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Analysis of the Efficacy of Mindfulness Meditation in a Mutual Aid Group for Bipolar Disorder

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ABSTRACT

Background: The bipolar disorder (BD) is a severe, disabling mental disorder characterized by phases of mania, hypomania, or depression. The present quasi-experimental study of 21 BD patients ($M_{\text{age}} = 44$ years, $SD = 11.45$, 6% women) compared the efficacy of a mutual aid group (MAG) with a MAG that followed a mindfulness-based intervention (MAG+M) over 6 weeks. **Method:** Both groups were evaluated pre-test and post-test with the following variables: depression, mania, anxiety, mindfulness, and psychological acceptance. **Results:** Pretest and post-test intragroup analyses showed that MAG+M improved significantly in measures of depression ($z = -2.31$, $p = .02$) and trait anxiety ($z = -2.43$, $p = .01$), while MAG did not improve in any of the measures. There were no statistically significant differences between groups in the post-test. **Conclusions:** Our findings suggest that mindfulness meditation may improve symptoms of depression and anxiety in a MAG for BD patients.

El análisis de la eficacia de la meditación *mindfulness* en un grupo de ayuda mutua para el trastorno bipolar

RESUMEN

Antecedentes: El trastorno bipolar (TB) es un trastorno mental grave e incapacitante caracterizado por la presencia de fases de manía, hipomanía o depresión. Este estudio cuasi-experimental con 21 pacientes con TB ($M_{\text{edad}} = 44$ años, $DT = 11.45$, 6% mujeres) compara la eficacia de un grupo de ayuda mutua simple (GAM) con otro grupo de ayuda mutua que siguió una intervención con *mindfulness* (GAM+M) durante seis semanas. **Método:** Ambos grupos fueron evaluados pretest y post-test con las siguientes variables: depresión, manía, ansiedad, *mindfulness* y aceptación psicológica. **Resultados:** Los análisis intragrupo pretest-postest mostraron que GAM+M mejoró significativamente en las medidas de depresión ($z = -2.31$, $p = .02$) y ansiedad rasgo ($z = -2.43$, $p = .01$), mientras que el GAM simple no mejoró en ninguna de las medidas evaluadas. No obstante, no se encontraron diferencias significativas entre los grupos en el post-test. **Conclusiones:** Estos hallazgos sugieren un papel potencial de la inclusión de la meditación *mindfulness* en los GAM de pacientes con TB para mejorar los síntomas de depresión y ansiedad.

Bipolar disorder (BD) is a mental health condition characterized by extreme mood swings alternating between periods of depression and mania (or hypomania; [American Psychological Association, 2013](#)). It affects a person's mood, energy levels, and ability to function in daily life ([Faurholt-Jepsen et al., 2023](#)). It is one of the leading causes of disability worldwide and has high economic costs ([Cloutier et al., 2018](#)). The mean age of onset in type I BD (BD-I) and type II BD (BD-II) is between 17 and 31 years, with those aged between 15 and 19 years being at greater risk ([McGinty et al., 2023](#)).

The course of the disorder is highly variable; it has a chronic and recurrent evolution involving an average of six affective episodes of around 13 weeks ([Rowland & Marwaha, 2018](#)). Socialization,

functioning, and quality of life can all be adversely affected, especially when the recurrence is more significant and other co-morbid disorders are present ([Bennett et al., 2019](#)). The two main subtypes are BD-I, featuring episodes of mania and usually depression, and BD-II, which presents with hypomanic (mood-elevating) and depressive episodes. The latter has traditionally been seen as a less severe and less disabling disorder than the former, primarily because hypomania should not cause marked impairment or hospitalization and should not present with psychotic features ([Karanti et al., 2020](#)).

