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Resilience and coping strategies in cognitive behavioral group therapy for patients with panic disorder

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ABSTRACT

Background: Although resilience and coping are important factors associated with mental health, they are rarely investigated in the treatment of patients with panic disorder (PD).
Objective: To evaluate the response to four resilience and coping strategy sessions added to the standard cognitive behavioral group therapy (CBGT) protocol for PD.
Design: Controlled clinical trial.
Methods: The control group (n = 50) attended 12 CBGT sessions, while the intervention group (n = 50) received four additional resilience and coping strategy sessions, *i.e.*, 16 in total. Symptom severity, resilience, coping strategies, and quality of life were assessed at baseline and post-CBGT.
Results: Symptom severity and maladaptive coping strategies decreased significantly in both groups. However, the intervention group had increased resilience and improvement in the environment domain of quality of life.
Conclusions: Additional sessions have potential benefits for coping skills and resilience in PD patients, but these benefits should be evaluated in further long-term studies.

Introduction

Cognitive behavioral therapy (CBT) is the first-line therapy for panic disorder (PD) and its aim is to reduce symptoms such as anticipatory anxiety and phobic avoidance (Heldt et al., 2003; Hofmann, Asnaani, Vonk, Sawyer, & Fang, 2012). Despite evidence of its efficacy in PD, many patients have residual symptoms or partial response to treatment, which leads to chronicity (Porter & Chambless, 2015) and lower quality of life (Craske et al., 2017).

Predictors of treatment response have been addressed in a number of studies. For instance, a study of 45 PD patients that investigated response mediators present in 13 cognitive behavioral group therapy (CBGT) sessions, including changes in catastrophic misinterpretations of physical symptoms, thoughts, and panic self-efficacy, found that changes in panic self-efficacy are a mediator of change in anxiety levels during CBT (Fentz et al., 2013). A follow-up study of patients treated with CBGT found that stressful life events were predictors of PD relapse two years after treatment (Heldt et al., 2011). Less adapted behavioral responses could occur in stressful situations or in the presence of adversity, including negative mood, which could interfere in coping with life events (Schneiderman, Ironson, & Siegel, 2005). Stressful events could trigger relapse in PD patients (Fentz et al., 2013), even those already in remission after CBT (Heldt et al., 2011). Therefore, specific strategies to address maladaptive coping styles while facing stressful life events could be added to standard CBGT, which is currently focused only on PD symptoms (Wesner et al., 2014).

Resilience is understood as an individual's competence in overcoming stressful life events and adversities (Rutter, 2012). Thus, the ability to cope with crises can be learned and stimulated by reducing the impact of risk, as well as by strengthening self-efficacy (Davis, Luecken, & Lemery-Chalfant, 2009). The CBGT model promotes resilience (Victor, Teismann, & Willutzki, 2017) and coping strategies through techniques to encourage positive emotions and increase self-esteem, self-efficacy and optimism, as well as cognitive flexibility, including positive reappraisal and acceptance (Helmreich et al., 2017).

Recent studies have investigated resilience in psychotherapeutic

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treatment for patients with mood and anxiety disorders (Helmreich et al., 2017). In one study, resilience increased significantly during treatment and remained stable after six months of follow-up, indicating the prognostic value of resilience for symptom reduction (Pakalniškienė, Viliūnienė, & Hilbig, 2016). A study by our group evaluated the response to adding four cognitive technique booster sessions focused on coping and resilience strategies one year after completing CBGT in PD patients. Although the results showed significant improvement in PD symptoms and depression for all patients, there was a significant increase in resilience and the social relations domain of the group that received coping and resilience strategy sessions. We also found that improved resilience was symptom-dependent, *i.e.*, the lower the intensity of the symptoms, the higher the resilience levels (Wesner, Gomes, Detzel, Guimarães, & Heldt, 2015). However, to our knowledge no study has evaluated the efficacy of specific resilience and coping techniques added to standard CBGT sessions.

The present study was a controlled clinical trial evaluating the efficacy of four booster sessions focusing on resilience and coping strategies added to the standard CBGT protocol for PD. Although we expected both interventions, with or without coping sessions, to be effective in treating PD symptoms, we hypothesized that the intervention group (with four booster sessions) would have better resilience, adaptive coping strategies, and quality of life than the standard CBT treatment group.

Methods

This controlled clinical trial evaluated the response of four booster sessions of coping and resilience training compared to standard CBGT in PD treatment. The patients were referred to the study by the Anxiety Disorders Program (PROTAN) of the Hospital de Clínicas de Porto Alegre (HCPA), the Hospital Materno Infantil Presidente Vargas and by media advertisement in the community. The CBGT sessions took place at the HCPA and the Hospital Materno Infantil Presidente Vargas outpatient unit between August 2015 and December 2016. The study was approved by the HCPA Institutional Review Board and Research Ethics Committee (CAAE 27515114.8.1001.532727). All participants signed an informed consent form prior to entering the study.

