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Review Article

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Psychoeducational CBT in 473 People with Bipolar Disorder, Schizophrenia or Major Depression in Trials with 1–2 Years of Follow-Up

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Abstract

Background: 30 years ago. we did set up a program based on treatment pathways combining pharmacological and psychological interventions. This article summarizes the effectiveness and efficacy of a psychological treatment program applying elements of psychoeducation, cognitive behavioral therapy, interpersonal social rhythm therapy and psychoeducational groups for relatives.

Methods: Four hundred seventy-three patients with bipolar disorder (BD), schizophrenia (SZ) and major depressive disorder (MDD) participated in our psychoeducational-cognitive group treatment program at the University Hospital for Psychiatry and Psychotherapy of the LMU Munich and of the AKH Vienna. The program provides psychoeducation about the respective illness and its pharmacological and psychological treatment, cognitive-behavioral strategies, identification of warning signs and relapse prevention. Psychoeducational groups were also offered to relatives to foster knowledge and communication skills.

Results: We conducted two randomized controlled trials in patients with schizophrenia and depression and one controlled trial in bipolar disorder. All studies demonstrated that psychoeducational CBT programs were effective at one or two years of follow-up. Treatment adherence was better in SZ and BD patients than in MDD patients.

Conclusions: Psychoeducational CBT programs proved to be effective and clinically feasible. These interventions resulted in a significant increase in knowledge about the respective illnesses, fewer hospitalizations during follow-up and more satisfaction with treatment.

Keywords: Bipolar disorder; in- and outpatient treatment; Psychoeducation; Family therapy; Cognitive behavioural therapy; Major depressive disorder; Schizophrenia; Treatment pathway

Abbreviations

ACT: Acceptance and Commitment Therapy; BD: Bipolar Disorder; BPRS-E: Brief Psychiatric Rating Scale – Expanded; BT: Bibliotherapy; CBT: Cognitive-Behavioural Therapy; CGI: Clinical Global Impression; COP: coping-oriented treatment program; DSM-IV: 4th Edition of the American Psychiatric Association Diagnostic and Statistical Manual for Mental Disorders; DSM-5: 5th Edition of the American Psychiatric Association Diagnostic and Statistical Manual for Mental Disorders; ECM: Extended Clinical Management; FT: Family Therapy; FFT: Family-focused therapy; GAF: Global Assessment of Functioning; HAMD: Hamilton rating scale for depression; ICD-10: International Classification of Diseases 10th edition; IPT-SRT: Interpersonal-Social Rhythm Therapy; IQ: Intelligence Quotient; LMM: Linear Mixed Models; LOCF: Last Observation Carried Forward; MBT: Mindfulness Based Therapy In Depression; MDD: Major Depressive Episode; PE: Psychoeducation; PCBT: Psychoeducational Cognitive Behavioural Therapy; PCBT-G: Psychoeducational CBT Group Therapy; PCBT-G + I: Psychoeducational CBT Group Treatment Combined with Individual Sessions; RCT: Randomized-Controlled Trial; RAISE-ETP: Recovery After Initial Schizophrenia Episode-Early Treatment Program; SMM: Symptom Management Modules; STEM: Coping with Stigmatization and Promoting Empowerment; SUP: Supportive Treatment; SZ: Schizophrenia; VBA: Value-Based Activation; VLMT: Verbaler Lern- und Merkfähigkeitstest (a German version of the "Auditory Verbal Learning Test" (AVLT))

Background

Schizophrenia (SZ), major depressive disorder (MDD) and bipolar disorder (BD) constitute, together with anxiety disorders, the most prominent severe mental disorders in adulthood and are characterized by a high illness burden, diminished social and occupational functioning, often disability and, as a consequence, enormous costs to health systems and society [1]. Whereas MDD and SZ have been the focus of clinicians and research, BD has attracted less attention because it was often considered a subtype of depression affecting only a small minority of people. In the last decades of the 20th century, the true burden of BD on individuals and society became increasingly apparent. BD ranks among the top 10 disabling illnesses worldwide and is characterized by depressive, manic, and mixed episodes [2]. BD I is defined by the presence of a syndromal, manic episode, and BD II is defined by the presence of a syndromal, hypomanic episode and a major depressive episode [3,4]. The prevalence rates for each BD subtype are approximately 0.6% and 1.4%, respectively, and the mean age of onset is approximately 20 years [3,4]. BD-related depression is often mistakenly and wrongly treated as unipolar depression, creating a cascade of negative outcomes, including the risk of experiencing numerous social and occupational impairments and alcohol or substance abuse [5]. This severe reduction in psychosocial functioning is associated with a loss of approximately 10–20 potential years of life compared to that of the general population and an elevated risk of death due to cardiovascular disease and suicide [4]. Although mania defines BD I disorder, depressive episodes dominate the longitudinal course of the illness.

