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## Psychoeducation in bipolar disorder: A systematic review

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### Abstract

#### BACKGROUND

Bipolar disorder (BD) is a severe psychiatric disorder characterized by mood swings. Psychosocial interventions, such as psychoeducation, play an essential role in promoting social rehabilitation and improving pharmacological treatment.

#### AIM

To investigate the role of psychoeducation in BD.

#### METHODS

A systematic review of original studies regarding psychoeducation interventions in patients with BD and their relatives was developed. A systematic literature search was performed using the Medline, Scopus, and Lilacs databases. No review articles or qualitative studies were included in the analysis. There were no date restriction criteria, and studies published up to April 2021 were included.

#### RESULTS

A total of forty-seven studies were selected for this review. Thirty-eight studies included patients, and nine included family members. Psychoeducation of patients and family members was associated with a lower number of new mood episodes and a reduction in number and length of stay of hospitalizations. Psychoeducational interventions with patients are associated with improved adherence to drug treatment. The strategies studied in patients and family members do not interfere with the severity of symptoms of mania or depression or with the patient's quality of life or functionality. Psychoeducational interven-

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tions with family members do not alter patients' adherence to pharmacotherapy.

### CONCLUSION

Psychoeducation as an adjunct strategy to pharmacotherapy in the treatment of BD leads to a reduction in the frequency of new mood episodes, length of hospital stay and adherence to drug therapy.

**Key Words:** Bipolar disorder; Mood disorders; Psychoeducation; Adherence; Mania; Depression

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**Core Tip:** Bipolar disorder (BD) is a severe and chronic psychiatric disorder that requires intense treatment usually based on pharmacotherapy. Treatment applying psychotherapy adjunctive treatment is usually prescribed, although with inconsistent data. We aimed to perform a systematic review evaluating the evidence of psychoeducation in BD patients and their family members. Evidence suggests that psychoeducation of patients and family members is associated with a lower number of new mood episodes and a reduction in number and length of stay of hospitalizations. Psychoeducational interventions with patients are associated with improved adherence to drug treatment. Psychoeducation is a good interventional strategy for BD treatment.

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### INTRODUCTION

Bipolar disorder (BD) is a chronic mental health illness characterized by mood swings [1]. It is estimated that more than 1% of the world population is affected by BD[2,3]. The prevalence rates for each BD subtype, I and II, in community-based samples are 0.6% and 1.4%, respectively, and the mean age of onset of the disease is approximately 20 years[2,3]. Poor treatment adherence is associated with mood swings, social stigmatization, and lower social support in BD[4]. Psychosocial interventions might play an essential role in promoting social rehabilitation and improving pharmacotherapy adherence. Studies have demonstrated that non-pharmacological interventions, such as psychoeducation and cognitive-behavioral and interpersonal therapy, promote effects in the treatment of acute mood episodes and maintenance treatment in BD[5]. These actions favors the early recognition of warning signs of mood instability and promote the development of healthier lifestyles[4].

Psychoeducation is an intervention strategy based on providing patients and/or relatives with information about the disorder to enhance their understanding and enable early identification of warning signs and mood changes, improving treatment adherence[5-7]. Psychoeducational strategies in BD might promote the frequency of new mood episodes and medication adherence[8]. The Barcelona Psychoeducation Program was associated with an almost ninefold decrease ratios regarding new mood episodes and reduced the number of symptomatic days, as well as the hospitalization's length of stay (LOS)[9]. Family psychoeducation intervention has been correlated with mood episode reduction in patients with BD[7]. When family members acquire better knowledge about the disorder, they contribute to the early detection of the first symptoms of changes in mood[10,11].

This systematic review aims to investigate the role of psychoeducation in BD in patients and in their family members.

## MATERIALS AND METHODS

### **Search strategies and selection criteria**

The authors have read the PRISMA 2009 Checklist, and the manuscript was prepared and revised according to the PRISMA 2009 Checklist. A systematic literature search was performed through the Medline (Medical Literature Analysis and Retrieval System Online/PubMed), Scopus and Lilacs databases. Studies published up to April 2021 were included. The key terms used were “bipolar disorder” and “psychoeducation”. Studies in Portuguese and English were selected. Two independent reviewers (J.L.R. and I.G.B) analyzed the titles and abstracts; afterward, texts that fulfilled the requirements were included. The inclusion criteria were as follows: (1) Original psychoeducation intervention studies; (2) Placebo-controlled studies; and (3) Interventions aimed at adult patients with BD. The exclusion criteria were as follows: (1) Review, case series, and case report; (2) Interventions aimed at groups of patients with other mental or behavioral disorders; (3) Book chapters or reviews, systematic reviews or meta-analyses; (4) Studies written in languages other than English or Portuguese; (5) Low-quality studies according to the Newcastle-Ottawa scale (NOS) scale; and (6) Interventions aimed at children or adolescent patients with BD. Only original studies with a control group or baseline data for psychoeducation interventions in patients with BD and their relatives were included.

### **Data extraction and quality assessment**

The systematic review has been registered in the International Prospective Register of Systematic Reviews (PROSPERO) with registration number CRD42020168910.

We developed a data extraction table based on a Cochrane model[12]. One of the revisors (J.L.R.) extracted data and another (I.G.B) verified them. To reduce selection bias, two revisors (J.L.R. and I.G.B.) assessed the methodological quality of all the studies according to the NOS criteria[13]. The NOS is a "star system"-based scale, which scores a maximum of 4 stars corresponding to selecting studying groups, 3 stars for the ascertainment of either the exposure or outcome of interest, and 2 for the comparability of the groups; thus, the total NOS maximum score is 9. In the present study, we considered a minimum score of 5 on the NOS scale sufficient to be included [13]. In the circumstances of any disagreement between those 2 revisors, a third revisor was consulted (B.F.C) for consensus.

All extracted data included information about publication (including author name and year of publication), some group characteristics (sample size, gender, mean age, mood state and subtype of BD), methods (psychoeducation protocols; number of sessions; instruments that were applied, and who had performed them; kind of study, either a blinded or a randomized one) and their main outcomes.

## RESULTS

### **Description of studies**

Six hundred sixty-seven publications were identified from the literature search (PubMed: Five hundred and eighty-four; Scopus: Sixty-one and Lilacs: Twenty-four). Duplicated studies were excluded ( $n = 34$ ). Five hundred thirty-nine were excluded after title and abstract screening. Twenty studies were included from manual extraction. Seventy-two studies were excluded: Four of these were article reviews; thirty-seven did not include psychoeducation treatment; four were about intervention strategies in patients under 18 years of age; five studies were qualitative studies; one study was about a protocol; and thirteen studies were duplicated. Eight studies were classified as low quality according to the NOS scale (*i.e.*, scored less than or equal to five stars) and were excluded from the present manuscript. A total of forty-seven publications were selected for this review, of which thirty-eight studies included patients with BD and nine studies included relatives of patients with BD (Figure 1).

### **Characterization of included studies**

**Studies in patients with BD:** Thirty-eight clinical studies were included. Thirty-eight studies[6,8,11-46] scored five or more stars according to the NOS scale[12] (Table 1). There were thirty-three randomized studies[6,8,11-18,20-26,28-32,34-36,39-47] and five nonrandomized studies[19,27,33,37,38]. Eighteen studies included euthymic or remitted patients[6,8,11,16-21,25,26,28,33,35,37,41-43]. Two studies included patients with depressed mood[31,32]. Sixteen publications did not evaluate the mood episodes

**Table 1 Newcastle–Ottawa scale evaluation for studies that assessed psychoeducation in bipolar disorder patients**

Ref.	Representativeness of the exposed cohort	Selection of the non-exposed cohort	Ascertainment of exposure	Demonstration that outcome of interest was not present at start of study	Comparability of cohorts on the basis of the design or analysis	Assessment of outcome	Follow-up long enough for outcomes to occur	Adequacy of follow up of cohorts	Total
Zhang <i>et al</i> [14], 2019	1	1	1	1	2	1	1	1	9
Wiener <i>et al</i> [15], 2017	1	1	1	1	1	1	1	1	8
Cardoso <i>et al</i> [16], 2015	1	1	1	1	1	1	1	1	8
Cardoso <i>et al</i> [17], 2014	1	1	1	1	1	1	1	1	8
Faria <i>et al</i> [18], 2014	1	1	1	1	2	1	1	1	9
Kurdal <i>et al</i> [19], 2014	1	1	1	1	1	1	1	1	8
Javadpour <i>et al</i> [20], 2013	1	1	1	1	2	1	1	1	9
de Barros Pellegrinelli <i>et al</i> [21], 2013	1	1	1	1	2	1	1	1	9
Candini <i>et al</i> [22], 2013	1	1	1	1	1	1	1	1	8
Colom <i>et al</i> [11], 2009	1	1	1	1	2	0	1	1	8
Colom <i>et al</i> [23], 2003	1	1	1	1	2	1	1	2	10
Colom <i>et al</i> [24], 2003	1	1	1	1	2	1	1	1	9
Dalum <i>et al</i> [25], 2018	1	1	1	0	1	0	1	1	6
Depp <i>et al</i> [26], 2015	1	1	1	1	1	1	1	1	8
Lauder <i>et al</i> [27], 2015	1	1	1	1	1	1	1	1	8
Torrent <i>et al</i> [28],	1	1	1	1	2	1	1	1	9

