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RESEARCH ARTICLE

Identifying predictors of a favourable outcome for outpatients with a persistent depressive disorder treated with Cognitive Behavioural Analysis System of Psychotherapy: A prospective cohort study

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Abstract

Objectives: Cognitive Behavioural Analysis System of Psychotherapy (CBASP) is the first therapy specifically developed for persistent depressive disorder (PDD). This study aimed to identify predictors of favourable treatment outcome after group CBASP and assess change in depression severity over 24 weeks.

Design: A prospective cohort study was conducted in patients with PDD treated with group-CBASP.

Methods: Outcomes were depression severity measured by the Inventory of Depression Severity—self-report (IDS-SR) after 6 and 12 months. Potential predictors investigated were baseline depression severity, prior antidepressant use, age, family status, income source, age of onset and childhood trauma. Multivariate logistic regression was performed to assess their effects with a ≥25% IDS-SR score decrease as the dependent variable.

Results: The IDS-SR score (range 0–84) significantly decreased from 37.78 at start to 33.45 at 6 months, an improvement which was maintained at 12 months. Having paid work and no axis I comorbidity significantly predicted favourable response. In the groups without a favourable outcome predictor a substantial percentage still showed at least partial response (16.7% and 19.2%).

Conclusions: Source of income and axis I comorbidity were predictors of response to group-CBASP. Within the group without favourable outcome predictors, a subgroup showed at least partial response. These results suggest that

group-CBASP has promise for patients who do not respond to standard treatments. Future studies should include outcome measures that take into account comorbidity and other clinically relevant changes, such as social functioning.

KEYWORDS

Cognitive Behavioural Analysis System of Psychotherapy, depressive disorder, dysthymic disorder, persistent depressive disorder, precision medicine, psychotherapy

Practitioner points

- Predictors of treatment response and change in depression severity over 12 months of group Cognitive Behavioural Analysis System of Psychotherapy (CBASP) were investigated.
- Clinically relevant effects comparable to standard therapies for acute depression were also found for patients with persistent depressive disorder after group CBASP.
- Presence of paid work and absence of an axis I comorbidity were predictors of favourable response to group-CBASP.
- Response to group-CBASP was maintained after 6-month follow-up.

INTRODUCTION

Depressive disorders cause the greatest disease burden of mental and addictive disorders in terms of disability-adjusted life years (Rehm & Shield, 2019) and years lived with disability (Charlson et al., 2016). In the acute phase, psychotherapy for depression has a 48% response rate compared to 19% after usual care, and psychotherapy may have superior effects in the long-term compared to pharmacotherapy. A recent umbrella meta-analysis which took into account risk of bias and study quality found effect sizes between .11 and .61 in comparison to placebo or treatment-as-usual for psychotherapies for depression, of which most effect sizes were small (Leichsenring et al., 2022). However, more than half of patients do not respond or remit after therapy (Cuijpers, Karyotaki, et al., 2021), and up to a third go on to experience chronic symptoms (Furukawa et al., 2000). Persistent depressive disorder (PDD) is classified according to the DSM-V as a depressed mood for most of the day, more days than not, for longer than 2 years (American Psychiatric Association, 2013). The estimated prevalence of PDD is up to 61% among patients being treated for depression in primary and secondary care settings (Herrman et al., 2022), and PDD is associated with functional impairments, severe depressive symptoms, and suicidality. In addition, patients with PDD need treatment over a longer period of time and improve less on pharmacotherapy than patients with a single depressive episode lasting less than 2 years (Torpey & Klein, 2009).

As a result of this need for more effective interventions, Cognitive Behavioural Analysis System of Psychotherapy (CBASP) was established. CBASP is at present the only therapy developed specifically to treat PDD and is designed to target habitual patterns of behaviour that characterize the treatment-resistant nature of chronic depressive disorders (Swan et al., 2014). The focus is primarily interpersonal; patients are taught to recognize the social consequences of their behaviour and resolve current problems through situational analysis. Patients learn behavioural skills which help to respond in appropriate and empathetic ways in their real-life environment. While it integrates interpersonal, cognitive, behavioural and psychodynamic models, CBASP is unique in two ways. Firstly, the therapeutic

relationship is used to address transference issues (learned expectations about interpersonal relationships) originating from early traumatic events. Secondly, CBASP centres the "outside-in" perspective, in which interpersonal consequences of behaviour are the primary focus, while the role of cognitions lies in the internal process leading to behaviour. This can be compared to the "inside-out" perspective, where conditional beliefs and cognitions are thought to play a primary role in the susceptibility to depression and treatment-resistance. Through the CBASP approach, patients learn more effective, goal-oriented social behaviours which allows them to achieve desired outcomes in their environment. (Swan et al., 2014). In individual and group forms, CBASP appears at least as effective as standard evidence-based treatments for PDD and may have added benefit in the long term (Potijk et al., 2020; Wiersma et al., 2014).

