Psychoeducational Interventions for Family Members of People With Schizophrenia: A Mixed-Method Systematic Review

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CME Objective

After studying the article by Sin and Norman, you should be able to:

- Provide group psychoeducation to caregivers of people with schizophrenia soon after diagnosis to increase knowledge and improve coping

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Financial Disclosure

All individuals in a position to influence the content of this activity were asked to complete a statement regarding all relevant personal financial relationships between themselves or their spouse/partner and any commercial interest. The CME Institute has resolved any conflicts of interest that were identified. In the past year, Alan J. Gelenberg, MD, Editor in Chief, has been a consultant for Allergan and Forest, has received grant/research support from Pfizer, and has been a stock shareholder of Healthcare Technology Systems. No member of the CME Institute staff reported any relevant personal financial relationships. **Faculty financial disclosure appears at the end of the article.**

ABSTRACT

Objective: This systematic review investigates the effectiveness of psychoeducation in improving the well-being of family members of people with schizophrenia and identifies the common ingredients, implementation considerations, and participants' feedback.

Data Sources: Published articles in either English or Chinese which reported psychoeducational intervention studies that targeted family members of people with schizophrenia as participants, were searched with the keywords *schizophrenia* and/or *psychosis* and *psychoeducation/psychoeducational interventions* in 8 databases (MEDLINE, PsycINFO, CINAHL, EMBASE, Web of Science, Applied Social Sciences Index and Abstracts [ASSIA], Cochrane Reviews Library, and CENTRAL), from the time of inception of the various databases to March 2012.

Study Selection: Fifty-eight articles reporting 44 research studies met all the inclusion criteria and the quality assessment requirement and were included in the review.

Data Extraction: Data from trials, quantitative studies, and qualitative research were extracted to address 3 parallel syntheses, following the Evidence for Policy and Practice Information Coordination Centre mixed-method systematic approach.

Results: Psychoeducation was found to be consistently effective in improving family members' knowledge and coping. However, it was less successful in changing family members' psychological morbidities, burden, or expressed emotion. Common ingredients across interventions included coverage of common coping strategies and problem-solving strategies to enhance communication or coping. Particularly valued by family carers were a group format to share experiences with other carers, skillful facilitation by professionals, and knowledge and skill development.

Conclusions: This review indicates that psychoeducation should be routinely provided to family members as early as possible following contact with health services. Suggestions are made for optimal psychoeducational intervention design and its successful implementation, and for further research to establish the enhanced effect of booster sessions, between-session practice, and online delivery.

J Clin Psychiatry 2013;74(12):e1145–e1162

Submitted: *December 1, 2012; accepted August 6, 2013 (doi:10.4088/JCP.12r08308).*

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Psychoeducation, that is, information given on a condition and its management,[1] is recommended as both an evidence-based and cost-effective treatment for all service users diagnosed with schizophrenia or a related disorder.[1,2] A Cochrane review[1] of psychoeducation for people with schizophrenia found that it is effective in reducing relapse and readmission and encouraging medication compliance. Families' involvement in the intervention, with or without service users, is identified as a key factor[2]; but the

Clinical Points

- Current evidence supports early provision of psychoeducation to family members of people with schizophrenia to increase the relatives' knowledge and skills to cope with caring.
- Psychoeducation interventions using a group format yield higher levels of satisfaction by family members and enhance peer support.
- Clinicians should consider implementation strategies, such as incorporating ethnic-cultural considerations into the program content and running repeated sessions outside of office hours, in addition to common essential ingredients of psychoeducation for the optimal design of interventions.

effect of psychoeducation on the well-being of the families of people with schizophrenia remains unclear.

Psychoeducational interventions have education as their cardinal feature and prime aim. It is hypothesized that the effectiveness of psychoeducation hinges on the impact of knowledge on stress appraisal and coping and subsequently perceived subjective burden and self-efficacy among family carers,[3] an idea that builds upon the theory of stress and coping proposed by Lazarus[4,5] in the 1960s. In a family setting of informal caring, improvement in coping and management by family members is believed to be influential in shaping service users' prognosis and relapse rates; hence, many psychoeducational intervention studies target family members as participants.[6–11] Research has also identified increased vulnerability to both physical and mental ill health among family carers,[12] in part due to the burden and distress associated with their status as caregivers.[13] Effective interventions for family carers are needed.

Family members are often the target participants of psychoeducational interventions.[14,15] Some studies have evaluated the impact of the intervention on family members directly by using validated tools, but existing systematic reviews on psychoeducation and family intervention have focused on service users' outcomes,[1,2,16] thus missing the opportunity to identify the effectiveness of psychoeducational interventions for families directly. This systematic review aims to address this knowledge gap by evaluating the effectiveness of psychoeducational interventions in improving the well-being of families of individuals diagnosed with schizophrenia. The review also identifies the common essential ingredients of effective interventions, facilitating factors and barriers to implementation, and the families' experiences and views of such interventions for their perceived acceptability. The review informs the development of future psychoeducational interventions targeting families directly, which may enhance the benefits of such interventions for service users.

METHOD

This review adopts the mixed-method approach advocated by the Evidence for Policy and Practice Information Coordination Centre,[17] which covers a wide remit of relevant literature investigating psychoeducational interventions that target family members of individuals diagnosed with schizophrenia or a related psychotic disorder. Four parallel syntheses using studies with different methods were devised to address specific review objectives and to investigate specific outcomes of interest, as summarized below and in Table 1.

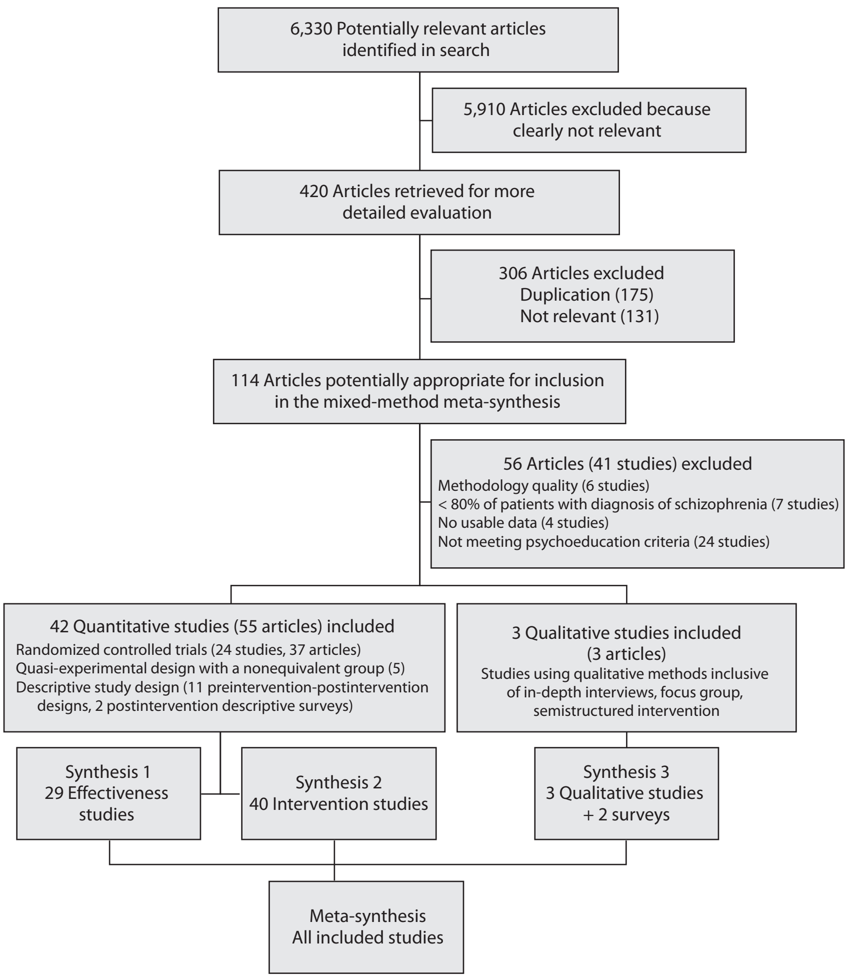
(1) To investigate the effectiveness of psychoeducational interventions for family members, using experimental and quasi-experimental intervention studies.
(2) To explore the essential ingredients, enablers, and barriers to implementation of psychoeducational interventions, using intervention studies with quantitative methods, with subgroup analysis focusing on 2 common design variants: brief (4–10 weeks) versus long interventions (more than 10 weeks in duration of programs) and modes of delivery of the intervention.
(3) To describe the perspectives of family members targeted by the interventions, using qualitative and survey studies.
(4) To identify the optimal design ingredients and implementation considerations of psychoeducational interventions for family carers by combining the former 3 syntheses using a "meta-synthesis matrix."

Data Sources, Study Selection, and Data Extraction

The search sought to identify published articles written in either English or Chinese languages that reported research studies in which psychoeducational interventions were received by families/relatives/family members (including parents, siblings, relatives, family caregivers/carers, partners, spouses) who are involved in supporting and caring for a family member with schizophrenia. We used key search terms from the Cochrane Schizophrenia Group and Central Register of Controlled Trials and various synonyms of the keywords *schizophrenia* and/or *psychosis* and *psychoeducation/psychoeducational interventions,* which were used in combination with free text to maximize the sensitivity of the search. Relevant studies were identified through electronic searches of the following databases: MEDLINE, PsycINFO, CINAHL, EMBASE, Cochrane Reviews Library and Cochrane Central Register of Controlled Trials (CENTRAL), and Web of Science and Applied Social Sciences Index and Abstracts (ASSIA). The databases were searched from the time of their inception to March 2012. In addition, the reference lists of all included studies and of relevant existing systematic reviews[1,2] were checked for possible studies. Authors of published articles were contacted to retrieve relevant information about their study that was either not reported or unclear from the published article.

Initial screening was undertaken by 1 researcher (J.S.) and then checked by the other (I.J.N.). One researcher (J.S.) extracted the data from the selected studies. The other author (I.J.N.) verified the extracted data and made corrections when necessary. Each study was critically appraised independently by the 2 authors against the Critical Appraisal Skills Program tools for appraising evidence.[18] Disagreements were resolved through discussion. Six studies were found to have methodological flaws that rendered the study results unreliable and so were excluded from the review. These studies and other excluded studies are detailed in the Supplementary eTable 1 (available at PSYCHIATRIST.COM) and the overview of studies section.

