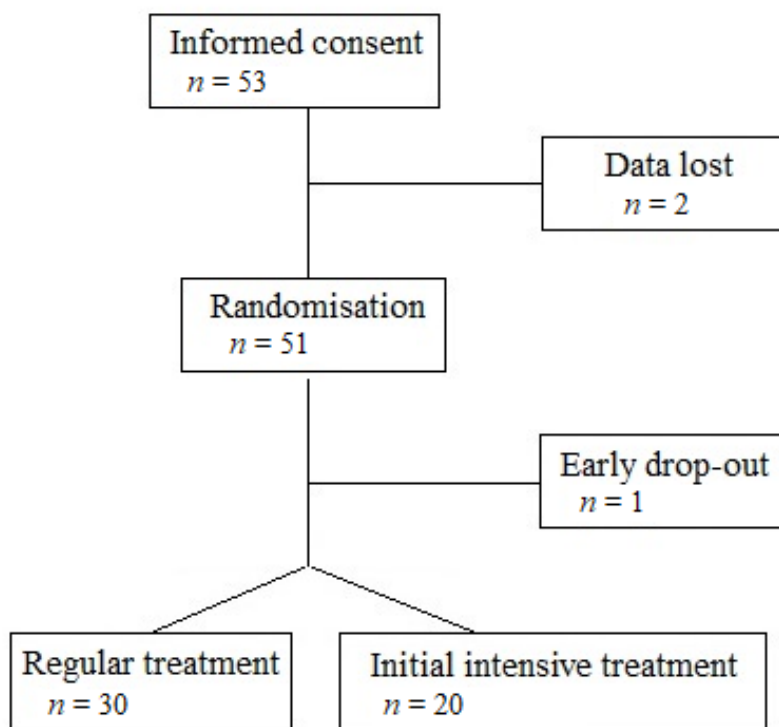
Results

Descriptives

The flowchart of patient inclusion is given in Figure 2. In total, 53 patients were included in the study. Because the study data of two patients were lost for unknown reasons, these patients were excluded from all analyses. Additionally, one patient decided to withdraw participation during the first four sessions of the study. Because most data were missing this patient was also excluded from the analysis of the remaining 50 patients, 30 patients were assigned to the regular treatment condition and 20 were assigned to the initial intensive treatment condition. Ten patients were early completers, i.e., they were able to successfully terminate treatment before the 12th session. Of the 50 patients included for analysis (Table 1), 21 were male and 29 were female with an age between 22 and 63 (M=42.1, SD=11.1). Medication was taken by nine of the 50 patients. Comorbidity was present in six patients. Three patients may have had additional personality problems which were classified as "diagnosis on Axis II postponed", one patient was additionally diagnosed with a personality disorder, one with a disorder in impulse-control not otherwise specified and one patient suffered from bereavement (not being the cause of AD). The other 44 patients were only diagnosed with AD. The background characteristics did not differ significantly (p<0.05) across both treatment groups.