Despite current knowledge of the impact of depression on individuals and society, which treatments work for whom and why is not well understood (Herrman et al., 2022). Also, the role of psychotherapy for treatment-resistant depression is often neglected, despite the knowledge that an appropriate psychotherapy for the individual patient can be effective, especially when combined with pharmacotherapy (Markowitz et al., 2022). Precision medicine is an approach to treatment and prevention that takes into account such individual variability (National Research Council, 2011), and it is a current research priority to investigate precision medicine approaches to optimize depression prevention, care and recovery (Herrman et al., 2022). In this light, the identification of factors affecting treatment outcomes could help to tailor treatment to individual patients, which could lead to better therapeutic results and reduced dropout (Cuijpers, Quero, et al., 2021; Potijk et al., 2020). In two previous studies of individual CBASP, more severe depressive symptoms at baseline were associated with a more favourable response (Furukawa et al., 2018; Serbanescu et al., 2020). This favourable response in patients with more severe baseline depressive symptoms was stronger when pharmacotherapy was used in conjunction to CBASP (Furukawa et al., 2018). In patients with lower anxiety symptom severity at baseline, individual CBASP had comparable effects to pharmacotherapy (Furukawa et al., 2018). Conversely, another study found that the presence of a comorbid anxiety disorder was associated with improved outcome (Assmann et al., 2018). Age too may play a role in the context of individual CBASP; younger patients were more likely to drop out of the treatment (Furukawa et al., 2018). Additionally, having a history of childhood trauma is associated with a favourable response to individual CBASP (Furukawa et al., 2018; Serbanescu et al., 2020). However, another RCT that investigated the response to individual CBASP in patients with different types of childhood trauma found that only the trauma subtype emotional abuse was associated with better treatment response to CBASP compared to supportive psychotherapy, whereas physical and sexual abuse; and emotional and physical neglect, were not (Bausch et al., 2020). Finally, in CBASP performed in a group setting, PDD patients with late-onset depressive disorders seemed to respond more to CBASP than those with early-onset depressive disorders. This finding was described as unexpected, since there is a theorized association between the chronicity of PDD and impaired interpersonal functioning that began in adolescence, which is targeted by the interpersonal focus in CBASP (McCullough, 2003). One possible explanation for the finding of Potijk et al. (2020) is the difference in family composition between early- and late-onset patients; late-onset patients more often lived with a spouse in this study, which may have impacted their baseline level of interpersonal functioning, and could have provided them with more opportunities to practise new interpersonal behaviour in everyday life. Also, the impaired interpersonal skills targeted by CBASP may be more specifically associated with the presence of childhood trauma, which was associated with improved treatment response in the previously mentioned studies of individual CBASP (Bausch et al., 2020; Furukawa et al., 2018; Serbanescu et al., 2020).

Regarding other potential predictors of treatment outcomes, group CBASP has not been studied as extensively as its individual counterpart. The previously mentioned studies of individual CBASP provide a starting point to determine which factors should be assessed in the group context.

Consequently, the aim of this study, which used an expanded version of the database by Potijk et al. (2020), was to identify predictors of favourable outcome in patients with PDD treated with group CBASP after 6 and 12 months. In line with the findings of Potijk et al. (2020), it was hypothesized that

late-onset depressive disorders would be associated with increased treatment response, potentially explained by the aforementioned differences in family composition in late-onset participants compared to individuals with late-onset depressive disorders. While group CBASP has not been studied as extensively as its individual counterpart, it was also hypothesized that similar factors found in the individual setting would predict favourable response in group-CBASP, such as pharmacotherapy, lower baseline depression and anxiety severity, and the presence of childhood trauma. In particular, childhood trauma may be more strongly associated with early impaired interpersonal functioning for which CBASP is designed as compared to age of depression onset, and individuals with childhood trauma may benefit more from this approach than those without.

Secondary objectives of this study were (1) to assess the change in self-reported depression severity over a period of 24 weeks, and (2) to exploratively assess differences in response level after 6 and 12 months in participants with or without favourable characteristics identified in the investigation of the primary research question. In line with the findings of Potijk et al. (2020), a significant reduction in self-reported depression severity over 24 weeks was expected.

METHODS

Study design

A prospective cohort study was carried out on a sample of 93 patients with depressive disorders. An existing database including 54 patients who completed group CBASP at the University Centre of Psychiatry (UCP) in Groningen (Potijk et al., 2020) was supplemented with 69 patients who had completed the program as of May 2021. All data used in this study were collected in the context of clinical evaluation and care.

Participants

The study population included patients who participated in an outpatient group CBASP program with individual follow-up sessions at the UCP between November 2011 and May 2021. Presence of PDD, defined as 'a depressive episode that lasts for more than 2 years or recurrent depressive episodes without full recovery between episodes' was the main indication for group CBASP (Potijk et al., 2020). Patients were diagnosed with the Mini International Neuropsychiatric Interview. Exclusion criteria included patients hospitalized before starting group CBASP; those who never started after referral; dropouts (e.g., early switching to individual sessions; missing outcome data); and those still following group CBASP at the time. Also, there was a recent change in the format of the follow-up program from individual sessions to a group follow-up trajectory. To avoid potential influence of this change on the results, patients who participated in the new group follow-up trajectory were excluded (Figure 1). Ultimately, 89 participants were included in the analyses.