Figure 1. PRISMA Flow Diagram of Selection of Studies for Inclusion in the Review



Data Analysis Strategy

The analysis began with an overview of study characteristics followed by tabulation of extracted data. Meta-analysis of the trials would be considered for synthesis 1, if the studies were sufficiently homogeneous. Otherwise, if considerable heterogeneity between the different studies was identified, the data were to be synthesized using a narrative approach instead. A narrative approach was to be used for syntheses 2 and 3, considering the mixed-method evidence to be reviewed in each. Thematic synthesis was then conducted for each synthesis.[17] Finally, meta-synthesis of the design and key ingredients of the intervention underpinning the relationship between the effectiveness of the intervention, any identified implementation-enhancing factors and barriers, and families' subjective experiences of the intervention was conducted across all quantitative and qualitative data.[17]

Definition of Key Terms

For the purpose of this systematic review, psychoeducational interventions were conceptualized as interventions with a prime aim to instill information or knowledge on the illness condition and its management.[1,2] These psychoeducational interventions included any group or individual program involving interaction between information provider and participants, using different delivery modes, like face-to-face or online support. It is also common that these interventions have multiple components that may consist of, for instance, cognitive and/or behavioral training elements and peer support and/or discussion, with a primary aim of enhancing problem-solving and/or coping with caring-related or illness management issues.[1] To qualify as a psychoeducational intervention, the education element had to be significant within the design and be prominent in terms of time duration within the overall content/duration of the multimodal intervention (at least 50% of the total duration) and be professionally led or cofacilitated by a professional. Considering that psychoeducational interventions commonly aim to change complex behaviors and attitudes (eg, coping, psychosocial well-being, self-efficacy), interventions that had a duration shorter than 4 weeks were excluded.[2] Brief interventions that focused purely on didactic education or health-information giving using textual or video materials solely were classified as bibliotherapy and were excluded.

RESULTS

Overview of Studies

The search process and total number of articles included and excluded in the review are summarized in Figure 1. In total, 56 articles reporting the results of 41 studies were excluded for the following reasons: poor methodological quality (6 studies), failure to fully meet the inclusion criteria (ie, not meeting definition for intervention, service user, or family member) (31 studies), or reporting no usable data on family members' outcomes (4 studies). Excluded studies are summarized in Supplementary eTable 1.

Fifty-eight articles (56 published in English and 2 in Chinese) reporting findings from 44 studies met all the inclusion criteria and the quality assessment requirement[18] and were included in the review. These studies originated from North America (10 studies), China (9 studies), United Kingdom (5 studies), Europe (11 studies), Middle East (2 studies), South America (2 studies), Pan-Asia (3 studies), and Australia (2 studies). One study by Li and Arthur[19,20] reported findings from both a randomized controlled trial evaluating the effectiveness of psychoeducation on family members, as well as their views on the intervention. Table 2 summarizes the

Table 1. Outcomes of Interest for the Syntheses 1–4

Synthesis 1: Effectiveness of Psychoeducation	Synthesis 2: Common Ingredients and Implementation Considerations of Psychoeducation	Synthesis 3: Family Members' Experiences and Views on Psychoeducation	Synthesis 4: Meta-Synthesis to Address the Overall Review Objective
Primary outcomes: Family members' psychosocial well-being, including quality of life; coping in terms of perceived burden of care; attitude and behavior toward the service users	Comparison of 2 major ingredients: • Brief (4–10 wk) vs longer (> 10 wk) programs • Modes of delivery (groups vs individual) And any other significant key ingredients	Family members' subjective experiences and perceived acceptability of the intervention; identified strengths or weaknesses of the intervention	Recommendations evidenced across all studies on psychoeducational interventions to enhance psychosocial well-being of families of people affected by schizophrenia
Secondary outcomes: Family members' knowledge about schizophrenia and its management and satisfaction with the intervention	Implementation facilitators and barriers, including strategies to enhance engagement and retention, eg, reminders, schedule of program, facilitation/facilitator qualities, modes of delivery		

Table 2. Summary of Included Studies Investigating Psychoeducational Interventions Targeting Family Members of People With Schizophrenia (studies are ordered according to their inclusion in syntheses 1–3)

Study	Study Method	Participants and Conditions	Intervention: Design, Duration, and Theoretical Framework	Outcomes	Major Findings	Attrition and Follow-Up	
Abramowitz and Coursey,[21] 1989 United States	RCT	48 Family members: n = 24 in psychoeducation group n = 24 in standard care	Group work designed using a stress-coping framework emphasizing knowledge and information combined with problem-solving approach Delivered weekly in 2 hourly sessions over 6 wk	Family carers' distress and negative feelings toward their mentally ill relatives, anxiety, sense of self-efficacy, use of community support services, and management of home lives	Significant improvement of intervention group on anxiety, personal distress, life upset, and use of community resources No significant difference on other outcomes	No postintervention follow-up 21% of control group did not complete postassessment	Syntheses 1 and 2
Birchwood et al,[6] 1992 England	RCT	94 Relatives of 82 patients in 3 arms: n = 47 in group n = 30 in postal n = 17 in video	Group program delivered weekly over 4 semistructured sessions by 2 clinical psychologists and supplemented by 4 booklets and group discussion	Family members' knowledge acquisition, beliefs and expectations, subjective burden, relatives' rating of service users' disturbance	Knowledge scores increased significantly across all conditions, but group program appeared superior immediately after intervention and at 6-mo follow-up	Good attendance for the intervention, but follow-up only 62% (n = 62/94) across groups at 6-mo	
Carra et al,[22] 2007 Italy	RCT	101 Relatives in 3 groups: n = 50 in information group program n = 26 in information group + additional support group n = 25 in treatment as usual	Information group comprised 16–18 relatives Delivery: 1.75 h/wk over 24 wk Based on an informative approach by Leff et al[69] 1989 model All groups led by 2 psychiatrists	Relatives' subjective burden, expressed emotion, objective burden regarding the service user's self-sufficiency and social functioning	No significant difference in family outcome variables across all 3 conditions Information group itself improved knowledge about schizophrenia in relatives and lowered overall expressed emotion levels	Low attrition; 6 lost to follow-up at 24 mo	
Chan et al,[7] 2009 Hong Kong	RCT	73 Patients and 73 family members in 2 groups: n = 36 dyads in educational group n = 37 dyads in treatment as usual who had delayed treatment	10 Weekly 2-h group program with group manual designed based on EPPIC Psychoeducational Working Party Framework Service users and their key relatives attended all sessions together Facilitated by an experienced mental health nurse	Family outcomes on burden of care, self-efficacy, perceived social support	No significant differences between the groups in the overall family outcome measures Measures of study group carers' self-efficacy remained significantly improved through 6-mo follow-up	Follow-up at 6 and 12 months' postintervention All attended ≥ 70% sessions Engagement strategies included phone reminders, and all sessions were run on weekends and repeated	
Cheng and Chan,[23] 2005 Hong Kong	RCT	64 Family carers: n = 32 in treatment group n = 32 in treatment as usual	Program was developed based on Atkinson and Coia's framework[75] 10 Weekly 2-h sessions Group size = 8 carers maximum All sessions were conducted by 1 experienced mental health nurse	Family carers' family burden, self-efficacy, perception of social support	Statistically significant improvement of the experimental group in their perception of burden of care, self-efficacy, and social support	Lacks follow-up 100% Attendance by all Engagement strategies included advanced reminders; 4 repeated sessions per weekend	

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Table 2 (continued). Summary of Included Studies Investigating Psychoeducational Interventions Targeting Family Members of People With Schizophrenia (studies are ordered according to their inclusion in syntheses 1–3)

Study	Study Method	Participants and Conditions	Intervention: Design, Duration, and Theoretical Framework	Outcomes	Major Findings	Attrition and Follow-Up
Syntheses 1 and 2						
Chien and Wong,[24] 2007 Hong Kong	RCT	84 Family members of people who developed schizophrenia within last 3 years: n = 42 in treatment group n = 42 in treatment as usual	Program included a 4-stage intervention group for carers: orientation and engagement, educational workshop, therapeutic family role and strength rebuilding, and termination Eighteen 2-h sessions over 36 weeks Facilitated by mental health nurse	Family carers' quality of life, family functioning, family's burden of care	Treatment was effective in reducing families' burden of care and increasing family functioning	Follow-up at 12 months' postintervention 93% of participants completed the program, and 10% dropped out in the control group
Chien et al[25,27]: 2006, 2005; Chien and Chan,[26] 2004 Hong Kong	RCT	96 Family carers: n = 32 in mutual support group (active treatment) n = 33 in psychoeducational group n = 31 in standard care	Psychoeducation group included twelve 2-hr sessions over 24 wk 10–12 Participants in each group Service users and 1 of their key family carers attended all sessions together Facilitated by 2 trained mental health nurses Program designed based on Anderson et al[76] model	Carers' outcomes on burden, the need for and use of formal support services	Both psychoeducation and mutual-support groups had consistently positive improvement in family burden Psychoeducation group showed significant improvement in service users' functioning	Up to 18 months' follow-up postintervention High attendance rate and low attrition were attributed to regular telephone follow-up and influence of group facilitator
Clarkin et al,[28] 1991; Glick et al,[29–31] 1990, 1991, 1993; Haas et al,[32,33] 1988, 1990; Spencer et al,[34] 1988 United States	RCT	92 Service users and relatives dyads (184 participants in total): n = 37 dyads in inpatient family psychoeducation n = 55 dyads in standard hospital treatment	Inpatient family psychoeducation was a brief individual family treatment with emphasis on psychoeducation Average no. of sessions = 8.6, mode = 6; 1 or 2 sessions/wk during hospitalization for service users with their key family carers	Family outcomes on family attitudes, behavior toward the service users	No significant difference in family outcomes across groups at posttreatment and follow-up apart from female service users and those with chronic illnesses for up to 6 mo	Follow-up to 18 mo after treatment/discharge Lacks reports on attrition or retention
Fiorillo et al,[8] 2011 Italy	RCT	212 Service users and 230 relatives in total: n = 107 patients + 112 relatives in psychoeducation n = 105 patients + 118 relatives in usual care	Program consisted of twelve 60- to 90-min manual-based information sessions over 4 mo 2 Booster sessions at months 5 and 6 Sessions were held separately for service users and relatives 12 Participants in each group, facilitated by 3 trained mental health workers	Family members' belief about schizophrenia; belief about the political, social, and affective rights of the service users	Relatives' opinions about service users' civil rights and social competence improved, and the belief that service users with schizophrenia are unpredictable decreased at the end of the intervention	Lacks follow-up Reported low dropout (not specified) rate Engagement strategies included standardized format, facilitation, and adaptation of program to address Italian cultural beliefs and values
Gutierrez-Maldonado et al,[10] 2009; Gutierrez-Maldonado and Caqueo-Urizar,[35] 2007 Chile	RCT	45 Key family caregivers: n = 22 in psychoeducational treatment group n = 23 in standard care	Multifamily psychoeducation group included 18 weekly 90-min sessions covering 5 main modules Facilitated by 3 psychologists	Relatives' attitude toward schizophrenia, general health status, and burden	Treatment is effective in lowering scores on attitude Burden was reduced However, no effect on carers' perception of health	No follow-up data reported
Koolaee and Etemadi,[11] 2010 Iran	RCT	62 Mothers: n = 21 in psychoeducational group n = 21 in the behavioral family group n = 20 in standard care	Psychoeducation group of 12 weekly 2-h sessions developed based on Stengard[53] and Anderson et al model[76] Facilitated by a researcher	Mother's expressed emotion and burden	Psychoeducation consistently produced greater reduced burden in mothers and reduced positive symptoms in service users over the intervention and follow-up periods	Follow-up at 3 mo and 6 mo Drop-out rate was about 10% across conditions: 19 mothers (90%) completed the psychoeducational groups
Kulhara et al,[36] 2009 India	RCT	76 Family caregivers: n = 38 in a structured psychoeducational intervention n = 38 in routine outpatient care	Psychoeducation has 9 monthly 40- to 60-min sessions Facilitated by 2 trained mental health professionals In addition, a key worker was allocated to each family during the intervention period	Family outcomes on carers' perceived burden, satisfaction, coping, and caregiver support	Psychoeducation was significantly better than routine care on caregivers' support and satisfaction, but it did not significantly affect dropout, relapse, and caregiver burden or caregiver coping	Lacks follow-up Attrition was high, with only 57% completing the trial overall; 60% completed the psychoeducational groups