2013										
Smith <i>et al</i> [29], 2011	1	1	1	1	2	1	1	1	9	
Sylvia <i>et al</i> [30], 2011	0	1	1	1	2	1	1	0	6	
D'Souza <i>et al</i> [31], 2010	1	1	1	1	2	1	1	1	9	
Castle <i>et al</i> [32], 2010	1	1	1	1	2	0	1	1	8	
So <i>et al</i> [46], 2021	1	1	1	1	1	0	1	1	7	
Sajatovic <i>et al</i> [33], 2009	1	1	1	1	2	1	1	1	9	
Miklowitz <i>et al</i> [34], 2007	1	1	1	1	2	0	1	0	7	
Miklowitz <i>et al</i> [35], 2007	1	1	1	1	2	1	1	1	9	
González Isasi <i>et al</i> [36], 2014	1	1	1	1	1	1	1	1	8	
Parikh <i>et al</i> [37], 2012	1	1	1	1	2	1	1	1	9	
Zaretsky <i>et al</i> [38], 2008	1	1	1	1	1	1	1	1	8	
Proudfoot <i>et al</i> [39], 2012	1	1	1	1	1	1	1	1	8	
Aubry <i>et al</i> [40], 2012	1	1	1	1	1	0	1	0	6	
Gonzalez <i>et al</i> [41], 2007	0	1	1	1	2	1	1	1	8	
Miklowitz <i>et al</i> [42], 2003	1	1	1	1	1	1	1	1	8	
Petzold <i>et al</i> [45], 2019	1	1	1	1	1	1	1	1	8	
Pakpour <i>et al</i> [43], 2017	1	1	1	1	1	1	1	1	8	
Morris <i>et al</i> [7], 2016	1	1	1	1	1	1	1	1	8	

Kessing <i>et al</i> [44], 2014	1	1	1	1	1	1	1	1	8
Gumus <i>et al</i> [47], 2015	1	1	1	1	1	1	1	1	8
Eker <i>et al</i> [48], 2012	1	1	1	0	1	0	1	1	6
Perry <i>et al</i> [49], 1999	1	1	1	1	2	1	1	1	9

of the patients[12-15,22-24,27,29,30,34,36,38-40,44].

The DSM-IV diagnostic criteria for BD were applied in twenty-nine studies[6,8,11,12,15,16,18-21,23-26,29-35,37,40,42,43,46,47]. The DSM-III was applied in four studies [13,27,39,44], and the ICD-10 criteria were applied in two studies[22,41]. One study did not state its diagnostic criteria for BD diagnosis[17].

A total of 2721 patients with BD and 1107 controls were included. Patients were classified as having type I or II BD in twenty-four studies[6,8,11,17-20,23-27,29-32,34,35,37,38,40,42,46,47]. Six studies evaluated BD type I patients[21,28,33,39,41,45], and only one study assessed BD type II patients[15].

**Psychoeducation programs in patients with BD:** Psychoeducation interventions and outcomes are summarized in Table 2. Eleven studies[11,15-24] assessed the psychoeducation manual for BD (PMBD)[6]. Patients in the PMBD group presented a lower incidence of new mood episodes, fewer hospitalizations[11,23,24], and reduced LOS[11,21,24]. Patients in the PMBD group had a reduction in the number of depressive episodes[17,18,23]. No difference was observed in the number of mood episodes in four studies[15,16,18,21]. PMBD was associated with a higher adherence to pharmacological treatment and a higher quality of life in one study[20]. PMBD did not result in better functional parameters[19,21].

Eight studies evaluated Group psychoeducation (GP)[45-51]. BD included in the GP compared to controls exhibited a longer interval between mood episodes[44], higher adherence to pharmacological treatment[45,46], and lower rates of hospital admissions [44]. GP interventions were not associated with functional, social or family improvements[46].

Intensive psychosocial intervention was not associated with functional state improvement[35], mood episode frequency[33], or new mood episodes (Hamilton depression rating scale). One study showed a reduction in the number of hospitalizations and mean hospitalization time[37].

Other psychoeducational techniques were applied in eleven studies[11,22-24,26-29,36,38,39]. Illness Management and Recovery program (IMR)[22]; Family-focused treatment (FFT)[42]; Systematic Illness Management Skills Enhancement Programme BD (SIMSEP-BD)[31] and MoodSwings-Plus (MS-PLUS)[27] were associated with increased adherence to pharmacological treatment. Nutrition/weight loss, exercise, and wellness treatment (NEW Tx)[30] and Personalized Real-Time Intervention for

Table 2 Extracted data from studies that evaluated psychoeducation in patients with bipolar disorder

Ref.	BD	Sample size, N (P × C)	Age in years (P × C)	Female frequency (%) (P × C)	Intervention	Applied scales/parameters	Results
Zhang <i>et al</i> [14], 2019	I e II	35 × 39	34.2 × 34.6	57.1 × 46.2	SCIT	YMRS	<i>P</i> = 0.21
						HDRS	<i>P</i> = 0.11
						FAST	<i>P</i> < 0.001
						TMTA	<i>P</i> = 0.77
						SDMT	<i>P</i> = 0.09
						HVLT-R	<i>P</i> = 0.09
						SCWT	<i>P</i> = 0.054
Wiener <i>et al</i> [15], 2017	ND	32 × 29	24 × 23.81	83.3 × 76.2	PMBD	HDRS	<i>P</i> = 0.028
						YMRS	<i>P</i> = 0.879
Cardoso <i>et al</i> [16], 2015	ND	32 × 29	24.09 × 24.03	65.6 × 72.4	PMBD	BRIAN	<i>P</i> = 0.88
						HARS	<i>P</i> = 0.175
						YMRS	<i>P</i> = 0.576
						HDRS	<i>P</i> = 0.074
Cardoso <i>et al</i> [17], 2014	ND	32 × 29	24.09 × 24.03	65.6 × 72.4	PMBD	HDRS	<i>P</i> = 0.001
						YMRS	<i>P</i> = 0.102
Faria <i>et al</i> [18], 2014	II	32 × 29	24.09 × 24.03	72.4 × 65.6	PMBD	BRIAN	<i>P</i> = 0.01
						Depressive symptoms	<i>P</i> = 0.001
Kurdal <i>et al</i> [19], 2014	ND	40 × 40	37.17 × 33.9	35 × 40	PMBD	BDFQ	<i>P</i> > 0.005
Javadpour <i>et al</i> [20], 2013	I e II	45 × 41	24.4/23.2	23 × 21	PMBD	WHOQOL-BREF	<i>P</i> < 0.001
						MARS	<i>P</i> = 0.008
						Hospitalizations	<i>P</i> < 0.001
de Barros Pellegrinelli <i>et al</i> [21], 2013	I e II	32 × 23	43.43 × 43.74	23 × 15	PMBD	HDRS	<i>P</i> = 0.820
						YMRS	<i>P</i> = 0.716
						SAS	<i>P</i> = 0.114
						GAF	<i>P</i> = 0.586
						CGI	<i>P</i> = 0.026
Candini <i>et al</i> [22], 2013	I e II	57 × 45	41.5 × 44.8	52.6 × 48.9	PMBD	Hospitalizations	<i>P</i> = 0.001
						Number of days of hospitalization	<i>P</i> = 0.001
Colom <i>et al</i> [11], 2009	I e II	60 × 60	34.03 × 34.26	63.3 × 63.3	PMBD	New mood episode	<i>P</i> = 0.002
						Hospitalizations	<i>P</i> = 0.023
						Number of days of hospitalization	<i>P</i> = 0.047
Colom <i>et al</i> [23], 2003	I	25 × 25	35.36 × 34.48	64 × 60	PMBD	Mood episodes in the treatment phase	<i>P</i> = 0.003
						Mood episodes after 2 yr	<i>P</i> = 0.008
						Depressive episodes	<i>P</i> = 0.004
						Hospitalizations	<i>P</i> = 0.001
Colom <i>et al</i> [24], 2003	I e II	60 × 60	23.25 × 22.26	63.3 × 63.3	PMBD	New mood episode	<i>P</i> = 0.001
						Hospitalizations	<i>P</i> = 0.05