Primary outcome measure

LMM analyses revealed a significant effect of time (n=50; F=108.6; p<0.001), indicating an overall significant reduction in psychosocial symptoms across the two groups over time. The within-group effect over 12 weeks was large (Cohen's d=1.5). At post-treatment, 64% patients could be classified as treatment responders and 62% could be classified as remitters. There was no significant effect of condition (F=0.6; p=0.46), indicating no average difference in psychosocial symptoms between the groups over all weeks. There was also no significant interaction effect (F=0.1; p=0.79) for the primary outcome measure, indicating that the change in psychosocial symptoms did not significantly differ between the two groups over time (Table 2). However, the estimated marginal means did show a clear trend in that patients in the initial intensive treatment condition experienced a more rapid reduction of psychosocial symptoms in the first weeks of treatment (Figure 3). The between-group difference after four weeks of treatment was moderate in size (Cohen's d=0.6).
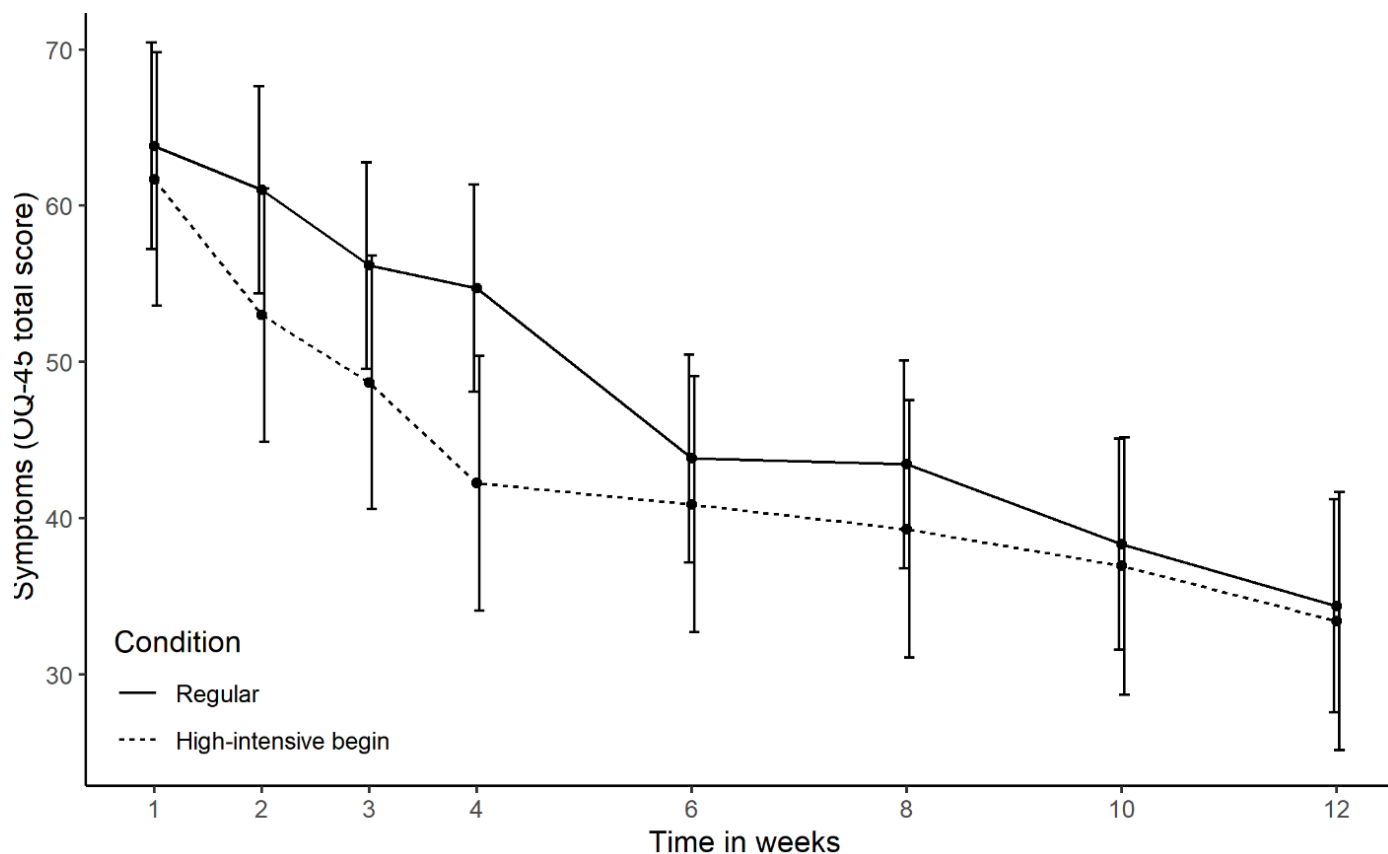
Informed consent
n = 53

Data lost
n = 2

Randomisation
n = 51

Early drop-out
n = 1

Regular treatment
n = 30

Initial intensive treatment
n = 20

Figure 2. Flowchart of patient inclusion

Table 1. Background characteristics across treatment groups at baseline

Variable	Total (N = 50)	Regular (n = 30)	Initial intensive (n = 20)	p
Age, M (SD)	42.1 (11.1)	42.9 (11.4)	40.8 (10.7)	0.89
Sex, n (%)				0.41
Male	21 (42%)	14 (47%)	7 (35%)	
Female	29 (58%)	16 (53%)	13 (65%)	
Treatment ended successfully				0.47
Before 12th session, n (%)	10 (20%)	7 (23%)	3 (15%)	
Comorbidity present, n (%)	6 (12%)	4 (13%)	2 (10%)	0.57
Usage of medication, n (%)	9 (18%)	6 (20%)	3 (15%)	0.65
Family status, n (%)				0.96
Living alone	20 (40%)	12 (40%)	8 (40%)	
Living together	27 (54%)	16 (53%)	11 (55%)	
No information	3 (6 %)	2 (7%)	1 (5%)	
Education, n (%)				0.09
Low and mid	29 (58%)	15 (50%)	14 (70%)	
Higher	14 (28%)	11 (37%)	3 (15%)	
No information	7 (14%)	4 (13%)	3 (15%)	
Previous psycholog-ical treatment,	18 (36%)			0.58
n (%)	7 (14%)			
Yes		10 (33%)	8 (40%)	
No information		4 (13%)	3 (15%)	
Note: For age an independent-samples t-test was used, for the rest of the variables chi-square tests were used.				