During the last century, there was a profound change in international systems of classification and in international S3 treatment guidelines for BD in Europe. In response to changes made in the 5th Edition of the DSM-5 [6], there were updated principles related to diagnosis and management. With respect to European guidelines, the International Classification of Diseases 10th edition (ICD-10) is still valid, and its updated version, the ICD-11, is not yet widely used [7]. The CANMAT and ISBD Bipolar Disorder Management Guidelines are also used to provide a comprehensive, up-to-date review of research evidence on the treatment of various phases of BD [8]. In a recent umbrella review including eighty-five meta-analyses, there was some heterogeneity in the guidelines; however, mental health services focus on early intervention services and any family intervention in early psychosis and CBT, any family intervention, individual placement and support for SZ [8]. According to guidelines in BD [5,8,9], (PEs, CBT, IPT-SRT and FT are recommended to prevent relapse, together with pharmacological interventions [10].

Elements of these psychotherapeutic interventions, with CBT as a strong base, compose clinically useful programs at the investigators' sites, namely, the Department of Psychiatry, University of Munich, and the Clinical Department of Social Psychiatry, University of Vienna [10-15]. These programs are inspired by the fundamental work of Keith Nuechterlein [16], Mike Goldstein and David Miklowitz [17,18], Bob Liberman [19] and Kim Mueser [20]. Individuals with BD must cope with personal challenges such as unpredictable relapses, loss of social support, poor functioning and highly expressed emotions. Family-focused therapy (FFT) and Symptom Management Modules (SMM) for relapse prevention in patients with BD, SZ and severe MDD are highly important. Primary prevention aims to prevent the onset of the illness; however, secondary prevention aims to prevent relapse using strategies such as identifying and managing early warning signs [10, 16-20].

Our treatment program for BD patients focuses on psychoeducation and symptom management, including social rhythm therapy and cognitive restructuring [11]. It is based on the vulnerability-stress-coping model, a valuable framework for illness management aimed at modifying psychological and environmental factors

that can precipitate relapses (e.g., poor coping ability). It also aims to harness patient motivation for active collaboration with others to improve the course of the illness [16]. It is to stress patients' self-efficacy and empowerment. There is greater emphasis on restoring circadian rhythms in BD patients than in SZ patients [17]. Our treatment program covers psychoeducation about depression and mania, activation, cognitive restructuring, relapse prevention and awareness of a healthy lifestyle (e.g., self-monitoring by life-charting [21], avoidance of alcohol and drugs [22]).

Currently, evidence-based manuals are available for psychoeducation [23], psychoeducational-cognitive interventions [11,24], IPT-SR [25] and FFT [18, 26] in BD. Current reviews and randomized controlled trials (RCTs) support the effectiveness of psychoeducation [27,28], family therapy [29,30] and CBT [31,32]. In a recent meta-analysis, Miklowitz [30] compared the treatment outcomes of standard treatment to those of different psychotherapeutic modalities. There was a significant reduction in new episodes with FFT, CBT and psychoeducation compared to standard treatment, with family-focused psychoeducation and brief psychoeducation showing the highest retention rates. Psychoeducation in a systemic-family context resulted in better relapse prevention than did individual therapy. There was better recovery from depression symptoms in the CBT and FFT groups; however, IPSRT was less effective than standard treatment. The analysis of treatment components showed the greatest effectiveness in relapse prevention with systemic-family group-based treatment and motivation to monitor early warning signs compared to individual therapy. Evidence from studies on meta-cognitive training, chronotherapeutic treatment, or internet-based psychoeducation are only scarce or inconsistent [33-36].

The purpose of this paper is to summarize the scientific evidence for the effectiveness of a psychoeducational cognitive behavioural therapy group program (PCBT) provided at the Department of Psychiatry and Psychotherapy, University of Munich [12,37- 40] and at the University of Vienna, consisting of 1-2 year follow-up controlled trials for a total of 473 patients. Two cross-sectional or pilot studies can be added to this review for interest, however, there are not included in the study [41-42]. We adapted the PCBT to patients with affective disorders and SZ, focusing on psychoeducation including pharmacological treatment, CBT, early warning sign managements and relapse prevention, as well as psychoeducational groups for relatives in order to increase their knowledge and communication skills. Data were also collected in cross-sectional and noncontrolled studies up with 2 years of follow-up, however, they were not included in the main study. The outcomes of interest were increase in knowledge about the illness in patients participating in this program; decrease in severity of illness, in depressive symptoms and high expressed emotion in their relatives, as measured using validated instruments [43-50].