Participants

Patients diagnosed with PD associated or not with agoraphobia according to DSM-5 (APA, 2014) were enrolled in the study if they were between 18 and 65 years of age, had been on a stable dose of medication for more than four months, and had a Global Clinical Impression (CGI) ≥ 3. The exclusion criteria were: patients with psychotic symptoms, severe major depression (Beck Depression Inventory [BDI] ≥ 35), significant clinical disease or chronic disabling diseases in the last 6 months before the trial. Eligible patients were randomly allocated to intervention or control groups. Patients who reported conflicts with their group's schedule were reallocated.

Of the 161 patients evaluated for the study, 32 did not meet the inclusion criteria and 29 declined to participate due to scheduling conflicts or other particular issues. A flowchart of the sample is shown in Fig. 1.

Instruments

The patients were evaluated with the Mini-International Neuropsychiatric Interview (MINI) – Brazilian version (Amorim, 2000), a semi-structured psychiatric clinical interview, to confirm PD diagnosis and assess comorbidities before beginning treatment. Sociodemographic data were collected at the time of the interview. The following instruments were applied at baseline and after the CBGT sessions in both groups by independent interviewers blinded to the treatment condition.

PD severity and CBGT response were measured with the Panic Disorder Severity Scale (PDSS) (Shear et al., 1997), the CGI (Guy, Hergueta, Baker, & Dunbar, 1998), the Hamilton Anxiety Scale (HAM-A) (Hamilton, 1959) and the BDI (Gorenstein & Andrade, 1996).

The PDSS is a seven-item instrument that considers the intensity and frequency of panic attacks, the degree of anticipatory anxiety, anxiety sensitivity, phobic avoidance level, and social and professional impairment. The PDSS is especially sensitive for diagnosing PD in patients with agoraphobia (99%) (Levitan et al., 2013). In the present study, the PDSS scores were evaluated as a continuous variable. The CGI scale was used to determine the global severity of illness (Guy et al., 1998), with scores ranging from 1 (normal, not ill) to 7 (extremely ill). The PDSS and CGI were translated into Portuguese, with no evidence of psychometric evaluation in a Brazilian sample. However, both instruments are well-established research-rating tool applicable for assessing symptoms of PD, according to the Brazilian Medical Association guidelines (Levitan et al., 2013).

The HAM-A's 14 items determine the intensity of anxiety, ranging from absent (0) to maximum intensity (4). This scale has been translated to Brazilian Portuguese and is widely used in studies evaluating anxiety symptoms (Ito & Ramos, 1998). The BDI, a validated version in Brazilian Portuguese (Gorenstein & Andrade, 1996), is a self-report instrument that aims to identify mild, moderate, and severe depression. Both instruments have shown good psychometric properties, with Cronbach's alphas ranging from 0.82 to 0.92 for the HAM-A (Shear et al., 2001) and 0.79 to 0.91 for the BDI (Gorenstein & Andrade, 1996).

The Resilience Scale was used to measure levels of positive psychosocial adaptation to major life events (Pesce et al., 2005). It includes 25 positively worded Likert items with scores from 1 (strongly disagree) to 7 (strongly agree). Total scores range from 25 to 175 points, with higher values indicating high resilience (Pesce et al., 2005). The study of cross-cultural adaptation to Brazilian Portuguese showed good psychometric properties, with Cronbach's alphas ranging from 0.85 to 0.80.

The Coping Strategies Inventory (CSI) was used to identify the thoughts and actions individuals use to deal with the internal or external demands of a specific stressful event. The CSI used was an instrument-validated version into Brazilian Portuguese (Savoia, Santana, & Mejias, 1996). This 66-item scale covers eight different dimensions that are grouped into three types of strategy: 1) problem-focused strategy: confrontation (aggressiveness, hostility, and risk taking to change the situation), social support (information, support, and emotional basis), problem solving, and positive reappraisal (creating a positive meaning, focus on personal growth); 2) emotion-focused strategy: distancing (detachment and minimization of the situation), acceptance of responsibility (recognizing one's role in the problem), escape and avoidance (efforts to escape or avoid the situation); and 3) both: self-control (regulating one's own feelings and actions). The results showed correspondence between the original form of the questionnaire and its translation, with correlation total score test-retest was 0.70.

Quality of life was assessed with the World Health Organization Quality of Life Instrument - Short Version (WHOQOL-bref), which consists of 26 questions: two about general quality of life and the remaining 24 covering physical, psychological, social, and environment domains (Fleck et al., 2000). The scores for each domain can range from 1 to 100, with higher scores associated with better quality of life. WHOQOL-bref showed a good performance concerning internal consistency, with Cronbach's alphas ranging from 0.69 to 0.91.

