

# Mindfulness-Based Cognitive Therapy for Spanish Oncology Patients: The Bartley Protocol

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## Abstract

**Objectives:** The aim of this study is to analyse whether MBCT will reduce the general level of psychopathology, increase the quality of life, and increase meta-knowledge about their emotional state in Spanish participants with cancer. **Method:** The sample consisted of  $n = 88$  Spanish oncology patients. This was a non-randomized, two-group (experimental vs waiting list) trial conducted in a naturalistic setting. We evaluated psychological distress (BSI-18), quality of life (FACT-G), and meta-knowledge of emotions (TMMS-24). **Results:** The participants who received the MBCT treatment improved more than the control group in distress ( $F = 6.79$ ;  $p = .01$ , BSI-18), depression ( $F = 8.38$ ;  $p = .005$ ), quality of life -physical health ( $F = 5.56$ ;  $p = .02$ ), emotional state ( $F = 7.06$ ;  $p = .01$ ), and functional capacity ( $F = 7.98$ ;  $p = .006$ ), as well as meta-knowledge about their emotional state ( $F = 35.4$ ;  $p = .01$ ), and its subscales of perception, ( $F = 8.95$ ;  $p = .004$ ), comprehension, ( $F = 16.06$ ;  $p = .01$ ), and repair ( $F = 15.67$ ;  $p = .01$ ). **Conclusions:** The Bartley MBCT program was feasible and showed promise in improving general psychopathology (depression), improving patients' quality of life, and increasing meta-knowledge about their emotional state.

**Keywords:** Mindfulness; cancer; Bartley protocol; quality of life; Mindfulness-based cognitive therapy.

## Resumen

**Terapia Cognitiva Basada en Mindfulness en Pacientes Oncológicos Españoles: el Protocolo Bartley.** **Objetivos:** el objetivo de este estudio es analizar el papel de la MBCT en la reducción de la psicopatología, la mejora de la calidad de vida y del metaconocimiento del estado emocional en participantes españoles oncológicos. **Método:** la muestra consta de  $n = 88$  pacientes oncológicos españoles. Este es un ensayo no aleatorio de dos grupos (experimental versus lista de espera) realizado en un entorno hospitalario. Se evaluaron distrés psicológico (BSI-18), calidad de vida (FACTG) y metaconocimiento de las emociones (TMMS). **Resultados:** los participantes con tratamiento MBCT mejoraron más que el grupo control en distrés ( $F = 6.79$ ;  $p = .01$ ), depresión ( $F = 8.38$ ;  $p = .005$ ), en la calidad de vida asociada a salud física ( $F = 5.56$ ;  $p = .02$ ), al estado emocional ( $F = 7.06$ ;  $p = .01$ ) y a la capacidad funcional personal ( $F = 7.98$ ;  $p = .006$ ), y en metaconocimiento de las emociones ( $F = 35.4$ ;  $p = .01$ ), y sus subescalas percepción ( $F = 8.95$ ;  $p = .004$ ), comprensión, ( $F = 16.06$ ;  $p = .01$ ) y reparación ( $F = 15.67$ ;  $p = .01$ ). **Conclusiones:** la MBCT mostró resultados prometedores para mejorar la psicopatología general, la calidad de vida y el metaconocimiento sobre el estado emocional.

**Palabras clave:** Mindfulness; cancer; protocolo Bartley; regulación emocional; Terapia Cognitiva Basada en Mindfulness.

Oncological disease has an enormous impact on patients, their families, and the social environment. The main problems the subject faces are the constant need to modify reality to adapt to a changing and unpredictable situation, dealing with uncertainty, and managing pain.

Interventions based on mindfulness have been shown to be effective in combating these symptoms (Branstrom et al., 2012; Cramer et al., 2012; Hoffman et al., 2012; Labelle et al., 2015; Piet et al., 2012; Shennan et al., 2011) in both newly diagnosed and advanced disease patients (Chambers et al., 2016). In the words of Carlson (2016), these programs adapted to cancer represent a form of emotion-focused coping that will allow the individual to deal with uncertainty and learn to accept his/her inability to control or change the course of the disease (Ott et al., 2006).

The two main mindfulness-based interventions that are specifically designed for oncological patients follow the Mindfulness-Based Stress Reduction (MBSR) program, but each enriches it with subtly different elements. The first is the Mindfulness Based Cancer Recovery (MBCR) (Carlson et al., 2010). Although its principles are the same as the Kabat-Zinn program, it differs in that the authors have included specific material about how to address cancer. Greater emphasis is placed on symptoms such as pain, anticipatory nausea, fear, and difficult emotions. This program has been effective in reducing symptoms such as stress (Carlson et al., 2001), sleep problems (Garland et al., 2014), and pain (Poulin et al., 2016), and in improving quality of life (Henderson et al., 2012).