To our knowledge, there are no 1–2-year follow-up randomized-controlled trials (RCT) examining different treatment pathways available with a relatively large sample size (n= 473) comparing in- and outpatients with SZ and MDD (n= 373) and outpatients with BD (n=100).

Materials and Methods

Study size and participants

There were two study sites, the University Hospital for Psychiatry and Psychotherapy at the LMU Munich and the AKH Vienna. At the Department of Psychiatry and Psychotherapy, University of Munich, 196 patients with SZ [37] and 177 with major depressive disorder (MDD) [38] were recruited between 1995 and 2013 and participated in different group programs in randomized controlled trials. Additionally, one hundred outpatients with BD from the Clinical Department of Social Psychiatry, University of Vienna, participated in a controlled 1-year follow-up study [38]. Finally, we compared the results of both trials [37 and 38] with each other [40]. Furthermore, 114 patients with BD participated in two trials, 52 and 62 patients, respectively [41,42], however, due to low scientific value they were not included in the analysis. They refer to 52 patients included in the cross-section study by Schaub et al 2013 [41] and the observational pilot study by Bernhardt et al 2006 [42] mainly focusing on educational and psychological outcomes; however, no clinical parameters were listed.

The inclusion criteria at the Munich Inpatient Center were as follows: (1) 18 to 65 or 69 years old; (2) diagnosed with SZ spectrum disorder or other psychotic disorders, MDD or BD, as assessed by the treating psychiatrists according to the DSM-IV [51]; (3) post-acute stage of the illness (i.e., remission of acute symptoms); (4) were proficient in German; (5) were sufficiently stable to participate in group therapy; and (6) provided written informed consent. The exclusion criteria were as follows: (1) had organic brain syndrome, (2) had current drug or alcohol dependence, (3) had acute suicidality, and (4) had an intelligence quotient (IQ) < 85. All studies were set up within a similar time frame, i.e., an intervention of six weeks, including 12 treatment sessions for each group, including patients with SZ or affective disorder (depressive or bipolar type), and relapse rates were measured at the 2-year follow-up. The inclusion criteria at the Vienna outpatient centre were (I) bipolar I and II disorder with stable psychopharmacological prophylaxis and (II) at least 2 mood episodes during the last 3 years or at least 3 mood episodes in the last 5 years. All studies. were approved by the Institutional Review Board of the respective universities, and patients provided informed written consent.

Measures

All studies focused on a psychoeducational CBT program adapted for different disorders aimed at increasing knowledge about the

disorder and its treatment as well as at achieving low rates of rehospitalization and satisfaction with treatment, applying comparable outcome criteria [43-45,51]. The measured outcomes were patients' severity of illness, schizophrenic or depressive symptoms [44-46] and relatives' high expressed emotion [47,48]. We also expected an increase in knowledge about the illness in patients participating in these programs [49] and satisfaction with treatment, assessed using a 4-item questionnaire administered at the end of each treatment group in all three studies, covering psychoeducation and the practicability of skills learned [50]. Rehospitalization rates were determined from a combination of participant interviews and a review of medical records. The chosen measures proved to be applicable in former studies [14, 52]

Data analysis

Baseline differences in demographic and clinical variables among the three groups of patients with SZ, MDD or BD were investigated with chi-square tests and independent t tests. For the main outcomes, we performed linear mixed-effects regression analyses with three measurements—pretreatment, 1-year follow-up, and 2-year follow-up—for the "Verbaler Lern- and Merkfähigkeitstest" (VLMT, a German version of the "Auditory Verbal Learning Test" (AVLT)) and four measurements—pretreatment, post treatment, 1-year follow-up, and 2-year follow-up—for GAF and knowledge. Measurements were considered nested within patients, and an unstructured covariance structure was assumed. Time and study/diagnosis, as well as their cross-level interaction time × study/diagnosis, were established as fixed factors. We controlled for the effects of age and duration of disease by including these variables as covariates. We did not use any imputation, e.g., last observation carried forward (LOCF), since our linear mixed models (LMM) compensate for missing values. At the patient level, a random effect was included for the intercept to take individual symptomatic variation at baseline into account. The effect size was reported as Cohen's d. The results were significant at $p < 0.05$. Analyses were performed using the lme4 package in R, version 3.5.2.