Intervention

The control group received the standard CBGT 12-week PD protocol over four months (Heldt et al., 2003; 2006). Twelve 90-minute sessions (8 weekly and 4 every other week) were conducted by two nurses with prior CBT experience and a psychiatric resident. The following CBT elements were used: psychoeducation, anxiety management techniques,

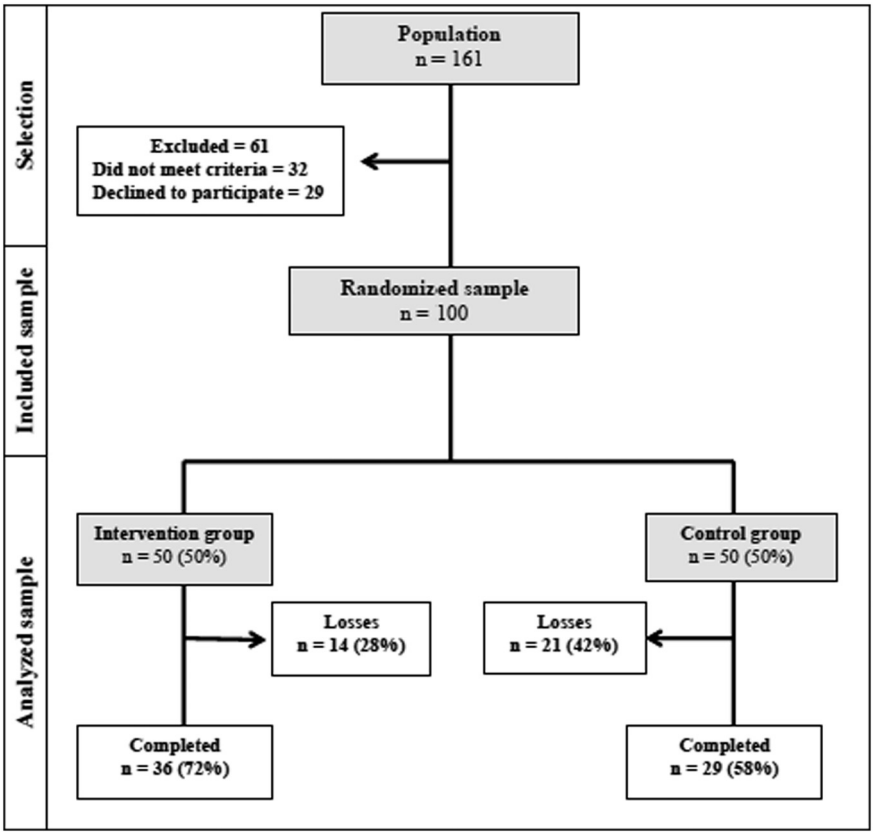

Fig. 1. Sample flowchart.

cognitive restructuring, interoceptive and naturalistic exposure, and finally *in vivo* exposure. The initial sessions involved instruction about the cognitive model of fear and techniques for dealing with anxiety (such as muscle relaxation and diaphragmatic breathing). The second phase addressed automatic thoughts and the identification and evaluation of evidence for or against catastrophic interpretations. Interoceptive exposure was conducted by simulating physical symptoms. In the final phase of the treatment, the patients were systematically exposed *in vivo* to avoided situations. The post-treatment sessions focused on preventing relapse.

The treatment length for the intervention group was also four months. Both groups began and ended therapy on the same dates. The 12 standard CBGT sessions were conducted weekly, and an extra four weekly 90-minute sessions were held to cover cognitive coping strategies and resilience. The intervention sessions were conducted by the same personnel who conducted the control CBGT. The following techniques were included in the standard CBGT: a) evaluating coping strategies for specific stressful situations and distinguishing between what can and cannot be changed in these situations; b) emotion-focused strategies that emphasize the use of adaptive resources for situations considered immutable, uncontrollable or threatening, such as cognitive restructuring and mood modulation, and strategies focused on problem-solving techniques, decision-making, communication and interpersonal negotiation skills; c) identifying adaptive thoughts to help cope with stressful situations; (d) promoting resilience by clarifying it as a concept and encouraging patients to cope with change and adversity in a positive way.

Data analysis

To compare the groups at baseline, we performed bivariate chi-square analysis, the *t*-test for independent samples, and the Mann-Whitney Test. The Shapiro-Wilk test was used to verify the distribution of variables. The generalized estimating equations model was used to compare pre- and post-treatment variables. Drop-outs were handled with intention-to-treat analysis.

We used a generalized estimating equation model with binary distribution and logit function for benzodiazepine use. We also used a generalized estimating equation model with normal distribution and identity function for variables with Gaussian distribution. We used the Bonferroni test for multiple comparisons as a post-hoc test. The significance level was set at 0.05. SPSS 18.0 was used for data analysis.

Results

A total of 100 patients were included (50 in the intervention group and 50 in the control group) and divided into 12 therapy groups with a mean of 8 participants each. No significant differences were found between the intervention and control groups regarding socio-demographic/clinical characteristics and baseline symptom severity (Table 1).

