Randomized Controlled Trials of Psychoeducation Modalities in the Management of Bipolar Disorder:
A Systematic Review

See Ann Soo, MSc, BASc[a]; Zhong Wei Zhang, BA[a]; Sarah Jia'En Khong, BA[a]; Josephine En Wen Low, BA[a]; Vamadevan S/O Thambyrajah, BHS(N), RN, Adv Dip Mental Health, Adv Dip Case Mgmt[a]; Syed Harun Bin Taha Alhabsyi, MBBS, MRCPsych[b]; Qian Hui Chew, BSocSci(Hons)[c]; Min Yi Sum, BA(Hons)[c]; Somnath Sengupta, MD[d]; Eduard Vieta, MD, PhD[e]; Roger S. McIntyre, MD[f]; and Kang Sim, MBBS, MMed, FAMS[c,d,*]

ABSTRACT

Objective: This review sought to summarize the extant literature on the efficacy of 4 modalities of psychoeducation (individual, group, family, internet- based) in the management of patients with bipolar disorder.

Data Sources: We searched the digital databases (Science Direct, Scopus, PubMed/MEDLINE) for relevant randomized controlled trials (RCTs) pertaining to psychoeducation in bipolar disorder from inception to February 2017. Keywords and combinations used included *psychoeducation, bipolar disorder, individual, family, group,* and *internet*. Reference lists of review articles were also used for retrieval of relevant articles.

Study Selection: We retrieved 48 studies and ultimately reviewed 40 RCTs meeting inclusion criteria. Studies were included if they were in English, were RCTs of different psychoeducation modalities managing patients with bipolar disorder, and used standardized assessment of outcomes of psychoeducation.

Data Extraction: We examined each of the selected publications for relevant data.

Results: The majority of psychoeducation RCTs (28 of 40 studies, 70.0%) focused on group and family psychoeducation, with positive benefits reported in clinical outcomes, treatment, and functioning measures. Group psychoeducation was associated with reduced illness recurrences, decreased number and duration of hospitalizations, increased time to illness relapse, better treatment adherence, higher therapeutic lithium levels, and reduced stigma. Family psychoeducation was associated with reductions in illness recurrence, hospitalization rates, and better illness trajectory as well as increased caregiver knowledge, skills, support, and sense of well-being and reduced caregiver burden. There are fewer RCTs on individual and internet-based psychoeducation, with findings being inconsistent or negative.

Conclusions: Future studies may include direct comparisons of different psychoeducation modalities to elucidate specific benefits of unique psychoeducation interventions at different phases of bipolar disorder.

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[a]Case Management Unit, Institute of Mental Health, Singapore

[b]Department of General and Forensic Psychiatry, Institute of Mental Health, Singapore

[c]Research Division, Institute of Mental Health, Singapore

[d]Department of General Psychiatry, Institute of Mental Health, Singapore

[e]Department of Psychiatry and Psychology, Institute of Neuroscience, University of Barcelona, IDIBAPS0-CIBERSAM, Barcelona, Spain

[f]Departments of Psychiatry and Pharmacology and Institute of Medical Science, University of Toronto, Toronto, Ontario, Canada

**Corresponding author:* Kang Sim, MBBS, MMed, FAMS, Department of General Psychiatry, Institute of Mental Health/Woodbridge Hospital 10, Buangkok View, Singapore 539747 (kang_sim@imh.com.sg).

Bipolar disorder is a chronic psychiatric disorder characterized by multifaceted symptoms, structural brain changes, and neuropsychological deficits,[1] with a diverse assortment of effective pharmacologic agents being available across the different phases of bipolar disorder.[2] Notwithstanding the availability of disparate pharmacologic agents for bipolar disorder, more than 50% of patients with bipolar disorder are nonadherent to treatment, which contributes to unfavorable clinical outcomes.[3] Bipolar disorder incurs a significant burden on the sufferer and family as well as the wider society due to the recurrent mood episodes, hospitalizations, and lost productivity from frequent or prolonged absences from work.[3] Of note, the quality of life of patients with bipolar disorder often remains decreased even when they are asymptomatic, and a persistent suicide risk exists that is up to 20 times higher compared with the general population.[4] The complexities of managing bipolar disorder as well as the limitations of existing pharmacologic interventions have provided the impetus to develop and empirically study psychosocial approaches such as psychoeducation as an adjunctive treatment modality to pharmacologic therapies.[2]

Psychoeducation is not limited to the provision of clinical information but refers to behavioral training that is informed by personalized data targeting a variety of clinical aspects of bipolar disorder with the aim of improving the clinical outcome.[5] The sessions are implemented by a therapist and usually involve the patient and the family members in the same or different sessions or within groups, which are termed *individual, family,* or *group psychoeducation*, respectively. Recently, psychoeducation has also been made available via computer/web-based interactive sessions, which is termed *internet psychoeducation*. Psychoeducation is thought to empower the patient to take an active role in the therapeutic process, thus potentially reducing stigma, guilt, and helplessness, as well as engage the caregivers in their caregiving role.[6] In view of the widening modalities of psychoeducation