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Study	Study Method	Participants and Conditions	Intervention: Design, Duration, and Theoretical Framework	Outcomes	Major Findings	Attrition and Follow-Up
Syntheses 1 and 2						
Leavey et al,[14] 2004 United Kingdom	RCT	106 Family carers of people with first-episode psychosis: n = 57 treatment group subjects, with carer-workers matched in terms of ethnicity n = 49 carers in usual care	Within 6 mo of first contact with services, 7 hourly psychoeducational sessions were provided for carers individually Sessions supplemented with an information pack and local services details The carer-workers were link workers with matching ethnicity to the carers	Carers' primary outcome on their satisfaction with psychiatric services, perceived severity of illness and caregiver strain	No significant differences in satisfaction with services, carers' perceived severity of illness or burden of care, and caregiver strain index between groups	58% of carers partially completed treatment; 80% completed follow-up at 4 and 9 mo Matching ethnicity of workers with carers made no advantage in engagement or recruitment
Li and Arthur,[20] 2005 China	RCT	101 Patients with schizophrenia and their families: n = 46 families in experimental group n = 55 families in control (= treatment as usual) No details on relationships	Intervention included 36 h psychoeducation for relatives and 8 h for service users while inpatient, then 3 monthly 2-h group session following discharge for service users and families together Program was delivered by nurses who were family-intervention trained	Relatives' outcomes on knowledge and various service users' outcomes at preintervention, postintervention, and 3 and 9 mo after discharge	Significant changes in relatives' knowledge at postintervention that were sustained at 3-mo and 9-mo follow-up	89 Service users and families (88%) completed the study Follow-up at 3 and 9 months' posttreatment
Li and Xu,[37] 2003 China Chinese article	RCT	120 Service users and 139 relatives: n = 68 service users + 74 family members in mixed groups n = 52 service users + 65 family members in routine care	Mixed individual family and group program included 6 monthly family psychoeducational sessions Facilitated by experienced psychiatrists	Family members' general mental state, including depression and anxiety	Treatment group family members have significant improvement in knowledge and overall psychological well-being, especially in reducing shame and anxiety about the service user's illness	6-mo program, no follow-up No attrition reported
Liu et al,[38] 2004 China Chinese article	RCT	118 Service users and 118 relatives: n = 59 dyads in mixed psychoeducation program n = 59 dyads in routine care	Mixed individual family and group intervention in addition to routine therapy included individual home-visit session lasting 60–90 min/mo for 6 mo + 2 seminars for service users and families to exchange experience	Family outcomes on knowledge and attitude using self-developed tools	Treatment group has significant effects on family members' knowledge and attitude toward schizophrenia, hope for recovery, insights, and compliance toward medication	No follow-up; no incomplete outcome data reported Tools used and data reported were ad hoc
Merinder et al,[39–42] 1998–2000 Denmark	RCT	46 Service users and 46 relatives: n = 23 service users and relatives in separate psychoeducation groups n = 23 dyads in standard care	8 Psychoeducational sessions, duration unclear, on a weekly basis for 5–8 participants, conducted separately for service users and relatives The intervention used didactic, interactive method standardized with manual	Relatives' knowledge, satisfaction, families' expressed emotion	Significant changes in satisfaction with relatives' involvement; improvement in knowledge in service users and relatives postintervention but not maintained at follow-up	Follow-up at 12 mo No details on attrition
Posner et al,[43] 1992 Canada	RCT	55 Family members: n = 28 in psychoeducational support group n = 27 in a wait-list control group	5–9 Carers in each psychoeducational group, which had eight 90-min sessions weekly Each session had half as didactic teaching on schizophrenia and related caring issues and half on group discussion Facilitated by 2 experienced therapists	Family members' knowledge, consumer satisfaction, negative feelings for service users, ways of coping, psychological distress	A significant increase in family members' knowledge following the group sessions and up to 6-mo follow-up and greater satisfaction with health care services No changes in other outcomes	Follow-up at 6 mo Only 70.9% of family members completed the trial 9 (32%) Dropped out of the group program
Rotondi et al,[9,44] 2005, 2010 United States	RCT	31 Service users and 21 informal support persons: n = 11 dyads + 5 service users in the telehealth intervention group n = 10 dyads + 4 service users in treatment as usual	An Internet-based psychoeducation intervention, including online therapy groups facilitated by clinicians based on manuals by Anderson et al[76] and McFarlane et al[82]; means for asking questions of the expert; a library of questions and answers; resources and news items; and educational reading materials No prescribed duration of use, but observation lasted 3 mo	Family members' disease-related distress, perceived social support	There were no significant differences in outcome variables between the support persons across 2 groups, apart from those in the treatment group having better knowledge about prognosis at 1-y follow-up	Both service users and carers used the online groups most Average no. of hits by carers = 229.7/3 mo

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Study	Study Method	Participants and Conditions	Intervention: Design, Duration, and Theoretical Framework	Outcomes	Major Findings	Attrition and Follow-Up	
Shin,[45] 2004 United States Focusing on Korean American parents	RCT	48 Parents of people with schizophrenia: n = 24 in psychoeducation group n = 24 in individual supportive sessions	10 Weekly 90-min group sessions, facilitated by a Korean-speaking social worker Each session used a format of lecture, followed by question and answer and group discussion Manual was based on a combination of Falloon et al,[73] Berheim and Lehman,[83] and Anderson et al[76]	Parents' perception of stigma, empowerment in family, the problem-solving and behavioral strategies utilized by families in difficult or problematic situations	Significant difference in reduction in stigma, increase in empowerment, and carers' coping skills in the treatment groups were noted	Lacks follow-up Program modified to suit the Korean cultural characteristics and favors a didactic format	Syntheses 1 and 2
Smith and Birchwood,[46] 1987 England	RCT	40 Family members: n = 20 in psychoeducation group n = 20 in the postal condition	Group included 4 weekly 90-min sessions using a semistructured format including oral presentation and audio-visual aids and information booklet Facilitated by a clinical psychologist Written homework exercise was given at the end of each session	Family outcomes on relatives' knowledge acquisition, beliefs about schizophrenia and its treatment, worry and fear, family stress	Knowledge acquisition, psychological distress, and burden were improved significantly in both groups at end of study and follow-up Group relatives fared better No other significant difference	Follow-up at 6 mo Good retention in the brief program	
So et al,[47] 2006 Hong Kong	RCT	45 Carers (only) of young people with first-episode schizophrenia: n = 22 in brief psychoeducation group n = 23 in 6-week waiting-list group	Brief psychoeducation group for carers included 6 weekly 90-min sessions for 4–8 carers in each Sessions focused on education on early psychosis and related management tissues Facilitated by a MSc-level psychologist	Family's outcomes on expressed emotion, knowledge, experience of caring using the Experience of Caregiving Inventory, coping activities, general health, stressful life events	Treatment-group carers showed a significant increase in knowledge at postintervention, but the increase was not maintained at follow-up No significant changes in all other outcomes	Follow-up at 6 mo Attendance of the group was good Engagement strategies included use of community venues and phone reminders	
Szmukler et al,[15] 2003 England	Exploratory RCT	61 Carers: n = 30 in mixed psychoeducation n = 31 in control (= 1-h single session plus the written and video information)	Designed based on the stress appraisal–coping model of caregiving, the 2-phased program included 6 weekly 1-h individual sessions followed by 12 biweekly 90-min relatives' group sessions Group sessions had talks and group discussion Facilitated by a THORN-trained mental health nurse	Carers' outcomes on psychological morbidity, appraisal of caregiving, coping, social support	The carers' program did not offer any significant advantage on any of the carers' outcome measures	Study identified significant engagement and recruitment problems: only 42% participated in the study	
Zhang et al,[48] 1993 China	Cluster RCT	3,092 Family members across 5 Chinese cities: n = 2,076 in the education program n = 1,015 in usual care	Educational program consisted of 10 lectures and 3 discussion groups conducted over a year, using a staggered schedule Facilitated by mental health workers 20–40 Family members in each group	Family members' knowledge about schizophrenia, burden of care, service users' level of disability perceived by family members	Carers' knowledge about schizophrenia and various coping strategies increased; the perceived burden on the family caring for a mentally ill member was also significantly improved	Follow-up to 1 y after the group sessions Attendance and completion rate were 77.3%–99.3% Strategies included local delivery by trained workers, repeated sessions	
Glynn et al,[49] 2010 United States	Quasi-experimental–nonequivalent comparison group with archival data	42 Family members: n = 26 family members in online support group n = 16 control family members from archival data	A 1-y online relative support program with multiple components: discussion board, resource links, written and brief streaming video educational presentations, and real time chat (60 min weekly and biweekly) Facilitated by a psychologist and researcher	Relatives' distress, especially anxiety/depression and somatization; relationship stress; perceived social support; and use and view of Web site	No significant difference between groups in relatives' outcomes Treatment group showed a trend toward improvement over time on family relationship stress levels	No follow-up reported Completion rate was 79% (20/26), with overall good end-of-treatment appraisal	
Haley et al,[50] 2011 Ireland	Quasi-experimental design	56 Family carers: n = 35 in the "remote" test site n = 21 in the "host" site	Program had 6 weekly 2-h sessions 2 Experienced therapists facilitated each site Each session comprised 1 h of didactic teaching in small group and 1 h of interactive discussion emanated from both sites between all participants	Family carers' outcomes on knowledge about schizophrenia	Both groups increased their knowledge significantly over time	Lacks follow-up 6 Relatives dropped out across sites	