The other specific protocol for cancer, and the object of this study, is Bartley's Mindfulness-Based Cognitive Therapy (MBCT) (Bartley, 2012). It is a program based on the MBCT by Teasdale et al (2000) for depression, but it incorporates the coping scheme proposed by Moorey and Greer (1983) and contributes the three circles model. The coping scheme proposed by O'Brien and Moorey (2010) considers the capacity for adaptation, the emotional

response, and the coping styles that oncological patients put into practice when they find out their diagnosis or the state of their illness. Depending on how s/he interprets it (as a challenge, loss, or threat), the patient will react with fear, anger, sadness, depression, or guilt, which, in turn, will activate a specific coping style (fighting spirit, hopelessness, anxious worry, fatalism, or avoidance) and, consequently, a greater or lesser perception of control. In addition to this survival scheme, Bartley (2012) proposes the three circles model: suffering, practice, and presence.

The circle of suffering shows how the patient is trapped by the disease and the main reactions as a consequence: avoidance, rumination, trauma and distress, along to the tendency of focusing only on the stressful symptoms (Bartley, 2012). The circle of practice puts the focus on attentive awareness, through four movements: 1) intention, 2) taking a step back, 3) moving towards difficulty, and 4) kindness (Bartley, 2016). Any difficult situation of the patient is used, integrating any physical sensations, emotions, thoughts, and actions. The third circle, regarding presence, focuses more on the Self rather than on Doing. As the individual practices, s/he begins to be able to integrate all that s/he has learned, achieving a greater connection with the self and with others (Bartley, 2016).

Several studies of different MBCT have been carried out with cancer patients, including a number of randomized studies. Benefits have been found in dealing with common experiences related to the cancer diagnosis, treatment, and survival, including loss of control, uncertainty about the future, and fears of recurrence, as well as a range of physical and psychological symptoms, including depression, anxiety, insomnia, and fatigue (Chambers et al., 2016; Compen et al., 2015; Kingston et al., 2015; Ott et al., 2006). Specifically, several previous studies have demonstrated the effectiveness of MBCT in oncology settings. The study by Foley et al. (2010) provided evidence supporting the use of MBCT in an oncological population. They found significant improvements in mindfulness, depression, anxiety, and distress in MBCT participants compared to those who had not received the training. Van der Lee and Garssen (2012) carried out a study whose aim was to evaluate the efficacy of MBCT group therapy in reducing severe chronic fatigue in cancer survivors with different types of cancer diagnoses. The subjective feeling of fatigue participants experienced during the previous week was significantly lower in the intervention group than in the waiting list group. Likewise, Stafford et al. (2013), in a study of an MBCT intervention (eight weekly two-hour therapy sessions), found that the MBCT intervention was associated with significant improvements in distress, quality of life, post-traumatic growth, and care, and post-treatment follow-up showed that these gains were maintained three months after treatment completion. Moreover, Johannsen et al. (2016) assessed the efficacy of MBCT and suggested that MBCT could be a useful pain rehabilitation strategy for breast cancer patients. Furthermore, in research conducted by Vaziri et al., (2017), 16 women with breast cancer received eight two-hour sessions (one session per week) of MBCT versus wait-list. The intervention group showed a significant reduction in the use of strategies to regulate maladaptive cognitive emotions. However, no significant differences were observed in the increase in adaptive cognitive emotion regulation strategies and the decrease in clinical symptoms between the intervention and control groups. Park et al. (2017) showed that MBCT was well accepted by Japanese breast cancer patients and had a favourable effect on patients' psychological state and quality of life. Toivonen et al. (2017) found that two web-based MBCT programs for cancer

patients, compared to wait-list, were effective in improving mood, psychological distress, and fatigue. A recent meta-analysis (Zhang et al., 2019) found beneficial effects of MCBT interventions on quality of life in breast cancer patients compared to the control group.

However, despite results suggesting the efficacy of MBCT, a recent meta-analysis of RCT studies about MBCT and MBSR interventions with cancer patients and survivors (Cillessen et al., 2019) showed that these interventions had a statistically significant effect on psychological distress (Hedges's  $g$ : 0.32), as well as on symptoms of anxiety, depression, fear of cancer recurrence, and fatigue (Hedges's  $g$  range: 0.29-0.51) at post-intervention. Moreover, Cillessen et al. (2019) found no effects of MBCT/MBSR on measures of cancer-related quality of life or post-traumatic stress symptoms. In the same way, Haller et al. (2017) found evidence for statistically significant short-term effects of MBSR and MBCT, compared to usual care, on stress, anxiety, depression, and quality of life, but with small effect sizes, and average effects did not reach minimal clinically important differences.