Results

We conducted three randomized controlled trials in 196 patients with SZ [37], 177 patients with MDD [38] and 100 patients with BD [39]. All studies demonstrated that psychoeducational CBT programs were effective at one or two years of follow-up. The coping-oriented treatment program in schizophrenia (COPsz), the psychoeducational CBT group therapy (PCBT-G) in depression (PCBTdep) and the PCBT-G in bipolar disorder (PCBTbip) were effective in preventing prehospitalization at the 2-year follow-up, and all groups had comparable but relatively low rates of prehospitalization over this period (COPsz: 39, PCBTdep: 28; PCBTbip:31). The relapse rates in COPsz [37], PCBTdep [38] and PCBTbip [39] studies were between 27% and 38%. However, the control conditions for extended clinical management (E-CM) were poor [38]. There was no predictive connection between the increase in knowledge achieved and the prevention of relapse.

More specifically, we investigated 196 patients with SZ [40] by comparing COP with a supportive control group. Participants in the COP group showed greater gains in knowledge from pre- to posttreatment than did those in the control group and improved more on the depression-anxiety subscale of the Brief Psychiatric Rating Scale- Expanded (BPRS-E); however, relapse rates did not differ significantly between the groups. In our sample, only 15% of the patients were temporary outpatients, and our inclusion criteria were broader, as we also included first-episode patients (approximately 1/3 of the sample), and there was no request for study participation for relatives in contrast to the study by Pitschel-Walz and colleagues [53].

In the second RCT, we compared the long-term effects of three different conditions in 177 patients with MDD: E-CM, psychoeducational CBT group treatment (PCBT-G) and PCBT combined with individual sessions (PCBT-G + I) [38]. At postintervention assessment, patients in both CBT programs were more satisfied with the program than patients without CBT. At the 2-year follow-up, participants in the PCBT-G group had significantly lower rehospitalization rates (27%) than did those in the E-CM group (40%) ($t(98.61) = 2.96$; $p \leq 0.004$; NNT = 3.8) and those in the CBT-G + I group (34%) ($t(114.01) = 2.22$; $p \leq 0.028$; NNT = 4.7), whereas the rehospitalization rates did not differ significantly between the PCBT-G + I group and the E-CM group [38].

The third RCT compared the long-term effects in patients with BD participating in PCBT or bibliotherapy (BT) [42]. One hundred patients were treated with prophylactic medication for 14 weeks. Fifty-two patients participated in the PCBT-G, and 48 participated in the BT group. At the 12-month follow-up, patients in the PCBT-G group had significantly better outcomes according to the Clinical Global Impression (CGI) scale [43] than those in the BT group. There was a significant reduction in the overall number of episodes in both groups (but only for manic episodes in the BT group) and in the number and duration of hospital admissions in the 12 months after the start of treatment compared to the 12 months before. In both groups, there was a positive effect on illness concepts and a reduction in disability [44].

We also compared the data of two randomized controlled trials [40] focusing on the long-term effects in 196 patients with SZ [40] and 177 patients with MDD [38]. There is little knowledge when comparing neuropsychological and psychosocial functioning in patients with SZ or severe MDD in their treatment pathways. These consisted of additional psychoeducation or the latter combined with cognitive behavioural therapy, including a 2-year follow-up [37,38]. There were significant time effects indicating

gains in knowledge about the illness, short- and medium-term memory and psychosocial functioning (measured with the GAF). However, the latter was the only variable showing a time x study/diagnosis interaction effect at the 2-year follow-up, showing significantly better outcomes in patients with MDD than in those with SZ. Moderator analysis revealed no changes in psychosocial or neuropsychological functioning in SZ patients or in those with affective disorders due to age, duration of illness or sex. There were no significant differences in rehospitalization rates between the two disorders. Both groups treated with psychoeducation or a combination of psychoeducation and CBT improved their neuropsychological and psychosocial functioning as well as their knowledge about the illness at the 2-year follow-up; however, patients with MDD showed greater gains in psychosocial functioning than patients with SZ [40].

Table 1 shows the flow of participants and cumulative rehospitalization rates at the 1-2-year follow-up in the two inpatient studies (Munich) and the outpatient study (Vienna).