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Table 2 (continued). Summary of Included Studies Investigating Psychoeducational Interventions Targeting Family Members of People With Schizophrenia (studies are ordered according to their inclusion in syntheses 1–3)

Study	Study Method	Participants and Conditions	Intervention: Design, Duration, and Theoretical Framework	Outcomes	Major Findings	Attrition and Follow-Up	
Kane et al,[51] 1990 United States	Quasi-experimental design	49 Family members (nearly all parents) of 37 service users with schizophrenia: n = 24 in psychoeducational intervention n = 25 in unstructured, carers-led sessions	Group consisted of 4 weekly 2-h sessions facilitated by a experienced nurse-researcher and nursing students Modeled on Falloon's 1984 program[73] Each session included information giving and discussion and exercises	Family carers' knowledge acquisition, perceived social support, distress and inability to cope with the service user's problems, depression, satisfaction with the intervention	Psychoeducation group carers have better effect for depression and satisfaction No significant difference in other outcomes across the 2 groups	Lacks follow-up Reported 90% completed the intervention, but 11 across groups dropped out	Syntheses 1 and 2
Prema and Kodandaram,[52] 1998 India	Pretest and posttest design with a comparison group	60 Family members: n = 30 service users and relatives in the psychoeducation program n = 30 dyads in usual care plus queries answered	The mixed individual and group psychoeducation program included (1) two 90-min teaching sessions with 5 dyads and (2) two 30-min individual sessions to discuss issues specific to index service users	Family members' distress on 3 aspects: personal and biological, family and social, occupational	The family members' occupational distress, personal and biological distress, and family and social distress were significantly reduced following the psychoeducation at 6-mo follow-up	Lacks details on program design, facilitation, and attendance/attrition	
Stengard,[53] 2003 Finland	Comparative, descriptive design with 2 nonequivalent groups	197 Family carers: n = 69 in 2 formats of the oral presentation groups: weekly or compressed over 1 weekend n = 128 in video education	Oral presentation groups comprised 8 weekly 2.5-h sessions (or compressed over a weekend course) 69 Carers in 8 groups Sessions had a combination of lecture and group discussion	Family outcomes on relatives' knowledge about the illness, level of expressed emotion, objective burden, psychological distress	Knowledge increased postintervention and retained at follow-up in both oral presentation groups Psychological distress improved across all groups	Due to inconsistency of tools used across groups and new outcome measures devised for this study, much data were not usable	
Cassidy et al,[54] 2001 Ireland	Single cohort pretest and posttest design	101 Relatives	"Carers Education Programme" had seven 2-h sessions over 8 wk, run by 3 therapists Each session had didactic small group teaching and group discussion Between-session reading is emphasized	Relatives' outcomes on knowledge about schizophrenia and its treatment	Relatives showed significant increase in their knowledge in all areas after the program	No discussion on retention or attrition	Synthesis 2
Canive et al,[55] 1996 Spain	Single cohort repeated-measures design	68 Parents of service users who had recent relapse and lived with them	A psychoeducational group of 6 weekly 1.5-h sessions Each group had a maximum of 15 parents and was facilitated by a psychiatrist and a psychiatric resident Each session had a lecture and group discussion	Parents' outcomes on knowledge, subjective distress, perceived social impact of service user's illness, annoyance with service user's behavior, expectation about service user's recovery	All parents acquired increased knowledge immediately following the course; however, knowledge declined at 9-mo follow-up No significant changes in other measures	Follow-up at 9 mo Over 80% of parents attended 4 or more sessions Evening sessions facilitated attendance	
Cazzullo et al,[56] 1989 Italy	Single cohort pretest and posttest design	17 Relatives of 14 service users	The information group had 16 weekly 90-min sessions Sessions included information giving by experts and group discussion, 8–10 carers in each group, facilitated by 2 therapists	Relatives' knowledge over 7 domains of schizophrenia	Family members had a significant increase in their information level, especially over prognosis and management	No follow-up; no attrition data	
Chow et al,[57] 2010 Canada (specifically for Chinese and Tamil ethnic minority groups)	Single cohort pretest and posttest design with carers	20 Family members of 14 service users: n = 11 of Chinese ethnicity n = 9 of Tamil ethnicity	Twelve 2-h monthly group sessions led by a supervisor and 2 facilitators who spoke the carers' languages Program was adapted from the multifamily group by MacFarlane but was briefer and integrated with cultural specific considerations	Relatives' perceived burden, psychological, and physical well-being	All family members significantly increased their acceptance of their ill relatives No significant changes in other outcomes	57% of family members attended at least 6 sessions Engagement strategies included culturally sensitive considerations	
Gonzalez-Blanch et al,[58] 2010 Spain	Prospective observational study with single-cohort design	23 Key relatives of 23 service users with first-episode psychosis	Family psychoeducation group for 6 families inclusive of the service users included 8 biweekly sessions Facilitated by multidisciplinary clinicians	Family members' subjective and objective burden, expressed emotion	Family burden and expressed emotion did not change after the intervention	High attendance rate, with key relatives attending 86% of all sessions Lacks follow-up	

(continued)

Table 2 (continued). Summary of Included Studies Investigating Psychoeducational Interventions Targeting Family Members of People With Schizophrenia (studies are ordered according to their inclusion in syntheses 1–3)

Study	Study Method	Participants and Conditions	Intervention: Design, Duration, and Theoretical Framework	Outcomes	Major Findings	Attrition and Follow-Up	
McWilliams et al,[59] 2010 Ireland	Prospective preintervention and postintervention evaluative study	31 Caregivers of people diagnosed with first-episode psychosis	A program developed specifically for families affected by first-episode psychosis, had 6 weekly 90-min multifamily group sessions plus a booster session 6 mo later Sessions included presentations and group discussion	Caregivers' knowledge about psychosis, attitude to treatment	There was improvement in knowledge of psychosis and specifically on medication among carers, but not other outcomes	Only 26 of 31 participants' outcome data are available No follow-up, not even after the booster session at 6 mo	Synthesis 2
Morris et al,[60] 1999 Australia	Pretest and posttest descriptive study design	20 Relatives of young people (aged 16 to 35 y) experiencing a first episode of psychosis	Education program has five 2-h weekly sessions 20 Family members in 2 groups, each facilitated by 3 multidisciplinary team clinicians	Family members' knowledge and confidence in managing the illness and dealing with crises before and at end of group session Satisfaction using a post group measure	Families had significant gains on knowledge about psychosis and services and increased confidence about managing the illness and dealing with crisis	Lacked follow-up and attrition data Consumer satisfaction ratings were strongly supportive of the program	
Mueser et al,[61] 1994 United States	Single cohort pretreatment and posttreatment design	30 Family members of 8 service users/families	Educational family therapy was an individual family-based psychoeducation program that included didactic teaching by clinicians supplemented with written manual Mean duration = 26.75 sessions	Family members' knowledge about schizophrenia and illness burden	All made significant knowledge gain immediately after the module from baseline to 6 mo and to 1 y	28 Completed knowledge test results (including service users, 74%) were available Lacks follow-up and attrition data	
Pakenham and Dadds,[62] 1987 Australia	Descriptive pretreatment and posttreatment design	7 Parents of 6 service users diagnosed with schizophrenia	Supportive educational group included nine 2-h weekly sessions, half education and half supportive experience sharing between parents, facilitated by a clinical psychologist	Parents' knowledge of schizophrenia, perceived burden, social performance and interference to family life, global distress, satisfaction using a sessional rating scale	Significant improvement in knowledge and decrease in personal distress from baseline to posttreatment Also significant increase in parents' outings and social contacts	Acceptance was high: 6 of the 7 participants attended all sessions Satisfaction rating was consistently high throughout the program	
Tel and Esmek,[63] 2006 Turkey	Single cohort preintervention and postintervention evaluative design	30 Relatives	Intervention included six 45-min sessions over 6 wk, in which information was given on schizophrenia and related management issues Facilitated by psychiatric nurses	Family relative's knowledge and coping with stress	A significant increase in relatives' knowledge and improvement in overall coping with stress, especially in optimism and seeking social support	No data on retention or attrition Lacks follow-up	
Yamaguchi et al,[64] 2006 Japan	Single cohort preevaluative and postevaluative study	46 Relatives of inpatients	Psychoeducational groups for 2–6 relatives included four 2-h sessions over 2 mo Sessions included lectures and interactive discussions facilitated by doctors and nurses	Relatives' anxiety, burden, and expressed emotion	Significant improvement over anxiety and burden across all relatives, especially the high expressed emotion subgroup (n = 15), was reported	All 46 relatives attended at least 3 sessions, but 4 dropped out, and their data were not included Lacks follow-up	
					Major Findings		
Buksti et al,[65] 2006 Denmark	Descriptive survey using postintervention questionnaire design	35 Relatives of 26 service users with first-episode psychosis	A closed-group program based on psychoeducational and psychodynamic principles Each group had 6–12 participants, eight 2-h weekly sessions Facilitated by 2–3 professionals, with external speakers giving talks on topics	To explore family members' satisfaction with the actual knowledge received and impact on their ability to cope and to share experiences with others	Overall satisfaction with the format and content of the course was high despite few carers feeling that the group had improved their collaboration with the treatment system or changed their feelings of shame and guilt Relatives most appreciated meeting and sharing experiences with others Some suggested the group should have been made available to them even earlier		Synthesis 3

(continued)

Table 2 (continued). Summary of Included Studies Investigating Psychoeducational Interventions Targeting Family Members of People With Schizophrenia (studies are ordered according to their inclusion in syntheses 1–3)