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Figure 3. Psychosocial symptoms over time in both treatment groups
Note: Condition (—) Regular, (••••) High-intensive begin
Abbreviations: OQ-45: Outcome Questionnaire 45

Table 2. Mean psychosocial symptoms (OQ-45) at different time points during treatment and results mixed model analysis

Week	Group		Fixed effects estimates		
	M (SE)		(95% CI)		
	Regular	Initial intensive	Group	Time	Group × Time
	(n = 30)	(n = 20)			
1	63.8 (3.3)	61.7 (4.1)			
2	61.0 (3.3)	53.0 (4.1)			
3	56.2 (3.3)	48.7 (4.1)			
4	54.7 (3.3)	42.3 (4.1)	4.2 (7.1 to 15.4)	-4.0 (-5.2 to 2.8)***	-0.2 (-1.8 to 1.4)
6	43.8 (3.4)	40.9 (4.1)			
8	43.5 (3.4)	39.3 (4.1)			
10	38.3 (3.4)	37.0 (4.2)			
12	34.4 (3.4)	33.4 (4.2)			
Note: ***$p<0.001$, OQ-45=Outcome Questionnaire 45					

Secondary outcome measures

An overall significant effect of time was also found for resumption of work (n=46; F=20.3; p<0.001) and all aspects of health-related quality of life (n=50; physical functioning: F=30.2, p<0.001; role limitations caused by physical health problems: F=53.1, p<0.001; role limitations caused by emotional problems: F=64.6, p<0.001; energy/fatigue: F=84.7, p<0.001; emotional wellbeing: F=105.1, p<0.001; social functioning: F=76.8, p<0.001; pain: F=21.1, p<0.001; general health perceptions: F=24.8, p<0.001). Across the two conditions significantly more patients were able to work all their contract hours and all aspects of health-related quality of life improved as treatment progressed. There was no significant effect of condition for health-related quality of life except for the RAND-36 subscale 'role limitations caused by physical health problems' (F=3.9, p=0.05). There was no significant group by time interaction effects for any of the secondary outcomes (Table 3). Patients in the initial intensive treatment condition did not appear to experience a faster return to work, nor a faster improvement in health-related quality of life compared to patients in the regular treatment group.

Table 3. Secondary outcome measures at different time points during treatment and results mixed model analysis.

Outcome	Week	Group M (SE)		Fixed effects estimates (95% CI)		
		Regular (n = 30)	Initial intensive (n = 20)	Group	Time	Group × Time
Resumption of work (binary)	1	0.4 (0.1)	0.3 (0.1)	-0.005 (-0.3 to 0.3)	0.05 (0.01 to 0.08)**	0.002 (-0.04 to 0.05)
	2	0.3 (0.1)	0.3 (0.1)			
	3	0.4 (0.1)	0.3 (0.1)			
	4	0.4 (0.1)	0.3 (0.1)			
	6	0.3 (0.1)	0.3 (0.1)			
	8	0.5 (0.1)	0.5 (0.1)			
	10	0.5 (0.1)	0.5 (0.1)			
	12	0.8 (0.1)	0.8 (0.1)			
RAND-36 PF	0	84.0 (2.3)	88.3 (2.8)	-5.6 (-13.7 to 2.5)	1.8 (0.5 to 3.0)**	1.1 (-0.6 to 2.7)
	3	85.8 (2.3)	91.8 (2.8)			
	6	89.5 (2.3)	92.2 (2.9)			
	9	91.6 (2.3)	94.4 (2.9)			
	12	95.4 (2.4)	95.2 (2.9)			
RAND-36 RP	0	37.1 (6.7)	51.3 (8.2)	-23.9 (-47.7 to -0.07)*	9.2 (4.5 to 13.9)***	3.9 (-2.2 to 10.0)
	3	45.1 (6.7)	70.0 (8.2)			
	6	64.8 (6.7)	78.7 (8.3)			
	9	67.6 (6.9)	82.2 (8.4)			
	12	89.2 (7.0)	90.4 (8.4)			
RAND-36 RE	0	18.8 (7.2)	33.3 (8.7)	-13.0 (-37.6 to 11.7)	10.3 (5.5 to 15.1)***	4.7 (-1.6 to 11.0)
	3	43.9 (7.2)	43.3 (8.7)			
	6	63.0 (7.2)	47.0 (8.9)			
	9	58.2 (7.4)	65.6 (9.0)			
	12	83.9 (7.5)	74.0 (9.0)			