A total of 36 (72%) intervention group patients and 29 (58%) control group patients concluded the CBGT sessions. We found significant improvement in symptom severity over time in both groups ($p_{time} > 0.001$). Anxiety and depression symptoms were significantly lower in the intervention group after CBGT (HAM-A: $p_{group} = 0.016$ and BDI: $p_{group} = 0.025$). However, there was no significant time-by-group interaction regarding intervention type. Furthermore, there was a significant decrease in benzodiazepine use, which was observed in the time interaction ($p_{time*group} < 0.001$). Specifically, there was a 28% post-CBGT reduction in the intervention group, whereas there was a 2% post-CBGT increase in the control group (Table 2).

As shown in Table 3, there was a change in coping strategies in relation to time, with a significant decrease in confrontation ($p_{time} = 0.019$) and escape and avoidance ($p_{time} = 0.005$). The strategies that increased after CBGT were: problem solving ($p_{time} = 0.001$)

Table 1
Sociodemographic, clinical and symptom severity characteristics of the intervention and control groups before CBGT.

Characteristics	Intervention n = 50(50%)	Control n = 50(50%)	P-value
Sociodemographic			
Sex[a]			
Female	43 (86)	39 (78)	0.436
Age[b]	36.8(11.5)	38.1(11)	0.552
Education (years)[b]	13.4(3.3)	12.8(3.0)	0.311
Marital status[a]			0.753
Single	16 (32)	18 (36)	
Married/stable relationship	28 (56)	25 (50)	
Separated/divorced	5 (10)	4 (14)	
Widowed	1 (2)	0 (0)	
Clinical			
Comorbidities[a]			
Mood disorders[c]	32 (64)	38 (76)	0.245
Anxiety disorders[d]	28 (56)	32 (64)	0.540
Agoraphobia	42 (84)	41 (82)	>0.999
Medications[a]			
Antidepressants	28 (56)	32 (64)	0.541
Benzodiazepines	29 (58)	26 (52)	0.688
Symptom severity[b]			
Global clinical impression	4.4(0.7)	4.5(0.8)	0.300
Panic disorder severity scale	15.9(4.2)	15.6(4.6)	0.768
Hamilton anxiety scale	29.6(7.9)	31.3(7.8)	0.282
Beck depression inventory	17.8(8.0)	20.8(9.9)	0.145

Abbreviation: CBGT – Cognitive behavior group therapy.
[a] Categorical variables presented as absolute frequency (%), analyzed with Fisher's Exact Test.
[b] Continuous variables expressed as means and standard deviation (SD), analyzed with a t-test.
[c] Mood disorders: Current and past major depression, dysthymia or hypomanic episode.
[d] Anxiety disorders: Social phobia, obsessive-compulsive disorder, posttraumatic stress and generalized anxiety.

and positive reappraisal (p_{time} = 0.004). However, there was no significant time-by-group interaction between the control and intervention groups.

Quality of life significantly improved in all domains in both groups over time. The environment domain significantly increased according to time-by-group interaction. Resilience increased significantly in both groups after CBGT (p_{time} < 0.001) and an interaction ($p_{time*group}$ = 0.013) related to the intervention group was found (Table 4).

Discussion

The results demonstrate that PD symptoms significantly improved in both groups, which supports previous research on CBGT efficacy in PD patients (Craske et al., 2017; Heldt et al., 2003; Hofmann et al., 2012). However, the addition of sessions featuring new coping strategies significantly increased intervention group resilience levels over those of the control group, which agrees with a more recent study (Victor et al., 2017).

Although the efficacy of CBGT was positive for both groups, we found that benzodiazepine use after CBGT decreased in the intervention group and increased in the control group. It is known that an improvement in symptoms leads to a decrease in benzodiazepine use (Bardelow, Michaelis, & Wedekind, 2017). However, the improvement in symptoms was similar in both groups, and a difference in resilience was observed in the intervention group. Our hypothesis is that reduced medication use may be related to increased resilience levels. Previous research on CBGT for PD found that high levels of resilience were inversely correlated with symptom intensity (Wesner et al., 2015). However, the design of the present study precludes affirmation of a causal relationship.

The change in coping strategies was significant in both groups. It is worth pointing out that maladaptive strategies (confrontation, escape and avoidance) decreased while adaptive strategies (problem solving and positive reappraisal) increased. In fact, the positive reappraisal strategy seeks to create positive meaning that focuses on personal

Table 2
Results of intervention and control group CBTG for symptom severity and medication use.