Clinical Points

- In view of the widening psychoeducation modalities available for treating bipolar disorder, we sought to review the extant data from randomized controlled trials regarding the specific clinical effectiveness of individual, group, family, and internet psychoeducation in bipolar disorder across clinical, treatment, and functioning domains.
- The majority of studies involving group and family psychoeducation reported positive benefits such as reduced illness recurrence and hospitalization, increased time to illness relapse, better treatment adherence, reduced stigma, reduced caregiver burden, and improved caregiver sense of well-being.

available, this review seeks to examine the extant data from randomized controlled trials (RCTs) regarding the specific clinical effectiveness of individual, group, family, and internet psychoeducation in bipolar disorder. The various outcome measures adopted across the different studies relate to the clinical (such as illness duration, severity of symptoms, recurrence, hospitalization rates, time to illness relapse, stigma, caregiver burden), treatment (adherence, therapeutic serum drug levels), and functioning (quality of life, level of psychosocial functioning) aspects of the illness.

METHODS

We searched the digital databases (including ScienceDirect, Scopus, PubMed/MEDLINE) for relevant RCTs pertaining to psychoeducation in the management of bipolar disorder from inception to February 2017. Identified reports were screened from abstracts as to whether they met the inclusion criteria for this review (Figure 1). Bibliographies for additional references were also reviewed. Keywords and combinations included *psychoeducation, bipolar disorder, individual, family, group,* and *internet*. The reference list of review articles was also used to retrieve relevant articles. Reports were selected for inclusion if (*a*) they were RCTs of the different psychoeducation modalities in the management of patients diagnosed with bipolar disorder as defined by criteria codified in the *Diagnostic and Statistical Manual of Mental Disorders* or *International Classification of Diseases*; (*b*) standardized assessment of outcomes of psychoeducation was performed; and (*c*) the study was reported in English.

RESULTS

Individual Psychoeducation

There were 8 RCT studies of individual psychoeducation involving 615 subjects (70.0% females) with a mean age of 37.5 years; the mean study duration was 10.9 months (Table 1).[7–14] Therapeutic foci included (1) illness, causes, and symptoms; (2) treatment, medications, and side effects; (3) resources, management plans; (4) detection of early relapse symptoms; and (5) lifestyle regulation, stress management, and problem solving. Taken together, while 1 study reported positive findings in terms of reduction of duration of depressive symptoms,[14] other observations of improvements

Figure 1. PRISMA Flowchart of Studies Included

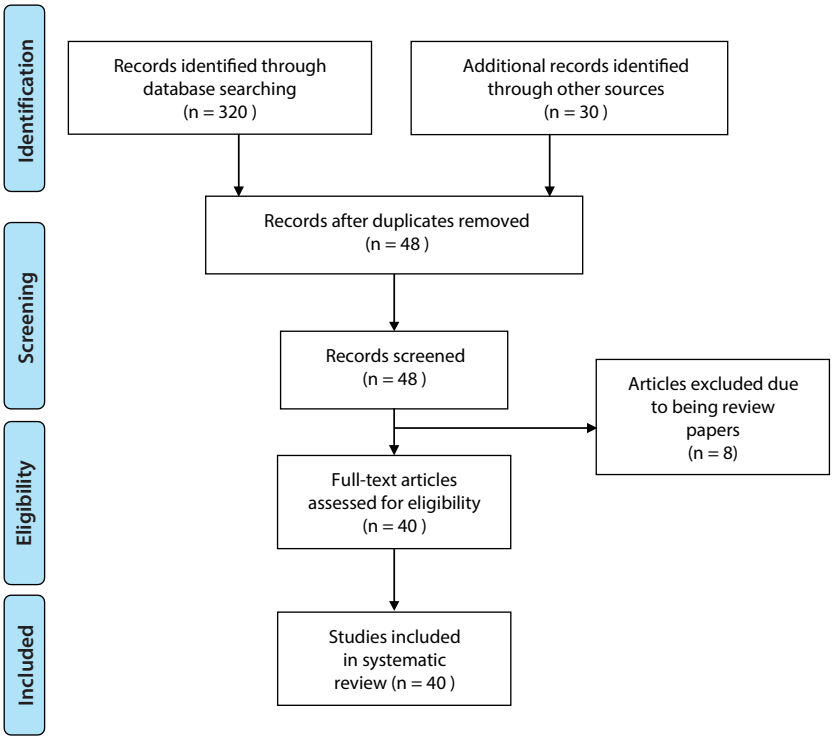

Table 1. Characteristics of Studies of Individual Psychoeducation (IP) in Bipolar Disorder