Diagnosis and management of both types of BD pose several challenges because of their complex etiology and the varied presentation of symptoms ([Hancock & Perich, 2022](#)). Management

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of BD typically involves a multimodal approach combining pharmacotherapy, psychotherapy, and lifestyle interventions. Mood stabilizers such as lithium and anticonvulsant medications are commonly prescribed to reduce the frequency and severity of episodes (Rybakowski & Ferensztan-Rochowiak, 2023). Antidepressants and antipsychotic medications may also be used in specific cases. Psychotherapy (e.g., cognitive-behavioral therapy and interpersonal therapy) can help individuals develop coping strategies, improve medication adherence, and manage stress (Echezarraga et al., 2022). Maintaining a stable daily routine, regular exercise, and healthy sleep habits are essential components of self-care for individuals with BD (Bauer et al., 2016).

Despite these multimodal interventions, episodic relapses after mood stabilization are still common in BD (Rybakowski & Ferensztan-Rochowiak, 2023). The effectiveness of pharmacological and psychological interventions is residual in more than 40% of BD patients (Samalin et al., 2016). As quality of life has been closely associated with resilience and residual depressive symptoms (Post et al., 2018), it is important to explore novel psychological interventions for BD that may reduce residual mood symptoms and prevent relapse in the longer term (Miura et al., 2014).

Mutual aid groups (MAG) are spaces where patients and family members can meet informally to share their problems without the intervention of professionals (Kurtz, 1988). Individuals with similar challenges come together to share their experiences, provide mutual support, and learn coping strategies. The emphasis is on personal interaction, respectful listening and taking responsibility for group members, providing emotional assistance, and promoting values such as identity and responsibility (Dale et al., 2019). Such groups can be beneficial for individuals with BD as they offer a sense of community, validation, and the opportunity to learn from others who have faced similar challenges. For these reasons, MAG may complement the professional services typically associated with BD, providing ongoing emotional support from the peer's perspective at little or no cost (Kelly et al., 2019). There is evidence of the effectiveness of MAGs for patients with addiction disorders such as alcohol use (Dale et al., 2019; Mellinger et al., 2023), but their effects on patients with BD are little known. Behler et al. (2017) and Kelly et al. (2019) observed that MAG appeared to provide participants with BD with the support and healing that psychotherapy and psychiatry did not offer.

Mindfulness meditation is a practice that focuses on bringing one's attention to the present moment in a non-judgmental and accepting way (Kabat-Zinn, 2009). Mindfulness-based interventions (MBIs) have been used as a complementary approach in mental health treatment, including depression and anxiety (Chu et al., 2018; Gu et al., 2015), to help individuals develop self-awareness, reduce stress, regulate emotions, and improve overall well-being (Burgos-Julian et al., 2022). In the past 20 years, there has been a dramatic rise in the number of clinical trials using MBI (Goldberg et al., 2018), that have been more heterogeneous than the standardized mindfulness-based cognitive therapy (MBCT) protocol. Systematic and meta-analytical studies have shown MBI to contribute to the reduction of symptoms of depression, pain conditions, smoking, and addictive disorders (Gu et al., 2015) in adults, adolescents, and children (Soriano et al., 2020); few, however, have examined its efficacy in BD.

The application of MBI in patients with BD has aroused interest recently. There is evidence of its effectiveness in reducing relapses (Burgos-Julian et al., 2022) and improving depression and anxiety symptoms, emotional processing and regulation, and attentional disposition (Chu et al., 2018; Lovas & Schuman-Olivier, 2018). While researchers have focused on the combined use of MAG and mindfulness meditation (MAG+M) for individuals with BD, both approaches have shown promise in managing various aspects of the condition. Mutual aid groups can provide social support and a sense of belonging that can contribute to overall well-being. Mindfulness meditation may help individuals develop self-awareness of their

mood fluctuations and enhance their ability to cope with stress. Meta-analyses have identified statistically significant results in the effectiveness of mindfulness-based interventions in the treatment of BD (Burgos-Julián et al., 2022; Chu et al., 2018).