Outpatient group CBASP with individual follow-up

Before starting group CBASP, patients had a series of approximately 1–2 individual sessions with a CBASP-certified psychologist in which a "transference hypothesis" was formulated, which takes into account the interpersonal context and expectancies of the patient (McCullough, 2003). Following this, the core program consisted of 24 weekly group CBASP sessions over a period of 6 months. Groups consisted of no more than eight patients and were led by a CBASP-certified psychologist and co-therapist. Each session involved a morning and afternoon program. The morning program starts with a "check-in"; all group members are free

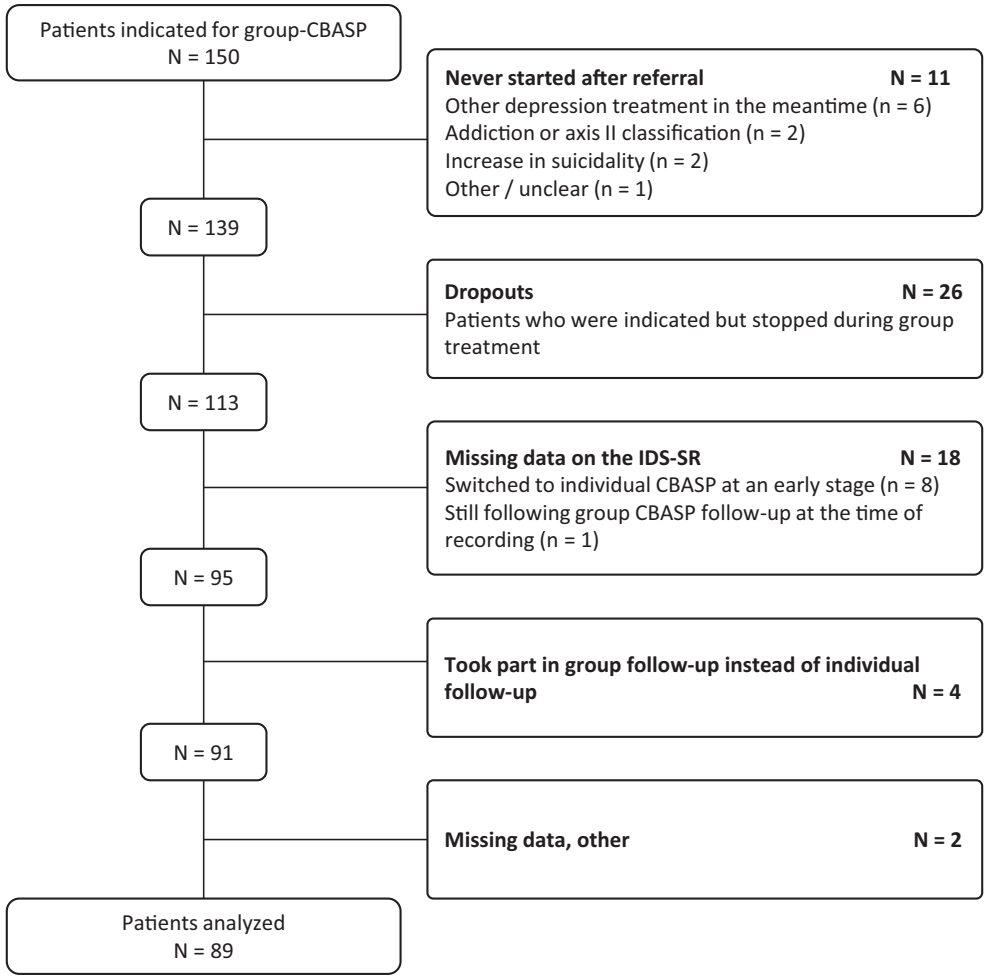

FIGURE 1 Flowchart of group-CBASP participants.

to share how their week went and the therapist can share organizational points (e.g., exact time of lunch and program changes due to holidays). The check-in takes a maximum of 30 min. A central "situational analysis" session follows the check-in. In the situational analysis session, patients analysed interpersonal experiences from their daily lives. After lunch, the afternoon group program differed from standard CBASP in the inclusion of 1 h of group psychomotor therapy (PMT). PMT exercises were based on CBASP techniques and conducted by therapists with experience in CBASP (Potijk et al., 2020). PMT involves carrying out tasks to reflect on the physical signals associated with thoughts, feelings, and behaviour. This played a supportive role to CBASP techniques by allowing patients to analyse situations in terms of nonverbal cues. This program is not unique in the combination of CBASP with nonverbal techniques; Wiersma (2021) describes another program which supplemented group CBASP with PMT and drama therapy. After the PMT session the check-out takes place, giving all group members the opportunity to share what comes to mind. The therapists close the check-out within 15 min.