						Number of days of hospitalization	<i>P</i> = 0.05
Dalum <i>et al</i> [25], 2018	ND	23 × 24	41 × 45	46 × 44	IMR	IMRS-P	<i>P</i> = 0.14
						IMRS-S	<i>P</i> = 0.76
Depp <i>et al</i> [26], 2015	I e II	51 × 63	46.9 × 48.1	53.7 × 63.4	PRISM	YMRS	<i>P</i> = 0.004
						MADRS	<i>P</i> = 0.036
						IIS	<i>P</i> = 0.636
Lauder <i>et al</i> [27], 2015	I e II	71 × 59	39.87 × 41.35	73 × 76	MS-PLUS	ASRMS	<i>P</i> = 0.02
						MADRS	<i>P</i> = 0.003
						MOS-SSS	<i>P</i> = 0.003
						MARS	<i>P</i> = 0.001
						GPF	<i>P</i> = 0.003
Torrent <i>et al</i> [28], 2013	I e II	159 × 80	40.59 × 40.47	57.1 × 57.5	FR	FAST	<i>P</i> = 0.002
						HDRS	<i>P</i> > 0.05
						YMRS	<i>P</i> > 0.05
						Hospitalizations	<i>P</i> > 0.05
Smith <i>et al</i> [29], 2011	I e II	24 × 26	42.7 × 44.7	54.2 × 69.2	BBO	FAST	<i>P</i> = 0.15
						GAF	<i>P</i> = 0.21
						SAI	<i>P</i> = 0.44
						WHOQOL-BREF	<i>P</i> = 0.25
Sylvia <i>et al</i> [30], 2011	I e II	4 × 6	60 × 50.2	75 × 33	NEW TX	MADRS	<i>P</i> = 0.10
						LIFE-RIFT	<i>P</i> = 0.014
D'Souza <i>et al</i> [31], 2010	I	27 × 31	40.7 × 39.5	51.85 × 51.61	SIMSEP-BD	ARS	<i>P</i> = 0.001
						New mood episode	<i>P</i> = 0.015
						Time between mood episodes	<i>P</i> = 0.001
Castle <i>et al</i> [32], 2010	I e II	42 × 42	41.6 × 42.6	79 × 26	MAPS	Mood episode	<i>P</i> = 0.003
						Depressive symptoms	<i>P</i> = 0.003
						Knowledge about illness	<i>P</i> > 0.05
						ESM-PA	<i>P</i> = 0.024
						ESM-NA	<i>P</i> = 0.001
So <i>et al</i> [46], 2021	I e II	38 × 26	35.8 × 43.1	78.9 × 73.1	LGP	Medication adherence	<i>P</i> > 0.05
Sajatovic <i>et al</i> [33], 2009	I e II	80 × 80	41.13 × 40	73.75 × 87.5	LGP	DAI	<i>P</i> = 0.366
						SRTAB	<i>P</i> = 0.577
						GAS	<i>P</i> = 0.382
Miklowitz <i>et al</i> [34], 2007	I e II	163 × 130	40.1 × 40	ND	IPI	Remission of symptoms 1 yr	<i>P</i> = 0.001
Miklowitz <i>et al</i> [35], 2007	I e II	84 × 68	ND	59 × 59	IPI	LIFE-RIFT	<i>P</i> = 0.006
González Isasi <i>et al</i> [36], 2014	I	20 × 20	43.35 × 39.25	45 × 50	CBT	STAI-S	<i>P</i> = 0.062
						YMRS	<i>P</i> = 0.009
						BDI	<i>P</i> = 0.131
						IS	<i>P</i> = 0.001
Parikh <i>et al</i> [37], 2012	I e II	109 × 95	40.9 × 40.9	53.2 × 63.2	CBT	LIFE	<i>P</i> > 0.05
						CARS-M	<i>P</i> = 0.089

Zaretsky <i>et al</i> [38], 2008	I e II	40 × 39	ND	ND	CBT	HDRS	<i>P</i> = 0.089
						CARS-M	<i>P</i> = 0.001
Proudfoot <i>et al</i> [39], 2012	ND	139 × 134	35.3 × 40.9	66.9 × 69.4	BEP	HDRS	<i>P</i> = 0.001
						GADS	<i>P</i> > 0.05
						WSAS	<i>P</i> > 0.05
						SWLS	<i>P</i> > 0.05
Aubry <i>et al</i> [40], 2012	I e II	50 × 35	46 × 52	66 × 62.9	LGP	BRIEF IPQ	<i>P</i> = 0.001
						Hospitalizations	<i>P</i> = 0.001
Gonzalez <i>et al</i> [41], 2007	I e II	11 × 11	40.5 × 41.0	45.45 × 45.45	IOM	Number of hospitalizations	<i>P</i> = 0.009
						GAF	<i>P</i> = 0.65
Miklowitz <i>et al</i> [42], 2003	I	31 × 70	35.6 × 36.6	58 × 66	FFT	CGI-BD	<i>P</i> = 0.06
						Depressive symptoms	<i>P</i> = 0.005
						SADS-C	<i>P</i> = 0.001
Pakpour <i>et al</i> [43], 2017	I e II	134 × 136	41.8 × 41.2	55.2 × 50.7	GP	New mood episode	<i>P</i> = 0.001
						MTS	<i>P</i> = 0.001
						MARS	<i>P</i> = 0.001
						YMRS	<i>P</i> = 0.001
Petzold <i>et al</i> [45], 2019	I e II	39 × 34	44.32 × 42.69	43.6 × 47.1	GP	CGI	<i>P</i> = 0.001
						QoL.BD	<i>P</i> = 0.001
						New mood episode	<i>P</i> = 0.175
						YMRS	<i>P</i> = 0.241
						HDRS	<i>P</i> = 0.58
Morris <i>et al</i> [7], 2016	I e II	153 × 151	44.2 × 46.5	60 × 56	GP	SF-36	<i>P</i> = 0.359
						Time between mood episodes	<i>P</i> = 0.012
						SOFAS	<i>P</i> > 0.05
Kessing <i>et al</i> [44], 2014	I	72 × 86	64.1 × 63	61.1 × 48.8	GP	SAS	<i>P</i> > 0.05
						Time between mood episodes	<i>P</i> = 0.014
Gumus <i>et al</i> [47], 2015	I e II	41 × 41	38.7 × 40.05	40.5 × 56.1	GP	Hospitalizations	<i>P</i> = 0.064
						Number of mood episodes	<i>P</i> = 0.208
Eker <i>et al</i> [48], 2012	ND	35 × 36	34.57 × 36.54	54.3 × 52.8	GP	ANT	<i>P</i> < 0.005
						MARS	<i>P</i> < 0.005
Perry <i>et al</i> [49], 1999	I	34 × 35	44.1 × 45	68 × 69	GP	Time between manic episodes	<i>P</i> = 0.008
						Time between depressive episodes	<i>P</i> = 0.19

ANT: Attitudes towards neuroleptic treatment; ASRMS: Altman self-rating mania scale; ARS: Medication adherence scale; B: Baseline; BBO: Beating bipolar online; BD: Bipolar disorder; BDG: Bipolar disorder group; BDI: Beck depression inventory; BDFQ: Bipolar Disorder Functioning Questionnaire; BEP: Bipolar Education Program; BDNF: Brain-Derived Neurotrophic Factor; BRIAN: Biological Rhythm Interview of Assessment in Neuropsychiatry; BRIEF IPQ: The Brief Illness Perception Questionnaire; C: Controls; CARS-M: Clinician-Administered Rating Scale for Mania; CBT: Cognitive-behavioral therapy; CC: Collaborative care; CGI-BD: Clinical Global Impression Scale for Bipolar Disorder; DAI: Drug Attitude Inventory; EDM: Education about Disorders and Medications; ESM-PA: With in person positive affect as measured by using Experience Sampling Method; ESM-NA: Within-person negative affect as measured by using Experience Sampling Method; FAST: Functional Assessment Test; FFT: Family-focused treatment; FR: Functional remediation; GADS: The Goldberg Anxiety and Depression Scale; GAF: Global Assessment of Functioning; GAS: Global Assessment Scale; HVLT-R: Hopkins Verbal Learning Tests-Revised; GDNF: Glial cell line-derived neurotrophic factor; GFP: Global Measure of Psychosocial Functioning; GP: Group Psychoeducation; HARS: Hamilton Anxiety Rating Scale; HDRS: Hamilton Depression Rating Scale; IOM: Integrative Outpatient Model; IMR: Illness Management and

Recovery program; IMRS-P: Illness Management and Recovery Scale-participants' version; IMRS-S: Illness Management and Recovery Scale-staffs; IPI: Intensive Psychosocial Intervention; IS: Maladjustment scale; IRSRT: Interpersonal and social rhythm therapy; LGP: Life Goals Program; LIFE: Longitudinal Interval Follow-up Evaluation; LIFE-RIFT: The Range of Impaired Functioning Tool; MADRS: Montgomery-Asberg Depression Rating Scale; MOSSF-36: Medical Outcomes Survey Short-form General Health Survey; MTS: Maintenance Treatment Scale; MARS: Medication Adherence Rating Scale; MAPS: Monitoring mood and activities (M), assessing prodromes (A), preventing relapse (P) and setting Specific, Measurable, Achievable, Realistic, Time-framed (SMART) goals (S); MARS: Medication adherence rating scale; MS-PLUS: MoodSwings-Plus; MOS-SSS: Medical Outcomes Study Social Support Survey; ND: Not described; NEW TX-Program: Nutrition/weight loss, Exercise, and Wellness Treatment; NGF: Nerve growth factor; P: Patients; PMBD: Psychoeducation Manual For Bipolar Disorder; PRISM: Personalized Real-Time Intervention for Stabilizing Mood, QoL:BD: Quality of Life in Bipolar Disorder scale; SAI: Schedule for Assessment of Insight; SADS-C: Schedule for Affective Disorders and Schizophrenia, Change Version; SAS: Social Adjustment Scale; SCIT: Social cognition and Interaction Training; SCWT: Stroop Color-Word Test; SDMT: Symbol Digit Modalities Test; SIMSEP-BD: Systematic Illness Management Skills Enhancement Program Bipolar Disorder; SF-36: 36-Item Short Form Survey; SOFAS: Social and Occupational Functioning Assessment Scale; SRTAB: Self-reported treatment adherence behaviours; STAI-S: State Trait Anxiety Inventory; SWLS: The Satisfaction with Life Scale; TMTA: Trail Making Test-A; WHOQOL-BREF: World Health Organization Quality of Life, Brief version; WSAS: The Work and Social Adjustment Scale; YMRS: Young Mania Rating Scale.