	Group	CBGT			P-value		
		Before	After	Total(1)	Group	Time	Interaction
Severity of symptoms							
CGI	Intervention	4.36[4.16–4.56]	2.70[2.31–3.09]	3.53[3.29–3.77]	0.112	< 0.001	0.406
	Control	4.52[4.30–4.74]	3.08[2.74–3.42]	3.80[3.57–4.03]			
	Total(2)	4.44[4.29–4.59]α	2.89[2.63–3.15]β				
PDSS	Intervention	15.86[14.71–17.01]	9.44[7.82–11.06]	12.65[11.51–13.79]	0.830	< 0.001	0.424
	Control	15.60[14.34–16.86]	10.06[8.59–11.53]	12.83[11.65–14.01]			
	Total(2)	15.73[14.88–16.58]α	9.75[8.66–10.84]β				
HAM-A	Intervention	29.56[27.40–31.72]	15.32[12.60–18.04]	22.44[20.56–24.32]#	0.016	< 0.001	0.061
	Control	31.26[29.11–33.41]	21.02[17.81–24.23]	26.14[23.77–28.51]*			
	Total(2)	30.41[28.89–31.93]α	18.17[16.06–20.28]β				
BDI	Intervention	17.74[15.56–19.92]	10.86[9.01–12.71]	14.30[12.57–16.03]#	0.025	< 0.001	0.560
	Control	20.74[18.02–23.46]	14.74[12.13–17.35]	17.74[15.29–20.19]*			
	Total(2)	19.24[17.50–20.98]α	12.80[11.20–14.40]β				
Use of medications							
ANT	Intervention	56.0%[42.2–69.8]	54.0%[40.2–67.8]	55.0%[41.9–68.1]	0.199	0.419	0.136
	Control	64.0%[50.7–77.3]	70.0%[57.3–82.7]	67.1%[54.4–79.7]			
	Total(2)	60.1%[50.4–69.7]	62.3%[52.7–72.0]				
BZD	Intervention	58%[44.3–71.7]aA	30%[17.3–42.7]bA	43.5%[30.8–56.1]	0.309	0.001	< 0.001
	Control	52%[38.2–65.8]aA	54%[40.2–67.8]aB	53%[39.9–66.1]			
	Total(2)	55%[45.2–64.8]	41.5%[31.5–51.5]				

Abbreviation: CBGT – Cognitive behavior group therapy; CGI – Global Clinical Impression; PDSS, Panic Disorder Severity Scale; HAM-A, Hamilton Anxiety; BDI, Beck Depression Inventory; ANT – Antidepressant; BZD – Benzodiazepines.
Representation by mean and confidence interval [95% CI]. Data analysis: Generalized Estimating Equations model and Bonferroni test for multiple comparisons. α, β - Greek letters represent significantly different means over time. #, * - Symbols represent significantly different means between groups. a, b - Lowercase letters represent significantly different means or proportions between times and groups. A, B - Uppercase letters represent significantly different means or proportions between times and groups.

Table 3
Results of coping strategies: comparison between intervention and control groups before and after CBGT.

Coping strategies	Group	CBGT			P-value		
		Before	After	Total(1)	Group	Time	Interaction
Confrontation	Intervention	6.06[4.99–7.13]	4.86[4.07–5.65]	5.46[4.68–6.24]	0.540	0.019	0.143
	Control	5.24[4.33–6.15]	4.96[4.06–5.86]	5.10[4.26–5.94]			
	Total(2)	5.65[4.95–6.35]α	4.91[4.31–5.51 β				
Distancing	Intervention	5.84[4.90–6.78]	6.52[5.60–7.44]	6.18[5.41–6.95]	0.428	0.132	0.722
	Control	5.54[4.81–6.27]	5.96[4.95–6.97]	5.75[5.01–6.49]			
	Total(2)	5.69[5.10–6.28]	6.24[5.56–6.92]				
Self-control	Intervention	5.46[4.62–6.30]	6.04[5.26–6.82]	5.75[5.08–6.42]	0.815	0.241	0.441
	Control	5.58[4.86–6.30]	5.70[4.96–6.44]	5.64[5.01–6.27]			
	Total(2)	5.52[4.97–6.07]	5.87[5.33–6.41]				
Social support	Intervention	9.84[8.77–10.91]	9.46[8.46–10.46]	9.25[8.75–10.55]	0.165	0.298	0.954
	Control	8.86[7.73–9.99]	8.52[7.44–9.60]	8.69[7.67–9.71]			
	Total(2)	9.35[8.57–10.13]	8.99[8.25–9.73]				
Acceptance responsibility	Intervention	9.30[8.10–10.50]	9.30[8.18–10.42]	9.30[8.30–10.30]	0.124	0.307	0.307
	Control	7.80[6.80–8.80]	8.56[7.36–9.76]	8.18[7.16–9.20]			
	Total(2)	8.55[7.77–9.33]	8.93[8.11–9.75]				
Escape and avoidance	Intervention	3.26[2.76–3.76]	2.42[1.94–2.90]	2.84[2.44–3.24]	0.289	0.005	0.081
	Control	3.26[2.79–3.73]	3.06[2.55–3.57]	3.16[2.73–3.59]			
	Total(2)	3.26[2.92–3.60]α	2.74[2.39–3.09]β				
Problem solving	Intervention	5.18[4.39–5.97]	5.90[5.15–6.65]	5.54[4.86–6.22]	0.086	0.001	0.703
	Control	4.18[3.35–5.01]	5.08[4.23–5.93]	4.63[3.84–5.42]			
	Total(2)	4.68[4.11–5.25]α	5.49[4.92–6.06]β				
Positive reappraisal	Intervention	9.58[8.04–11.12]	11.50[9.81–13.19]	10.54[9.09–11.99]	0.927	0.004	0.257
	Control	10.02[8.37–11.67]	10.86[9.11–12.61]	10.44[8.86–12.02]			
	Total(2)	9.80[8.67–10.93]α	11.18[9.96–12.40]β				

Abbreviation: CBGT – Cognitive behavior group therapy. Representation by means and confidence intervals [95% CI].
Data analysis: Generalized Estimating Equations model and Bonferroni test for multiple comparisons.
α, β - Greek letters represent significantly different means over time.