In summary, in spite of the evidence of the effectiveness of MBCT-based interventions with participants with cancer in different countries, as far as we know, there are no studies with Spanish participants with cancer. The aim of this study was to analyse whether MBCT would reduce the general level of patients' psychopathology, increase their quality of life, and increase meta-knowledge about their emotional state in Spanish participants with cancer.

## Method

### Participants

The inclusion criteria for participants were: men and women over 18 years of age with a diagnosis of cancer; FVIO patients in cancer stages I-III who had finished active treatment (chemotherapy, radiotherapy, and/or surgery); the presence of psychopathological symptoms suggesting psychological distress; and signed informed consent. Patients who were assigned to the control group were offered the opportunity to participate in the next full awareness treatment groups to be held in the coming months. The exclusion criteria for the study were: patients undergoing chemotherapy and/or radiotherapy; patients with a diagnosis of severe mental disorder (e.g. schizophrenia, bipolar disorder, or a severe personality disorder such as borderline personality disorder); or patients with advanced physical deterioration. They were previously informed of the procedure to be followed and did not receive any financial compensation. The sample was recruited between May 2015 and May 2017.

The final sample is made up of a total of 88 participants, all of them cancer patients at the Foundation Valencian Institute of Oncology (FVIO) (78.4% women,  $n = 69$  and 21.6% men,  $n = 19$ ), with an average age of 54.92 years ( $SD = 9.45$ ). Research participants are diagnosed with different types of tumours: 48.9% breast cancer,  $n = 43$ , 9.1% lung cancer,  $n = 8$ , 8% uterine and urinary cancer,  $n = 7$ , 6.8% colon cancer,  $n = 6$ , 3.4% prostate, ovarian, kidney and skin cancer,  $n = 3$ , 2.3% stomach and pancreatic cancer,  $n = 2$ , and 1.1% bone cancer,  $n = 1$ , with an average time since the diagnosis of the disease of 40.20 months ( $SD = 4.18$ ). Participants had a diagnosis of cancer of stage I (6%), II (72%), or III (22%).

## Instruments

Brief Symptom Inventory 18 (BSI-18; Derogatis & Melisaratos, 1983). The objective of this inventory is to provide information about the level of psychological distress in the general and medical population. The person evaluated should indicate the degree of discomfort caused by each of the 18 symptoms in the past seven days. The scores are obtained from a Likert-type scale ranging from 0 to 4 (0 = nothing and 4 = a lot). A Global Severity Index is obtained from the sum of the 18 items, and it ranges from 0 to 72. The items are grouped in the following three subscales: somatization (items 1, 4, 7, 10, 13 and 16), depression (items 2, 5, 8, 11, 14 and 17), and anxiety (items 3, 6, 9, 12, 15 and 18). This instrument has high internal consistency ( $\alpha = 0.89$ ) and has been validated in Spanish (Galdón et al., 2008). In our sample, the reliabilities were: Somatization ( $\alpha = 0.75$ ); depression ( $\alpha = 0.89$ ); anxiety ( $\alpha = 0.83$ ); BSI total ( $\alpha = 0.84$ ).

Functional Assessment of Cancer Therapy - General (FACT-G; Cella et al., 1993) is an instrument that was designed for self-application or for use in a clinical interview. Its objective is to measure the quality of life of the oncology patient in general. This tool consists of a total of 27 items grouped in the following dimensions: general physical health situation, family and social environment, emotional state, and capacity for personal functioning. It is scored on a Likert-type scale (0 = nothing and 4 = a lot). Some of the items are presented in the opposite direction (items on the family and social environment and capacity for personal functioning subscales). This questionnaire is characterized by high reliability (Cronbach alpha close to 0.9). We used the Spanish version (Cella et al., 1993). In our sample, the reliabilities were adequate for the FACTG total ( $\alpha = 0.81$ ), and for the subscales: FACTG physical health ( $\alpha = 0.83$ ); FACTG: family and social environment ( $\alpha = 0.78$ ); FACTG emotional state ( $\alpha = 0.85$ ); FACTG personal functioning ( $\alpha = 0.82$ ).