	Schaub et al. 2016 [37]	Lenz et al. 2016 [42]	Schaub et al. 2018 [38]
Diagnosis	SZ	BD	MDD
Numbers and study design	N= 100 COP N = 96 SUP	N = 52 PCBT-G N = 48 BT	N = 59 PCBT-G N = 60 PCBT-GI N = 58 ECM
Duration of treatment	COP: 12 sessions over 6 weeks (75 min)	12 sessions over 6 weeks (90 min)	PCBT-G:12 sessions over 8 weeks(90min) PCBT-GI: Additional 16 individual outpatient sessions after discharge E-CM: up to 4 SUP sessions
Relatives participating in groups	15% of relatives of participants	N = 95	n.r.
Follow-up	2 years	1 year	2 years
Rehospitalization rates (2y)	COP=38.3%, SUP= 36.7%	Pre-post comparison: Fewer hospitalizations (PCBT-G**, BT*)	PCBT-G=27%* PCBT-GI=34% ECM =40%
Additional Outcomes	COP> Reduction in BPRS-E**	PCBT-G, BT: pre-post reduction in disability (Sheehan scale)	
	COP> Reduction in BPRS Depression/anxiety subscale*	Increase in knowledge	
	COP > BPRS subscale Increase in knowledge*	PCBT> BT for CGI improvement*	
	Feedback about program	Overall reduction of episodes pre-post for both therapies, PCBT-G: fewer depressive episodes	Feedback about program

*p < .05, **p=< .001, n.r.: not reported
COP: Coping-oriented treatment, SUP: Supportive treatment
PCBT-G: psychoeducational cognitive behavioural group treatment, BT: Bibliotherapy
PCBT-GI: psychoeducational cognitive intervention group + individual
E-CM: Extended clinical management
CGI: Clinical Global Impression scale
BPRS-E: Brief Psychiatric Rating Scale, expanded

Table 1: Overview of the cognitive-psychoeducational treatment program studies in SZ patients [37], BD [39] and MDD [38] in the Munich inpatient study and the Vienna outpatient study.

There was greater treatment adherence in SZ patients (125 of 196) [37] and BD patients (40 of 52) [39] than in MDD patients (96 of 177) [38]. We also compared the level of psychopathological functioning between patients with SZ and those with MDD [40], revealing a much lower level in SZ patients. Another study showed that despite comparable total scores in psychosocial functioning and psychopathology, there were significant differences in most subscales and different neuropsychological test profiles in patients with MDD and SZ [54]. Patients with depressive disorder performed better in short-term memory and speed than did those with SZ [54].

Two hundred thirty-one patients with major depressive episodes (unipolar and bipolar depression) also participated in a feasibility study, and at the post-assessment, approximately 90% of the inpatients rated the program to be helpful. Inpatients with affective disorders may benefit from a structured group program if their cognitive and motivational deficits are considered. The group leaders' didactic and psychotherapeutic strategies as well as the patients' exchanging ideas with each other play a central role. In the course of further investigations, the program was differentiated for patients with MDD or BD [38,39].

In an open-label study, we investigated 52 patients with BD in a naturalistic setting and found improvements in the severity of illness and differential treatment response [39]. At post-assessment, patients with a higher level of education performed better than those with a lower level of education. Ninety-six percent of the participants rated the PCBT group to be helpful. A greater number of previous hospitalizations and male sex best predicted the readmission rate (30%) at the 2-year follow-up; however, the present study lacked a control group, which limits the interpretability of the results.

Table 2 shows the flow of participants and cumulative rehospitalization rates at the 2-year follow-up in the two inpatient studies (Munich).

Content and Structure					
Psychoeducation: Providing information about the illness and its treatment on the basis of the stress-vulnerability-coping model [49] Symptom management, establishing rewarding activities Recognizing and changing dysfunctional cognitions in illness and self-confidence Relapse prevention Group leader: 1 psychologist Group members: 8–13 patients Treatment manual, information and worksheets, homework assignments, video-based supervision					
Schaub et al. 2016 [37]		Schaub et al 2018 [38]			Schaub et al 2013 [39]
Patients with SZ (COP-study)		Patients with MDD (PCBT-G-study)			Patients with BD (BD study)
Age					
33.6 (SD = 11.3) y		47,9 (SD = 12.6) y			42,62 (SD = 11.9)
Duration					
12 sessions twice a week, for 75 min		12 sessions 90 min			14 sessions 90 min
Randomized: 196		Randomized: 177			Cross-sectional: 52
COP	SUP	E-CM	PCBT-G	PCBT-G+I	PCBT-G
Pre-treatment					
n=100	n=96	n=58	n=59	n=60	n=52
Analysed at 1-y follow-up					
n=66	n=64	n=27	n=23	n=20	no data
Analysed at 2-y follow-up					
n=70	n=55	n=31	n=30	n=25	n=40
Rehospitalization rate					
38%	37%	40%	27%	34%	30%