After 6 months of group CBASP, participants had at least 6 months of individual follow-up appointments. These appointments also followed the CBASP methodology. The frequency of follow-up appointments varied from once a week to once every 4 weeks according to the needs of individual patients.

Assessment of depression severity

The outcome of interest, depression severity, was monitored during treatment using the Inventory of Depressive Symptomatology—Self Report (IDS-SR). The IDS-SR is a validated questionnaire that consists of 30 items measuring depressive symptomatology in the past week. Answers for each item are assigned a maximum of three points. Total scores range between 0 and 84 and are calculated as the sum of scores for 28 of the items (Rush et al., 1996). Response was defined as a decrease in the IDS-SR score of ≥50%. Partial response was defined as a decrease in the IDS-SR score of 25%–49%. Outcome variables after 6 and 12 months were treatment response measured by the IDS-SR, dichotomized as partial or full response (≥25% decrease in the IDS-SR score, henceforth described as "treatment response"), or no response (<25% decrease in the IDS-SR score). The choice to dichotomize the outcome variable at the level of partial response was made to identify predictors of all clinically relevant improvements in depression severity.

Statistical analyses

Demographic and clinical characteristics of the population were collected from patient charts, including age, sex, marital status, level of education, primary source of income, age of depression onset, family history of depression, psychiatric comorbidity (defined as a comorbidity in axis I of the DSM-IV or equivalent), previous treatments for depression, previous inpatient treatment, registered suicide attempts and current antidepressant medication. Characteristics of the study population were compared between subgroups corresponding to different levels of the outcome measures (treatment response after 6 and 12 months) using Chi-Square and Mann–Whitney *U*-tests.

To answer the primary research question, potential predictors of treatment outcome were chosen based on the literature and included baseline depression severity, prior antidepressant medication use, age, family status, primary source of income, age of onset, psychiatric comorbidity, and childhood trauma, defined as traumatic events before the age of 18. As patients did not routinely complete a childhood trauma questionnaire but were interviewed in-depth at intake, traumatic events in the childhood were identified in patient charts. To investigate the effects of these baseline characteristics, two sets of univariable and multivariable backwards logistic regressions were performed to calculate the odds ratios and 95% confidence intervals (95% CI), with treatment response to group CBASP after 6 and 12 months as the respective dependent variables. Statistical tests were carried out in SPSS Statistics 27. *p*-values were 2-tailed and considered significant if $p < .05$.

To answer the secondary research questions, first a repeated-measures (RM-)ANOVA was used to assess whether the decrease in severity of depressive symptoms over time was significant. Second, RM-ANOVA was used to assess the decrease in severity of depressive symptoms over time in patients with or without favourable characteristics identified in the logistic regression analysis. Finally, differences in response level (full response, partial response, and nonresponse) after 6 and 12 months between patients with or without favourable characteristics identified in the logistic regression analysis were compared using Chi-square tests.

RESULTS

Table 1 shows the demographic and clinical characteristics of the study population divided into subgroups of the outcome measure (treatment response/no treatment response) after 6 and 12 months. Participants completed a mean of 25 group sessions and 10 individual follow-up sessions and missed a mean of three sessions. 31.46% and 37.08% of patients showed partial or full response after 6 and 12 months, respectively. Participants who showed at least partial response after 6 months differed significantly to those who did not in terms of whether their primary source of income was through paid labour (as opposed to income through social benefits, relying on a partner, and so on). After 12 months, patients

TABLE 1 Characteristics of the study population sorted by primary outcome (response or partial response after 6 months) and secondary outcome (response or partial response after 12 months).