Trait-Meta Mood Scale-24 (TMMS-24; Salovey et al., 1995). This scale in its original version evaluates meta-knowledge about emotional states with 24 items, and it has been validated in Spanish (Fernández-Berrocal et al., 2004). The scale is composed of three subscales containing 8 items each: emotional attention or perception, emotional clarity or understanding, and emotional repair or regulation. In the Spanish validation (Fernández-Berrocal et al., 2004), the internal consistency of the subscales was high (all Cronbach alphas were above 0.85). In our sample, the reliabilities were: Emotional attention ( $\alpha = 0.76$ ); Emotional perception ( $\alpha = 0.84$ ); Emotional regulation ( $\alpha = 0.85$ ); and TMMS total ( $\alpha = 0.86$ ).

## Procedure

This is a non-randomized, two-group (experimental vs waiting list) trial conducted in a naturalistic setting. Naturalistic studies (effectiveness studies) are carried out under the conditions of clinical practice. Based on previous studies on psychological interventions in heterogeneous populations of patients with cancer, an effect size of 0.39 for anxiety and 0.35 for depression is expected (Guarino et al., 2020). Because our design includes two experimental conditions, and considering an  $\alpha = 0.05$  and a statistical power of 0.80 on a 2-tailed t test, the total sample size needed is about 90 participants (45 participants per experimental condition). These calculations were made with the software program G\*Power 3.1 (Faul et al., 2007).

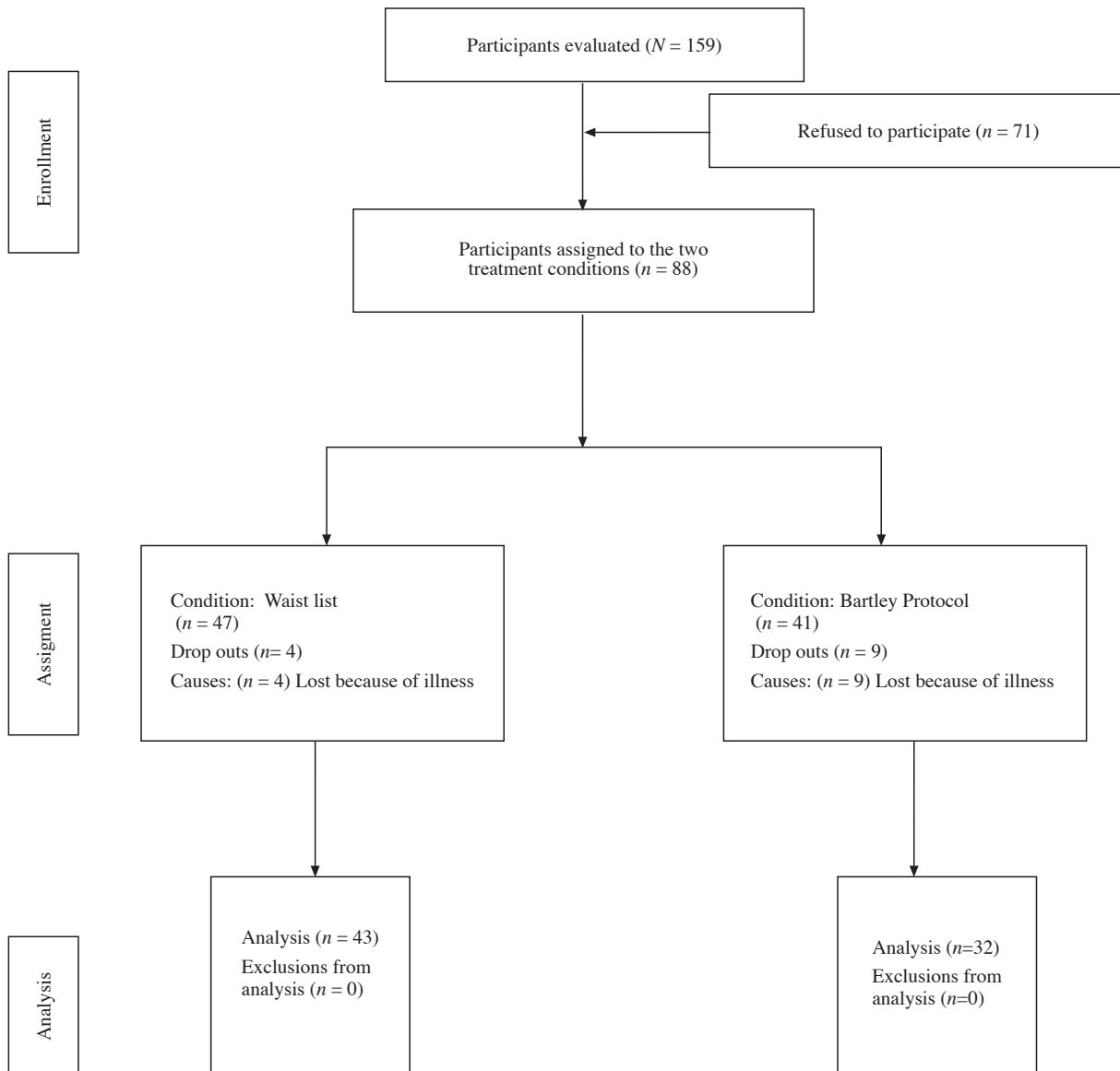
Two weeks before the beginning of therapy, the psychologist offered the patient the possibility of participating in the study. Thus, 159 participants were consulted, and  $n = 88$  agreed to participate and filled in the BSI-18, FACT-G, and TMMS questionnaires on the first day (pre-test). The reason 71 participants refused to participate in the study was that the group intervention was held in the morning, and this timetable was incompatible with their job or family activities. At pre-treatment, the sample was composed of 88 patients,  $n = 47$  in the wait list condition and  $n = 41$  in the experimental condition. In the wait list condition, therefore, four patients dropped out during the two months because of illness (e.g., medical complications or change in hospital for medical treatment), and so at the end of the process,  $n = 43$ . In the experimental condition, nine patients dropped out because of illness, and so  $n = 32$  at the end of the treatment. This information is displayed in the following scheme according to the CONSORT group (See figure 1).