Evaluation		
GAF, BPRS-E	GAF, HAMD	CGI
Knowledge Test	Knowledge Test	Knowledge Test
Feedback about program	Feedback about program	Feedback about program

COP: coping-oriented treatment (=BOT) in SZ
PCBT-G: psychoeducational cognitive behavioural treatment-group in MDD
PCBT-G: psychoeducational cognitive behavioural treatment-group in bipolar BD-Study
PCBT-G+I: Cognitive behavioural group and individual treatment
E-CM: Extended clinical Management,
GAF: Global Assessment Functioning scale; BPRS-E: Brief Psychiatric Rating scale, expanded; HAMD: Hamilton rating scale for depression,
CGI: Clinical Global Impression
COP, SUP, PCBT-G, PCBT-G + I, E-CM for inpatients * p = .05 (Partial publication of the data Schaub et al 2016 [36])

Table 2: Studies conducted at the University Hospital for Psychiatry and Psychotherapy at the LMU Munich.

Discussion

This article provides a review of psychoeducational CBT for inpatients and outpatients with psychosis and affective disorders in 1- to 2-year follow-up randomized controlled or cross-sectional trials recruited from the Department of Psychiatry and Psychotherapy of the LMU Munich and the AKH Vienna.

The psychoeducational CBT programs [37-40] proved to be clinically effective in studies that included 196 inpatients with SZ [37], 177 patients with MDD [38], and 100 outpatients with BD [39] and in a cross-sectional study with 52 in-patients with BD [39]. The programs tested resulted in a significant increase in knowledge about the respective illnesses and satisfaction with treatment. The lack of a predictive relationship between increased knowledge and the prevention of relapse suggests that mere knowledge does not prevent relapse; however, training in real-life situations and symptom management are needed to achieve these goals [39].

The rehospitalization rates in the SZ cohort are similar to those in other studies comparing psychosocial treatment programs to a control condition [14,55]. In a cluster randomized controlled trial involving 34 sites, the 2-year hospitalization rate for participants in the special comprehensive treatment program for first-episode psychosis was 34%, whereas it was 37% for those who received usual community care [55]. This Recovery After Initial Schizophrenia Episode-Early Treatment Program (RAISE-ETP) study was recently sponsored by the National Institute of Mental Health. The psychoeducational approach in the PIP Study at the Technical University of Munich offered information about symptoms, pharmacotherapy and a relapse plan to patients and their relatives in distinct groups, and there was a rehospitalization rate of 41% in this intervention compared to 58% in standard treatment [53].

Psychopharmacotherapy plays a major role in the treatment of acute symptoms, reducing disease severity and preventing relapse; however, there is growing evidence of additional benefits of psychotherapy [27-32]. Active treatment is more efficient in preventing mania than in preventing depression. Over the last twenty years, meta-analyses have shown that CBT and PE are effective in the treatment of SZ and affective disorders.

Treatment adherence was better in SZ (125 of 196, [37]) and BP (40 of 52 [39]) patients than in MDD patients (96 of 177 [38]). We assume that the timing of the different studies may play a role in explaining this difference. The University Department of Psychiatry Munich has a long history of leadership in psychopharmacotherapy. Around the turn of the millennium, psychotherapy became more visible and important both for holistic therapy and for a junior doctor-training curriculum, leading at that time to enthusiasm about psychoeducation and CBT both in therapists and patients. This study on SZ was the first to add psychoeducational CBT elements to standard treatment and was a starting point for didactic programs to train psychologists and physicians in CBT. At approximately the same time, BD also became a new focus of research in Munich, including psychotherapeutic illness management programs [56] that resulted in strong therapeutic relationships. Treatment outcomes, including adherence, in both the SZ and BD studies are comparable to those in other high-quality studies in specialized settings [55,57].