It is essential to differentiate the mindfulness-based stress reduction (MBSR) program (Kabat-Zinn, 2009) an MBI where formal mindfulness meditations were practiced. Formal mindfulness meditation includes sitting meditation exercises involving mindfulness of the body, sensations, breathing, emotions, and thoughts, but not "informal mindfulness practices," which refer to a body scan, mindfulness in movement, yoga exercises, and conscious walking (Kabat-Zinn, 2009). We have analyzed the effectiveness of formal mindfulness meditation because sitting meditation is considered the principal element of the MBSR program and because it gives meaning to the rest of the informal practices (Kabat-Zinn, 2009). The literature on BD has thus far not examined whether mindfulness meditation is an effective strategy to implement in MAGs. In light of this, the present study aimed to compare the differential efficacy of MAG+M to MAG alone in reducing symptoms of depression, mania, trait anxiety, and state anxiety.

Method

Participants

The participants were recruited via a regional BD association in Spain. The inclusion criteria were as follows: (a) at least 18 years of age; (b) lifetime Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-5; American Psychiatric Association, 2013) diagnosis of BD-I or II; (c) having pharmacological treatment and psychiatric supervision; (d) maintaining a period of remission for at least 2 months without any signs or symptoms characteristic of BD; and (e) able to provide informed consent. The exclusion criteria were as follows: (a) current DSM-5 major depressive, hypomanic, or manic episodes; (b) substance abuse disorder, schizophrenia, schizoaffective disorder, antisocial, or borderline personality disorder; (c) the presence of a significant medical condition that would impede participation; and (d) currently receiving another psychological therapy. The study was approved by the *Asociación de Bipolares de Andalucía Oriental* [Bipolar Association of Eastern Andalusia].

Instruments

International Neuropsychiatric Interview (MINI; Lecrubier et al., 1997)

The MINI assesses 17 current and lifetime diagnoses from DSM-IV (American Psychiatric Association, 1994), DSM-5, and the International Statistical Classification of Diseases and Related Health Problems (10th revision, World Health Organization, 2015). Each diagnosis begins with one or two screening questions that, if positive, allow for a more thorough exploration of the diagnostic criteria. It shows sensitivity indices between .94 and .86 and specificity indices between .79 and .92 (Lecrubier et al., 1997). The Spanish adaptation showed good psychometric properties and has the advantage of brevity (Ferrando et al., 1999).

International Personality Disorders Examination (IPDE; Loranger et al., 1994)

The IPDE allows the evaluation of personality disorders following ICD-10 and DSM-IV. The present study used the self-applied screening evaluation questionnaire included in the IPDE. It has 77 dichotomous items (true-false); a score of three or more points indicates the