The participants completed three measurement instruments at both the beginning and end of treatment, in order to be able to verify and evaluate the results after implementing the intervention based on full awareness. Information about the diagnosis of mental disorders, previous surgery, chemotherapy and / or radiotherapy treatments, or advanced physical deterioration was obtained from the clinical history of the participants. The study was approved by the ethics committees of the FVIO.

For the experimental condition, participants who were receiving psychological treatment for cancer were consecutively selected, and for the wait list condition, participants who were waiting to initiate the psychological treatment were consecutively selected. The time between the pre-treatment and posttreatment evaluations in the experimental condition was two months, and the time between the two evaluations (T1T2) in the wait list condition was also two months.

The program conducted in this study consists of a full care training treatment based on the Bartley Protocol (2012). The program was applied in groups composed of 15 participants. In this eight-week intervention offered to patients, different aspects of the disease process are addressed: awareness, facing obstacles, familiarization with the body and feelings, encouraging kindness, and taking care of oneself. For this purpose, different techniques are used: various types of meditation, full attention through the body scan, the raisin exercise, the pause exercise, or the experience map, among others. Each session has an approximate duration of two and a half hours (one per week), with a follow-up session one month after the end of therapy. Throughout the treatment, the patients had audio recordings with which they could practice full day-to-day care. In each session, the performance on the previous week's homework was evaluated. The treatment was administered by two expert MCBT therapists with more than 10 years of experience in the evaluation and treatment of patients with cancer. Thus, each therapist monitored adherence to the original MBCT protocol by the other therapist.

As explained above, Bartley (2012) proposes the three circles model in her mindfulness program. In the first session, the circle of suffering is explained in order to identify the main difficulties that arise when facing cancer. Mindfulness is explained by using the classic raisin exercise, and the body-scan and pause practices are introduced. The second session teaches participants to use the experience map as a cognitive record of everyday situations, starting with pleasant situations and then moving on to unpleasant



**Figure 1.** Sample evolution throughout treatment

ones. The third week is dedicated to familiarizing participants with breathing and body movement, teaching them to work with their own personal boundaries in a courageous, gentle, and sensitive manner, and returning to breathing whenever they need to. In this session, they learn the Three Minute Breathing Space. The central theme of the fourth session is to learn to respond to experience in a gentle way. For this purpose, they are taught to recognize their way of reacting impulsively, especially the mental patterns of cavitation and anxiety, and to return to the direct sensations of the body and breathing. The fifth session introduces the circle of practice. It illustrates the movements or gestures patients learn during the course (Intention, Coming Back, Turning Towards, and Kindness), so that they learn to relate to their problematic patterns (Physical Sensations, Thoughts, Feelings, and Actions). It is a moment of courage and bravery, as cancer patients are afraid to focus on their own fears and physical sensations with openness and kindness because they interpret any physical discomfort as a

sign of recurrence. Therefore, in this session, the patient has to stop and observe the mental patterns that cause his/her suffering and observe them in a mindful and compassionate way. The practice of The Physical Barometer linked to the Pause is very useful in this session. The aim of the sixth week is for participants to learn to accept that thoughts are transient, empty, and impersonal, although some are linked to feelings. In the seventh week, patients are invited to observe their personal guidelines by listing the nurturing and draining daily activities so that they can make decisions that encourage well-being, both now and in the future. The eighth week consists of observing what has been done in the previous weeks and committing to a plan of action for the next four weeks. Part of this session is dedicated to introducing the third circle, Presence, where one begins to appreciate the richness of the experience with greater clarity and confidence, increasing the connection with shared humanity. To conclude, the follow-up session that takes place one month after the end of the eight sessions consists of a

daily review and action plans. Its aim is to continue to encourage the practice of mindfulness and kindness in everyday life. Self-reports and tasks were collected and reviewed weekly during the MCBT sessions.