Both novelty and a specialized illness management program were not relevant to the findings of the MDD study, which was conducted a few years later. This study [38] compared a combination of group and individual treatments (PCBT-G+I) to PCBT-G and extended clinical management (E-CM). At the 2-year follow-up, the rehospitalization rate was lowest for CBT-G (27%), the combined treatment was less effective (34%), and ECM (40%) performed worst (PCBT-G vs. E-CM, p= 05). Considering the rate of rehospitalization over the two-year study, we constructed the following hypothesis to explain these results. At the four 6-month intervals

after discharge from the hospital, the rate of relapse was highest for participants in the PCBT-G+I group during the 6- to 12-month period. In this timeframe, individuals stopped individual therapy, which possibly triggered relapse and rehospitalization. The use of booster sessions might have optimized treatment outcomes; however, only 30% of our patients in our sample continued attending our outpatient clinic. When exploring patients at readmission, many patients expressed discomfort about having therapy in the hospital, provoking negative memories of the time when they were inpatients and therefore preferred therapy by therapists in private practice. Thus, discomfort with the setting, lack of novelty and otherwise specialized treatment may have contributed to the lower adherence in the major MDD sample.

During the last 27 years, strategies for people with psychiatric disorders have dramatically changed. The following studies investigated the effectiveness of a psychoeducational CBT program in different cohorts, including the Department of Psychiatry and Psychotherapy of LMU, Munich, and the Department of Psychiatry and Psychotherapy, Clinical Department of Social Psychiatry, Vienna. We were interested in the feasibility, effectiveness and efficacy of psychoeducational cognitive group interventions for inpatients with SZ and affective disorders treated with psychopharmacological strategies [37,39]. For patients with BD, there was an outpatient setting in the second centre [42].

Nowadays, psychoeducation about the illness and its treatment are common treatment strategies offered to patients, as are self-help strategies. Michael Goldstein was one of the first to address self-stigmatizing beliefs about mental illness, which are currently an important aspect of treatment [17]. Psychoeducational programs and CBT tap deep-seated issues of personal identity and one's role in a family unit; therefore, there is a great need to focus on patients' needs. Goldstein [17,18] argued in favor of more interactive teaching approaches and started an important procedure in SZ and BD. All programs offer interactive, psychoeducational teaching methods and combine them with enhancing strategies for dealing with stress and symptoms and cognitive restructuring [37-41].

Psychoeducational cognitive interventions [11] help participants process their personal experiences related to the illness and help patients understand the nature of their illness and its treatment. The vulnerability-stress-coping model provides a valuable framework for guiding illness management efforts aimed at modifying psychological and environmental factors that can precipitate relapses (e.g., poor coping ability) and harnessing patient motivation for active collaboration with others aimed at improving the course of the illness [16].

If psychoeducational programs were oriented to the patients' needs and supported them in coping with their illness, patients were thankful for this offer; however, interventions that were too short might trigger suicidal ideation [58]. Patients attending our coping programs had better skills to cope with the illness. This leads to greater and more sustained improvements in depression/anxiety and overall symptom severity over the 2-year follow-up [37]. Our studies including patients with SZ and affective disorders [40] showed a significant gain in knowledge about the illness and its treatment, in short- and medium-term memory and psychosocial functioning and a reduction in symptoms. However, the level of psychosocial functioning was the only variable showing a significant time × group interaction effect at the 2-year follow-up in favour of depressive disorders [40].

These results in total are encouraging, showing the effects of a short-term program of 12 sessions for inpatients and outpatients with SZ, BD or MDD and their 1- to 2-year follow-up after patient discharge. They document potential benign effects of a psychoeducational CBT group during the acute and post-acute phases of the illness. The studies were set up in a setting offering psychopharmacological interventions and a broad repertoire of psychotherapeutic and rehabilitative interventions.

Our programs described in this article covered the first and second waves (e.g., behavioural analysis, operant and social skills learning); however, the third wave (Table 3) recently gained more attention covering novel techniques such as mindfulness [20], acceptance and commitment therapy [10], value-based BA [59] and empowerment [60,61]. There is a need for interventions supporting patients with mental health conditions in coping with stigma and discrimination, and psychoeducational group therapy modules are needed to promote stigma coping and empowerment [60, 61]. Due to the political situation, we also offer strategies to cope with experiences of migration [62] or drugs [63]. Whereas the first and second generations of CBTs have already been proven to be efficient, novel therapies have also been developed to prove their expertise. Emotional acceptance is an important emotion regulation strategy promoted by most psychotherapy approaches. Table 3 shows the novel trends in psychotherapy.

Mindfulness based therapy in depression (MBT) [64]
Acceptance and commitment therapy (ACT) [65]
Value-based activation (VBA) [59]
Coping with stigmatization and promoting empowerment (STEM) [60,61]
Empowerment for persons with affective disorders and experiences of migration [62]
Modular therapy in cannabis use disorder [63]

Table 3: Novel trends in third-wave interventions and other programs.