Study/Country	No. of Subjects (Intervention + Control)	Age[a] and Sex	Design	Treatment	Main Outcome Measures	Duration of Study	Main Findings[b]
Cardoso et al,[7] Brazil	61 (32 + 29)	29.09 ± 3.91 (intervention) 21 F, 11 M 24.03 ± 3.57 (control) 21 F, 9 M	RCT	Individual psychoeducation (combined intervention with pharmacologic services) vs TAU	QOL	7.5 mo comprising (6 sessions of 1 h treatment over 6 wk) + 6 mo (follow-up)	IP = TAU
Doğan and Sabancioğullari,[8] Turkey	26 (14 + 12)	33.64 ± 1.68 (intervention) 4 F, 10 M 41.91 ± 3.45 (control) 5 F, 7 M	RCT	Individual psychoeducation (with pharmacotherapy) vs TAU	Medication adherence, symptom level, QOL	3 mo comprising 2 sessions over 2 wk + 1 review session + 2 mo (follow-up)	IP > TAU IP group had improvement in medication knowledge, treatment adherence, symptom level, and QOL
Faria et al,[9] Brazil	61 (32 + 29)	24.09 ± 3.9 (intervention) 21 F, 11 M 24.03 ± 3.57 (control) 21 F, 8 M	RCT	Individual psychoeducation (with pharmacotherapy) vs TAU	Severity of depressive symptoms, biological rhythm (sleep, activity, social rhythm, and eating pattern)	6 wk comprising 6 sessions × 1 h	IP = TAU
Gumus et al,[10] Turkey	78 (37 + 41)	38.70 ± 11.68 (intervention) 15 F, 22 M 40.05 ± 12.17 (control) 23 F, 18 M	RCT	Individual psychoeducation (with pharmacologic services) vs TAU	Hospitalization, recurrence rates	13 mo comprising 4 sessions × 1 h over 4 wk + 12 mo (follow-up)	IP = TAU
Javadpour et al,[11] Iran	86 (45 + 41)	Range, 18–60 23 F, 22 M (intervention) 21 F, 20 M (control)	RCT	Individual psychoeducation (with pharmacotherapy) vs TAU	Relapse, hospitalization rates, medication compliance, QOL	20 mo comprising 8 sessions × 50 min weekly + 18 mo (follow-up)	IP > TAU IP arm had fewer relapses, better medication compliance
Lobban et al,[12] England	96 (56 + 40)	45 ± 10 (intervention) 39 F, 17 M 45 ± 10 (control) 26 F, 14 M	RCT	Individual psychoeducation vs TAU	Time to relapse	12 mo comprising 6 sessions × 1 h + follow-up	IP = TAU
Perry et al,[13] United Kingdom	69 (34 + 35)	44 ± 14 (intervention) 23 F, 11M 45 ± 11 (control) 24 F, 11 M	RCT	Individual psychoeducation (with pharmacotherapy) vs TAU	Time to relapse, relapse rate, social functioning	18 mo comprising 7–12 sessions × 1 h + follow-up	IP > TAU IP was effective in reducing manic but not depressive relapses
van der Voort et al,[14] the Netherlands	138 (56 + 82)	46.8 ± 9.8 (intervention) 39 F, 17 M 44.7 ± 11.3 (control) 49 F, 33 M	RCT	Individual psychoeducation (collaborative care, problem solving treatment) vs TAU	Duration and severity of symptoms, treatment adherence	12 mo comprising 6 sessions × 2 h + follow-up	IP > TAU IP had significant and clinically relevant effects on duration of depressive symptoms and severity of depressive symptoms at 12 months No difference for manic symptoms or treatment adherence

[a]Expressed in years as mean ± SD unless otherwise noted.
[b]Greater-than symbol (>) indicates greater effectiveness; equals sign (=) indicates no difference.
Abbreviations: F = female, M = male, QOL = quality of life, RCT = randomized controlled trial, TAU = treatment as usual.

in terms of reductions of symptom severity,[9,14] illness relapse,[10,11] and quality of life[7,8,11] were less consistent. There was no difference between the treatment arms (individual psychoeducation and treatment as usual) in terms of time to relapse.[12,13]

Group Psychoeducation

Overall, there were 18 RCT studies of group psychoeducation involving 2,364 subjects (61.4% females) with a mean age of 36.6 years; the mean study duration was 18.7 months (Table 2).[15–32] The majority of the studies reported positive findings on a number of clinical outcomes such as reduction in recurrences of affective episodes,[16–18,,21,24] symptoms over time,[32] and number and duration of hospitalizations[15,17–19,21,27] and increased time to affective relapse,[18,19,23,26] especially early in the course of illness.[29] Group psychoeducation was found to positively impact treatment adherence.[25] The latter observation may explain the higher therapeutic serum lithium levels over time found in 2 studies.[17,20] Other findings included reduced stigma pertaining to bipolar disorder,[22] as well as increased functioning over time based on ratings using the Bipolar Disorder Functioning Scale.[28]