### Data analysis

First, with the aim of verifying whether there were statistically significant differences between the two conditions (experimental vs waiting list), Student's t-test for independent samples was performed for continuous variables and chi-squares for categorical variables. Subsequently, an analysis of variance (ANOVA) of repeated measures was performed to check whether there were statistically significant differences between the two experimental conditions at the end of treatment.

### Results

The results show that there were no differences between the experimental conditions before beginning the intervention on: Types of tumours ( $\chi^2 = 15.33; p = .17$ ), gender ( $\chi^2 = 0.01, p = .939$ ), age ( $t_{(86)} = 0.41; p = .67$ ), and time since the diagnosis of the disease ( $t_{(86)} = -0.13; p = .89$ ).

Regarding the BSI-18 before starting treatment, the experimental condition had higher scores than the wait list condition on the BSI total score ( $t_{(86)} = -3.78; p < .01$ ) and on each of its subscales: somatization ( $t_{(86)} = -3.25; p < .01$ ), depression ( $t_{(86)} = -3.36; p < .01$ ), and anxiety ( $t_{(86)} = -3.43; p < .01$ ). Therefore, before receiving any type of treatment, the experimental condition had worse scores on the level of psychological distress.

Regarding the FACTG, the experimental condition and the waiting list condition did not differ on the FACTG total score ( $t_{(86)} = 0.52; p > .05$ ). However, there were statistically significant differences on the physical health ( $t_{(86)} = -2.27; p < .02$ ), family and social environment ( $t_{(85)} = 3.58; p < .01$ ), emotional state ( $t_{(86)} = -3.28; p < .01$ ), and personal functioning capacity ( $t_{(85)} = 2.66; p < .01$ ) subscales. On all of them, the experimental condition had worse scores than the wait list condition.

Regarding the TMMS, there were no differences between the two conditions on the TMMS total score ( $t_{(85)} = 0.436; p = .66$ ) or on the subscales: emotional perception ( $t_{(85)} = 2; p = .17$ ), emotional comprehension ( $t_{(85)} = 0.94; p = .34$ ), and emotional regulation ( $t_{(85)} = 1.08; p = .28$ ).

As Table 1 shows, on the BSI-18 total score, no statistically significant differences were found depending on the time of evaluation (pre-post) ( $F_{(1,71)} = 1.05; p = .31; \eta^2 p = .01$ ). However, a significant interaction effect was found between the time of evaluation and the treatment condition ( $F_{(1,71)} = 6.79; p = .01; \eta^2 p = .08$ ). The group that received the treatment improved more than the control group. In the same way, on the BSI-18 depression subscale, no statistically significant differences were found depending on the time of evaluation (pre-post) ( $F_{(1,71)} = 1.18; p = .28; \eta^2 p = .01$ ). However, a significant interaction effect was found between the time of evaluation and the treatment condition ( $F_{(1,71)} = 8.38; p = .005; \eta^2 p = .11$ ). On BSI-18 anxiety, no statistically significant differences were found depending on the time of evaluation (pre-post) ( $F_{(1,71)} = 1.18; p = .28; \eta^2 p = .01$ ), and no significant interaction effect was found ( $F_{(1,71)} = 3.18; p = .08; \eta^2 p = .43$ ). Finally, on BSI-18 somatization, no statistically significant differences were found depending on the time of evaluation (pre-post) ( $F_{(1,71)} = 0.05; p = .82; \eta^2 p = .01$ ), and no significant interaction effect was found ( $F_{(1,71)} = 3.21; p = .07; \eta^2 p = .43$ ).

No statistically significant differences were found on the FACTG total score depending on the time of evaluation ( $F_{(1,71)} = 0.21; p = .64; \eta^2 p = .01$ ), and no significant interaction effect between the treatment conditions was found ( $F_{(1,71)} = 0.01; p = .92; \eta^2 p = .01$ ).