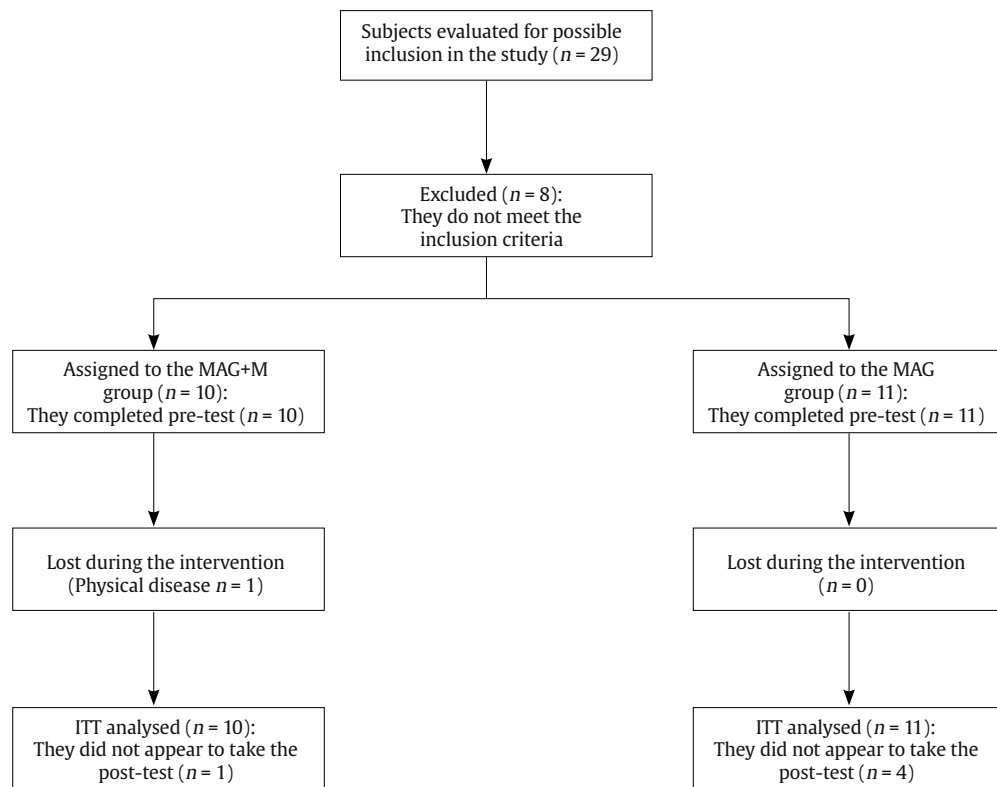


Figure 1. Flow Diagram of Trial Participation.

presence of a personality disorder in the evaluated category. Its adaptation to the Spanish population showed an average sensitivity and specificity of 89% and 55%, respectively (San Narciso et al., 1998). The dependent or outcome variables comprise depression, mania, state and trait anxiety, mindfulness, and psychological acceptance measures. These variables are measured with the psychometric instruments shown below.

Beck Depression Inventory (BDI-II, 2nd ed.; Beck et al., 1996)

The BDI is a 21-item self-rating scale of depression. Each of the items is scored on a scale of 0 to 3 points (from least to most serious), and a total score between 0 and 63 points can be obtained. The validity and reliability ($\alpha = .89$) of the BDI-II are well established (Sanz et al., 2005).

Altman Self-Report Scale for Mania (ASRM; Altman et al., 1997)

The ASRM is a self-report that measures manic symptomatology during the past week. Individuals respond to five statements rated on a scale of 0 to 4 according to their severity. The instruments were adapted to the Spanish population (Álvarez et al., 2005), with adequate reliability indices ($\alpha = .84$).

State-Trait Anxiety Questionnaire (STAI; Spielberger et al., 1982)

The STAI is a 40-item self-report that measures anxiety reactions on a Likert scale from 0 (*rarely*) to 3 (*almost always*). The questionnaire is divided into two scales of 20 items each: the trait anxiety scale (STAI-T) is a measure of trait anxiety, while the state

anxiety scale (STAI-S) measures currently experienced anxiety reactions. In Spanish population samples, internal consistency levels ranged between $\alpha = .84$ and $\alpha = .93$ for total scores and each subscale (Spielberger et al., 1982).

Mindfulness Attention Awareness Scale (MAAS; Brown & Ryan, 2003)

The MAAS is a unidimensional measure of mindfulness comprising 15 items scored on a Likert-type scale from 1 to 6, with a maximum score of 90 points. It allows individuals to establish their degree of awareness of the present moment. It showed good psychometric properties when adapted to the Spanish population (Buz et al., 2022).

Acceptance and Action Questionnaire (AAQ; Hayes et al., 2004)

The AAQ allows the evaluation of experiential avoidance and psychological acceptance through a self-administered questionnaire with a one-dimensional factorial structure. It comprises nine items scored on a Likert-type scale from 1 to 9 points, where a higher score indicates a greater degree of experiential avoidance and a lower score indicates greater psychological acceptance. It showed adequate reliability indices ($\alpha = .74$) in the version adapted to the Spanish population (Mairal, 2004).

Design and Procedure

The present study employed a repeated measures design (pre- and post-test) with two intervention groups: (a) a MAG and (b) a 6-week MAG+M. Participants followed their usual pharmacological treatment. Those interested in taking part were given detailed information about

the study, and those who enrolled signed an informed consent form. Participants were assigned to a group according to their availability. Of the 29 people interviewed, 21 were selected as candidates, 11 of whom were assigned to the MAG group and 10 to the MAG+M group. The analysis was conducted on an intention-to-treat (ITT) basis. Figure 1 shows the trial participation flow diagram.