Family Psychoeducation

A total of 10 RCTs examining family psychoeducation were reviewed, which involved 756 families; the mean study duration was 21.7 months. Several positive findings were reported (Table 3).[33–42] First, there was an increase in caregiver knowledge, skills, support, sense of well-being, and positive attitude after family psychoeducation was provided for bipolar patients and their families.[35,36,42] Second, there was a statistically significant improvement in patient disability scores and level of objective burden of illness compared to the control group.[34] In terms of patient clinical status, a significant improvement in depressive/anxiety symptoms was found in the active arm, and significant reductions in the objective and subjective levels of burden within the family were found in treated relatives compared to the control arm.[34] Third, relapse and rehospitalization rates were significantly reduced.[39] Patients receiving family psychoeducation remained remitted or partially remitted (without relapsing) for longer intervals than cases undergoing crisis management (73.5 vs 53.2 weeks)[37]; experienced increased time to relapse, especially for patients earlier in their course of illness[40,41]; and had more favorable illness trajectory.[38]

Internet Psychoeducation

Four RCTs on internet psychoeducation included 772 subjects (56.7% female) with a mean age of 44.3 years, and the mean study duration was 8.5 months (Table 4).[43–46] Overall, more data are needed for sustainability of symptomatic improvements over time,[44] and there was no difference between patients receiving internet psychoeducation and controls on recurrences of illness,[43] illness perception,[45] or quality of life scores.[46]

DISCUSSION

Several findings arose from this review of 40 RCTs involving 4,507 subjects and families with a mean follow-up of 15.0 months. The majority of psychoeducation RCTs (28 out of 40 studies, 70.0%) focused on group and family psychoeducation with positive benefits related to improved clinical outcomes, treatment, and functioning measures. Group psychoeducation was associated with reduced illness recurrences, decreased number and duration of hospitalizations, increased time to relapse, better treatment adherence, higher therapeutic lithium levels, and reduced stigma. Family psychoeducation was associated not only with reductions in illness recurrences and hospitalizations and better illness trajectory but also increased caregiver knowledge, skills, support, and sense of well-being and reduced caregiver burden. There were comparatively fewer RCTs on individual and internet psychoeducation overall, with findings being inconsistent or indicating a lack of demonstrable efficacy.

Group psychoeducation was associated with clinical improvements such as reduced relapses of illness, decreased number and duration of hospitalizations, and increased time to relapse, which can be related directly to an increase in treatment adherence.[25] Better treatment adherence can also result in optimal therapeutic medication levels such as with lithium.[17,20] It is unclear why the therapeutic levels of other mood stabilizers such as sodium valproate and carbamazepine were not different between the active and control arms, but it may be related to prescriber practice and frequency of initiation of specific psychopharmacologic agents in the management of bipolar disorder. There is also evidence that decreased stigma through group psychoeducation may contribute to the better clinical outcomes.[22] In addition, discussion about illness factors, holistic care, and relapse prevention during group psychoeducation can foster greater self-acceptance of the condition and enhance self-efficacy and hope within the patients.[47] This is consistent with a retrospective study by Michalak et al,[48] who found better quality of life and patient satisfaction as measured by the Quality of Life Enjoyment and Satisfaction Questionnaire following group psychoeducation. Separate qualitative studies of group psychoeducation in bipolar disorder have observed that patients not only gained knowledge about their illness and perceived a better level of social support but also considered helping others with similar illness in return.[49,50]

Patients (and their caregivers) who underwent family psychoeducation had longer intervals between relapses.[39] Similar results were reported in another study by Reinares et al,[40] in which the time to a hypomanic/manic episode was significantly longer in patients whose relatives attended the family psychoeducation sessions. One explanation is that the caregivers had greater knowledge of the condition and were better equipped with skills to deal with the relapses.[35] The knowledge and skills can empower the family members, who subsequently feel less burdened by the illness and also experience less psychological distress in the process of

Table 2. Characteristics of Studies of Group Psychoeducation (GP) in Bipolar Disorder

