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Psychoeducation for schizophrenia (Review)

Xia J, Merinder LB, Belgamwar MR

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[Intervention Review]

Psychoeducation for schizophrenia

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ABSTRACT

Background

Schizophrenia can be a severe and chronic illness characterised by lack of insight and poor compliance with treatment. Psychoeducational approaches have been developed to increase patients' knowledge of, and insight into, their illness and its treatment. It is supposed that this increased knowledge and insight will enable people with schizophrenia to cope in a more effective way with their illness, thereby improving prognosis.

Objectives

To assess the effects of psychoeducational interventions compared with standard levels of knowledge provision.

Search methods

We searched the Cochrane Schizophrenia Group Trials Register (February 2010).

We updated this search November 2012 and added 27 new trials to the awaiting assessment section.

Selection criteria

All relevant randomised controlled trials focusing on psychoeducation for schizophrenia and/or related serious mental illnesses involving individuals or groups. We excluded quasi-randomised trials.

Data collection and analysis

At least two review authors extracted data independently from included papers. We contacted authors of trials for additional and missing data. We calculated risk ratios (RR) and 95% confidence intervals (CI) of homogeneous dichotomous data. We used a fixed-effects model for heterogeneous dichotomous data. Where possible we also calculated the numbers needed to treat (NNT), as well as weighted means for continuous data.

Main results

This review includes a total of 5142 participants (mostly inpatients) from 44 trials conducted between 1988 and 2009 (median study duration ~ 12 weeks, risk of bias - moderate). We found that incidences of non-compliance were lower in the psychoeducation group in the short term (n = 1400, RR 0.52 CI 0.40 to 0.67, NNT 11 CI 9 to 16). This finding holds for the medium and long term. Relapse appeared to be lower in psychoeducation group (n = 1214, RR 0.70 CI 0.61 to 0.81, NNT 9 CI 7 to 14) and this also applied to readmission (n = 206, RR 0.71 CI 0.56 to 0.89, NNT 5 CI 4 to 13). Scale-derived data also suggested that psychoeducation promotes better social and global functioning. In the medium term, treating four people with schizophrenia with psychoeducation instead of standard care resulted in one additional

person showing a clinical improvement. Evidence suggests that participants receiving psychoeducation are more likely to be satisfied with mental health services (n = 236, RR 0.24 CI 0.12 to 0.50, NNT 5 CI 5 to 8) and have improved quality of life.

Authors' conclusions

Psychoeducation does seem to reduce relapse, readmission and encourage medication compliance, as well as reduce the length of hospital stay in these hospital-based studies of limited quality. The true size of effect is likely to be less than demonstrated in this review - but, nevertheless, some sort of psychoeducation could be clinically effective and potentially cost beneficial. It is not difficult to justify better, more applicable, research in this area aimed at fully investigating the effects of this promising approach.

Note: the 27 new citations in the awaiting classification section of the review may alter the conclusions of the review once assessed.

PLAIN LANGUAGE SUMMARY

Psychoeducation added to standard treatment for schizophrenia reduces relapse

The purpose of patient education/teaching (or psychoeducation) is to increase patients' knowledge and understanding of their illness and treatment. It is supposed that increased knowledge enables people with schizophrenia to cope more effectively with their illness. Psychoeducational interventions involve interaction between the information provider and the mentally ill person. This review compares the efficacy of psychoeducation added to standard care as a means of helping severely mentally ill people with that of standard care alone. The evidence shows a significant reduction of relapse or readmission rates. There seems to be some suggestion that psychoeducation may improve compliance with medication, but the extent of improvement remains unclear. The findings show a possibility that psychoeducation has a positive effect on a person's well being and promotes better social function. In the medium term, treating four people with schizophrenia with psychoeducation instead of standard care resulted in one additional person showing a clinical improvement. The scarcity of studies made the comparison between the efficacy of different formats (programmes of 10 sessions or less or 11 or more, individual or group sessions) weak.