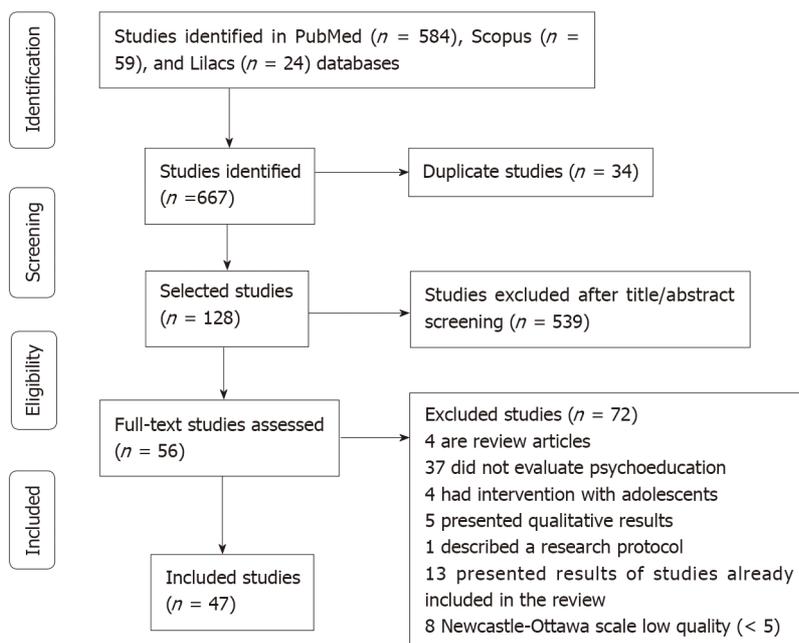


Figure 1 PRISMA flow diagram for studies evaluating psychoeducation in bipolar disorder.

Stabilizing Mood (PRISM)[25] were associated with a reduction in severity of mania symptoms. Depressive symptoms were less severe in patients submitted to MAPS-monitoring mood and activities (M), assessing prodromes (A), preventing relapse (P) and setting Specific, Measurable, Achievable, Realistic, Time-framed (SMART) goals (S)[32], integrative outpatient model (IOM)[38], and PRISM[25] interventions, when compared to control intervention. The online bipolar education program (BEP) was associated with a reduction in anxiety symptoms[39]. There was a reduction in the frequency of mood episodes in patients submitted to IMR[26] and MAPS[33]. Functional remediation (FR) was associated with improvement in functional status [28]. Social cognition and interaction training (SCIT)[14], FR[28], FFT[41], SIMSEP-BD [31], MAPS[32] and MS-PLUS[27] were not associated with changes in the severity of mood symptoms. FR did not influence the number of hospital admissions[28]. BEP [39], Beating bipolar online[29], and IOM[41] did not influence functional status. BEP was not associated with improvement in the quality of life or increased insight[29].

**Studies with relatives of patients with BD:** Nine clinical studies were included. Nine studies scored five or more stars[50-58] according to the NOS scale[13] (Table 3). There were seven randomized[50-52,54,58] and two nonrandomized studies[53,57]. Two studies evaluated euthymic patients[51,53]. Information regarding mood episodes was not available in seven studies[50-52,55-58].

Four studies diagnosed patients according to the DSM-III criteria[49,51-53], and four studies applied the DSM-IV[46-48,50]. One study did not state the BD diagnostic criteria[50]. Two studies assessed BD type I and BD type II patients[48,50]; three studies included exclusively BD type I patients[46,49,52]. Four studies did not specify

Table 3 Newcastle–Ottawa scale evaluation for studies that evaluated psychoeducation in relatives of patients with bipolar disorder

Ref.	Representativeness of the exposed cohort	Selection of the non-exposed cohort	Ascertainment of exposure	Demonstration that outcome of interest was not present at start of study	Comparability of cohorts on the basis of the design or analysis	Assessment of outcome	Follow-up long enough for outcomes to occur	Adequacy of follow up of cohorts	Total
Hubbard <i>et al</i> [50], 2016	1	1	1	1	1	1	0	1	7
Fiorillo <i>et al</i> [51], 2015	1	1	1	1	1	1	1	0	7
Madigan <i>et al</i> [52], 2012	1	1	1	1	1	1	1	1	8
Reinares <i>et al</i> [53], 2008	1	1	1	1	1	1	1	1	8
Solomon <i>et al</i> [54], 2008	1	1	1	1	1	0	1	0	6
Reinares <i>et al</i> [55], 2004	1	1	1	1	1	1	1	0	7
Van Gent <i>et al</i> [56], 1991	1	1	1	1	1	0	1	0	6
Miklowitz <i>et al</i> [57], 2000	1	1	1	1	1	0	1	1	7
Simoneau <i>et al</i> [58], 1999	1	1	1	1	1	0	1	0	6

the BD type[45,47,51,53].

One hundred thirteen relatives were included in psychoeducation programs: one hundred and six were couples; twelve were sons/daughters; and ten were brothers/sisters. Fifty-four parents were included in the control groups, eighty-nine were couples, two were sons/daughters, six were brothers/sisters, and two were friends.

**Psychoeducation programs aimed at family members of patients with BD:** Psychoeducation interventions and outcomes are summarized in Table 4. Two studies[52,53] compared the program of pharmacotherapy and FFT and Crisis management with naturalistic follow-up (CMNF). There was no difference in the severity of mood symptoms after a one-year follow-up[52]. There was a reduction in the frequency of mood episodes in the FFT compared to the CMNF[52].

Three studies assessed the psychoeducational family intervention (PFI) strategy compared to a nonintervention control group[51,53,54]. There were no improvements in the frequency of mood episodes[50], adherence to treatment[53], or caregiver burden[55]. The group submitted to PFI showed a significant improvement in relation

**Table 4** Extracted data from studies that evaluated psychoeducation in relatives of patients with bipolar disorder

Ref.	BD	Psychoeducation group		Group control		Applied scales/parameters	Results		
		Psychoeducation strategy	n (%)	Intervention strategy	n (%)				
Hubbard <i>et al</i> [50], 2016	ND	GCPBD	18	8 Partner; 10 Parents	WL	14	3 Partner; 8 Parents; 1 Sibling; 2 Friend	DASS- 21 BAS KBDS BDSS	<i>P</i> = 0.52 <i>P</i> = 0.91 <i>P</i> > 0.05 <i>P</i> > 0.05
Fiorillo <i>et al</i> [51], 2015	BD I	PFI	85	21 Parents; 44 Partner; 10 Son; 9 Sibling; 1 Other	WI	70	23 Parents; 31 Partner; 11 Son; 3 Sibling; 2 Other	Subjective burden Professional help Help in emergencies	<i>P</i> = 0.001 <i>P</i> = 0.001 <i>P</i> = 0.01
Madigan <i>et al</i> [52], 2012	ND	MFGP; SFGP	18; 19	ND	WI	10	ND	Caregiver knowledge IEQ GHQ12 WHOQOL Bref GAF	<i>P</i> = 0.404 <i>P</i> = 0.795 <i>P</i> = 0.723 <i>P</i> = 0.355 <i>P</i> = 0.617
Reinares <i>et al</i> [53], 2008	BD I e II	PFI	57	35 Parents; 20 Partner; 2 Offspring/siblings	WI	56	27 Parents; 25 Partner; 4 Offspring/siblings	Amount of daily contact between the patient and the caregiver Manic/hypomanic recurrence time Medication adherence	<i>P</i> = 0.757 <i>P</i> = 0.015 <i>P</i> = 0.611
Solomon <i>et al</i> [54], 2008	BD I	MFGP; IFT	21; 16	ND	WI	16	ND	New mood episode Hospitalization frequency BRMS HAM-D	<i>P</i> = 0.47 <i>P</i> = 0.04 <i>P</i> = 0.44 <i>P</i> = 0.12
Reinares <i>et al</i> [55], 2004	BD I e II	PFI	30	17 Parents; 12 Partner; 1 Sibling	WI	15	6 Parents; 6 Partner; 2 Son; 1 Sibling	HAM-D YMRS Subjective burden of the caregiver FES Knowledge about the disorder	<i>P</i> > 0.05 <i>P</i> > 0.05 <i>P</i> = 0.48 <i>P</i> = 0.22 <i>P</i> = 0.001
Van Gent <i>et al</i> [56], 1991	ND	GT	14	14 Partner	WI	12	12 Partner	IPSQ IPP SCL-90	<i>P</i> > 0.05 <i>P</i> > 0.05 <i>P</i> > 0.05
Miklowitz <i>et al</i> [57], 2000	BD I	FFT	31	ND	CMNF	70	ND	New mood episode Depressive symptoms Manic symptoms	<i>P</i> = 0.042 <i>P</i> = 0.06 <i>P</i> = 0.59
Simoneau <i>et al</i> [58], 1999	ND	FFT	22	ND	CMNF	22	ND	KPI	<i>P</i> > 0.05