Study	Study Method	Participants and Conditions	Intervention: Design, Duration, and Theoretical Framework	Outcomes	Major Findings
Synthesis 3					
Cabral and Chaves,[66] 2010 Brazil	Descriptive survey design using a self-completed questionnaire	44 Family carers of people with first-episode psychosis	Multifamily groups based on McFarlane and colleagues' approach[82] to reinforce sharing experiences and information giving Duration unclear, but all included carers attended at least 6 sessions Meetings were held on weekday mornings	To investigate family members' knowledge acquisition and their opinion and satisfaction with the intervention	Approximately two-thirds of family members reported their understanding of the illness improved, which also influenced their understanding of the service users and their treatment 95% of those who approved the multifamily group format especially liked the sharing of experiences Time of meetings and lack of supplementary information may have impacted outcomes and recruitment
Li and Arthur,[19] 2006 China	Qualitative design using individual interview postintervention	19 Subjects who participated in an individual interview (7 from treatment group, 12 from control)	As per Li and Arthur[20]	To explore experimental group carers' experience with the family education program and to contrast that to the control group carers	Participants from the experimental group identified that the family education program was useful, helpful, and necessary, especially in improving their knowledge and skills in caring at home Most highly rated the program style, particularly liked nurses to be the facilitators Also appreciated follow-ups
Barrio and Yamada,[67] 2010 United States, for Spanish-speaking Latinos of Mexican origin	Postintervention qualitative evaluative studies using focus group and in-depth interviews	59 Service users-family carer dyads: n = 26 pairs in treatment arm—culturally adapted psychoeducation groups for families of people with schizophrenia n = 33 in usual care	Sixteen 2-h weekly sessions psychoeducation program developed and run for Spanish-speaking Latinos of Mexican origin who were family members of service users with schizophrenia in southern California 10–15 Carers in each group Peer support is optimized	To explore family members' perceived changes in knowledge, attitude, and practice/behavior 1 month following end of program	All reported an increase in knowledge, especially acknowledged within a Latina family context and cultural belief system Many appreciated the group experience Carers also reported an increased sense of empowerment and assertiveness in seeking treatment, improved family relationships, reduced stigma Engagement is reinforced by culturally appropriate adaptation
Budd and Hughes,[68] 1997 United Kingdom	Postpsychoeducation program qualitative interview	20 Family carers of service users diagnosed with schizophrenia	An educational intervention developed based on Smith and Birchwood[46] The program included 4 to 5 sessions, delivered by the multidisciplinary team Family Service, to the individual families at their own home	To identify helpful and unhelpful aspects of the program using individual semistructured interview with carers	Most carers appreciated the increase in their understanding of schizophrenia, and that helped them to reattribute problem behavior to illness rather than to service users Increased understanding of medication treatment and importance of compliance was also highlighted Some carers wanted a longer program and the program being provided to them much earlier

Abbreviations: EPPIC = Early Psychosis Prevention and Intervention Centre, RCT = randomized controlled trial.

design features of the 44 included studies. Further critique of the quality of the studies is included within each synthesis.

Synthesis 1: Effectiveness of Psychoeducational Intervention for Family Members

This synthesis of intervention studies included 24 randomized controlled trials and a further 5 trials with quasi-experimental designs (Table 2, references 6–11,14,15, 20–53). The 29 trials originated from China (9 trials; 2 published in Chinese,[37,38] 7 in English), United States (6 trials), Canada (1 trial), Europe (5 trials), United Kingdom (4 trials), India (2 trials), Chile (1 trial), and Iran (1 trial). Altogether these trials included a total of 6,164 participants: 823 service users, and 5,341 family members of people diagnosed with schizophrenia or related psychotic disorders. The sample sizes in the included studies vary substantially; the smallest study had 40 family carers,[46] while the largest study, conducted across 5 cities in China, included 3,092 relatives.[48] Across the 29 trials, the mean sample size was 212, while the median sample size was 84.

Only 8 trials (28%) recruited both service users and their key family carers as service user–carer pair participants (dyad).[7,8,20,28,37–39,44] Commonly in those studies conducted in Oriental-Asia countries that targeted dyad participants, the service users and their family carers attended the sessions/intervention together.[7,20,28,37,38] Other studies arranged separate or parallel sessions/programs for the service users and their families, respectively.[8,39,44]

Most of the trials (21 of the total of 29, [72%]) recruited family members only as participants, although some of the studies also collected service users' outcomes, most frequently their general mental state and number of relapses.[27,43,47,49] Most of these trials recruited 1 close relative or family member who had key care-giving responsibilities or most contacts with the service users in the study.[6,14,15,46] Of the 16 studies that specified the relationships of the participants to the concerned service users, 1 study,[11] conducted in Iran, was dedicated to mothers. Two further studies focused on parents as participants: parents in Ireland[50] and American-Korean parents.[45] The remaining 13 studies usually had mothers or parents as the majority of participants, ranging from 60% to 85% of the total participants. Spouses, if included, especially in studies conducted in Oriental-Asian countries such as China and India, were among the second most common participants, ranging from 4% to 32% of the total participants.[7,48] Children and siblings of service users were the other 2 most frequently involved family members, although each rarely comprised more than 5% of the total participants on average in most trials.

The earliest research into psychoeducational intervention for families of people diagnosed with schizophrenia dates back to 1987 by Smith and Birchwood[46] in the United Kingdom and Abramowitz and Coursey[21] in the United States. These early studies explored various formats and modes of delivery and informed the design of these interventions, either on their own or in combination with other therapeutic components within a broader multimodal intervention, such as family intervention.[69–71] In the following decade, clinical implementation and research into psychoeducational interventions spread widely to the East.[38,48] Indeed, since the late 1990s, studies conducted in China and other non-English speaking countries have started to dominate the published literature. Many of these later studies tend to be bigger in scale and aim to establish psychoeducation as a cost-effective intervention for family carers, building on the findings of earlier studies that developed and established the feasibility of psychoeducation as a discrete intervention.[8,48] A high proportion of these later trials also had an additional aim in adapting and modifying the well-established psychoeducation approaches from the United Kingdom or the United States into many non-Caucasian ethnic groups (eg, Korean,[45,72] Chinese,[20,37] South American Latino,[35,66] and Indian[36,52]).

Despite the long tradition and the few seminal theoretical frameworks underpinning the psychoeducational interventions, as discussed at the outset of this review, only 6 of the 29 trials mentioned the theoretical framework they used in designing the psychoeducational interventions and, hence, the rationale for selection of the primary (and secondary) outcome(s).[7,15,22,23,27,51] Among those studies that identified their theoretical base, Carra and colleagues' study[22] cited Leff and colleagues' (1989) model,[69] and Kane and colleagues' study[51] used an intervention that was developed on Falloon's model of family psychoeducation.[73] The few trials conducted in Hong Kong all cited a well-established theoretical model in supporting the development and design of their interventions, including Early Psychosis Prevention and Intervention Centre (EPPIC) Psychoeducational Working Party Framework,[74] Atkinson and Coia's framework,[75] and Anderson and colleagues' model.[76] Szmukler and colleagues' study[15] was clear in addressing the family carers' coping through psychoeducation using Lazarus' stress appraisal and coping theory.[4]

The trials included tested the effectiveness of the psychoeducational intervention on family members of people affected by long-term schizophrenia or related disorders, with only 3 studies focused on families of individuals with first-episode psychosis.[14,24,47] Altogether, the studies cover a range of care settings, including inpatient,[32] community,[7,15,26] and cross inpatient-community rehabilitation.[20,48]

Most of the trials used "standard care" or "treatment as usual" as the comparison to evaluate the effectiveness of psychoeducational interventions (19 of 29 trials, 66%). A few studies compared psychoeducational groups with other modes of delivery using a less intensive format: for example, postal booklet or video (Internet-link).[6,46,50,53] Only a handful of studies compared psychoeducation with another active intervention head to head, like a mutual support group that was carer led[25–27] or a behavioral family group.[36]

The outcomes reported across the studies vary a great deal. Most frequently reported primary and/or secondary outcomes are family members' knowledge (acquisition) of schizophrenia and management of common symptoms. Other frequently reported outcomes are coping, attitude toward the illness or to the service users, perceived burden, expressed emotion, perceived social support, distress and psychological morbidity, and general well-being. Overall, there is substantial heterogeneity across the studies, including variations in the populations, the design and delivery of the interventions, and a wide range of outcome measures being reported. Furthermore, the scales used to measure the variety of outcomes over a range of time points (from 1 day to 2 years following intervention) differ substantially, rendering most results across studies incomparable. For instance, family carers' well-being has been measured using a number of scales that report either a number of positive direct measures (such as quality of life, mental well-being) or an array of quasi measures of well-being like psychological morbidity (either in a general sense as distress or in specific definitions, as depression or anxiety, fear, and worry). Many of the scales were outcomes of modification or adaptation of validated scales made by the research teams to suit local ethnic needs,[36,38] and there are also many examples of invalidated scales generated ad hoc by researchers. This limitation rendered a lot of reported data unusable and findings difficult to generalize outside of the research area. A couple of the trials that tested the efficacy or feasibility of online/Web-based psychoeducational intervention for family carers (and service users as well)[9,44,49] focused on usability, retention, and attrition in addition to the outcomes of distress or self-efficacy.

As quantitative data could not be statistically combined for a meta-analysis, extracted outcome data were synthesized into a narrative summary herewith. In terms of effectiveness, most studies that targeted knowledge (acquisition) as a primary or secondary outcome reported significant improvement at end of treatment[6,20,23,37–44,47,48] and also at follow-up.[6,9,20,23,37,38,43,44] Moreover, perceived self-efficacy or confidence related to coping with the caring situation and problem-solving[23,25–27] and satisfaction with the intervention[23,39,43] were often found to be positively correlated to increased knowledge. Some studies reported that they successfully enhanced the family members' perceived social support, especially when the interventions were delivered in a group format,[23,24] although increased use of services

Table 3. Duration (contact hours) and Formats of All Psychoeducational Interventions Included in Synthesis 2[a]

	Intervention Duration Between 4–10 Weeks		Intervention Duration Longer Than 10 Weeks	
Duration and Format	Study, Date	Contact Hours	Study, Date	Contact Hours
Group format that incorporated peer support	Abramowitz and Coursey,[21] 1989	12	**Carra et al,[22] 2007**	**42**
	Birchwood et al,[6] 1992	**6**	**Chien and Wong,[24] 2007**	**36**
	Chan et al,[7] 2009	**20**	**Chien et al,[25–27] 2004, 2005, 2006**	**24**
	Cheng and Chan,[23] 2005	**20**	**Fiorillo et al,[8] 2011**	**27**
	Merinder et al,[39,40] 1998–2000	12	Gutierrez-Maldonado et al,[10,35] 2007, 2009	18
	Posner et al,[43] 1992	12	**Koolaee and Etemadi,[11] 2010**	**24**
	Shin,[45] 2004	15	Kulhara et al,[36] 2009	8
	Smith and Birchwood,[46] 1987	6	**Zhang et al,[48] 1993**	**16**
	So et al,[47] 2006	**9**	Cazzullo et al,[56] 1989	24
	Haley et al,[50] 2011	12	Chow et al,[57] 2010	24
	Kane et al,[51] 1990	**8**	**McWilliams et al,[59] 2010**	**12**
	Stengard,[53] 2003	20		
	Cassidy et al,[54] 2001	14		
	Canive et al,[55] 1996	**9**		
	Gonzalez-Blanch et al,[58] 2010	**8**		
	Morris et al,[60] 1999	**10**		
	Pakenham and Dadds,[62] 1987	**18**		
	Tel and Esmek,[63] 2006	4.5		
	Yamaguchi et al,[64] 2006	**8**		
Individual carer/family format	Glick et al,[29–31] 1991, 1993	8	Mueser et al,[61] 1994	26
	Leavey et al,[14] 2004	7		
Mixed (individual session[s] + group meetings)	Prema and Kodandaram,[52] 1998	4	**Li and Arthur,[20] 2005**	**42**
			Li and Xu,[37] 2003	12
			Liu et al,[38] 2004	12
			Szmukler et al,[15] 2003	24
Others[b]			Rotondi et al,[9,44] 2005, 2010	Unlimited
			Glynn et al,[49] 2010	Unlimited