Table 1. Structure of the Treatment Program

Session	Content
Session 1	Presentation of the program. Breathing meditation (12 minutes)
Session 2	Mindfulness in breathing extended (20 minutes)
Session 3	Mindfulness in the breath and body (25 minutes)
Session 4	Mindfulness in breathing, body and sounds (30 minutes)
Session 5	Mindfulness in breathing, body, sounds and thoughts (30 minutes)
Session 6	Mindfulness in thoughts and emotions (30 minutes)

The MAG was designed to provide emotional support for its members, look after their legal and social interests, and offer group activities of various kinds (e.g., social and cultural). The group took part in weekly unstructured 2-hour sessions moderated by an association leader with extensive experience. The dynamics were

based on a previously established topic of the day, with the more experienced participants sharing their experiences and clarifying doubts to the less experienced ones.

The second group (MAG+M) followed the same protocol as the first but with the addition of a MBI based on the MBSR program (Kabat-Zinn, 2009). It was conducted by a certified psychologist with more than 7 years' experience. The MBI lasted 6 weeks, with two weekly sessions (Mondays and Wednesdays). Table 1 shows the MAG+M program with the same dynamics in all sessions. The mindfulness meditation practice was preceded by a brief introduction to meditation, and a brief group discussion followed. The present study was carried out under the auspices of the Andalusian Bipolar Association (<https://trastornobipolarbao.com>).

Data Analysis

An exploratory analysis was used to check the fit of the data to normality criteria. Non-parametric statistical tests were carried out because of the resultant non-compliance and small sample size. Since the data analysis was based on an ITT procedure, an imputation procedure based on the expectation-maximization (EM) method was implemented. The descriptive analysis, shown

Table 2. Descriptive Statistics of Sociodemographic and Dependent Variables at Baseline

	MAG+M	MAG	Total	χ^2/U	<i>p</i>
Age (<i>Mdn</i> , <i>IR</i>)	45.50 (12)	42 (12)	44.00 (11)	$U = 29.50$	.07
Gender (<i>n</i> , %)				$\chi^2 = 0.43$	.83
Male	5 (50%)	6 (54.5%)	11 (52.4%)		
Female	5 (50%)	5 (45.5%)	10 (45.6%)		
Education level (<i>n</i> , %)				$\chi^2 = 0.56$	.75
Primary school degree	2 (50%)	2 (50.6%)	4 (19.0%)		
High school degree	3 (37.5%)	5 (62.5%)	8 (38.1%)		
Bachelor's degree	5 (55.6%)	4 (44.4%)	9 (42.9%)		
Employment situation (<i>n</i> , %)				$\chi^2 = 4.78$	.19
Employee	1 (16.7%)	5 (83.3%)	6 (28.6%)		
Student	0 (0%)	1 (100%)	1 (4.8%)		
Unemployed	2 (66.7%)	1 (33.3%)	3 (14.3%)		
Retired	7 (63.6%)	4 (36.4%)	11 (52.4%)		
Marital status (<i>n</i> , %)				$\chi^2 = 0.27$	.87
Single	4 (50%)	4 (50%)	8 (38.1%)		
Married	5 (50%)	5 (50%)	10 (47.6%)		
Separated/Divorced	1 (33.3%)	2 (66.7%)	3 (14.3%)		
Diagnosis (<i>n</i> , %)				$\chi^2 = 2.49$	.29
BD I	7 (41.2%)	10 (58.8%)	17 (81.0%)		
BD II	2 (100%)	0 (0%)	2 (9.5%)		
BD NOS	1 (50%)	1 (50%)	2 (9.5%)		
Medication (<i>n</i> , %)				$\chi^2 = 2.44$	.65
MS	2 (40%)	3 (60%)	5 (23.8%)		
MS+Anx.	1 (33.3%)	2 (66.7%)	3 (14.3%)		
MS+Anx+Anp.	1 (33.3%)	2 (66.7%)	3 (14.3%)		
MS+And.	5 (71.4%)	2 (28.6%)	7 (33.3%)		
MS+Anp.	1 (33.3%)	2 (66.7%)	3 (14.3%)		
Dependent variables (<i>Mdn</i> , <i>IR</i>)					
BDI-II	8.50 (17)	6 (14)		$U = 51$	.78
ASRM	2 (3)	2 (5)		$U = 53$	.87
STAI-S	17 (12)	13 (12)		$U = 43$	.42
STAI-T	26.50 (19)	25 (28)		$U = 38$	.23
MAAS	55 (26)	63 (16)		$U = 74.50$	.17
AAQ	39 (9)	40 (12)		$U = 50.50$	.75