There are several limitations of our three controlled studies, including the use of in- and outpatients with 1- to 2-year follow-ups.

Information about medication adherence over the course of the study was missing, leaving the question of whether the greater symptomatic improvement was due to improved adherence compared to that of the control group or to the other treatment options unanswered. Patients in different treatment programs conducted in the same inpatient setting might have motivated patients to interact with each other by comparing their different experiences in their respective groups.

The relatively limited length of group treatment, twelve 75-minute or 90-minute sessions over 6–8 weeks in the study with inpatients having SZ or MDD, or 90-minute sessions over 14 weeks in the study with outpatients having BD included a breadth of topics covered in the group. Providing more opportunities to practice skills by adding additional outpatient services was considered to optimize treatment in the inpatient setting; however, booster sessions were included in the outpatient setting.

There are also several strengths of the four controlled studies. In the study of patients with SZ, there was a relatively low drop-out rate, and the inclusion of an active control group designed to control for nonspecific therapeutic factors and a relatively large sample size. Patients with MDD had a moderately high drop-out rate, comparable to the rate in other studies. Intensive but time-limited CBT for depressed inpatients has substantial and clinically short- and long-term benefits. In the study with bipolar patients, both treatments were preventive for manic episodes; however, the psychoeducational cognitive group performed better in preventing depressive episodes and was generally more effective.

The results of our studies cannot be generalized. The programs were conducted in university hospital settings, which, in Germany and Austria, often implies some positive selection of patients as far as social and educational status are concerned and greater availability and research interest of therapists. Transferring our programs to community settings and non-academic institutions should be the next step to prove not only their effectiveness but also their utility.

Finally, the meta-analytic approach strongly supports the efficacy of PCBT, and future guidelines, especially for SZ and BD patients, should give PCBT a high recommendation grade in addition to pharmacotherapy. There are important changes, ongoing controversies, and unclear future directions at this time; however, based on sound diagnoses, we will face these challenges [63]. We want to add a direction for future research. We recommend to combine psychological interventions (psychoeducation, CBT, FT) and work-related interventions (cognitive training and supported employment). –

Conclusions

Compared to inpatient supportive psychotherapy, coping-oriented therapy, including both illness management and cognitive–behavioural therapy for psychosis, led to greater increases in knowledge about mental illness and greater reductions in overall symptoms, especially MDD and anxiety. The benefits of the program on symptoms were sustained for more than 2 years following discharge from the hospital, and data on the effects of the outpatient setting were obtained for one year. These studies suggest that all three programs provided during the outpatient and acute inpatient phases of treatment can have lasting benefits in the outpatient setting and following discharge into the community. In summary, psychoeducation, communication, and problem-solving skills, as well as relapse prevention, are important for current treatment programs. In this (meta-) review, our program showed its feasibility and its effectiveness in our clinic and its transfer when implemented in a different setting.

Looking at the treatment programs for patients with BD, we conclude that both kinds of therapy (PCBT and bibliotherapy) were successful in preventing the relapse of manic episodes; the PCPT group also showed an inhibitory effect on the frequency of depressive episodes, and PCPT was generally more effective. Family-focused interventions initiated in childhood or adolescence improve the long-term trajectory of the disorder. Further research, as well as more training for professionals on effective family interventions, seems necessary. With e-health using information and communication technology as a novel opportunity, it is also desirable to adapt and test PCBT in a virtual environment.

Trial registration

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Availability of data: The datasets utilized in this article are available in the public domain (published articles/books). More detailed data on the studies conducted by the authors of this article are available upon reasonable request to the corresponding author. The total sample of the paper (N=525) refers to 52 patients with bipolar disorder in a cross-sectional trial at LMU (Schaub et al.

2016), 196 patients with schizophrenia in a randomized controlled trial (RCT) at LMU (Schaub al. 2016), 100 patients with bipolar disorder RCT (Lenz et al. 2016) at Wien, 177 depressed patients RCT at LMU (Schaub et al. 2018). See Table 2 to describes the data of these studies.

Ethics declarations

Ethics approval and consent to participate: Studies conducted by the authors of this article and described within this article were conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Boards of the University of Munich or Vienna. Informed consent was obtained from all the subjects involved in the studies conducted by the authors of this article.

Consent for publication: All authors have read and approved the final manuscript

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