Table 4
Results for quality of life domains and resilience: a comparison between the intervention and control groups before and after CBGT.

	Group	CBGT			*P*-value		
		Before	After	Total(1)	Group	Time	Interaction
Quality of life - Domains							
Physical	Intervention	45.21[40.61–49.82]	59.86[54.96–64.75]	52.54[48.36–56.71]#	0.028	< 0.001	0.088
	Control	40.79[35.50–46.07]	49.79[44.22–55.35]	45.29[40.38–50.20]*			
	Total(2)	43.00[39.49–46.51]α	54.82[51.11–58.53]β				
Psychological	Intervention	44.67[40.68–48.65]	56.75[52.22–61.28]	50.71[11.51–13.79]	0.061	< 0.001	0.319
	Control	40.83[36.50–45.17]	49.92[44.96–54.87]	45.38[41.24–49.51]			
	Total(2)	42.75[39.81–45.69]α	53.33[49.98–56.69]β				
Social relations	Intervention	48.33[42.68–53.99]	55.17[49.86–60.47]	51.75[46.81–56.69]	0.912	< 0.001	0.348
	Control	47.17[41.19–53.15]	57.17[51.23–63.10]	52.17[46.67–57.66]			
	Total(2)	47.75[43.63–51.87]α	56.17[52.19–60.15]β				
Environment	Intervention	48.19[43.94–52.43]aA	57.94[54.28–61.60]bA	53.06[49.41–56.71]	0.946	< 0.001	0.027
	Control	50.38[46.40–54.35]aA	55.38[50.80–59.95]bA	52.88[48.84–56.91]			
	Total(2)	49.28[46.37–52.19]	56.66[53.73–59.58]				
General	Intervention	48.00[42.53–53.47]	61.25[55.44–67.06]	54.63[49.70–59.55]	0.119	< 0.001	0.952
	Control	42.00[35.51–48.49]	55.00[48.18–61.82]	48.50[42.57–54.43]			
	Total(2)	45.00[40.75–49.25]α	58.13[53.64–62.61]β				
Resilience							
	Intervention	112.78[107.41–118.15]aA	124.94[119.01–130.87]bA	118.86[113.59–124.13]	0.041	< 0.001	0.013
	Control	108.94[103.42–114.46]aA	113.48[107.89–119.07]bB	111.21[106.10–116.32]			
	Total(2)	110.86[107.01–114.71]	119.21[115.14–123.28]				

Abbreviation: CBGT – Cognitive behavior group therapy.
Representation by means and confidence intervals [95% CI].
Data analysis: Generalized Estimating Equations model and Bonferroni test for multiple comparisons.
α, β - Greek letters represent significantly different means over time. #, * - Symbols represent significantly different means between groups. a, b - Lowercase letters represent significantly different means or proportions between times and groups. A, B - Uppercase letters represent significantly different means or proportions between times and groups.

growth by overcoming challenging situations (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986), which consequently improves psychological adaptation (Helmreich et al., 2017). Similarly, use of the problem solving strategy indicates an analytical effort to seek out alternatives that deal with stressful situations in a positive way (Folkman et al., 1986). According to a previous study, specific cognitive and behavioral techniques for PD (correction of dysfunctional thinking and interoceptive and *in vivo* exposure) promote cognitive flexibility, which can impact the process of assessing stressful circumstances by providing more adaptive coping strategies (Wesner et al., 2014).

We found improvement in quality of life in all domains in both groups over time, which agrees with another study on the impact of

CBGT in PD patients (Heldt et al., 2006). However, the environment domain presented significant interaction with the additional sessions on coping and resilience strategies. This domain reflects conditions and opportunities for wellbeing in the external environment, such as: physical safety and protection, opportunities to acquire new knowledge and skills, and participation in recreation and leisure activities (Fleck et al., 2000). We understand that this specific domain may be related to aspects of increased resilience in the intervention group, since it could lead to a more positive perception of the environment (Helmreich et al., 2017).

Whereas general studies usually evaluate PD symptom changes after therapy (Fentz et al., 2014), this study contributes to an understanding of psychosocial aspects of CBT patients that may predict relapse, particularly those related to coping with stressful life situations (Heldt et al., 2011; Fentz et al., 2014).