Note. MAG+M = Mutual Aid Group and Mindfulness Meditation; MAG = Mutual Aid Group. MS = Mood Stabilizer; Anx = anxiolytic; Anp = antipsychotic; And = antidepressant; BD I = BDtype I; BD II = BDtype II; BD NOS = Bipolar Disorder not Otherwise Specified. BDI-II = Beck Depression Inventory; ASRM: Altman Self-Rating Scale for Mania. STAI-E = State-Trait Anxiety Inventory - Version Status; STAI-T = State-Trait Anxiety Inventory - Version Trait; MAAS = Mindful Attention Awareness Scale; AAQ = Acceptance and Action Questionnaire; *Mdn* = median; *IR* = interquartile rank.

in Table 2, indicates the homogeneity of both groups in terms of socio-demographic variables (chi-square and Fisher's exact test) and quantitative variables (Mann-Whitney *U* test).

A comparison of the effects of both interventions was based on a non-parametric analysis of covariance (ANCOVA) by prior transformation of the scores to ranges. This procedure can be applied in situations of non-compliance with the necessary assumptions, in addition to allowing the effects of the covariates (dependent variables in the baseline) to be controlled while the effects are compared in the post-test. The analysis was carried out using R software (RRID: SCR_001905).

Results

Table 2 shows the set of sociodemographic variables and comparisons on the baseline. The final sample was made up of 21 people who were assigned to the two intervention groups (MAG and MAG+M). The MAG+M group comprised 10 participants (five women [50%] and five men [50%]) with an age range between 29 and 58 years (*Mdn* = 45.50, *IR* = 12), seven of whom had a BD-I diagnosis (41.2%) and two a BD-II diagnosis (100%); one was not otherwise specified (NOS; 50%). Of the 11 people in the MAG group, 6 were male (54.5%), and 5 were female (45.5%), with an age range between 29 and 51 years (*Mdn* = 42, *IR* = 12). Ten (52.4%) had a BD-I diagnosis and one a BD-NOS (47.6%) diagnosis.

Table 3. Median of Both Groups in the Pre-test and Post-test and Results of the Wilcoxon *Z* Test

Variable	Pre-test		Post-test		Wilcoxon <i>Z</i>	<i>p</i>
	Grupo	<i>Mdn</i> (<i>IR</i>)	<i>Mdn</i> (<i>IR</i>)			
BDI-II	MAG+M	8.50 (17)	3.03 (7)	-2.31	.02*	
	MAG	6 (14)	5 (3)	-1.87	.06	
ASMS	MAG+M	2 (3)	2 (5)	-0.17	.87	
	MAG	2 (5)	2 (4)	-0.11	.92	
STAI-S	MAG+M	17 (12)	17 (9)	-1.12	.26	
	MAG	13 (12)	14.28 (13)	-0.18	.86	
STAI-T	MAG+M	26.50 (19)	18 (13)	-2.43	.01*	
	MAG	25 (28)	18 (21)	-1.27	.20	
MAAS	MAG+M	55 (26)	64 (15)	-1.89	.06	
	MAG	63 (16)	58.30 (25)	-0.36	.72	
AAQ	MAG+M	39 (9)	37.57 (5)	-0.97	.33	
	MAG	40 (12)	41 (13)	-0.31	.76	

Note. MAG+M = Mutual Aid Group with Mindfulness Meditation; MAG = Mutual Aid Group. BDI-II = Beck Depression Inventory; ASRM: Altman Self-Rating Scale for Mania. STAI-E = State-Trait Anxiety Inventory – Version Status; STAI-T = State-Trait Anxiety Inventory – Version Trait; MAAS = Mindful Attention Awareness Scale; AAQ = Acceptance and Action Questionnaire. *Mdn* = median; *IR* = interquartile rank. **p* < .05.