	Study population $n = 89$	Response or partial response after 6 months[a]		Response or partial response after 12 months	
		Yes $n = 28$	No $n = 61$	Yes $n = 33$	No $n = 56$
Age, mean ± SD	50.64 ± 10.0	49.54 ± 9.9	51.15 ± 10.1	50.18 ± 11.1	50.91 ± 9.4
Female	69.7 (62)	67.9 (18)	70.5 (43)	69.7 (23)	69.6 (39)
CBASP sessions					
Group CBASP	24.5 (4.0)	23.5 (2.4)*	25.1 (4.5)*	23.8 (1.7)	25.1 (4.9)
Individual CBASP	10.1 (7.4)	11.6 (7.1)	9.4 (7.6)	9.5 (6.8)	10.5 (7.9)
Sessions absent	3.2 (2.8)	2.8 (2.3)	3.3 (2.9)	2.9 (2.6)	3.3 (2.9)
Family status					
Single, separated, other	32.6 (29)	28.6 (8)	34.4 (21)	24.2 (8)	37.5 (21)
In a relationship	67.4 (60)	71.4 (20)	65.6 (40)	75.8 (25)	62.5 (35)
Educational level[b]					
Low	19.1 (17)	10.7 (3)	23.0 (14)	12.1 (4)	23.2 (13)
Intermediate	43.8 (39)	50.0 (14)	41.0 (25)	48.5 (16)	41.1 (23)
High	37.1 (33)	39.3 (11)	36.1 (22)	39.4 (13)	35.7 (20)
Primary source of income					
Labour	32.5 (29)	64.3 (18)***	18.0 (11)***	48.5 (16)*	23.2 (13)*
Other	67.4 (60)	35.7 (10)	82.0 (50)	51.5 (17)	76.8 (43)
Family history of depression[c]	51.7 (46)	42.9 (12)	55.7 (34)	54.5 (18)	50.0 (28)
Axis I comorbidity[d]	29.2 (26)	17.9 (5)	34.4 (21)	15.2 (5)*	37.5 (21)*
Axis II comorbidity	36.0 (32)	42.9 (12)	32.8 (20)	45.5 (15)	30.4 (17)
Comorbid somatic disorder	53.9 (48)	50.0 (14)	55.7 (34)	60.6 (20)	50.0 (28)
Previous psychotherapy	98.9 (88)	96.4 (27)	100.0 (61)	97.0 (32)	100.0 (56)
Previous antidepressant medication	95.5 (85)	89.3 (25)	98.4 (60)	87.9 (29)*	100.0 (56)*
Previous electroconvulsive therapy	10.1 (9)	7.1 (2)	11.5 (7)	15.2 (5)	7.1 (4)
Previous inpatient treatment	38.2 (34)	32.1 (9)	41.0 (25)	33.3 (11)	41.1 (23)
Registered suicide attempt	20.2 (18)	10.7 (3)	24.6 (15)	12.1 (4)	25.0 (14)
Taking antidepressant medication	91.0 (81)	92.9 (26)	90.2 (55)	87.9 (29)	92.9 (52)
Baseline depression severity[e]					
None/mild (IDS-SR 0–25)	14.6 (13)	14.3 (4)	14.8 (9)	15.2 (5)	14.3 (8)
Moderate (IDS-SR 26–38)	41.6 (37)	60.7 (17)	32.8 (20)	51.5 (17)	35.7 (20)
Severe/very severe (IDS-SR ≥39)	43.8 (39)	25.0 (7)	52.5 (32)	33.3 (11)	50.0 (28)
Childhood trauma in the history[f]	59.6 (53)	53.6 (15)	62.3 (38)	51.5 (17)	64.3 (36)
Early onset[g]	52.8 (47)	50.0 (14)	54.1 (33)	42.4 (14)	58.9 (33)

Note: Data represent mean ± standard deviation (SD) or percent (number).

*$p < .05$. ***$p \leq .001$.

[a]Response = decrease in IDS-SR score by ≥50%, partial response = decrease in IDS-SR score by 2549%, no response = decrease in IDS-SR score by <25%.

[b]Low = completed middle school or less and/or low-level technical/vocational education; medium = completed medium-level technical/vocational education; high = completed university or high-level technical/vocational training.

[c]1st or 2nd degree relative.

[d]Some patients received therapy during a time when DSM-IV classification was standard, but case selection was done in 2017 and 2021 using DSM-V classification. Data may be missing in Axis II classification or somatic disorders because only Axis I conditions were required to be registered at the UCP.

[e]None = IDS-SR score 0–13, mild = IDS-SR score 14–25, moderate = IDS-SR score 26–38, severe = IDS-SR score 39–48, very severe = IDS-SR score ≥49.

[f]Childhood trauma is defined as childhood events found in patient files which fall into the categories assessed in the CTQ-SF and/or presence of other childhood events described as traumatic in the patient files.

[g]Early onset = depression onset <21st life year.

who showed at least partial response differed significantly to those who did not in terms of whether their primary source of income was paid labour and the presence of an axis I comorbidity.

Treatment response after 6 months

After 6 months, treatment response was observed in 31.46% of patients. Patients who responded to treatment after 6 months differed significantly to those who did not in terms of whether their primary source of income was through paid labour (as opposed to income through social benefits, relying on a partner, and so on).

Table 2 presents the results of the multivariable backwards logistic regressions. The final model with outcome after 6 months included primary source of income and psychiatric comorbidity and was not statistically significant, $\chi^2(2)$, $p = .38$. Two predictors in the model were associated with a statistically significant treatment response after 6 months. Patients whose primary source of income was labour were 12.40 times more likely to achieve at least partial response after 6 months, $p = .00$. Patients with no psychiatric comorbidity were 5.07 times more likely to achieve at least partial response after 6 months, $p = .019$, where psychiatric comorbidity was defined as axis I comorbidities according to the DSM-IV or equivalent. Axis I comorbidities present in the population included anxiety disorders, obsessive compulsive disorder, alcohol abuse/dependence, attention-deficit/hyperactivity disorder, eating disorders, pervasive developmental disorder not otherwise specified, post-traumatic stress syndrome and chronic pain syndrome. It was not possible to draw a conclusion about the effect of past antidepressant medication use, as almost all participants had used such medications.