RAND-36 VT	0	43.3 (3.0)	45.3 (3.7)	-2.5 (-13.5 to 8.4)	5.8 (3.8 to 7.9)***	0.6 (-2.1 to 3.3)
	3	49.6 (3.0)	49.0 (3.7)			
	6	54.7 (3.0)	56.3 (3.7)			
	9	59.6 (3.1)	61.9 (3.7)			
	12	69.4 (3.1)	68.6 (3.7)			
RAND-36 MH	0	52.9 (2.7)	56.2 (3.3)	-2.4 (-12.1 to 7.2)	5.2 (3.5 to 6.8)***	0.6 (-1.6 to 2.7)
	3	58.6 (2.7)	56.4 (3.3)			
	6	64.0 (2.7)	62.0 (3.4)			
	9	68.1 (2.8)	69.3 (3.4)			
	12	76.0 (2.8)	76.6 (3.4)			
RAND-36 SF	0	59.2 (3.1)	59.4 (3.8)	-0.4 (-11.8 to 10.9)	5.8 (3.5 to 8.1)***	1.7 (-1.3 to 4.7)
	3	68.5 (3.1)	64.4 (3.8)			
	6	77.0 (3.2)	67.3 (3.9)			
	9	81.2 (3.2)	76.7 (3.9)			
	12	89.5 (3.3)	82.8 (3.9)			
RAND-36 BP	0	72.7 (3.45)	68.3 (4.2)	2.7 (-9.6 to 15.0)	3.4 (1.0 to 5.8)**	0.2 (-2.8 to 3.3)
	3	70.5 (3.47)	71.6 (4.2)			
	6	78.5 (3.48)	75.4 (4.3)			
	9	82.0 (3.56)	78.1 (4.3)			
	12	86.5 (3.59)	82.2 (4.3)			
RAND-36 GH	0	66.1 (2.9)	64.5 (3.6)	2.3 (-7.6 to 12.1)	3.0 (1.5 to 4.5)***	-1.2 (-3.1 to 0.8)
	3	65.0 (2.9)	66.4 (3.6)			
	6	69.5 (2.9)	71.3 (3.6)			
	9	69.8 (3.0)	71.7 (3.6)			
	12	73.2 (3.0)	76.6 (3.7)			

Note: *$p<0.05$; **$p<0.01$; ***$p<0.001$, n=28 for regular group and n=18 for initial intensive group

Abbreviations: RAND-36: RAND 36-item Health Survey; PF: Physical Functioning; RP: Role-Physical; RE: Role-Emotional; VT: Vitality; MH=Mental Health; SF: Social Functioning; BP: Bodily Pain; GH: General Health

Discussion

The main goal of this study was to examine whether CBT is an effective treatment for adjustment disorder. By randomly assigning patients to either a regular treatment condition (12 weekly sessions) or an initial intensive treatment condition (two sessions per week over the first four weeks, and biweekly sessions in the subsequent 8 weeks) additionally the presence of a dose-response relationship was explored. An overall significant and large reduction in psychosocial symptoms was found across the two groups. At post-treatment 64% of patients could be classified as treatment responders, 62% as remitters. Furthermore, across the two groups; significantly more patients were able to fully return to work and health-related quality of life improved as treatment progressed. These results are in line with the results of other studies suggesting that CBT is an effective treatment for patients with AD [19-26]. Contrary to expectations, a high initial frequency of treatment sessions was not found to result in significantly stronger improvements over the 12 weeks as compared to weekly sessions on any of the outcome measures. However, it should be noted that this assumption was only statistically tested with a linear group by time interaction term assuming linear changes over the entire 12 weeks of treatment. Visual inspection of the mean psychosocial symptoms scores across both conditions did show a clear trend towards a more rapid reduction of symptoms in the first four weeks of treatment with a moderate between-group effect size. This dose-response effect was not clearly visible in any of the secondary outcomes, which could be because it is usually the case that you first recover from complaints before you can resume your work and the quality of life increases. These secondary outcome measures may be

less sensitive to a more speedy change.

To our knowledge, this is the first treatment study for AD testing the existence of a dose-effect of psychotherapy. One limitation of this study is the sample size, for reasons discussed in section 'Design'. Partly for this reason, we did not perform extensive post-hoc analyzes or otherwise test the dose-response effect. Further studies with larger sample sizes also enabling more sophisticated statistical analyses are needed to reach more definitive conclusions on this topic. A second limitation is the violations of the residual normality, linearity and homoscedasticity assumptions of the LMM analysis for some of the secondary outcome measures. It was not possible to transform these variables and meaningful cut-off points for dichotomization are not known. Therefore, care should be taken in interpreting the results.

Conclusion

In summary, the present study provides an additional indication that CBT might be effective in treating AD patients in terms of improvement in psychosocial symptoms, work status and health-related quality of life. However, further research is needed to investigate whether there is a causal relationship between offering CBT treatment and improvement in psychosocial symptoms, work status and health-related quality of life. Outcomes of a Randomized-Controlled Trial (RCT) with a placebo control group and a large sample size could provide the strongest evidence for such a causal relationship but unfortunately it is complicated to conduct such a study in clinical practice because of the ethical objections not to offer treatment to patients with such serious problems classified as AD.

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