Study/Country	No. of Subjects (Intervention + Control)	Age[a] and Sex	Design	Treatment	Main Outcome Measures	Duration of Study	Main Findings[b]
Candini et al,[15] Italy	102 (57 + 45)	41.5 ± 9.1 (intervention) 30 F, 27 M 44.8 ± 8.8 (control) 22 F, 23 M	Controlled trial	Group psychoeducation vs TAU	Hospitalization rate	17.25 mo comprising 5.25 mo (21 sessions of 1.5 h treatment) + 12 mo (follow-up)	GP > TAU Fewer mean number and duration of hospitalizations in GP arm
Castle et al,[16] England	84 (42 + 42)	41.6 ± 11 (intervention) 33 F, 9 M 42.6 ± 11.3 (control) 31 F, 11 M	RCT	Group psychoeducation vs TAU	Relapse rate, symptom level	12 mo comprising 12 sessions × 1.5 h over 12 wk + 3 booster sessions over 3 mo + 9 mo (follow-up)	GP > TAU Reduced relapse rate in the GP arm
Colom et al,[17] Spain	120 (60 + 60)	34.03 ± 9.32 (intervention) 38 F, 22 M 34.26 ± 7.80 (control) 38 F, 22 M	RCT	Group psychoeducation vs TAU	Recurrence, hospitalization rates, therapeutic serum drug levels	29 mo comprising 5 mo (21 sessions of treatment) + 24 mo (follow-up)	GP > TAU Fewer recurrences and readmissions across 12, 18, and 24 months in GP group Fewer days of hospitalization (4.75 days GP vs 14.83 days TAU) Higher therapeutic lithium levels at 2-year follow-up in intervention group No plasma, valproate, or carbamazepine level differences between groups
Colom et al,[18] Spain	50 (25 + 25)	35.36 ± 10.87 (intervention) 15 F, 10 M 34.48 ± 7.80 (control) 16 F, 9 M	RCT	Group psychoeducation vs TAU	Recurrence rate	29 mo comprising 5 mo (21 sessions of treatment) + 24 mo (follow-up)	GP > TAU Significantly fewer recurrences and depressive episodes in GP group (60% in GP vs 92% in TAU)
Colom et al,[19] Spain	37 (15 + 22)	36 ± 7.32 (intervention) 11 F, 4 M 35.04 ± 7.06 (control) 17 F, 5 M	RCT	Group psychoeducation vs TAU	Hospitalization rate, time to relapse	29 mo comprising 5 mo (21 sessions of treatment) + 24 mo (follow-up)	GP > TAU Shorter mean duration of hospitalization; longer time to relapse for GP arm
Colom et al,[20] Spain	93 (49 + 44)	21.95 ± 6.33 (intervention) 33 F, 16 M 23.56 ± 7.63 (control) 28 F, 16 M	RCT	Group psychoeducation vs TAU	Therapeutic serum drug level	29 mo comprising 5 mo (21 sessions of treatment) + 24 mo (follow-up)	GP > TAU Higher mean therapeutic lithium levels in GP group at 6, 18, and 24 months
Colom et al,[21] Spain	120 (60 + 60)	23.25 ± 7.55 (intervention) 38 F, 22 M 22.26 ± 6.69 (control) 38 F, 22 M	RCT	Group psychoeducation vs TAU	Recurrence, hospitalization rates	29 mo comprising 5 mo (21 sessions of treatment) + 24 mo (follow-up)	GP > TAU Fewer recurrences, less days of hospitalization in GP group, type of episode did not matter
Çuhadar and Çam,[22] Turkey	63 (32 + 31)	83% F	RCT	Group psychoeducation vs TAU	Self-stigmatization (Internalized Stigmatization Scale of Mental Illnesses)	1.75 mo comprising 7 sessions × 1.5 h, no follow-up	GP > TAU Psychoeducation program had positive effects on internalized stigmatization levels within patients
D'Souza et al,[23] Australia	58 (27 + 31)	40.7 ± 8.4 (intervention) 14 F, 13 M 39.5 ± 10.7 (control) 16 F, 15 M	RCT	Group psychoeducation vs TAU	Relapse rates, time to relapse, severity of symptoms	18 mo comprising 3 mo (12 sessions of 1.5 h treatment) + 15 mo (follow-up)	GP > TAU GP group less likely to relapse, had 11 weeks longer time to relapse, and had less severe symptoms
de Barros Pellegrinelli et al,[24] Barcelona, Spain	55 (32 + 23)	43.43 ± 11.14 (intervention) 23 F, 9 M 43.74 ± 11.55 (control) 15 F, 8 M	RCT	Group psychoeducation vs TAU (placebo)	Symptom, QOL, psychosocial functioning (Social Adjustment Scale, Global Assessment of Functioning, Clinical Global Impressions scale)	14 mo comprising 2 mo (16 sessions of 1.5 h treatment) + 12 mo (follow-up)	GP = TAU

(continued)

Table 2 (continued).