[a] Bold print denotes studies with retention/completion rate ≥ 80%.
[b] For example, online.

due to increased knowledge of available resources was also reported.[9,15,44,49] However, psychoeducation would seem to have less impact on other outcomes, especially on family carers' perceived burden, service use, psychological well-being or distress, with a few studies reporting no difference between intervention and comparison groups.[7,14,15]

Synthesis 2: Common Ingredients and Implementation Considerations of Effective Psychoeducational Interventions

In addition to the 29 experimental and quasi-experimental trials discussed in synthesis 1, eleven additional quantitative studies using single cohort/within-subject preintervention and postintervention design (5 from Europe, 2 from Australia, 1 from United States, 1 from Canada, 1 from Turkey, and 1 from Japan) were included in a second synthesis (see Table 2, references 54–64) to establish the common ingredients of psychoeducational interventions and implementation considerations. In comparison to the 29 trials, the quality of the 11 quantitative studies included in this second synthesis was weaker overall. The sample size ranged from 7 parents[62] to 101 relatives[54] (mean = 38, median = 31). All nonexperimental studies, apart from 1 by Canive et al,[55] included no follow-up after the completion of the psychoeducational interventions.

The duration of the psychoeducational interventions reported by the 40 quantitative studies ranged from 4 weeks (ie, the minimal duration as inclusion criteria)[6,46,51,52] to 12 months.[48,49,57] Commonly, interventions lasted between 8 and 36 weeks for 6 to 12 weekly or biweekly sessions.[7,15,22,24] Some used a special schedule so that early sessions were delivered more frequently than latter sessions, which were spaced out with longer gaps between sessions.[20,38] Programs by McWilliams et al[59] and Fiorillo et al[8] used booster sessions following a gap from the completion of the main education program.

In terms of formats of delivery, there were 4 main categories: individual, in that a therapist would see a relative or a whole family unit for the intervention[14,61]; groups, in which relatives would attend sessions together[6,7,48]; mixed, in that the programs usually would start with a few individual sessions before all relatives were brought together in a support/discussion group[15,20]; and other, that is, any format or mode that did not fit any of the other 3 categories, such as innovative online delivery that, despite no face-to-face contacts between participants and facilitators, provided both information and peer support through an online discussion forum or virtual groups.[9,44,49] Table 3 summarizes all interventions in terms of their duration (brief [4–10 weeks] vs long [> 10 weeks] programs) and specifies the total contact hours and the delivery format of each program.

Across all 40 quantitative studies, 15 studies (38%) gave no data on retention, completion, or attrition explicitly. Of the remainder that reported completion and attrition, 18 studies (45%) reported good completion (≥ 80%) or low attrition (< 20%) and are highlighted in Table 3. Seven studies (17%) reported substantial recruitment, retention, and engagement problems; for instance, Leavey et al[14] reported that only 58% of participants partially completed the treatment, and Szmukler et al[15] reported a recruitment rate of 42% from all potentially suitable family carers across South London regions.

Subgroup analysis comparing brief (≤ 10 weeks) versus long (> 10 weeks) interventions was inconclusive, although many more studies reported brief rather than long interventions, so limiting the evidence upon which an evaluation could be made. Furthermore, duration of programs may not accurately reflect their intensity in terms of total hours of contact, which also depends on a combination of program design factors, such as the frequency and length of sessions and group size. For instance, while all brief programs were delivered within 10 weeks, most covered 6–12 hours of contact time,[6,39,40,46,47,63,64] a minority delivered up to 30 hours of contact.[21,23,53,56,57,61] Most longer programs delivered a higher number of contact hours, ranging 24–36 hours.[11,24–27,] However, some longer programs delivered less frequent sessions and ended up with a small number of contact hours, ranging from 8 to 12 hours.[36–38,59] Overall, the contact time of the interventions that have the successful recruitment and retention rate is estimated at 16–18 hours over 8–24 weeks. The studies that have evaluated group programs incorporating a peer support element report them to be popular with families, and recruitment, retention, and completion rates appear to be comparable to those of individual psychoeducation programs (see Table 3).

An array of engagement strategies were used by the studies, with varying degrees of success. These are summarized below:

- Running sessions outside of office hours, including weekends to facilitate attendance by working relatives.[7,23,27,47]
- Repeating sessions 2 or more times to enhance flexibility for relatives to choose sessions convenient for themselves.[7,23,24]
- Modifying programs to meet local cultural ethnic preferences: eg, a more didactic format for Korean American parents[45]; including a Sunday lunch and meeting in Chinatown for Chinese relatives in Canada.[57]
- Reminders in advance of sessions via phone.[23,24,47]
- Engagement reinforcement between program facilitator(s) and participants by arranging preprogram meetings.[15,47]
- Matching the ethnicity of the facilitator(s) to the participants.[14,45,57]
- Conducting sessions in a local neighborhood to enhance convenience of attendance.[48,50,57]
- Facilitation by experienced mental health workers; for instance, a number of studies specified using experienced mental health nurses with at least 10 years' postqualifying experience and specific training in running educational groups[7,15,20,23,24] and many others were run by experienced clinical psychologists/ researchers.[6,46,60]
- Provision of computers and online access to the relatives to facilitate their use of the online support resource.[9,44]

All psychoeducational interventions reported by the studies shared the cardinal feature of education about schizophrenia and related caring issues. Most programs included coverage of some common coping strategies to help family members communicate with the service users and/or problem-solve common caring issues more effectively. Among those strategies, problem-solving skills, communication skills, and information on local resources most commonly formed the program content.[7,15,24,45,60] The overall program content tended to be delivered in a modular design, with the program spread out over its duration.

The peer support element was commonly emphasized in those programs using a group format. However, none of the studies explicitly discussed the theoretical model used to guide the peer support or group discussion element, if used. If group discussion was included, most programs described it being used to reinforce mutual learning and support among family carers.[15,21] Most programs had the peer support/group discussion element scheduled into the later part of the sessions, and discussion focused on the education topics covered in the early part of the sessions[6,7,24,59,62] across the program. A few programs completed all the didactic education in the early part of the program before focusing on peer-support group in the latter half of the program.[15,20]

Between-session practice of skills learned from the sessions was rarely emphasized across programs. Only 2 studies provided a rationale to reinforce between-session learning and practice through reading, quiz, and homework tasks.[6,46]

Synthesis 3: Family Members' Experiences and Perceived Acceptability of Psychoeducation

Altogether, 5 studies[19,65–68] explored family members' experiences of receiving psychoeducation and perceived acceptability of the intervention. One study originated from each of the 5 countries: China,[19] Brazil,[66] United States,[67] United Kingdom,[68] and Denmark.[65] Three used qualitative methods like semistructured interviews and focus groups with participants following the intervention,[19,67,68] and 2 used a postintervention questionnaire survey.[65,66] Table 2 summarizes these 5 studies.

In general, the family members' satisfaction reported across the 5 studies in this synthesis was high. Common components of the programs that were repeatedly highlighted and attributed to the high satisfaction included group format that reinforced listening to and sharing of experiences[66,67]; skillful facilitation by mental health professionals, especially their engaging attitudes toward family carers[19,65,67]; and psychoeducation being useful and helpful in filling a gap in the knowledge and skills needed by family carers.[19,66,68]

Although a couple of the programs targeted family members of individuals affected by first-episode psychosis and thus would have recruited the families in an early stage of their involvement with the health care services,[65,66] families wanted the provision to be made even earlier. This demand for early psychoeducational intervention for families was echoed in other studies.[68] On the contrary, the timing of the sessions and the lack of alternative or additional provision of

Table 4. Meta-Synthesis Matrix Integrating Common Ingredients and Implementation Strategies for Best Design of Psychoeducational Interventions

Key Ingredients and Implementation Strategies	Evidence of Effectiveness and Family Members' Views and Experiences of Psychoeducational Interventions: From Trials Using Experimental and Quasi-Experimental Designs	Evidence of Effectiveness and Family Members' Views and Experiences of Psychoeducational Interventions: From Other Studies	Review Recommendations
Programs including a peer support or group discussion element	Many trials using group programs reported positive results, although the group discussion element was not evaluated as an independent variable Individual programs did not enhance engagement or retention, nor effectiveness	Group programs were positively evaluated by participants who particularly valued sharing and listening to common experiences	Group format or delivery modes that optimize sharing of experiences among participants are desirable for peer support purpose Further research is needed to investigate how best to facilitate the peer support element
Intervention duration	No matching evaluation identified	Across programs that had high retention or completion rate, duration ranged from 4 to 52 wk, with total number of contact hours ranging from 6 to 42 h (delivered over an average of 17 wk)	Intensity of the program, in terms of hours of contact together with the duration of the intervention, seems more significant than either element alone Program lasting around 16–18 h over 8–24 wk is recommended
Program content	All interventions included fairly conventional content in covering information on schizophrenia and management and caring issues	Same as findings from trials Many included coverage on teaching problem-solving and communication skills in addition to information on schizophrenia, its treatment, and management	Cardinal content of psychoeducation, ie, information on illness and its management, should be embraced in all interventions Families expect the information to enhance their knowledge, coping, and self-efficacy
Implementation strategies to facilitate engagement and completion	Flexible and repeated sessions; skillful facilitation; modification incorporating ethnic-cultural considerations	In addition to the content of usual psychoeducation, facilitation and implementation enablers, such as flexible schedule, skillful facilitation, delivery in local neighborhood, seemed important	Strategies to enhance continuous participation are crucial for successful implementation Flexible scheduling is particularly important to suit the lifestyles and other commitments of family members
Provision	Trials covered a wide range of clinical settings, especially for families of service users with long-term illness	Families across service settings demanded the intervention to be provided much earlier	Increase the availability of psychoeducation and ensure provision to families as early as possible

audio-visual aids or supplementary information to face-to-face didactic presentation were highlighted as detrimental to family members' satisfaction.[66] Sessions run in evenings and weekends were in demand by working relatives.[66]

When discussing satisfaction and acceptability of such interventions, family members tended to list their perceived benefits as increased knowledge, changed attitude and belief toward the service users and hence modified behavior (eg, lessen criticism toward bizarre behavior or speech by service users), and improved sense of social support and empowerment.[19,65,68]

Meta-Synthesis: Implications From Literature for the Design of Psychoeducational Interventions

In the overall meta-synthesis, a matrix is developed in which the findings from the parallel syntheses were juxtaposed[17] to make recommendations regarding designing and conducting psychoeducational interventions with family members of individuals affected by schizophrenia (Table 4).