SUMMARY OF FINDINGS

Summary of findings for the main comparison. ANY FORM OF PSYCHOEDUCATION compared with STANDARD CARE for schizophrenia

ANY FORM OF PSYCHOEDUCATION compared with STANDARD CARE for schizophrenia

Patient or population: patients with schizophrenia
Settings: in hospital
Intervention: ANY FORM OF PSYCHOEDUCATION
Comparison: STANDARD CARE

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	STANDARD CARE	ANY FORM OF PSYCHOEDUCATION				
Compliance: Not compliant with medication Follow-up: 12 months	**Low risk population[1]**		**RR 0.48** (0.31 to 0.75)	282 (3 studies)	⊕⊖⊖⊖ **very low**[2,3,4]	
	200 per 1000	**96 per 1000** (62 to 150)				
	Medium risk population[1]					
	400 per 1000	**192 per 1000** (124 to 300)				
	High risk population[1]					
	800 per 1000	**384 per 1000** (248 to 600)				
Compliance: 2a. With follow-up - loss to follow-up for any reason - long term (by 5 years or more) Follow-up: 12 months	**Low risk population[1]**		**RR 0.77** (0.48 to 1.23)	172 (2 studies)	⊕⊖⊖⊖ **very low**[2,3,4]	
	200 per 1000	**154 per 1000** (96 to 246)				
	Medium risk population[1]					
	400 per 1000	**308 per 1000** (192 to 492)				

	High risk population[1]				
	800 per 1000	**616 per 1000** (384 to 984)			
Compliance: 2b. With follow-up - received intervention but left the study early - long term Follow-up: 12 months	**Low risk population[1]**		**RR 0.63** (0.38 to 1.04)	206 (2 studies)	⊕⊕⊝⊝ **low**[2,4]
	200 per 1000	**126 per 1000** (76 to 208)			
	Medium risk population[1]				
	400 per 1000	**252 per 1000** (152 to 416)			
	High risk population[1]				
	800 per 1000	**504 per 1000** (304 to 832)			
Relapse: 1. Relapse for any reason - long term Follow-up: 12 months	**Low risk population[5]**		**RR 0.73** (0.62 to 0.85)	790 (6 studies)	⊕⊕⊝⊝ **low**[4,6]
	200 per 1000	**146 per 1000** (124 to 170)			
	Medium risk population[5]				
	400 per 1000	**292 per 1000** (248 to 340)			
	High risk population[5]				
	800 per 1000	**584 per 1000** (496 to 680)			
Relapse: 2. Relapse with readmission - long term Follow-up: 12 months	**Low risk population[7]**		**RR 0.71** (0.56 to 0.89)	206 (2 studies)	⊕⊕⊝⊝ **low**[2,4]
	200 per 1000	**142 per 1000** (112 to 178)			
	Medium risk population[7]				
	400 per 1000	**284 per 1000**			

		(224 to 356)			
	High risk population[7]				
	800 per 1000	**568 per 1000** (448 to 712)			
Satisfaction with mental health services: 3. binary outcome - medium term - unsatisfied Follow-up: 12 months	**Low risk population[1]**		**RR 0.4** (0.17 to 0.96)	116 (1 study)	⊕⊕⊝⊝ **low**[2,4]
	200 per 1000	**80 per 1000** (34 to 192)			
	Medium risk population[1]				
	400 per 1000	**160 per 1000** (68 to 384)			
	High risk population[1]				
	800 per 1000	**320 per 1000** (136 to 768)			
Adverse event: Death - long term Follow-up: 12 months	**Low risk population[8]**		**RR 1.39** (0.24 to 8.11)	344 (2 studies)	⊕⊕⊝⊝ **low**[2,4]
	10 per 1000	**14 per 1000** (2 to 81)			
	Medium risk population[8]				
	30 per 1000	**42 per 1000** (7 to 243)			
	High risk population[8]				
	50 per 1000	**69 per 1000** (12 to 405)			

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: Confidence interval; **RR:** Risk ratio;

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.

Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

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[1] Control risk from studies - about 30%
[2] Randomisation poorly described
[3] High heterogeneity not explained by study design, population or interventions
[4] Small sample size - confidence interval around best estimate of effect include both no effect and appreciable benefit/harm
[5] Control risk from studies - about 50%
[6] 50% of the included studies used scientific randomisation methods and provided description of methods, but the other 50% did not describe randomisation methods
[7] Control risk from studies - about 70%
[8] Control risk from studies - about 1%

BACKGROUND

Description of the condition

Schizophrenia is a chronic, severe and disabling illness which affects approximately 1% of the population. It is a worldwide illness that crosses all cultures and socioeconomic groups (Fortinash 2000). The severe and long-lasting symptoms of schizophrenia cause considerable disability.

Description of the intervention

Psychoeducation may be defined as the education of a person with psychiatric disorder in subject areas that serve the goals of treatment and rehabilitation. The terms 'patient education', 'patient teaching', and 'patient instruction' have also been used for this process. All imply that there is a focus on knowledge. The purpose of patient education is to enable the patient to engage in behaviour change. Compliance with treatment for seriously or persistently mentally ill people is of great concern and is often a focus of patient education. Many people with severe mental illness are frequently and repeatedly hospitalised due to poor compliance with treatment. Many patients feel stigmatised by their illness and may deny its existence, which ultimately increases non-compliance. This issue is even more of a problem when people are living in the community, and is often related to adverse effects of medication as well as a lack of adequate knowledge about medication (Antai-Otong 1989). Therefore, the goal of patient education may be to try to prevent hospitalisation or to manage the illness or condition to help the patient attain her/his maximum degree of health. The psychiatric and mental health nursing practice standards include patient teaching and, according to these standards, client adherence to treatment regimens increases when health education is an integral part of the client's care (ANA 1982).

How the intervention might work

Education is a gradual process by which a person gains knowledge and understanding through learning. Learning, however, involves more than knowledge and, according to Rankin 1996, it can involve cognitive, affective and psychomotor processes. Learning implies changes in behaviour, skill or attitude (Falvo 1994). Patient education can take a variety of forms depending upon the abilities and interest of the patient and family. For example, the education may take place in small groups or on a one-to-one basis; it may involve the use of videotapes or pamphlets or a combination of these.

Why it is important to do this review

Relapse is a major challenge in the rehabilitation of people with schizophrenia (Ayuso-Gutierrez 1997), and high relapse rates are often related to non-compliance with treatment (Lacro 2002). Therefore, teaching patients and families with a view to improving treatment compliance is a major goal in psychiatric nursing (Antai-Otong 1989). Illness management programmes such as psychoeducation have traditionally provided information for adhering to treatment and minimizing relapse. Extensive research has been conducted around the effectiveness of such interventions. While many prior studies indicated positive effects of psychoeducation on reducing symptoms and minimising relapse (Klingberg 1999; Dixon 2000), others showed that the intervention increased patients' knowledge about mental illness but didn't affect other outcomes or their behaviour (Barrowclough 1987; Tarrier 1988). The previous version of this review was also inconclusive, as most of the included studies produced equivocal effects or skewed data. Many new studies have been conducted since the previous review, and therefore it is important that we re-evaluate the effectiveness of psychoeducation with the presence of new evidence. This review represents an important and considerable update of the previous version of this work.

OBJECTIVES

The primary objective was to assess the efficacy of psychoeducational interventions as means of helping severely mentally ill people when added to 'standard' care, compared to the efficacy of standard care alone.

The secondary objective was to investigate whether there is evidence that a particular kind (individual/ family/group) or duration (brief/other) of psychoeducational intervention is superior to others.

METHODS

Criteria for considering studies for this review

Types of studies

All relevant randomised controlled trials (RCTs). We excluded quasi-randomised trials, using, for example, alternation as the method of randomisation.

Types of participants

People suffering from severe non-affective mental disorders such as schizophrenia and schizophreniform, schizoaffective or schizotypal disorders, and including those with multiple diagnoses.