Wilcoxon's *Z* test allowed for independent contrasting differences between the pretest and post-test for each intervention group. The results showed statistically significant improvements in the MAG+M group in the depression variables (pretest: *Mdn* = 13.5, *IR* = 17; post-test: *Mdn* = 5, *IR* = 7, *z* = -2.31, *p* = .02) and in the trait anxiety variable (pretest: *Mdn* = 32.50, *IR* = 19; post-test: *Mdn* = 20.50, *IR* = 13, *z* = -2.43, *p* = .01), while in the MAG group no statistically significant differences were observed in any of the variables (Table 3).

Effect sizes were reported using partial η^2 , where values less than .06 were considered small effects, values between .06 and .14 as moderate effects, and values greater than .14 as large effects (Mordkoff, 2019). There were no differences between the groups for the dependent variables (Table 4).

Table 4. Median Interquartile Rank, and Results of the Non-parametric ANCOVA in the Post-test between the MAG+M and MAG Groups

Variable	Post-test		<i>F</i>	<i>p</i>	η^2 partial
	MAG+M (<i>n</i> = 10) (<i>Mdn</i> / <i>IR</i>)	MAG (<i>n</i> = 11) (<i>Mdn</i> / <i>IR</i>)			
BDI-II	3.03 (7)	5 (3)	0.75	.40	.04
ASMS	2 (5)	2 (4)	0.26	.62	.01
STAI-E	17 (9)	14.28 (13)	0.02	.89	.01
STAI-R	18 (13)	18 (21)	0.19	.67	.01
MAAS	64 (15)	58.30 (25)	1.28	.27	.07 ¹
AAQ	37.57 (5)	41 (13)	2.11	.16	.10 ¹

Note. MAG+M = Mutual Aid Group with Mindfulness Meditation; MAG = Mutual Aid Group. BDI-II = Beck Depression Inventory; ASRM: Altman Self-Rating Scale for Mania. STAI-E = State-Trait Anxiety Inventory – Version Status; STAI-T = State-Trait Anxiety Inventory – Version Trait; MAAS = Mindful Attention Awareness Scale; AAQ = Acceptance and Action Questionnaire.

¹Moderate effect sizes (Green & Salkind, 2010).

**p* < .05.

Discussion

Previous research has documented the effectiveness of MAGs for people with BD (Mellinger et al., 2023), but more studies are needed (including quantitative ones). Although the efficacy of mindfulness in BD has been proven in meta-studies (Burgos-Julian et al., 2022), we were unable to identify any articles on the efficacy of mindfulness meditation in group therapy in the present context.

We tested the degree to which mindfulness meditation is effective in MAG, concluding that the changes between the pretest to the post-test in the MAG+M group partially supported our hypotheses. While improvements in emotional symptoms were found for depression and trait anxiety measures, the same did not apply in cases of mania, state anxiety, mindfulness, or acceptance skills. The results for the MAG group showed no statistically significant differences in the set of dependent variables. The post-test results for both groups showed that neither the levels of depression, mania, or state anxiety were reduced, nor that the levels of mindfulness or acceptance skills improved in the MAG+M group.