Based on this meta-synthesis, the following recommendations are made regarding key ingredients in designing psychoeducational interventions and best practice considerations in delivering such interventions for family members:

- Effective psychoeducational interventions all shared some common features in terms of content: in particular, information on psychosis and its management and coping strategies for family carers to manage the caring.
- Group programs that reinforce participant sharing of experiences, knowledge, and caregiving skills were more successful in engaging and retaining participants than programs that did not.
- Considerations for successful implementation are as important as the program design. Flexible scheduling and skillful facilitation are crucial in engaging with family members and accommodating their other commitments.
- Family members expect and appreciate psychoeducation to increase their knowledge about the illness and its management and, thus, enhance their coping and confidence/self-efficacy in dealing with caring demands.
- Many family members particularly appreciate sharing their experiences with other family carers, finding that it reduced their sense of isolation and enhanced mutual support.
- Families wanted psychoeducation to be provided to them as early as possible, once their family member becomes known to mental health services.

DISCUSSION

The current review of 44 studies across the world over the last 3 decades reflects the wealth of information about and increasing interest in psychoeducational interventions. The relative high number of trials included suggests that psychoeducational interventions are widely researched and popular in clinical practice across different continents.

The major output of this review is recommendations on the design of effective psychoeducational intervention for family members of people affected by schizophrenia, grounded in the evidence from existing quantitative and qualitative studies (see Meta-Synthesis section and Table 4). The findings of the review indicate that psychoeducation should be routinely provided to family members as early as possible following contact with health services. This recommendation echoes the existing and prior reviews in which psychoeducation was recommended to be routinely provided to service users with schizophrenia themselves due to its effectiveness in reducing relapses and promoting compliance with medication.[1,2]

This review identified specific and direct benefits of psychoeducational interventions for family members. These benefits include increased knowledge, which commonly correlates to better self-perceived coping and/or self-efficacy, and increased sense of social support.[6,20,22–24,48] However, a number of direct and positive measures of psychological well-being of family members are reported with an array of quasi measures, including psychological morbidity, negative impact from caring, and more entrenched and in-depth constructs like beliefs and attitude toward the service users and/or illness.[7,14,15] The sheer number of different scales used across studies to report these various outcomes presents a challenge to interpretation of results and renders the option of meta-analysis of findings across studies as inappropriate.[77]

Furthermore, caution is required when interpreting and generalizing the findings of studies reported here, as their participants were largely composed of mothers who had an adult child affected by long-term schizophrenia. Most of these mothers would have been in their key caring role for a long time and in their late adulthood (aged 60+ years). It seems possible that a high proportion of these family carers would have developed well-established beliefs about how much psychoeducation might or, more likely, might not change their caring situation, which might, in turn, influence their assessment of change in outcomes like burden, expressed emotion, and psychological morbidity.

Some studies argue that psychoeducational interventions should be used as an initial part of a more complex intervention, like family intervention.[69,71] Psychoeducation, given it is well received by families, could then serve to build a baseline knowledge and repertoire of coping strategies in the families as well as help engage them with health care service/professionals in preparation for more intensive intervention. Some researchers[6,7,46,70] also suggest that more intensive and complex interventions conducted over a longer period are required to complement psychoeducation and to produce an impact on intricate outcomes like beliefs and behavior toward schizophrenia or the service users with schizophrenia.

Future Research and Clinical Implications

Some common components of successful psychoeducational interventions appear to be well established. However, this review found a number of characteristics to vary across successful programs. The intervention duration and schedules of successful psychoeducational programs vary, with programs ranging from 6 to 42 hours across 4 to 52 weeks. The role and effectiveness of booster sessions, which were sometimes used in programs, are underexplored in previous studies. This review thus falls short of recommending an optimal intervention duration, although the contact time of the successful interventions is estimated at 16–18 hours over 8–24 weeks.

The collective understanding of the role and function of out-of-session practice and that of the group element, within the overall intervention design, remains limited. Only 2 trials investigated the differential effectiveness of out-of-session practice through quiz, exercises, and/or homework tasks,[6,46] and neither produced conclusive findings. The lack of attention to this feature is contrary to the ethos of ongoing practice and adoption of skills and knowledge learned in everyday life being core to all psychosocial interventions. Across all group program studies, little was articulated on the theoretical framework or facilitation considerations in terms of the peer support element. Group discussion, sharing personal experiences in caring, and mutual learning were the 3 most commonly noted activities in groups. Otherwise, there was no consensus over the group size[6,15,20,48,53] nor group mix considering participants' gender, length of caring, and any other demographic factors. Nonetheless, given that the group discussion element seems crucial in the effectiveness and engagement of the interventions with the participants, facilitators may wish to pay particular attention to these aspects.

As far back as the late 1980s, psychoeducational programs, especially when delivered in a group format, were proposed as a cost-effective intervention for service users and their families.[6,46,69] Nonetheless, research since then appears to have focused on spreading the interventions worldwide, and the feasibility of psychoeducational interventions for families across different settings and cultural ethnic context has been supported by recent studies. Little progress has been made in understanding the best design of the intervention, how the interventions impact or do not impact particular family outcomes, and how these impacts correlate to service users' outcomes like decreased relapse and better compliance. This dearth of information suggests that future studies should be more congruent and focused in their selection of primary outcome(s) of psychoeducational interventions by using well-validated outcome measurement scales[77] that are sensitive to the intervention and reflect its core tenants and theoretical underpinnings, as well as family members' expectations. In psychiatry, there has been a call for an increased effort to develop and apply agreed standardized sets of outcomes in clinical trials that are of value to all those interested in the results of evaluative studies, similar to the established initiatives such as the Core Outcome Measures for Effectiveness Trials (COMET).[77]

The majority of the studies included in this review used a face-to-face delivery format, mostly through groups. However, in the last decade, innovative design and delivery formats using online medium have arisen, as evidenced in 2 studies[9,44,49] in the United States and 1 study[78] in the United Kingdom, supplemented with low-intensity phone and/or e-mail support from mental health workers. While these appeared novel in the mental health field, psychoeducational interventions using online delivery and design have gathered more momentum and evidence in other long-term ill-health conditions (eg, dementia, diabetes, stroke care) worldwide.[79,80] Given ever-increasing demands on integrating evolving technologies to enhance accessibility and flexibility of evidence-based interventions,[80,81] further development to optimize online design and delivery of psychoeducational interventions for people with schizophrenia and their families would appear to be a worthwhile endeavor.

Limitations of the Review

This review focuses on the outcomes of psychoeducation for family members, rather than service users. But outcomes for family members are invariably reported as secondary outcomes, with those for service users being the primary outcomes, even though in most studies family members alone were the recipients of psychoeducational interventions. The secondary status of family members' outcomes is a limitation of this review. While family members' participation in psychoeducation is widely regarded as pivotal, the research targeting family members and reporting outcomes for them is limited, possibly because research that gives primacy to service user outcomes is more attractive to research funders. While the published literature was comprehensively searched for this review, there is also a possibility of publication bias in that studies with negative outcomes for service users (but possibly not for family members) are in the "file drawer."[17,77] Due to limitation of resources of the review team, only English and Chinese articles were considered for inclusion.

Disclosure of off-label usage: The authors have determined that, to the best of their knowledge, no investigational information about pharmaceutical agents that is outside US Food and Drug Administration–approved labeling has been presented in this article.

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Financial disclosure: **Dr Norman** and **Ms Sin** have no personal affiliations or financial relationships with any commercial interest to disclose relative to the article.

Funding/support: This review was developed as part of the E Sibling Research Project. Ms Sin is funded by a National Institute for Health Research (NIHR) Doctoral Research Fellowship (NIHR-DRF-2011-129) (United Kingdom).

Disclaimer: This article presents independent research funded by the NIHR. The views expressed are those of the authors and not necessarily those of the NHS, the NIHR, or the Department of Health.

Acknowledgments: The authors thank Karen Poole, MSc, Information Science, Information Specialist—Biomedical and Health Research, King's College London, for her professional advice and assistance in the systematic search process. Ms Poole has no personal affiliations or financial relationships with any commercial interest to disclose relative to the article.

Supplementary material: See accompanying pages.

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Supplementary material follows this article.

POSTTEST

To obtain credit, go to PSYCHIATRIST.COM (Keyword: December) to take this Posttest and complete the Evaluation online.

1. **Most studies of psychoeducation interventions for families of patients with schizophrenia that used knowledge acquisition as a primary or secondary outcome reported which of the following results?**
   a. Significant improvement at end of treatment but not at follow-up
   b. Significant improvement at end of treatment and at follow-up
   c. Minor improvement at end of treatment but not at follow-up
   d. No improvement
2. **Studies that reported increased knowledge among participants often found a correlation with their perceived self-efficacy or confidence related to coping with the caring situation and problem-solving.**
   a. True
   b. False
3. **Which of the following elements of the interventions was *not* associated with high satisfaction among participants?**
   a. Psychoeducation to fill gaps in knowledge and skills among carers
   b. A one-on-one format
   c. Engaging, skillful facilitators
   d. Sessions run on weekends and in evenings
4. **You have diagnosed Mr A with schizophrenia and, as guidelines recommend, will offer his family members psychoeducation. Which of the following methods should you implement to follow best practices according to available evidence?**
   a. Provide written information about the illness and tell them to call you with any questions about it
   b. Set up appointment times during office hours for family members to talk to you individually
   c. Invite family members to evening or weekend group sessions that provide psychoeducation as well as time for networking with other families
   d. Suggest they wait to attend any informational sessions until they have had some time to manage the patient on their own for a while so they will know what questions to ask

THE JOURNAL OF
CLINICAL PSYCHIATRY

Supplementary Material

Article Title: Psychoeducational Interventions for Family Members of People With Schizophrenia: A Mixed-Method Systematic Review

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DOI Number: 10.4088/JCP.12r08308

List of Supplementary Material for the article

1. **eTable 1** Summary of Excluded Studies

Disclaimer

This Supplementary Material has been provided by the author(s) as an enhancement to the published article. It has been approved by peer review; however, it has undergone neither editing nor formatting by in-house editorial staff. The material is presented in the manner supplied by the author.