However, a significant interaction effect between treatment conditions was observed for the general physical health scale subscale ( $F_{(1,71)} = 5.56; p = .02; \eta^2 p = .07$ ), for the emotional state scale subscale ( $F_{(1,71)} = 7.06; p = .01; \eta^2 p = .09$ ), and for the personal functioning subscale ( $F_{(1,71)} = 7.98; p = .001; \eta^2 p = .10$ ). Finally, on the family and social environment subscale, no significant differences were observed in the groups before and after treatment, and no interaction effect was found between treatment conditions ( $F_{(1,71)} = 3.50; p = .06; \eta^2 p = .05$ ).

Finally, on the TMMS total, there were statistically significant differences with regard to the moment of evaluation (pre-post) ( $F_{(1,72)} = 5.67; p = .02; \eta^2 p = .07$ ), and a significant interaction effect between the moment of evaluation and the treatment condition ( $F_{(1,72)} = 35.40; p = .01; \eta^2 p = .33$ ). On TMMS perception, there were no statistically significant differences with regard to the moment of evaluation (pre-post) ( $F_{(1,72)} = 2.75; p = .10; \eta^2 p = .03$ ), but there was a significant interaction effect between the moment of evaluation and the treatment condition ( $F_{(1,72)} = 8.95; p = .01; \eta^2 p = .11$ ). In the same way, on TMMS compression, there were statistically significant differences with regard to the moment of evaluation (pre-post) ( $F_{(1,72)} = 6.85; p = .01; \eta^2 p = .08$ ) and a significant interaction effect between the moment of evaluation and the treatment condition ( $F_{(1,72)} = 16.06; p = .01; \eta^2 p = .18$ ). Finally, for TMMS repair, there were statistically significant differences with regard to the moment of evaluation (pre-post) ( $F_{(1,72)} = 8.51; p = .01; \eta^2 p = .11$ ) and a significant interaction effect between the moment of evaluation and the treatment condition ( $F_{(1,72)} = 15.67; p = .01; \eta^2 p = .17$ ). All the results are listed in Table 1.

### Discussion

The aim of this study was to analyse whether MBCT would reduce the general level of patients' psychopathology, increase their quality of life, and increase meta-knowledge about their emotional state in Spanish participants with cancer.

Our results are in line with those from Bondolfi et al. (2017), who found that MBCT had positive effects on depression, showing that MBCT increases the average time to relapse by at least 18 weeks in participants with a history of recurrent major depression. Our results further support previous studies that have demonstrated the effectiveness of MBCT in oncology settings (Foley et al., 2010; Van der Lee & Garssen 2012; Stafford et al., 2013; Johannsen et al., 2016; Vaziri et al., 2017; Park et al., 2017; Toivonen et al., 2017; Zhang et al., 2019; Cillessen et al., 2019). However, with our study, we have taken another step by showing that MBCT reduced the general level of patients' psychopathology (depression), increasing quality of life (general physical health, emotional state, and personal functioning) and meta-knowledge about their emotional state in a naturalistic setting with Spanish cancer patients. Naturalistic studies are carried out under the conditions of clinical practice, and so they have high clinical representativeness (Leichsenring, 2004). Finally, our results suggest that, although the most widely used mindfulness-based intervention in psycho-oncology is MBSR, oncology patients who



Table 1  
Descriptive statistics at pre and post treatment for the outcome variables in the experimental condition and wait list condition

Measure Instrument	Group	Moment		MomentXCondition					
		Pre	Post	Pre-post			Pre-post		
		M(DT)	M(DT)	F	p	$\eta^2_p$	F	p	$\eta^2_p$
BSItotal	Experimental	22.91(15.24)	18.67(12.83)	1.05	.31	.015	6.79	.011	.087
	Control	12.82(9.66)	14.66(12.96)						
BSIans	Experimental	22.91(15.24)	7.41(5.20)	1.18	.281	.016	3.18	.079	.043
	Control	12.82(9.66)	4.12(3.71)						
BSIdep	Experimental	7.70(6.06)	5.76(4.94)	1.66	.201	.023	8.38	.005	.106
	Control	4.28(4.5)	5.02(5.44)						
BSIsom	Experimental	7.79(5.47)	6.76(4.083)	0.053	.819	.001	3.2	.077	.043
	Control	4.41(3.29)	5.20(4.5)						
FACTGtotal	Experimental	53.15(7.36)	53.45(8.11)	0.217	.643	.003	0.01	.919	.000
	Control	53.97(9.38)	54.44(9.67)						
FACTGp	Experimental	10.27(6.54)	9.51(5.83)	0.692	.408	.010	5.56	.021	.077
	Control	7.91(6.001)	9.5(6.79)						
FACTGs	Experimental	16.75(5.80)	17.90(5.21)	0.687	.410	.010	3.5	.066	.050
	Control	20.50(4.30)	20.05(4.26)						
FACTGe	Experimental	12.90(3.73)	11.12(4.28)	1.82	.182	.026	7.06	.010	.095
	Control	9.75(3.93)	10.33(4.37)						
FACTGf	Experimental	12.90(3.73)	11.12(4.28)	0.184	.670	.003	7.98	.006	.106
	Control	9.75(3.93)	10.33(4.37)						
TMMSp	Experimental	72.14(15.23)	81.66(14.84)	2.75	.102	.037	8.95	.004	.111
	Control	73.84(13.21)	69.77(12.18)						
TMMSc	Experimental	24.97(5.26)	25.68(5.99)	6.85	.011	.087	16.06	.000	.182
	Control	22.51(7.45)	26.91(6.90)						
TMMSr	Experimental	24.66(6.40)	23.74(5.24)	8.51	.005	.106	15.67	.000	.179
	Control	24.65(7.90)	29.06(7.09)						
Control		24.56(6.58)	25.88(6.29)						