Table 3 presents the exploratory analysis of differences in response level (full response, partial response and nonresponse) between patients with or without favourable characteristics identified in the logistic regression. Seventeen patients (19.10%) reached partial response and 11 patients (12.36%) reached full response after 6 months. In patients whose primary income source was labour, treatment response was significantly higher after 6 months (62.07%, $p < .001$), compared to patients with other income sources.

Treatment response after 12 months

37.08% of patients showed treatment response after 12 months. Patients who responded to treatment at this time point differed significantly to those who did not in terms of whether or not their primary source of income was paid labour, and in the presence of a psychiatric comorbidity.

The final model with outcome after 12 months, presented in Table 2 included antidepressant history, relationship status, primary source of income and psychiatric comorbidity and was not statistically significant, $\chi^2(2)$, $p = .98$. Two predictors in the model were associated with a statistically significant treatment response after 12 months. Patients whose primary source of income was labour were 4.30 times more likely to achieve at least partial response after 6 months, $p = .005$. Patients with no psychiatric comorbidity were 4.81 times more likely to achieve at least partial response after 6 months, $p = .011$. Again, it was not possible to identify effects of past antidepressant medication use, due to the small proportion of patients who had not used these medications.

The exploratory analysis to compare differences in response level between patients with or without favourable characteristics identified in the logistic regression are again presented in Table 3. After 12 months, 16 patients (17.97%) reached partial response and 17 patients (19.10%) reached full response. In patients whose primary income source was labour, treatment response percentage was significantly higher after 12 months, as compared to patients with other income sources (55.17%, $p = .019$). Patients with no psychiatric comorbidity had significantly higher response after 12 months (44.44%, $p = .031$) compared to patients with a psychiatric comorbidity.

TABLE 2 Analysis of the potential factors affecting outcome of group CBASP with individual follow-up after 6 and 12 months (uni- and multivariable backwards logistic regression) ($N = 89$).

Factor	Response or partial response after 6 months		Response or partial response after 12 months	
	Univariable HR (95% CI) *p*-value	Multivariable HR (95% CI) *p*-value	Univariable HR (95% CI) *p*-value	Multivariable HR (95% CI) *p*-value
Baseline IDS severity				
None-mild	1		1	
Moderate	1.91 (.50–7.33) .34		1.36 (.37–4.95) .64	
Severe-very severe	.49 (.12–2.07) .33		.63 (.17–2.35) .49	
Antidepressant history				
No	7.20 (.71–72.60) .094		3,119,537,669 (.00–∞) 1.00	
Yes	1		1	
Age				
<50	1.54 (.62–3.81) .35		1.01 (.42–2.42) .99	
≥50	1		1	
Romantic relationship				
No	1		1	
Yes	1.31 (.50–3.48) .59		1.88 (.72–4.91) .20	
Primary income source				
Labour	8.18 (2.98–22.50) .00***	12.40 (3.85–39.93) .00***	3.11 (1.24–7.83) .016*	4.30 (1.54–12.00) .005**
Other	1	1	1	1
Early onset				
No	1.18 (.48–2.89) .72		1.95 (.81–4.67) .13	
Yes	1		1	
Childhood trauma				
No	1.43 (.58–3.54) .44		1.70 (.71–4.06) .24	
Yes	1		1	
Axis I psychiatric comorbidity				
No	2.42 (.80–7.27) .12	5.07 (1.30–19.70) .019*	3.36 (1.12–10.04) .030*	4.81 (1.44–16.01) .011*
Yes	1	1	1	1

Note: Bolded text indicates factors for which significant values were found.

*$p < .05$. **$p \leq .01$. ***$p \leq .001$.

TABLE 3 Response rates (percentage of decrease in IDS-SR) ($N = 89$).

	24 sessions group-CBASP (6 months)			Group-CBASP + individual phase (12 months)		
	25%–49% *n* (%)	≥50% *n* (%)	Total >25% *n* (%)	25%–49% *n* (%)	≥50% *n* (%)	Total >25% *n* (%)
Total ($N = 89$)	17 (19.10)	11 (12.36)	28 (31.46)	16 (17.97)	17 (19.10)	33 (37.07)
Primary source of income						
Labour ($n = 29$)	13 (44.83)***	5 (17.24)	18 (62.07)***	7 (24.14)	9 (31.03)	16 (55.17)*
Other ($n = 60$)	4 (6.67)	6 (10.00)	10 (16.67)	9 (15.00)	8 (13.33)	17 (28.33)
Axis I psychiatric comorbidity						
No ($n = 63$)	14 (22.22)	9 (14.29)	23 (36.51)	14 (22.22)	14 (22.22)	28 (44.44)*
Yes ($n = 26$)	3 (11.54)	2 (7.69)	5 (19.23)	2 (7.69)	3 (11.54)	5 (19.23)

*$p < .05$. ***$p < .001$.