Supplementary eTable 1: Summary of excluded studies

Studies - authors & country	**Reasons for exclusion**	**Methods**	**Summary description of the studies**
Barrowclough & Tarrier, 1990; Barrowclough et al., 1987; Tarrier et al., 1989; Tarrier et al., 1988 England	Not meeting intervention definition	RCT Included in Cochrane psychoeducation review 2011 and FI review 2010 but as FI in NICE review 2010	FI study Psychoeducation lasted only 2 sessions over 2 weeks, was used as a control rather than an active treatment, to compare with other active interventions.
Bauml et al., 2007; Pitschel-Walz et al., 2006; Pitschel-Walz et al., 1993; Pitschel-Walz et al., 2004 Germany	Not meeting intervention definition	RCT Included in Cochrane psychoeducation review 2011 and NICE Psychoeducation review 2010	Treatment group: N=125 service users and family members; Control: N=111. Treatment was group psychoeducation sessions, separate for service users and family members.
Breitborde et al., 2011 USA	Not meeting intervention definition	RCT in protocol stage	Multi-family psychoeducation is based on McFarlane model of MFG, i.e. a significant problem-solving element and is classified as FI rather than psychoeducation.
Chien & Chan, 2004; Chien et al., 2008 Hong Kong, China	Not meeting intervention definition	RCT	RCT comparing carer-led mutual support group against standard care.
Das et al., 2006 India	Not meeting intervention definition	RCT	A short structured educational programme of 2 sessions over 2 weeks, focusing on explanatory models of schizophrenia.
Gleeson et al., 2010 Australia	Not meeting intervention definition	RCT	The family component of Relapse Prevention Therapy combined psychoeducation and CBT within behavioural family therapy – does not fit inclusion criteria.
Glynn et al., 1993 USA	Not meeting intervention definition	Prospective research design	The relative workshop lasted for 1 day (7 hours), thus does not meet inclusion criteria.
Hazel et al., 2004 USA	Not meeting intervention definition	RCT	The family psychoeducation programme used the MacFarlane model, included both family members and the service users, classified as FI instead of pscyhoeducation as

			psychoeducation only made up a small fraction of the programme content and design.
Herz, 1996; Herz et al., 2000 USA	Not meeting intervention definition	RCT Included in Cochrane psychoeducation review 2011	Treatment programme was multi-modal, including psychoeducation plus intensive monitoring and intervention to prevent relapse. Primary outcomes and target participants were service users.
Hogarty et al., 1991; Hogarty et al., 1986 USA	Lacking family outcomes or involvement	RCT	1 year and 2 year follow up of the same RCT. Study lacks discussion of any involvement of family members nor report on any family carers' outcomes
Hugen, 1993 USA	Not meeting intervention definition	Single cohort pre-test post-test design	A one-day (7 hours) education workshop in design and the pre-test evaluation was conducted 2 weeks before ix, with post-test evaluation done 3 months after intervention.
Hussain et al., 2009 Ireland	Not meeting diagnostic criteria	Descriptive evaluative study	Service users' diagnosis are primarily severe or profound intellectual disability and co-morbid psychiatric illness. One-ff session. Used a prospective evaluation method with 35 next of kin, most were parents, 6 siblings.
Kaufman et al., 2010 U.S.A.	Study quality issue: severely under-recruit participants against sample size target (15 out of 40)	A wait-list controlled pre- and post-test pilot study	Elderly parents (>60 years old) of service users with schizophrenia Treatment arm, N=5; Control arm, n=10, total sample =15 whilst the original plan was to recruit 40. A 10-session over 10 week individual carer programme focusing on education, management skills training and future planning – but not predominantly on education.
Kim & Mueser, 2011 Korea	Study quality issue: only 5 mothers in each arm with unclear procedures	Quasi-experimental study	15 mothers who had strong negative feelings towards their sons with schizophrenia in 3 groups: psychoeducation in groups, via video, vs social skills training.
Levy-Frank et al., 2011 Israel	Not meeting diagnostic criteria	Process outcome model descriptive study design	Service users' diagnoses were not any more specific than SMI.
Berkowitz et al., 1984; Leff et al., 1982 England	Not meeting intervention definition	RCT Included in Cochrane FI review, not in NICE FI review	Multi-modal intervention comprised of education (4 weeks), relatives group (9 months) and FI (ranging from 1 to 25 sessions) with emphasis on early-day FI. Authors concluded that they cannot differentiate effectiveness of different elements of the intervention despite a focus on EE.

Berkowitz et al., 1990; Leff et al., 1989 UK	Not meeting intervention definition	RCT comparing family therapy/ intervention with relatives groups for family members of people with schizophrenia from high EE household. Included in NICE FI review and Cochrane FI review	RCT comparing family therapy/ intervention + education with relatives groups + education for families of people with schizophrenia and high EE. All have education prior to being randomised into 2 treatment conditions: relatives' group. Treatment effects measured are correlated to the 2 conditions, not limited to psychoeducation.
Li et al., 2004 China Chinese paper	Not meeting intervention definition	RCT Included in Cochrane psychoeducation review	Too multi-modal and complex to be categorised as psychoeducation Treatment condition is family psychological intervention with 3 stages: 1. To familiarise service users and families with knowledge of schizophrenia, information on medication and coping with side effects (2 x 30 minutes sessions/ weeks); 2. Crisis intervention and communication skills was demonstrated to service users and family, service users' harmful behaviour corrected (60 minutes/month); 3. Organise seminars for service users and families together to exchange experiences (120 minutes/ 2 months)
Lowenstein et al., 2010 UK	Not meeting intervention definition	Within subject pre-& post test design	The carers group is described as cognitively orientated carers group and seems to include a high proportion of cognitive elements alongside psychoeducation.
Magliano et al., 2006a; Magliano et al., 2006b Italy	Not meeting intervention definition	Quasi-experimental study	The intervention is based on Falloon et al (1985) model, so is a FI, not psychoeducational (2006a) Magliano et al 2006a reports on the staff training element related to the trial (2006b).
McFarlane et al., 1995a; McFarlane et al., 1995b USA	Not meeting intervention definition	RCT, included in NICE FI review and Cochrane FI review	Multi-modal intervention emphasising on FI
McGill et al., 1983 USA	Not meeting intervention definition	RCT	RCT to evaluate a 9-month individual-FI programme involving service users and family members. The 2 education session form parted part of the comprehensive programme.
Moxon & Ronan, 2008	Not meeting intervention	RCT with waitlist control	Programme consisted of 3 (1.5 hours each) sessions lasting over 2 weeks, brief intervention that fell outside of the

New Zealand	definition		eligibility criteria
Mullen et al., 2002 Australia	Not meeting diagnostic criteria	Pre and post evaluation study.	No inclusion or exclusion criteria for service users and their family carers. Data on their knowledge and attitude to treatment were reported together.
Nasr & Kausar, 2009 Pakistan	Study quality issue: follow up data cannot be found	Quasi-experimental study	9 service users/ 8 carers lost to FU. 6-month FU data cannot be found in the paper despite the paper reported FU was conducted.
Paranthaman et al., 2010 Malaysia	Not meeting intervention definition	Cluster(not randomised) - Controlled trial	5 module-programme includes 5 lectures each lasting an hour in duration over 2 weeks, delivered by trained staff. Intervention period <2 weeks.
Pickett-Schenk et al., 2008 USA	Not meeting intervention definition	RCT with waitlist control	Family-led education programme to families
Pitman & Matthey, 2004 Canada and Australia	Not meeting diagnostic criteria	Descriptive pre and post-intervention design	Participants were children of parents or siblings diagnosed with a mental illness. Diagnosis amongst the parents and siblings were mostly affective disorders (bipolar or depressive) – 70%.
Ran et al., 2003 China	Lacking family outcomes	Cluster RCT Included in NCIE FI review (2010) and the Cochrane FI review (Xia et al, 2011)	FI study focusing on patient outcomes. Limited independent data on family members' outcomes.
Raskin et al., 1998 U.S.A.	Not meeting diagnostic criteria	Descriptive evaluative design	Targeting paid/ formal caregivers in residential homes of veterans who have a chronic mental illness, 60% believed to be schizophrenia.
Reza et al., 2004 Iran	Not meeting diagnostic criteria	Solomon's experimental design	Participants were family members of service users with schizophrenia (n=170) and mood disorder (n=174).
Sefasi et al., 2008 Malawi	Study quality issues: no data on randomisation of study design despite the term RCT is used in its method.	RCT	90 service users with schizophrenia and their family caregivers. No data on the intervention program. No data on randomisation or study design No data on post-treatment outcome measures
Shin & Lukens, 2002 U.S.A.	Lacking family outcomes	RCT included in NICE review on psychoeducation (2010), but was	A parallel study to Shin 2004. Shin & Lukens (2002) focuses on service users as participants and patient outcomes.

		excluded from Cochrane review on psychoeducation as deemed to be too complex an intervention.	
Smerud & Rosenfarb, 2008 U.S.A.	Study quality issues: not empirical research	Secondary research	Irrelevant, secondary research and reporting on FI studies and therapeutic alliance
Solomon, 1996 USA	Not meeting diagnostic criteria	RCT	The relatives participated in the trial were of a family member with schizophrenia (63.5%) or a major affective disorder (36.5%).
Sota et al., 2008 Japan	Study quality issues: all participants have more than 1 treatment condition but data reported is all merged.	non-equivalent group design	The study described itself as a comparative study to compare 3 modes of family psychoeducation to family members, however, the 3 programmes (1. 2x 2 hr session over 2 day; 9 sessions for larger group; 5 sessions for larger groups – not sure over what timeframe) were run longitudinally over 8 years and some carers attended more than 2 programmes, and the reported data was all merged into 1.
Stephens et al., 2011 Australia	Not meeting intervention definition	Longitudinal evaluative study	Led by facilitators who have lived experiences as carers Uncertain proportion of carers of people with psychosis.
Tomaras et al., 2000 Greece	Not meeting intervention definition	Controlled trial	Testing combined individual PSI and psychoeducation on family carers vs individual PSI alone. No clinical outcomes investigated concern carers/ families.
Xie, 2006 China Chinese paper	Not meeting intervention definition	RCT included in Cochrane psychoeducation review 2011	Brief program included 2 sessions per week whilst patients were inpatient.
Worakul et al., 2007 Thailand	Not meeting intervention definition	Single cohort pre- and post intervention design	A one-day psychoeducation programme using didactic teaching and group discussion, for relatives of people with schizophrenia. Outcomes are knowledge and attitude, both were found to be improved after the programme (statistically significant). Satisfaction is high.
Yoshimura, 1991 Japan	Lacking family outcomes	Cohort study	Intervention studied is not reported in good enough details and far removed from psychoeducation. No family carers' outcomes are reported.

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