BAS: Burden assessment scale; BD: Bipolar disorder; BDSS: Bipolar disorder self-efficacy scale; BPRS: Brief psychiatric rating scale; BRMS: Bech-Rafaelsen Mania Scale; C: Control; CMNF: Crisis management with naturalistic follow-up; DAS: Disability assessment scale; DASS-21: Depression, Anxiety, Stress Scale; FES: Family Environment Scale (Cohesion, Expressiveness e Conflict)-Relationship subscales; FFT: Program of pharmacotherapy and family-focused

psychoeducational treatment; GAF: Global Assessment of Functioning; GHQ12: General Health Questionnaire 12; GCPBD: Guide for Caregivers of People with Bipolar Disorder; HAM-D: Hamilton Rating Scale for Depression-17-item; IEQ: Involvement evaluation questionnaire; IFT: Individual family therapy; IPP: Inventory of psychosocial problems; IPSQ: Interactional Problem Solving Questionnaire; KBDS: Knowledge of Bipolar Disorder Scale; KPI: Interactional coding system-assessed verbal and nonverbal communication behaviors of patients and their family; MFGP: Multifamily Group Psychoeducation; N: Total number I; ND: Not described; P: Psychoeducation; PFI: Psychoeducational family intervention; SADS-C: Schedule for Affective Disorders and Schizophrenia-Change Version; SCL-90: Symptom Checklist; SFGP: Solution Focused Group Psychotherapy; GT: Group therapy; WHOQOL Brief: World Health Organization Quality of Life, Brief version; WI: Without intervention; WL: Waiting list; YMRS: Young Mania Rating Scale.

to the perception of professional support received and help in times of emergency[51].

Two studies compared multifamily group psychoeducation, individual family therapy (IFT), and solution focused group psychotherapy (SFGP)[52,54]. There were no differences between these strategies regarding reduction in frequency of mood episodes[53,56], quality of life[52], or changes in functional status[53,54]. One study found that parents submitted to IFT reduced the incidence of hospital admissions[54].

The Guide for Caregivers of People with BD[50] was not associated with changes in relatives' symptoms of anxiety, depression or mania; stress discharge; knowledge of the disease; or changes in the caregiver burden[50].

## DISCUSSION

Psychoeducation applied to BD patients and their relatives is associated with a reduction in the frequency of new mood episodes and a reduction in the number of hospital admissions and LOS. Psychoeducational interventions applied to patients contribute to improvement in pharmacological treatment adherence. Psychoeducation does not seem to influence the severity of depressive or manic symptoms or functionality. PMBD was associated with a higher adherence to pharmacological treatment and a higher quality of life in one study[23]. Psychoeducation strategies applied to relatives had no effect on adherence to pharmacological treatment.

Psychoeducational strategies in patients with BD are associated with a lower frequency of mood swings. These results are in line with a previous meta-analysis that evaluated 650 patients; 45% did not present a new mood episode compared to 30% of controls[54]. A possible explanation for this association is that the occurrence of subsyndromal symptoms is one of the main risk factors for new episodes[57,58]. Psychoeducational strategies in patients promote increased understanding about their own disease[59], improve the abilities of recognizing mood subsyndromal symptoms, enable early interventions, and might contribute to refraining new mood episodes[60]. Psychoeducational strategies also provide information about healthier lifestyles, sleep routines, exercise and stress management tips. All these steps are important to the maintenance of the euthymic state in BD[59].

Psychoeducation interventions were effective in reducing the frequency of hospitalizations and LOS and enhanced adherence to pharmacological treatment. Knowledge regarding their own illness might enrich comprehension of the importance of medication use and its effects on mood[61]. Moreover, a higher adherence to treatment is associated with monotherapy and reduced drug side effects[4,62]. Psychoeducational approaches to family members had no influence on treatment adherence.

When applied to patients and family members, psychoeducational approaches did not have an effect on mood severity symptoms, functionality or the quality of life of BD patients. Mood changes might lead to social, interpersonal and occupational impairments and contribute negatively to quality of life[63,64]. Depressive episodes are the most common and the most persistent affective states in BD and are the main cause of functional disability[4]. Residual and persistent depressive symptoms, cognitive decline, sleep deprivation, past history of psychotic symptoms[65,66], current presence of psychiatric comorbidities, use of psychoactive substances[65-68], long course of the disease, number of mood episodes[69-71], and hospitalizations[72] are associated with a reduction in functionality[73].

Family member psychoeducation is related to a lower frequency of mood swings and to a reduction in LOS. As family members acquire knowledge of the disease, they become more able to help patients identify early mood changes, apply assertive strategies to deal with daily situations and crisis management[48,74]. Through the provision of care, acceptance of the disease and dialogue, family members present themselves to the patient as a source of aid and support for decisions about their treatment[75-77].

In regard to the limitations of the present study, we might consider meta-analysis to be unable to be performed, owing to the methodological differences between heterogeneous studies (sample size, duration of follow-up, main results, type of comparison group), the population characteristics (severity, comorbidity, clinical status of patients in recruiting phase) and the intervention itself (target population, format, content, duration). All of these factors hamper the generalization of the results. In addition, the findings of the present study reveal that the characteristics of the sampling must be carefully considered. Patients with severe chronic disease may have poorer treatment responses. Future research to clarify the effectiveness of psychoeducation and to identify the determinants of response to treatment might be required for this population.

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## CONCLUSION

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The data from this systematic review show the positive effects of the psychoeducational intervention on both patients and family members. Despite the lack of effectiveness in some parameters, psychoeducation has been associated with other treatments as an additional intervention. It is recommended that additional studies should approach strategies that aim to maximize the benefits of those therapies, adding interventions focused on family and interpersonal relationships.

## ARTICLE HIGHLIGHTS

### **Research background**

The bipolar disorder (BD) treatment is challenging, and there is some evidence that non-pharmacological interventions promote effects in the treatment of acute mood episodes and maintenance treatment. Psychoeducation is an intervention strategy based on providing patients and/or relatives with information about the disorder to enhance their understanding and enable early identification of warning signs and mood changes, improving treatment adherence, and have showed some results in order to help the BD treatments.

### **Research motivation**

Even using adequate drug strategies, BD is characterized by high rates of occurrence of mood episodes, number of hospital admissions, and a progressive impairment. We aimed to summarize the best evidence of psychoeducation in the treatment of BD, considering patients and their family members.

### **Research objectives**

This systematic review aims to investigate the role of psychoeducation in BD in patients and in their family members.

### **Research methods**

A systematic search of original studies on psychoeducation with patients with Bipolar Affective Disorder and their families was carried out using Medline, Scopus and Lilacs databases. A data extraction table was created based on the Cochrane model and the methodological quality of the studies was assessed according to the criteria of the Newcastle-Ottawa scale.

### **Research results**

Psychoeducation applied to BD patients and their relatives is associated with a reduction in the frequency of new mood episodes and a reduction in the number of hospital admissions and length of stay. Psychoeducational interventions applied to patients contribute to improvement in pharmacological treatment adherence, although the same effect it is not observed when applied to relatives. Psychoeducation does not seem to influence the severity of depressive or manic symptoms or functionality.

### **Research conclusions**

Psychoeducation as an adjunct strategy to pharmacotherapy has been shown to be effective in the treatment of Bipolar Affective Disorder.

**Research perspectives**

To systematize the effectiveness of psychoeducation intervention on BD patients and family members.