Treatment response over time

The decrease in the severity of depressive symptoms over time was significant for group CBASP with individual follow-up, $F(3.4, 373) = 4.66$, $p = .002$. The differences in mean IDS-SR scores over time are shown in Table 4. Mean IDS-SR score was significantly decreased from 37.78 at the start of treatment to 33.45 after 6 months. During individual follow-up, the mean IDS-SR score remained stable. The effect size was small, with Cohen's *d* of .35 and .30 after 6 and 12 months respectively.

In terms of the factors that predicted treatment outcome, RM-ANOVA found that the decrease in IDS-SR score over time for patients with work as their primary income source was significant, $F(3.22, 310) = 4.14$, $p = .007$. For patients without work, the decrease in IDS-SR score over time was not significant, $F(3.30, 146) = 1.65$, $p = .17$.

For patients with no psychiatric comorbidity, the decrease in IDS-SR score over time was significant, $F(3.55, 481) = 5.41$, $p = .001$. For patients with a psychiatric comorbidity, the decrease in IDS-SR score over time was not significant, $F(2.39, 76) = 1.14$, $p = .33$.

DISCUSSION

The main objective of this study was to identify predictors of favourable treatment outcome to group CBASP with individual follow-up in patients with PDD. Two factors significantly predicted treatment response in both the univariable and multivariable regression; absence of psychiatric comorbidity and having paid work were found to predict favourable response. After 12 months, more than half of patients with paid work responded to treatment. Of the patients without psychiatric comorbidity, almost half showed treatment response. These predictors may be unsurprising as they could correlate with disease severity, such that patients with more comorbidity and reduced functioning also showed reduced response. Striking, however, is that clear improvement was observed even in the groups with unfavourable characteristics (no paid work, presence of a psychiatric comorbidity). After 6 months almost a fifth of the group without paid work showed treatment response, and after 12 months almost a third showed treatment response. In the group with psychiatric comorbidity, almost a fifth showed treatment response after both 6 and 12 months. In the context of PDD, which is associated with severe depressive symptoms and a need for treatment over a longer period of time (Torpey & Klein, 2009), these results are encouraging.

Of the total sample, more than a third showed partial to full response after group CBASP directly after treatment, which was maintained after 6-months of individual follow-up appointments. These findings are in line with the previous study, in which 33.3% and 42.6% of total patients showed treatment response after 6 and 12 months, respectively (Potijk et al., 2020). The current study demonstrates a comparable decrease in depressive symptoms to that seen in purely individual CBASP, and other

TABLE 4 Differences in mean IDS-SR scores over time ($N = 89$).

Months	Group-CBASP 0 $M = 37.78$ $SD = 10.95$	Group-CBASP 3 $M = 36.47$ $SD = 13.01$	Group-CBASP 6 $M = 33.45$ $SD = 14.78$	Individual 9 $M = 34.89$ $SD = 13.85$	Individual 12 $M = 33.48$ $SD = 16.71$
0		$t = 1.23$ $SE = 1.06$ $p = .222$ $d = .13$	$t = 3.25$** $SE = 1.33$ $p = .002$ $d = .35$	$t = 2.30$* $SE = 1.26$ $p = .024$ $d = .24$	$t = 2.82$** $SE = 1.53$ $p = .006$ $d = .30$
3			$t = 2.96$** $SE = 1.02$ $p = .004$ $d = .31$	$t = 1.37$ $SE = 1.16$ $p = .17$ $d = .15$	$t = 2.19$* $SE = 1.37$ $p = .031$ $d = .23$
6				$t = -1.27$ $SE = 1.13$ $p = .21$ $d = -.13$	$t = -.026$ $SE = 1.30$ $p = .98$ $d = -.0030$
9					$t = 1.19$ $SE = 1.18$ $p = .24$ $d = .13$

*$p < .05$. **$p \leq .01$.

forms of psychotherapy; the effect size of .35 is in line with that found for purely individual CBASP in a previous meta-analysis ($g = .34–.44$, $p < .01$) (Negt et al., 2016), and the effect size of .42 found for psychotherapies in general in treatment-resistant depression (van Bronswijk et al., 2019). In addition, it is notable that in this patient group who do not show sufficient response to standard treatment, the effect size is comparable to that found for standard psychotherapies for depression after correction of possible overestimation (Leichsenring et al., 2022; Ormel et al., 2022). Finally, the 37% treatment response rate after 12 months found in the current study approaches the 41% response rate found for acute-phase depression treatments (Cuijpers, Karyotaki, et al., 2021), further suggesting that CBASP may have positive results even in the long-term.