Our results are in line with previous results (Che-Sheng et al., 2018; Johannsen et al., 2022) showing that mindfulness-based interventions improved depressive symptoms in uncontrolled trials and offered no evidence of their superiority when compared with control groups such as MAGs. One of the few studies with 12-month follow-up (Perich et al., 2013) found that MBI did not prevent relapse or depressive symptomatology compared with the control group. We were also unable to conclude that mindfulness meditation improves the symptoms of mania. The participants with BD in the present study were asymptomatic, leading to shallow baseline scores, which therefore limited our ability to detect improvements. Unlike some studies (Sverre et al., 20223), we did not expect to find a worsening throughout treatment. Our results did not reveal which MBI might exert protective effects on mania symptoms, unlike those of previous authors (Burgos-Julian et al., 2022; Lovas & Schuman-Olivier, 2018).

The present study provides partial evidence of the possible effects of mindfulness meditation on anxiety symptoms in a MAG. Meta-analyses and systematic reviews (Che-Sheng et al., 2018; Williams et al., 2023) have presented contradictory results regarding the improvement of anxiety symptoms with MBI compared with inactive control groups. Our results contrast with those of previous studies examining mindfulness-based cognitive therapy (Zhang et al., 2023). Anxiety symptoms in the first years are related to a poor prognosis in BD, and this leads to a lower global performance (Gogharia & Harrowb, 2019). The pharmacological management of anxiety disorders in BD involves drugs that lead to adverse events (Williams et al., 2023).

Therapeutic programs that have incorporated tackling anxiety in BD patients have had better results (Lovas & Schuman-Olivier, 2018). The program used herein, which focused on formal mindfulness skills, took less time than other mindfulness programs that have benefited the same population. In addition, as well as being more cost-effective, it can be integrated into a broader treatment program containing other valid strategies for the improvement of quality of life in people with BD.

The effect obtained in measures relating to mindfulness and acceptance skills gave contradictory and, to a certain extent, surprising results. We expected to find improvements in the MAG+M group in terms of the participants' ability to be more aware of everyday experiences, which is one of the fundamental objectives of mindfulness-based treatments and cognitive strategies for psychological acceptance (Ptáček et al. 2023). Nevertheless, our results did not reveal statistically significant differences within or between the groups.

Our MBI is based solely on formal mindfulness exercises (i.e., seated meditation) and lasts just 6 weeks, which may explain why the measure of mindfulness attentional awareness (MAAS) was not sensitive to the effects of the MAG+M training. Indeed, there was no correlation between MAAS and depression. By contrast, we expected the measure of experiential avoidance and psychological acceptance (AAQ) to show changes as a consequence of the treatment. Moderate effect sizes were observed for the conscious action variable (MAAS) and a strong negative correlation with AAQ in the MAG+M group.

The present study demonstrates the feasibility and potential therapeutic effects of short formal meditations and the possibility of them being integrated into broader treatment packages. Future researchers might use larger samples to explore the effectiveness of mindfulness-based interventions in people with a diagnosis of BD. In particular, it is necessary to clarify which mindfulness exercises have protective effects. More extensive studies should be carried out with active and inactive control groups and incorporating follow-up measures involving a broader range of BD symptoms, especially anxiety. The relationship between the type of mindfulness training dispensed and the construct measured by the psychometric instrument should also be identified (Park et al., 2013). In the present instance, only MAG+M improved depressive and anxiety symptoms.

The present study has some limitations. First, there was no randomization; secondly, the results are exploratory since there was no calculation of the necessary sample size; thirdly, the evidence is partial since the therapeutic effects involved symptoms of anxiety and depression measures from the pretest to the post-test, but there was no follow-up. Nonetheless, it is important to note that BD is a complex condition, and treatment approaches should be tailored to each individual's needs. A qualified mental health professional can provide personalized advice and explore the most appropriate treatment options, including the possible incorporation of self-help groups and mindfulness practices into the individual's treatment plan.

To the best of our knowledge, the present study is the first to analyze the efficacy of MAG+M in a MAG context for BD patients over 6 weeks. Our findings suggest a potential role for MAG+M in BD patient MAGs in improving symptoms of depression and anxiety. We would therefore encourage interested parties to include and promote mindfulness meditation in the MAG meetings of patients with BD.

Conflict of Interest

The authors of this article declare no conflict of interest.

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