**REFERENCES**

- 1 **American Psychiatric Association (APA)**. Diagnostic and statistical manual of mental disorders. 5th ed. Arlington, VA: American Psychiatric Association, 2013
- 2 **Vigo D**, Thornicroft G, Atun R. Estimating the true global burden of mental illness. *Lancet Psychiatry* 2016; **3**: 171-178 [PMID: 26851330 DOI: 10.1016/S2215-0366(15)00505-2]
- 3 **Vieta E**, Berk M, Schulze TG, Carvalho AF, Suppes T, Calabrese JR, Gao K, Miskowiak KW, Grande I. Bipolar disorders. *Nat Rev Dis Primers* 2018; **4**: 18008 [PMID: 29516993 DOI: 10.1038/nrdp.2018.8]
- 4 **Bosaipo NB**, Borges VF, Juruena MF. Bipolar disorder: a review of conceptual and clinical aspects. *Medicina. Ribeirao Preto Online* 2017; **50**: 72-74 [DOI: 10.11606/issn.2176-7262.v50isup11.p72-84]
- 5 **Demissie M**, Hanlon C, Birhane R, Ng L, Medhin G, Fekadu A. Psychological interventions for bipolar disorder in low- and middle-income countries: systematic review. *BJPsych Open* 2018; **4**: 375-384 [PMID: 30202599 DOI: 10.1192/bjo.2018.46]
- 6 **Colom F**, Vieta E, Scott J. Psychoeducation Manual for Bipolar Disorder. Cambridge University Press, 2006
- 7 **Morriss R**, Lobban F, Riste L, Davies L, Holland F, Long R, Lykomitrou G, Peters S, Roberts C, Robinson H, Jones S; NIHR PARADES Psychoeducation Study Group. Clinical effectiveness and acceptability of structured group psychoeducation versus optimised unstructured peer support for patients with remitted bipolar disorder (PARADES): a pragmatic, multicentre, observer-blind, randomised controlled superiority trial. *Lancet Psychiatry* 2016; **3**: 1029-1038 [PMID: 27688021 DOI: 10.1016/S2215-0366(16)30302-9]
- 8 **Novick DM**, Swartz HA. Evidence-Based Psychotherapies for Bipolar Disorder. *Focus (Am Psychiatr Publ)* 2019; **17**: 238-248 [PMID: 32047369 DOI: 10.1176/appi.focus.20190004]
- 9 **Miklowitz DJ**, Efthimiou O, Furukawa TA, Scott J, McLaren R, Geddes JR, Cipriani A. Adjunctive Psychotherapy for Bipolar Disorder: A Systematic Review and Component Network Meta-analysis. *JAMA Psychiatry* 2021; **78**: 141-150 [PMID: 33052390 DOI: 10.1001/jamapsychiatry.2020.2993]
- 10 **Chatterton ML**, Stockings E, Berk M, Barendregt JJ, Carter R, Mihalopoulos C. Psychosocial therapies for the adjunctive treatment of bipolar disorder in adults: network meta-analysis. *Br J Psychiatry* 2017; **210**: 333-341 [PMID: 28209591 DOI: 10.1192/bjp.bp.116.195321]
- 11 **Colom F**, Vieta E, Sánchez-Moreno J, Palomino-Otiniano R, Reinares M, Goikolea JM, Benabarre A, Martínez-Arán A. Group psychoeducation for stabilised bipolar disorders: 5-year outcome of a randomised clinical trial. *Br J Psychiatry* 2009; **194**: 260-265 [PMID: 19252157 DOI: 10.1192/bjp.bp.107.040485]
- 12 **Higgins J**, Thomas J, Chandler J, Cumpston M, Li T, Page M, Welch V. Cochrane Handbook for Systematic Reviews of Interventions. 2nd Edition. Chichester (UK): John Wiley & Sons, 2019
- 13 **Wells GA**, Shea B, O'Connell D, Peterson J, Welch V, Losos M, Tugwell P. The Newcastle-Ottawa Scale (NOS) for assessing the quality of nonrandomized studies in meta-analysis, 2019. [cited 10 January 2021]. Available from: [http://www.ohri.ca/programs/clinical\\_epidemiology/oxford.asp](http://www.ohri.ca/programs/clinical_epidemiology/oxford.asp)
- 14 **Zhang Y**, Ma X, Liang S, Yu W, He Q, Zhang J, Bian Y. Social cognition and interaction training (SCIT) for partially remitted patients with bipolar disorder in China. *Psychiatry Res* 2019; **274**: 377-382 [PMID: 30852431 DOI: 10.1016/j.psychres.2019.03.002]
- 15 **Wiener CD**, Molina ML, Moreira FP, Dos Passos MB, Jansen K, da Silva RA, de Mattos Souza LD, Osés JP. Brief psychoeducation for bipolar disorder: Evaluation of trophic factors serum levels in young adults. *Psychiatry Res* 2017; **257**: 367-371 [PMID: 28803094 DOI: 10.1016/j.psychres.2017.07.062]
- 16 **Cardoso Tde A**, Campos Mondin T, Reyes AN, Zeni CP, Souza LD, da Silva RA, Jansen K. Biological Rhythm and Bipolar Disorder: Twelve-Month Follow-Up of a Randomized Clinical Trial. *J Nerv Ment Dis* 2015; **203**: 792-797 [PMID: 26348588 DOI: 10.1097/NMD.0000000000000369]
- 17 **Cardoso Tde A**, Farias Cde A, Mondin TC, da Silva Gdel G, Souza LD, da Silva RA, Pinheiro KT, do Amaral RG, Jansen K. Brief psychoeducation for bipolar disorder: impact on quality of life in young adults in a 6-month follow-up of a randomized controlled trial. *Psychiatry Res* 2014; **220**: 896-902 [PMID: 25300245 DOI: 10.1016/j.psychres.2014.09.013]
- 18 **Faria AD**, de Mattos Souza LD, de Azevedo Cardoso T, Pinheiro KA, Pinheiro RT, da Silva RA, Jansen K. The influence of psychoeducation on regulating biological rhythm in a sample of patients with bipolar II disorder: a randomized clinical trial. *Psychol Res Behav Manag* 2014; **7**: 167-174 [PMID: 25061340 DOI: 10.2147/PRBM.S52352]
- 19 **Kurdal E**, Tanriverdi D, Savas HA. The effect of psychoeducation on the functioning level of patients with bipolar disorder. *West J Nurs Res* 2014; **36**: 312-328 [PMID: 24025221 DOI: 10.1177/0193945913504038]
- 20 **Javadpour A**, Hedayati A, Dehbozorgi GR, Azizi A. The impact of a simple individual psychoeducation program on quality of life, rate of relapse and medication adherence in bipolar disorder patients. *Asian J Psychiatr* 2013; **6**: 208-213 [PMID: 23642977 DOI: 10.1016/j.ajp.2012.12.005]

- 21 **de Barros Pellegrinelli K**, de O Costa LF, Silval KI, Dias VV, Roso MC, Bandeira M, Colom F, Moreno RA. Efficacy of psychoeducation on symptomatic and functional recovery in bipolar disorder. *Acta Psychiatr Scand* 2013; **127**: 153-158 [PMID: 22943487 DOI: 10.1111/acps.12007]
- 22 **Candini V**, Buizza C, Ferrari C, Caldera MT, Ermentini R, Ghilardi A, Nobili G, Pioli R, Sabauda M, Sacchetti E, Saviotti FM, Seggioli G, Zanini A, de Girolamo G. Is structured group psychoeducation for bipolar patients effective in ordinary mental health services? *J Affect Disord* 2013; **151**: 149-155 [PMID: 23816448 DOI: 10.1016/j.jad.2013.05.069]
- 23 **Colom F**, Vieta E, Reinares M, Martínez-Arán A, Torrent C, Goikolea JM, Gastó C. Psychoeducation efficacy in bipolar disorders: beyond compliance enhancement. *J Clin Psychiatry* 2003; **64**: 1101-1105 [PMID: 14628987 DOI: 10.4088/jcp.v64n0917]
- 24 **Colom F**, Vieta E, Martínez-Arán A, Reinares M, Goikolea JM, Benabarre A, Torrent C, Comes M, Corbella B, Parramon G, Corominas J. A randomized trial on the efficacy of group psychoeducation in the prophylaxis of recurrences in bipolar patients whose disease is in remission. *Arch Gen Psychiatry* 2003; **60**: 402-407 [PMID: 12695318 DOI: 10.1001/archpsyc.60.4.402]
- 25 **Dalum HS**, Waldemar AK, Korsbek L, Hjorthøj C, Mikkelsen JH, Thomsen K, Kistrup K, Olander M, Lindschou J, Nordentoft M, Eplöv LF. Participants' and staffs' evaluation of the Illness Management and Recovery program: a randomized clinical trial. *J Ment Health* 2018; **27**: 30-37 [PMID: 27841057 DOI: 10.1080/09638237.2016.1244716]
- 26 **Depp CA**, Ceglowski J, Wang VC, Yaghouti F, Mausbach BT, Thompson WK, Granholm EL. Augmenting psychoeducation with a mobile intervention for bipolar disorder: a randomized controlled trial. *J Affect Disord* 2015; **174**: 23-30 [PMID: 25479050 DOI: 10.1016/j.jad.2014.10.053]
- 27 **Lauder S**, Chester A, Castle D, Dodd S, Gliddon E, Berk L, Chamberlain J, Klein B, Gilbert M, Austin DW, Berk M. A randomized head to head trial of MoodSwings.net.au: an Internet based self-help program for bipolar disorder. *J Affect Disord* 2015; **171**: 13-21 [PMID: 25282145 DOI: 10.1016/j.jad.2014.08.008]
- 28 **Torrent C**, Bonnin Cdel M, Martínez-Arán A, Valle J, Amann BL, González-Pinto A, Crespo JM, Ibáñez Á, García-Portilla MP, Tabarés-Seisdedos R, Arango C, Colom F, Solé B, Pacchiarotti I, Rosa AR, Ayuso-Mateos JL, Anaya C, Fernández P, Landín-Romero R, Alonso-Lana S, Ortiz-Gil J, Segura B, Barbeito S, Vega P, Fernández M, Ugarte A, Subirá M, Cerrillo E, Custal N, Menchón JM, Saiz-Ruiz J, Rodao JM, Isella S, Alegría A, Al-Halabi S, Bobes J, Galván G, Saiz PA, Balanzá-Martinez V, Selva G, Fuentes-Durá I, Correa P, Mayoral M, Chichlana G, Merchan-Naranjo J, Rapado-Castro M, Salamero M, Vieta E. Efficacy of functional remediation in bipolar disorder: a multicenter randomized controlled study. *Am J Psychiatry* 2013; **170**: 852-859 [PMID: 23511717 DOI: 10.1176/appi.ajp.2012.12070971]
- 29 **Smith DJ**, Griffiths E, Poole R, di Florio A, Barnes E, Kelly MJ, Craddock N, Hood K, Simpson S. Beating Bipolar: exploratory trial of a novel Internet-based psychoeducational treatment for bipolar disorder. *Bipolar Disord* 2011; **13**: 571-577 [PMID: 22017225 DOI: 10.1111/j.1399-5618.2011.00949.x]
- 30 **Sylvia LG**, Nierenberg AA, Stange JP, Peckham AD, Deckersbach T. Development of an integrated psychosocial treatment to address the medical burden associated with bipolar disorder. *J Psychiatr Pract* 2011; **17**: 224-232 [PMID: 21587004 DOI: 10.1097/01.pra.0000398419.82362.32]
- 31 **D'Souza R**, Piskulic D, Sundram S. A brief dyadic group based psychoeducation program improves relapse rates in recently remitted bipolar disorder: a pilot randomised controlled trial. *J Affect Disord* 2010; **120**: 272-276 [PMID: 19428117 DOI: 10.1016/j.jad.2009.03.018]
- 32 **Castle D**, White C, Chamberlain J, Berk M, Berk L, Lauder S, Murray G, Schweitzer I, Piterman L, Gilbert M. Group-based psychosocial intervention for bipolar disorder: randomised controlled trial. *Br J Psychiatry* 2010; **196**: 383-388 [PMID: 20435965 DOI: 10.1192/bjp.bp.108.058263]
- 33 **Sajatovic M**, Davies MA, Ganocy SJ, Bauer MS, Cassidy KA, Hays RW, Safavi R, Blow FC, Calabrese JR. A comparison of the life goals program and treatment as usual for individuals with bipolar disorder. *Psychiatr Serv* 2009; **60**: 1182-1189 [PMID: 19723732 DOI: 10.1176/ps.2009.60.9.1182]
- 34 **Miklowitz DJ**, Otto MW, Frank E, Reilly-Harrington NA, Kogan JN, Sachs GS, Thase ME, Calabrese JR, Marangell LB, Ostacher MJ, Patel J, Thomas MR, Araga M, Gonzalez JM, Wisniewski SR. Intensive psychosocial intervention enhances functioning in patients with bipolar depression: results from a 9-month randomized controlled trial. *Am J Psychiatry* 2007; **164**: 1340-1347 [PMID: 17728418 DOI: 10.1176/appi.ajp.2007.07020311]
- 35 **Miklowitz DJ**, Otto MW, Frank E, Reilly-Harrington NA, Wisniewski SR, Kogan JN, Nierenberg AA, Calabrese JR, Marangell LB, Gyulai L, Araga M, Gonzalez JM, Shirley ER, Thase ME, Sachs GS. Psychosocial treatments for bipolar depression: a 1-year randomized trial from the Systematic Treatment Enhancement Program. *Arch Gen Psychiatry* 2007; **64**: 419-426 [PMID: 17404119 DOI: 10.1001/archpsyc.64.4.419]
- 36 **González Isasi A**, Echeburúa E, Limiñana JM, González-Pinto A. Psychoeducation and cognitive-behavioral therapy for patients with refractory bipolar disorder: a 5-year controlled clinical trial. *Eur Psychiatry* 2014; **29**: 134-141 [PMID: 23276524 DOI: 10.1016/j.eurpsy.2012.11.002]
- 37 **Parikh SV**, Zaretsky A, Beaulieu S, Yatham LN, Young LT, Patelis-Siotis I, Macqueen GM, Levitt A, Arenovich T, Cervantes P, Velyvis V, Kennedy SH, Streiner DL. A randomized controlled trial of psychoeducation or cognitive-behavioral therapy in bipolar disorder: a Canadian Network for Mood and Anxiety treatments (CANMAT) study [CME]. *J Clin Psychiatry* 2012; **73**: 803-810 [PMID: 22795205 DOI: 10.4088/JCP.11m07343]