Study/Country	No. of Subjects (Intervention + Control)	Age[a] and Sex	Design	Treatment	Main Outcome Measures	Duration of Study	Main Findings[b]
Eker and Harkin,[25] Turkey	71 (35 + 36)	34.57 ± 11.03 (intervention) 19 F, 16 M 36.64 ± 10.63 (control) 19 F, 17 F	RCT	Group psychoeducation vs TAU	Treatment adherence	1.5 mo (2 h per week), no follow-up	GP > TAU
Kallestad et al,[26] Norway	85 (42 + 43)	38.1 ± 13 25 F, 17 M (intervention) 21 F, 22 M (control)	RCT	Group psychoeducation vs TAU	Time to hospitalization	26.5 mo comprising 2.5 mo (10 weekly sessions) + 24 mo	GP > TAU GP group had longer time to hospitalization
Kessing et al,[27] Denmark	158 (72 + 86)	22.6 ± 2.0 (aged 18–25 intervention) 9 F, 5 M 41.5 ± 10.7 (aged 26 and above intervention) 35 F, 23 M 22.5 ± 1.8 (aged 18–25 control) 11 F, 4 M 40.5 ± 10.8 (aged 26 and above control) 31 F, 40 M	RCT	Group psychoeducation vs TAU	Rehospitalization rate	24 mo comprising 12 sessions × 1.5 h weekly + 3 booster sessions + 12 mo follow-up	GP > TAU GP had reduced rehospitalization rate especially for younger patients aged 18–25 y
Kurdal et al,[28] Turkey	80 (40 + 40)	18–60 14 F, 26 M (intervention) 16 F, 24 M (control)	RCT	Group psychoeducation vs TAU	Emotional, social, occupational, intellectual, sexual functioning, feelings of stigmatization (Bipolar Disorder Functioning Scale [BDFS])	5.5 mo comprising 2.5 mo (21 sessions, twice a week, 0.75 h per session) + 3 mo (follow-up)	GP > TAU Increase in BDFS scores over time for GP group versus no difference over time in TAU group
Morriss et al,[29] United Kingdom	304 (153 + 151)	44.2 ± 11.1 (intervention) 92 F, 61 M 46.5 ± 11.4 85 F, 66 M	RCT	Group psychoeducation vs TAU (peer support)	Time to relapse	24 mo comprising 21 sessions, once a week + 19 mo (follow-up)	GP = TAU Moderator analysis found that psychoeducation was most beneficial in participants with < 7 previous illness episodes
Parikh et al,[30] Canada	204 (109 + 95)	40.9 ± 10.8 (intervention) 58 F, 51 M 40.9 ± 10.7 (control) 60 F, 35 M	RCT	Group psychoeducation vs CBT	Symptom burden	18 mo comprising 6 sessions × 90 min	GP = CBT
Simon et al,[31] United States	441 (212 + 229)	44.1 ± 13.4 (intervention) 144 F, 68 M 44.3 ± 12.9 (control) 157 F, 72 M	RCT	Group psychoeducation vs TAU	Severity of symptoms	24 mo comprising 5 sessions weekly + twice monthly sessions + 12 mo follow-up	GP > TAU Mean depression ratings across the entire follow-up period did not differ significantly between the 2 groups, but the GP arm had greater improvement in depression ratings over time
Torrent et al,[32] Spain	239 (82 + 77 + 80)	39.25 ± 8.85 (GP) 40.59 ± 9.10 (FR) 40.47 ± 8.69 (TAU)	RCT	Group psychotherapy vs functional remediation (FR) vs TAU	Psychosocial functioning (Functioning Assessment Short Test)	5.25 mo, comprising 21 sessions × 90 min weekly	GP = TAU FR > TAU FR showed superiority to TAU in improving psychosocial functioning

[a]Expressed in years as mean ± SD unless otherwise noted.
[b]Greater-than symbol (>) indicates greater effectiveness; equals sign (=) indicates no difference.
Abbreviations: F = female, M = male, QOL = quality of life, RCT = randomized controlled trial, TAU = treatment as usual.

Table 3. Characteristics of Studies of Family Psychoeducation (FP) in Bipolar Disorder