Note: BSI-18 = Brief Symptom Inventory 18; BSI-18total: total score on BSI-18; BSI-18ans: anxiety scale of BSI-18; BSI-18dep: depression scale of BSI-18; BSI-18som: somatization scale of BSI-18; FACTG = Functional Assessment of Cancer Therapy – General; FACTGtotal: total score on the FACTG; FACTGp: general physical health scale of FACTG; FACTGs: family and social environment scale of FACTG; FACTGe: emotional state scale of FACTG; FACTGf: personal functioning scale of FACTG; TMMS = Trait-Meta Mood Scale-24; TMMStotal: total score on the TMMS24; TMMSp: emotional perception scale of TMMS24; TMMSc: emotional comprehension scale of TMMS24; TMMSr: emotional regulation scale of TMMS24

score significantly high on depressive symptoms may benefit from being treated with MBCT.

There are several limitations that should be improved in our study and could be the starting point for future research. The main limitation is that the non-randomization of the sample may lead to bias in the selection of participants. Thus, it is not possible to infer causal relationships between the independent variable (treatment condition) and the dependent variables (BSI-18, FACT-G, and TMMS-24 scores), and so it is necessary to perform a randomized control trial with the MBCT intervention in Spanish oncological patients to confirm our results. However, in our study, we have verified that there are no differences between the two experimental conditions in gender, type of tumour, age, and years of evolution of the disease before beginning the intervention. There were only differences on the BSI-18 and on the level of psychological stress, with the experimental condition presenting higher scores. Moreover, in our study there is no follow-up to confirm the differences between

conditions, as previous study showed beneficial results over time. Stafford et al. (2013), after performing the MBCT intervention, found significant improvements in anguish, quality of life, attention, and post-traumatic growth, and these gains were maintained at follow-up three months after the end of the treatment. An interesting proposal would be to follow up patients at both six months and one year. This could provide more precise information about whether the positive effect of this intervention in this type of patient lasts over time. Moreover, our sample is very heterogeneous in the types of tumours presented by the participants, and for this reason, the generalization of these results to other types of samples is limited. Finally, we used the wait list as the control group, and we do not have information about the satisfaction and perceived utility of the intervention participants. Thus, generic components of group-based therapy, such as support, destigmatization, therapeutic attention, and emotional expression in the groups, could be responsible for our results, and we cannot attribute the change specifically to MBCT.

A recent meta-analysis of MBCT stated that studies with passive control conditions (compared with active/competing conditions) reported greater reductions in psychological distress, anxiety, and depression at post-intervention (Cillessen et al., 2019). Therefore, future studies will have to compare the MBCT intervention with other active psychotherapies, such as Meaning-centred group psychotherapy (Breitbart et al., 2010) or CBT interventions. Moreover, in our study, we cannot analyse the mediators or moderators of the results. Previous studies (Cillessen et al., 2019) found that age and the comparison condition (active vs passive) were significant mediators of the results. Finally, we did not evaluate the benefits mindfulness produced, and so in future research it would be interesting to add to the assessment protocol a specific scale that evaluates the benefits of mindfulness (Barajas & Garra, 2014).

In conclusion, as far as we know, this is the first study to administer the MBCT program to Spanish cancer patients, and

the results suggest that the Bartley MBCT program was feasible and showed promise in improving the general status of patients' psychopathology (depression), increasing quality of life (general physical health, emotional state, and personal functioning) and meta-knowledge about their emotional state.

#### Compliance with Ethical Standards

The authors declare that they have no conflicts of interest.

All procedures performed in this study were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent was obtained from all individual participants included in the study.

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