- 38 **Zaretsky A**, Lancee W, Miller C, Harris A, Parikh SV. Is cognitive-behavioural therapy more effective than psychoeducation in bipolar disorder? *Can J Psychiatry* 2008; **53**: 441-448 [PMID: 18674402 DOI: 10.1177/070674370805300709]
- 39 **Proudfoot J**, Parker G, Manicavasagar V, Hadzi-Pavlovic D, Whitton A, Nicholas J, Smith M, Burckhardt R. Effects of adjunctive peer support on perceptions of illness control and understanding in an online psychoeducation program for bipolar disorder: a randomised controlled trial. *J Affect Disord* 2012; **142**: 98-105 [PMID: 22858215 DOI: 10.1016/j.jad.2012.04.007]
- 40 **Aubry JM**, Charmillot A, Aillon N, Bourgeois P, Mertel S, Nerfin F, Romaillet G, Stauffer MJ, Gex-Fabry M, de Andrés RD. Long-term impact of the life goals group therapy program for bipolar patients. *J Affect Disord* 2012; **136**: 889-894 [PMID: 21975136 DOI: 10.1016/j.jad.2011.09.013]
- 41 **Gonzalez JM**, Prihoda TJ. A case study of psychodynamic group psychotherapy for bipolar disorder. *Am J Psychother* 2007; **61**: 405-422 [PMID: 18251385 DOI: 10.1176/appi.psychotherapy.2007.61.4.405]
- 42 **Miklowitz DJ**, George EL, Richards JA, Simoneau TL, Suddath RL. A randomized study of family-focused psychoeducation and pharmacotherapy in the outpatient management of bipolar disorder. *Arch Gen Psychiatry* 2003; **60**: 904-912 [PMID: 12963672 DOI: 10.1001/archpsyc.60.9.904]
- 43 **Pakpour AH**, Modabbernia A, Lin CY, Saffari M, Ahmadzad Asl M, Webb TL. Promoting medication adherence among patients with bipolar disorder: a multicenter randomized controlled trial of a multifaceted intervention. *Psychol Med* 2017; **47**: 2528-2539 [PMID: 28446253 DOI: 10.1017/S003329171700109X]
- 44 **Kessing LV**, Hansen HV, Christensen EM, Dam H, Gluud C, Wetterslev J; Early Intervention Affective Disorders (EIA) Trial Group. Do young adults with bipolar disorder benefit from early intervention? *J Affect Disord* 2014; **152-154**: 403-408 [PMID: 24268595 DOI: 10.1016/j.jad.2013.10.001]
- 45 **Petzold J**, Mayer-Pelinski R, Pilhatsch M, Luthe S, Barth T, Bauer M, Severus E. Short group psychoeducation followed by daily electronic self-monitoring in the long-term treatment of bipolar disorders: a multicenter, rater-blind, randomized controlled trial. *Int J Bipolar Disord* 2019; **7**: 23 [PMID: 31680193 DOI: 10.1186/s40345-019-0158-8]
- 46 **So SH**, Mak AD, Chan PS, Lo CC, Na S, Leung MH, Ng IH, Chau AKC, Lee S. Efficacy of Phase 1 of Life Goals Programme on symptom reduction and mood stability for bipolar disorder. *J Affect Disord* 2021; **281**: 949-957 [PMID: 33229019 DOI: 10.1016/j.jad.2020.11.019]
- 47 **Gumus F**, Buzlu S, Cakir S. Effectiveness of individual psychoeducation on recurrence in bipolar disorder: a controlled study. *Arch Psychiatr Nurs* 2015; **29**: 174-179 [PMID: 26001717 DOI: 10.1016/j.apnu.2015.01.005]
- 48 **Eker F**, Harkin S. Effectiveness of six-week psychoeducation program on adherence of patients with bipolar affective disorder. *J Affect Disord* 2012; **138**: 409-416 [PMID: 22316565 DOI: 10.1016/j.jad.2012.01.004]
- 49 **Perry A**, Tarrier N, Morriss R, McCarthy E, Limb K. Randomised controlled trial of efficacy of teaching patients with bipolar disorder to identify early symptoms of relapse and obtain treatment. *BMJ* 1999; **318**: 149-153 [PMID: 9888904 DOI: 10.1136/bmj.318.7177.149]
- 50 **Hubbard AA**, McEvoy PM, Smith L, Kane RT. Brief group psychoeducation for caregivers of individuals with bipolar disorder: A randomized controlled trial. *J Affect Disord* 2016; **200**: 31-36 [PMID: 27116364 DOI: 10.1016/j.jad.2016.04.013]
- 51 **Fiorillo A**, Del Vecchio V, Luciano M, Sampogna G, De Rosa C, Malangone C, Volpe U, Bardicchia F, Ciampini G, Crocamo C, Iapichino S, Lampis D, Moroni A, Orlandi E, Piselli M, Pompili E, Veltro F, Carrà G, Maj M. Efficacy of psychoeducational family intervention for bipolar I disorder: A controlled, multicentric, real-world study. *J Affect Disord* 2015; **172**: 291-299 [PMID: 25451428 DOI: 10.1016/j.jad.2014.10.021]
- 52 **Madigan K**, Egan P, Brennan D, Hill S, Maguire B, Horgan F, Flood C, Kinsella A, O'Callaghan E. A randomised controlled trial of carer-focussed multi-family group psychoeducation in bipolar disorder. *Eur Psychiatry* 2012; **27**: 281-284 [PMID: 21334858 DOI: 10.1016/j.eurpsy.2010.12.008]
- 53 **Reinares M**, Colom F, Sánchez-Moreno J, Torrent C, Martínez-Arán A, Comes M, Goikolea JM, Benabarre A, Salamero M, Vieta E. Impact of caregiver group psychoeducation on the course and outcome of bipolar patients in remission: a randomized controlled trial. *Bipolar Disord* 2008; **10**: 511-519 [PMID: 18452447 DOI: 10.1111/j.1399-5618.2008.00588.x]
- 54 **Solomon DA**, Keitner GI, Ryan CE, Kelley J, Miller IW. Preventing recurrence of bipolar I mood episodes and hospitalizations: family psychotherapy plus pharmacotherapy versus pharmacotherapy alone. *Bipolar Disord* 2008; **10**: 798-805 [PMID: 19032711 DOI: 10.1111/j.1399-5618.2008.00624.x]
- 55 **Reinares M**, Vieta E, Colom F, Martínez-Arán A, Torrent C, Comes M, Goikolea JM, Benabarre A, Sánchez-Moreno J. Impact of a psychoeducational family intervention on caregivers of stabilized bipolar patients. *Psychother Psychosom* 2004; **73**: 312-319 [PMID: 15292629 DOI: 10.1159/000078848]
- 56 **van Gent EM**, Zwart FM. Psychoeducation of partners of bipolar-manic patients. *J Affect Disord* 1991; **21**: 15-18 [PMID: 1827472 DOI: 10.1016/0165-0327(91)90013-i]
- 57 **Miklowitz DJ**, Simoneau TL, George EL, Richards JA, Kalbag A, Sachs-Ericsson N, Suddath R. Family-focused treatment of bipolar disorder: 1-year effects of a psychoeducational program in conjunction with pharmacotherapy. *Biol Psychiatry* 2000; **48**: 582-592 [PMID: 11018229 DOI: 10.1016/s0006-3223(00)00931-8]