Study/Country	No. of Subjects (Intervention + Control)	Age[a] and Sex	Design	Treatment	Main Outcome Measures	Duration of Study	Main Findings[b]
de Souza et al,[33] Brazil	73 patients + 53 caregivers (25 + 28)	44.1 ± 2.1 21 F, 4 M (intervention) 21 F, 7 M (control)	RCT	Family psychoeducation vs TAU	Caregiver well-being	7.5 mo comprising 1.5 mo (6 sessions of 1.5 h) + 6 mo (follow-up)	FP = TAU
Fiorillo et al,[34] Italy	137 families (70 + 67)	46.3 ± 10.0 (intervention) 42 F, 28 M 48.0 ± 12.2 (control) 44 F, 23 M	Controlled trial	Family psychoeducation vs TAU	Functioning as measured by Disability Assessment Schedule, symptoms, patient burden of illness, family burden of care	42 mo comprising 6 mo (3 sessions per month treatment) + 36 mo (follow-up)	FP > TAU Intervention group (FP) had significant improvements in Disability Assessment Schedule global scores, psychotic/depressive/anxiety symptoms, patient burden of illness and family burden of care scores
Fristad et al,[35] United States	Families of 35 children (16 bipolar disorder + 19 depressive spectrum disorders) 34 mothers + 15 fathers	10.1 ± 1.2 22% F, 78% M	RCT	Immediate treatment (multifamily psychoeducation) + TAU vs waitlist control (6 month) + TAU	Caregiver knowledge, attitudes, skills, support	6 mo comprising 2 mo (6 sessions) + 4 mo (follow-up)	FP > waitlist Families described having gained better knowledge, attitudes, skills, and support
Madigan et al,[36] Ireland	47	42 65% F, 35% M	RCT	Family psychoeducation vs TAU (pharmacologic treatment for patients) and no intervention (for caregivers)	Knowledge, burden of care	25.25 mo comprising 1.25 mo (5 sessions) + 24 mo (follow-up)	FP > TAU Caregivers in FP arm demonstrated greater knowledge and reduction in caregiver burden than those in TAU arm
Miklowitz et al,[37] United States	101 (31 + 70)	35.7 ± 9.2 (intervention) 18 F, 13 M 35.6 ± 10.6 (control) 46 F, 24 M	RCT	Family-focused therapy (FFT) + pharmacotherapy vs TAU (less intensive crisis management intervention + pharmacotherapy)	Remission period	33 mo comprising 9 mo (21 sessions) + 24 mo (follow-up)	FP > TAU Patients in FP arm remained remitted for longer intervals compared with crisis management arm (73.5 ± 28.8 vs 53.2 ± 39.6 weeks)
Miklowitz et al,[38] United States	58	14.5 ± 1.6 33 F, 25 M	RCT	Family-focused therapy (FFT) + pharmacotherapy vs TAU (enhanced care + pharmacotherapy)	Symptomatic period and illness trajectory	33 mo comprising 9 mo (21 sessions) + 24 mo (follow-up)	FP > TAU Patients in FP arm had shorter duration of depressive episodes and a more favorable trajectory of depression symptoms for 2 years
Rea et al,[39] United States	53 (28 + 25)	26.5 ± 6.86 (intervention) 15 F, 13 M 24.6 ± 4.8 (control) 15 F, 10 M	RCT	Family-focused psychoeducational therapy vs TAU (individually focused patient treatment)	Relapse rate, treatment adherence	33 mo comprising 9 mo (21 sessions) + 24 mo (follow-up)	FP > TAU At 2 years, patients in FP arm had reduced relapse rates compared with individual therapy (28% vs 60%) No difference in treatment adherence between the groups
Reinares et al,[40] Spain	113 (57 + 56)	33 ± 10.87 (intervention) 28 F, 29 M 35 ± 9.09 (control) 33 F, 23 M	RCT	Family psychoeducation (for caregivers) vs TAU	Time to recurrence	15 mo comprising 12 sessions of interventions over 3 mo + 12 mo (follow-up)	FP > TAU Time to a hypomanic/manic episode was significantly longer in patients in FP arm

(continued)

Table 3 (continued).

Study/Country	No. of Subjects (Intervention + Control)	Age[a] and Sex	Design	Treatment	Main Outcome Measures	Duration of Study	Main Findings[b]
Reinares et al,[41] Spain	113 (72 + 41)	32.67 ± 10.40 (Stage 1) 36 F, 36 M 37.56 ± 8.80 (Advanced stage) 25 F, 16 M	RCT	Family psychoeducation (for caregivers) vs TAU	Time to recurrence	15 mo comprising 12 sessions of interventions over 3 mo + 12 mo (follow-up)	FP > TAU Longer time to recurrence in subgroup of early stage illness in FP arm No differences between the FP and TAU for patients with advanced stages
van Gent and Zwart,[42] the Netherlands	26 (14 + 12)	42 ± 12 (intervention) 56 ± 8 (control)	RCT	Family therapy (theme-oriented group education) + fill in questionnaires for partners of bipolar-manic patients vs TAU (fill in questionnaires only for partners of bipolar-manic patients)	Knowledge, patient and caregiver sense of well-being	5 structured group sessions + 6 mo (follow-up)	FP > TAU Caregivers acquired more knowledge of illness, lithium, and social strategies, both caregivers and patients reported an increased feeling of well-being and mutual understanding

[a]Expressed in years as mean ± SD unless otherwise noted.
[b]Greater-than symbol (>) indicates greater effectiveness; equals sign (=) indicates no difference.
Abbreviations: F = female, M = male, RCT = randomized controlled trial, TAU = treatment as usual.