It is important in the interpretation of these results to consider that patients with PDD have more impaired social and physical health, and experience less benefit from standard psychological treatments compared to patients with an acute episode of depression (Schramm et al., 2017). Also, patients in the group studied had already tried other available treatment options, such as psychotherapy, pharmacotherapy, electroconvulsive therapy and inpatient treatment, without sufficient effect. Because of these severe symptoms and lack of treatment options, even partial response can infer clinically relevant increases in functioning (Markowitz et al., 2022). Furthermore, the finding that this level of response was maintained after 12 months emphasizes the potential long-term efficacy of group CBASP, particularly when viewed in the light of the low long-term efficacy of current treatments for depression (Ormel et al., 2022). While further research with a control group is needed to establish a causal relationship between group CBASP and treatment response, the clinical improvement observed in this study suggests that group CBASP with individual follow-up holds promise in the context of severe depressive disorders.

This study provides promising input about the effectiveness of group CBASP with individual follow-up for severely depressed patients. Nevertheless, some limitations must be addressed. Firstly, a

cohort design without a control group was used. This means that it cannot be concluded from this study that the changes in depression severity were specifically a result of the CBASP program. Because the identified predictors could be correlated with disease severity, they may be true for more forms of psychotherapy and might not be specific to CBASP. Also, only a single outcome measure, the IDS-SR score was used. On one hand, this scale is highly correlated with other measures of depression severity (Rush et al., 1996). However, other outcomes such as social functioning, quality of life, sense of purpose and well-being were not included, and these may also have important clinical relevance for patients with depressive disorders (Markowitz et al., 2022). Furthermore, in a previous case series of patients with PDD and a high rate of comorbidity, patients treated with CBASP showed significant shifts in other dimensions such as anxiety symptoms, hostility, interpersonal sensitivity and paranoid ideation (Swan et al., 2014). The high comorbidity rates in PDD, combined with the clinical relevance of multiple outcomes in depressive disorders, means that the current study may have underestimated the potential clinically relevant effects of CBASP. Also, the current CBASP program differed from previous research in that it included PMT. However, the PMT program was based on CBASP techniques, and the changes in depression severity were maintained after PMT was stopped. This suggests that CBASP was the main contributor to the decrease in depression severity. Additionally, patients who participated in volunteer work were not included in the group with paid work, whereas both paid and volunteer work may represent participation in meaningful daily activity and an increased number of opportunities to practise interpersonal skills learned in CBASP. Combining paid and volunteer work may increase predictive value. This study also aimed to assess the effects of previous antidepressant use, but because almost all patients had previously used these medications, it was a poorly discriminating variable and could not be included in the final model. Finally, presence of childhood trauma was not identified as a factor affecting response to the CBASP program. Use of a standardized questionnaire to assess childhood trauma in future studies might help to better elucidate the potential effects of this factor. Also, as one previous study suggested that only the subtype "childhood emotional abuse" had an effect (Bausch et al., 2020), future research might benefit from looking at trauma subtypes separately.

Important strengths of this study include the long-term measurement of depression severity, meaning it was possible to investigate sustained response to treatment, supplementing limited previous research on the effects of CBASP in the long-term. Additionally, the findings might be more generalizable to real-world practice because data were gathered from the clinical population, whereas RCTs risk overestimating efficacy due to the inclusion of generally more treatable patients (Ormel et al., 2022). Furthermore, the current study builds upon the foundation of the previous study to show sustained response percentages with an increased sample (Potijk et al., 2020). Also, the group of patients in the study had severe symptoms, and most had tried standard treatments already. This means the current study was able to identify the effectiveness of group CBASP with individual follow-up for a severely affected patient group, who lack other treatment options. Finally, this study can be informative for future prospective research investigating personalized treatment approaches (Furukawa et al., 2018; Herman et al., 2022), which in turn could lead to better treatment outcomes and reduced dropout.

Future research goals include the development of prediction tools to aid in treatment decision-making for PDD (Furukawa et al., 2018). This may include the analysis of previous failed treatments as a measure of the level of treatment resistance (van Bronswijk et al., 2019). Augmentation strategies could also be investigated (Leichsenring et al., 2022), such as the combination of occupational therapy and CBASP. Moreover, future studies should take comorbidity and other clinically relevant outcome measures, such as social functioning, into account alongside symptomatic change.

In conclusion, this study supports previous findings that suggest that group CBASP with individual follow-up can benefit patients with PDD for whom standard treatments are no longer sufficient. Primary source of income and psychiatric comorbidity were identified as predictors of treatment response, but even among patients without work or with a psychiatric comorbidity, a substantial percentage responded. CBASP may thus provide much-needed hope for patients with PDD, especially those with work and no comorbidity, but even for those with more complex symptoms, comorbidity and functional outcome.

AUTHOR CONTRIBUTIONS

Juliana A. Dean: Conceptualization; data curation; formal analysis; investigation; methodology; project administration; visualization; writing – original draft; writing – review and editing. **Marieke J. Eldering:** Conceptualization; data curation; investigation; methodology; supervision; visualization; writing – original draft; writing – review and editing. **Robert A. Schoevers:** Supervision; writing – review and editing. **Catheleine M. G. van Driel:** Conceptualization; data curation; formal analysis; investigation; methodology; supervision; visualization; writing – original draft; writing – review and editing.

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CONFLICT OF INTEREST STATEMENT

All authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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