Limitations

This study's small sample size and losses over the course of treatment should be considered as limitations, although we addressed them by controlling with intention-to-treat analysis. Control of pharmacological treatment was not performed over time. However, there was no significant difference between the intervention and control groups regarding the use of medications at baseline. Another limitation involves the evaluation of complex procedural phenomena, such as coping and resilience, through self-report scales applied only pre- and post-CBGT. Nevertheless, coping was measured with repeated assessments for more reliable results, and the use of a paired control group and a number of different psychosocial instruments contributed to a consistent understanding of the results.

Conclusions

Our hypothesis that the intervention group would show better resilience, coping strategies, and quality of life than a standard CBT treatment group was partially confirmed. Although the results were positive for both groups after CBGT, resilience capacity and environment domain quality of life increased significantly in the intervention group. Nevertheless, changes in coping strategies and other domains of quality of life were unrelated to the intervention group's additional cognitive strategies.

Randomized trials with larger samples evaluating PD interventions that focus on coping and resilience are recommended. Furthermore, follow-up studies with repeated mid- and long-term assessments are necessary to obtain an understanding of the effectiveness of interventions with additional resilience and coping strategies in preventing relapse.

Declaration of Competing Interest

The authors report no conflicts of interest.

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References

Americam Psychiatric Association (2014). Manual Diagnóstico e Estatístico dos Transtornos Mentais: DSM-5. 5 ed. Porto Alegre: Artmed, 189-234.

Amorim, P. (2000). Mini International Neuropsychiatric Interview (MINI): Validation of a short strutured diagnostic psychiatric interview. *Revista Brasileira de Psiquiatria, 22*(3), 106–115. https://doi.org/10.1590/S1516-44462000000300003.

Bardelow, B., Michaelis, S., & Wedekind, D. (2017). Treatment of anxiety disorders. *Dialogues in Clinical Neuroscience, 19*(2), 93–107.

Craske, M.G., Stein, M.B., Eley, T.C., Milad, M.R., Holmes, A., Rapee, R.M., and Wittchen, H.U. (2017). Anxiety disorders. Nature Reviews Disease Primers, 4;3:17024. doi: 10.1038/nrdp.2017.24.

Davis, M. C., Luecken, L., & Lemery-Chalfant, K. (2009). Resilience in common life: Introduction to the special issue. *Journal of Personality, 77*(6), 1637–1644. https://doi.org/10.1111/j.1467-6494.2009.00595.x.

Fentz, H. N., Hoffart, A., Jensen, M. B., Arendt, M., O'Toole, M. S., Rosenberg, N. K., & Hougaard, E. (2013). Mechanisms of change in cognitive behaviour therapy for panic disorder: The role of panic self-efficacy and catastrophic misinterpretations. *Behaviour Research and Therapy, 51*(9), 579–587. https://doi.org/10.1016/j.brat.2013.06.002.

Fleck, M. P., Louzada, S., Xavier, M., Chachamovich, E., Vieira, G., Santos, L., & Pinzon, V. (2000). Application of the Portuguese version of the abbreviated instrument of quality life WHOQOL-bref. *Revista de Saúde Pública, 32*, 178–183. https://doi.org/10.1590/S0034-89102000000200012.

Folkman, S., Lazarus, R. S., Dunkel-Schetter, C., DeLongis, A., & Gruen, R. J. (1986). Dynamics of a stressful encounter: Cognitive appraisal, coping, and encounter outcomes. *Journal of Personality and Social Psychology, 50*(5), 992–1003. https://doi.org/10.1037/0022-3514.50.5.992.

Gorenstein, C., & Andrade, L. (1996). Validation of a Portuguese version of the Beck depression inventory and the state-trait anxiety inventory in Brazilian subjects. *Brazilian Journal of Medical and Biological Research, 29*(4), 453–457.

Guy, W., Hergueta, T., Baker, R., and Dunbar, G. (1998). Clinical Global Impressions. In: E.A. M. F. Psychopharmacology (Ed.), CGI (1976 ed.). Rockville (MD): US National Institute of Health, Psychopharmacology Research Branch.

Hamilton, M. (1959). The assessment of anxiety states by rating. *The British Journal of Medical Psychology, 32*(1), 50–55. https://doi.org/10.1111/j.2044-8341.1959.tb00467.x.

Heldt, E., Blaya, C., Isolan, L., Kipper, L., Teruchkin, B., Otto, M. W., ... Manfro, G. G. (2006). Quality of life and treatment outcome in panic disorder: Cognitive behavior group therapy effects in patients refractory to medication treatment. *Psychotherapy and Psychosomatics, 75*(3), 183–186. https://doi.org/10.1159/000091776.

Heldt, E., Kipper, L., Blaya, C., Salum, G. A., Hirakata, V. N., Otto, M. W., & Manfro, G. G. (2011). Predictors of relapse in the second follow-up year post cognitive-behavior therapy for panic disorder. *Revista Brasileira de Psiquiatria, 33*(1), 23–29. https://doi.org/10.1590/S1516-44462010005000005.