Table 4. Characteristics of Studies of Internet Psychoeducation (INP) in Bipolar Disorder

Study/Year	No. of Subjects (Intervention + Control)	Age[a] and Sex	Design	Treatment	Main Outcome Measures	Duration of Study	Main Findings[b]
Barnes et al,[43] Australia	233 (113 + 120)	39.0 ± 10.8 168 F, 65 M	RCT	Internet-based psychoeducational program—active program vs TAU	Recurrence rate	12 mo, comprising 20 sessions × 30–45 min	INP = TAU
Depp et al,[44] United States	82 (41 + 41)	46.9 ± 11.8 (intervention) 53.7% F 48.1 ± 12.9 (control) 63.4% F	RCT	Mobile device delivered interactive intervention vs TAU (paper-and-pencil mood reporting)	Severity of depressive symptoms	6 mo comprising 4 sessions × 1 hour (in-person intervention) + 2 surveys daily over 10 wk + 3.5 mo (follow-up)	INP = TAU Mobile intervention showed significantly greater reduction of depressive symptoms at 6 and 12 weeks, but these effects were not maintained at 24 weeks
Proudfoot et al,[45] Australia	407 (139 + 134 + 134)	28.7% (< 30 y) 93 F, 46 M (INP) 98 F, 36 M (INP + peer support) 93 F, 41 M (control)	RCT	Internet psychoeducation vs internet psychoeducation + online peer support vs attentional control	Perceptions of control and understanding (Brief Illness Perception Questionnaire)	6 mo comprising 8 sessions × 30–40 min weekly + 4 mo (follow-up)	INP = controls
Smith et al,[46] United Kingdom	50 (24 + 26)	42.7 ± 11.4 (intervention) 13 F, 11 M 44.7 ± 9.9 (control) 18 F, 8 M	RCT	Internet psychoeducation (Beating Bipolar psychoeducation tool) vs TAU	QOL	10 mo, comprising 8 sessions every 2 wk over 4 mo + 6 mo (follow-up)	INP = TAU

[a]Expressed in years as mean ± SD unless otherwise noted.
[b]Equals sign (=) indicates no difference.
Abbreviations: F = female, M = male, QOL = quality of life, RCT = randomized controlled trial, TAU = treatment as usual.

caring for such patients.[34,36] This is in agreement with the study by van Gent and Zwart,[42] who found that caregivers and patients experienced a greater sense of well-being and mutual understanding following family psychoeducation. In addition, there is evidence to suggest that the benefits of family psychoeducation also extended to a more favorable illness trajectory[38] and earlier detection of signs of relapse by caregivers, with patients feeling better understood by their relatives, which, in turn, led to improved family relationships.[51]

In contrast, RCTs in individual and internet psychoeducation are still sparse. Individual psychoeducation seemed to improve severity of depressive symptoms over time at 12 months[9] but did not prevent recurrences of affective episodes[10] or improve quality of life.[7] Internet psychoeducation has the benefits of convenience, reduced need for transportation to visit the therapist, and anonymity but requires access to internet and openness to somewhat less personal contact compared with the other psychoeducation modalities. In view of the benefits and limitations of internet psychoeducation, there is a dire need for further studies to examine the efficacy of combination modalities such as individual, group, and family psychoeducation conducted using social media or over the internet. Of note, several factors may mediate the response to a specific modality of psychoeducation in bipolar disorder. There is suggestion from relatively large studies of group psychoeducation that fewer illness episodes predict better response[29] but not the nature of the affective episode in bipolar disorder.[21] This seems consistent with the observations by Kessing et al[27] that a reduced risk of rehospitalization benefits younger patients and by Reinares et al,[41] albeit in a study of family psychoeducation, that early stage of illness was associated with better outcome in terms of a longer time to illness recurrence. In addition, when all studies are viewed together, a greater number of sessions is the norm in studies of group and family psychoeducation (compared with fewer sessions within fewer studies of individual psychoeducation), and both psychoeducation modalities are also associated with better overall clinical effectiveness.

The limitations of the review pertained to the relative paucity of RCTs on individual and internet psychoeducation, which constrains more extensive comparisons across the different modalities. There is also a lack of head-to-head studies directly examining the different types of psychoeducation in bipolar disorder. Future studies may consider combining psychoeducation modalities within the context of holistic care; investigating efficacy at specific phases of the illness, access, affordability; and including objective and subjective measures of functioning related to occupational, social domains, quality of life, and caregiver burden.

In conclusion, our review revealed that the majority of RCTs on psychoeducation in bipolar disorder encompassed group and family psychoeducation and indicated positive impact on clinical features, treatment adherence, and lessened caregiver burden. There is a need to address other psychoeducation modalities and integration with holistic care over time and relate the efficacy of the specific psychoeducation modality, or lack thereof, to practical measures of daily functioning, quality of life, and social relationships.

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