- 58 **Simoneau TL**, Miklowitz DJ, Richards JA, Saleem R, George EL. Bipolar disorder and family communication: effects of a psychoeducational treatment program. *J Abnorm Psychol* 1999; **108**: 588-597 [PMID: [10609423](#) DOI: [10.1037//0021-843x.108.4.588](#)]
- 59 **Joas E**, Bäckman K, Karanti A, Sparding T, Colom F, Pålsson E, Landén M. Psychoeducation for bipolar disorder and risk of recurrence and hospitalization - a within-individual analysis using registry data. *Psychol Med* 2020; **50**: 1043-1049 [PMID: [31057138](#) DOI: [10.1017/S0033291719001053](#)]
- 60 **Simhandl C**, König B, Amann BL. A prospective 4-year naturalistic follow-up of treatment and outcome of 300 bipolar I and II patients. *J Clin Psychiatry* 2014; **75**: 254-62; quiz 263 [PMID: [24717379](#) DOI: [10.4088/JCP.13m08601](#)]
- 61 **Malhi GS**, Bell E, Bassett D, Boyce P, Bryant R, Hazell P, Hopwood M, Lyndon B, Mulder R, Porter R, Singh AB, Murray G. The 2020 Royal Australian and New Zealand College of Psychiatrists clinical practice guidelines for mood disorders. *Aust N Z J Psychiatry* 2021; **55**: 7-117 [PMID: [33353391](#) DOI: [10.1177/0004867420979353](#)]
- 62 **Velentza O**, Grampsa E, Basiliadi E. Psychoeducational Interventions in Bipolar Disorder. *Am J Nurs Sci* 2018; **7**: 51-56 [DOI: [10.1016/b978-0-12-812347-8.00012-9](#)]
- 63 **Vieta E**, Salagre E, Grande I, Carvalho AF, Fernandes BS, Berk M, Birmaher B, Tohen M, Suppes T. Early Intervention in Bipolar Disorder. *Am J Psychiatry* 2018; **175**: 411-426 [PMID: [29361850](#) DOI: [10.1176/appi.ajp.2017.17090972](#)]
- 64 **Forcada I**, Mur M, Mora E, Vieta E, Bartrés-Faz D, Portella MJ. The influence of cognitive reserve on psychosocial and neuropsychological functioning in bipolar disorder. *Eur Neuropsychopharmacol* 2015; **25**: 214-222 [PMID: [25172270](#) DOI: [10.1016/j.euroneuro.2014.07.018](#)]
- 65 **Anaya C**, Torrent C, Caballero FF, Vieta E, Bonnin Cdel M, Ayuso-Mateos JL; CIBERSAM Functional Remediation Group. Cognitive reserve in bipolar disorder: relation to cognition, psychosocial functioning and quality of life. *Acta Psychiatr Scand* 2016; **133**: 386-398 [PMID: [26719018](#) DOI: [10.1111/acps.12535](#)]
- 66 **Bonnin CDM**, Reinares M, Martínez-Arán A, Jiménez E, Sánchez-Moreno J, Solé B, Montejo L, Vieta E. Improving Functioning, Quality of Life, and Well-being in Patients With Bipolar Disorder. *Int J Neuropsychopharmacol* 2019; **22**: 467-477 [PMID: [31093646](#) DOI: [10.1093/ijnp/pyz018](#)]
- 67 **Etain B**, Godin O, Boudebessé C, Aubin V, Azorin JM, Bellivier F, Bougerol T, Courtet P, Gard S, Kahn JP, Passerieux C; FACE-BD collaborators, Leboyer M, Henry C. Sleep quality and emotional reactivity cluster in bipolar disorders and impact on functioning. *Eur Psychiatry* 2017; **45**: 190-197 [PMID: [28957786](#) DOI: [10.1016/j.eurpsy.2017.06.013](#)]
- 68 **Murru A**, Pacchiarotti I, Verdolini N, Reinares M, Torrent C, Geoffroy PA, Bellivier F, Llorca PM, Vieta E, Samalin L. Modifiable and non-modifiable factors associated with functional impairment during the inter-episodic periods of bipolar disorder. *Eur Arch Psychiatry Clin Neurosci* 2018; **268**: 749-755 [PMID: [28534186](#) DOI: [10.1007/s00406-017-0811-0](#)]
- 69 **Aref-Adib G**, McCloud T, Ross J, O'Hanlon P, Appleton V, Rowe S, Murray E, Johnson S, Lobban F. Factors affecting implementation of digital health interventions for people with psychosis or bipolar disorder, and their family and friends: a systematic review. *Lancet Psychiatry* 2019; **6**: 257-266 [PMID: [30522979](#) DOI: [10.1016/S2215-0366\(18\)30302-X](#)]
- 70 **Au CH**, Wong CS, Law CW, Wong MC, Chung KF. Self-stigma, stigma coping and functioning in remitted bipolar disorder. *Gen Hosp Psychiatry* 2019; **57**: 7-12 [PMID: [30654294](#) DOI: [10.1016/j.genhosppsy.2018.12.007](#)]
- 71 **Williams TF**, Simms LJ. Personality traits and maladaptivity: Unipolarity versus bipolarity. *J Pers* 2018; **86**: 888-901 [PMID: [29171877](#) DOI: [10.1111/jopy.12363](#)]
- 72 **Keshavarzpir Z**, Seyedfatemi N, Mardani-Hamooleh M, Esmaeeli N, Boyd JE. The Effect of Psychoeducation on Internalized Stigma of the Hospitalized Patients with Bipolar Disorder: A Quasi-Experimental Study. *Issues Ment Health Nurs* 2021; **42**: 79-86 [PMID: [32881602](#) DOI: [10.1080/01612840.2020.1779881](#)]
- 73 **Soni A**, Singh P, Shah R, Bagotia S. Impact of Cognition and Clinical Factors on Functional Outcome in Patients with Bipolar Disorder. *East Asian Arch Psychiatry* 2017; **27**: 26-34 [PMID: [28387210](#)]
- 74 **Comes M**, Rosa A, Reinares M, Torrent C, Vieta E. Functional Impairment in Older Adults With Bipolar Disorder. *J Nerv Ment Dis* 2017; **205**: 443-447 [PMID: [28459727](#) DOI: [10.1097/NMD.0000000000000683](#)]
- 75 **Fresan A**, Yoldi M, Morera D, Cruz L, Camarena B, Ortega H, Palars C, Martino D, Strejilevich S. Subsyndromal anxiety: Does it affect the quality of life? *European J Psy* 2019; **33**: 159-164 [DOI: [10.1016/j.ejpsy.2019.06.005](#)]
- 76 **Thomas SP**, Nisha A, Varghese PJ. Disability and Quality of Life of Subjects with Bipolar Affective Disorder in Remission. *Indian J Psychol Med* 2016; **38**: 336-340 [PMID: [27570346](#) DOI: [10.4103/0253-7176.185941](#)]
- 77 **Mazzaia MC**, Souza MA. Adherence to treatment in Bipolar Affective Disorder: perception of the user and the health professional. *Port J Nurs Ment Heal* 2017; 34-42 [DOI: [10.19131/rpsm.0181](#)]



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