Heldt, E., Manfro, G. G., Kipper, L., Blaya, C., Maltz, S., Isolan, L., ... Otto, M. W. (2003). Treating medication-resistant panic disorder: Predictors and outcome of cognitive-behavior therapy in a Brazilian public hospital. *Psychotherapy and Psychosomatics, 72*(1), 43–48. https://doi.org/10.1159/000067188.

Helmreich, I., Kunzler, A., Chmitorz, A., König, J., Binder, H., Wessa, M., & Lieb, K. (2017). Psychological interventions for resilience enhancement in adults. *Cochrane Database of Systematic Reviews, 2*, 1–43. https://doi.org/10.1002/14651858.CD012527.

Hofmann, S. G., Asnaani, A., Vonk, I. J., Sawyer, A. T., & Fang, A. (2012). The efficacy of cognitive behavioral therapy: A review of meta-analyses. *Cognitive Therapy and Research, 36*(5), 427–440. https://doi.org/10.1007/s10608-012-9476-1.

Ito, L. M., & Ramos, R. T. (1998). Escalas de avaliação clínica: Transtorno de pânico. *Revista de Psiquiatria Clínica, 25*(6), 294–302.

Levitan, M. N., Chagas, M. H., Linares, I. M., Crippa, J. A., Terra, M. B., Giglio, A. T., ... Nardi, A. E. (2013). Brazilian medical association guidelines for the diagnosis and differential diagnosis of panic disorder. *Revista Brasileira de Psiquiatria, 35*, 406–415. https://doi.org/10.1590/1516-4446-2012-0860.

Pakalniškienė, V., Viliūnienė, R., & Hilbig, J. (2016). Patients' resilience and distress over time: Is resilience a prognostic indicator of treatment? *Comprehensive Psychiatry, 69*, 88–99. https://doi.org/10.1016/j.comppsych.2016.05.010.

Pesce, R. P., Assis, S. G., Avanci, J. Q., Santos, N. C., Malaquias, J. V., & Carvalhaes, R. (2005). Cross-cultural adaptation, reliability and validity of the resilience scale. *Caderno de Saúde Pública, 21*, 436–448. https://doi.org/10.1590/S0102-311X2005000200010.

Porter, E., & Chambless, D. L. (2015). A systematic review of predictors and moderators of improvement in cognitive-behavioral therapy for panic disorder and agoraphobia. *Clinical Psychology Review.*. https://doi.org/10.1016/j.cpr.2015.09.004.

Rutter, M. (2012). Resilience as a dynamic concept. *Development and Psychopathology, 24*(2), 335–344. https://doi.org/10.1017/S0954579412000028.

Savoia, M. G., Santana, P. R., & Mejias, N. P. (1996). Adaptação do inventário de estratégias de coping de Folkman e Lazarus para o português. *Revista de Psicologia da Universidade de São Paulo, 7*(1/2), 183–201. https://doi.org/10.1590/S1678-51771996000100009.

Schneiderman, N., Ironson, G., & Siegel, S. D. (2005). Stress and health: Psychological, behavioral, and biological determinants. *Annual Review of Clinical Psychology, 1*, 607–628. https://doi.org/10.1146/annurev.clinpsy.1.102803.144141.

Shear, M. K., Brown, T. A., Barlow, D. H., Money, R., Sholomskas, D. E., Woods, S. W., & Papp, L. A. (1997). Multicenter collaborative panic disorder severity scale. *The American Journal of Psychiatry, 154*(11), 1571–1575. https://doi.org/10.1176/ajp.154.11.1571.

Shear, M. K., Vander Bilt, J., Rucci, P., Endicott, J., Lydiard, B., Otto, M. W., & Frank, D. M. (2001). Reliability and validity of a structured interview guide for the Hamilton Anxiety Rating Scale (SIGH-A). *Depression and Anxiety, 13*(4), 166–178. https://doi.org/10.1002/da.1033.

Victor, P. P., Teismann, T., & Willutzki, U. (2017). A pilot evaluation of a strengths-based CBT intervention module with college students. *Behavioural and Cognitive Psychotherapy, 45*(4), 427–431. https://doi.org/10.1017/S1352465816000552.

Wesner, A. C., Gomes, J. B., Detzel, T., Blaya, C., Manfro, G. G., & Heldt, E. (2014). Effect of cognitive-behavioral group therapy for panic disorder in changing coping strategies. *Comprehensive Psychiatry, 55*(1), 87–92. https://doi.org/10.1016/j.comppsych.2013.06.008.

Wesner, A. C., Gomes, J. B., Detzel, T., Guimarães, L. S., & Heldt, E. (2015). Booster sessions after cognitive-behavioural group therapy for panic disorder: Impact on resilience, coping, and quality of life. *Behavioural and Cognitive Psychotherapy, 43*(5), 513–525. https://doi.org/10.1017/S1352465814000289.