Types of interventions

1. We included all didactic interventions of psychoeducation or patient teaching involving individuals or groups. We have defined psychoeducational interventions as any group or individual programme involving interaction between information provider and patient. These programmes address the illness from a multidimensional viewpoint, including familial, social, biological and pharmacological perspectives. Patients are provided with support, information and management strategies. We considered programmes of 10 sessions or less as 'brief', and of 11 or more as 'standard' for the purposes of this review. We excluded interventions including elements of behavioural training, such as social skills or life skills training, as well as education performed by patient peers, from this review. We also excluded staff education studies.

2. Standard care was defined as the normal level of psychiatric care provided in the area where the trial was carried out.

Types of outcome measures

For the first version of the review (Pekkala 2002) we did not pre-specify specific time periods into which to cluster outcomes. For this update we asked an editor of the Cochrane Schizophrenia Group, who was not familiar with the data to help us divide the data by time. For this update we grouped outcomes into the short term (up to 12 weeks), medium term (13-52 weeks) and long term (over 52 weeks).

Primary outcomes

1. Compliance
1.1 Compliance with medication
1.2 Compliance with follow-up

2. Relapse

Secondary outcomes

1. Knowledge
1.1 Improvement of understanding of his/her illness and need for treatment - recipient/family member
1.2 Level of knowledge about expected and undesired effects of medication - recipient/family member

2. Behaviour
2.1 Level of psychiatric symptoms
2.2 Symptom control skills
2.3 Problem-solving skills
2.4 Social skills

3. Social functioning*
3.1 No clinically important change in social functioning
3.2 No change in social functioning
3.3 Average endpoint in social functioning
3.4 Average change in social functioning

4. Global functioning*
4.1 No clinically important change in general functioning
4.2 No change in general functioning
4.3 Average endpoint in general functioning
4.4 Average change in general functioning

5. Service utilisation
5.1 Use of outpatient treatment
5.2 Length of hospitalisation

6. Global state*
6.1 No overall improvement
6.2 Use of additional medication
6.3 Average endpoint score
6.4 Average change score
6.5 Average dose of drug

7. Mental state*
7.1 No clinically important change in general mental state
7.2 No change in general mental state
7.3 Average endpoint general mental state score
7.4 Average change in general mental state scores

8. Expressed emotion*
8.1 No clinically important change in expressed emotion
8.2 No change in expressed emotion
8.3 Average endpoint general expressed emotion
8.4 Average change in general expressed emotion

9. Quality of life*
9.1 No clinically important change in quality of life
9.2 Not any change in quality of life
9.3 Average endpoint quality of life score
9.4 Average change in quality of life scores
9.5 No clinically important change in specific aspects of quality of life
9.6 No change in specific aspects of quality of life
9.7 Average endpoint specific aspects of quality of life
9.8 Average change in specific aspects of quality of life

10. Satisfaction with care*
10.1 No clinically important change in satisfaction
10.2 No change in satisfaction
10.3 Average endpoint in satisfaction
10.4 Average change in satisfaction

11. Adverse effects/event*
11.1 Clinically important general adverse effects
11.2 Any general adverse effects
11.3 Any serious, specific adverse effects
11.4 Average endpoint general adverse effect score
11.5 Average change in general adverse effect scores
11.6 No clinically important change in specific adverse effects
11.7 No change in specific adverse effects
11.8 Average endpoint specific adverse effects
11.9 Average change in specific adverse effects

12. Health economic outcomes
12.1 Treatment costs

* Additional outcomes added for 2010 update (please see Differences between protocol and review and Appendix 1).

Search methods for identification of studies

We performed both the electronic search and the handsearch. We inspected the references of all identified studies to identify additional studies.

Electronic searches

1. Update 2011 - Cochrane Schizophrenia Group Trials Register (May 2011)
We searched the register using the phrase:

[*Psychoeducat* in interventions of STUDY]

This register is compiled by systematic searches of major databases, handsearches and conference proceedings (see Group Module).

2. Previous searches
Please refer to Appendix 2; Appendix 3; Appendix 4 for detail of previous searches.

3. The Trials Search Co-ordinator, Samantha Roberts, searched the Cochrane Schizophrenia Group Trials Register register (November 2012) using the phrase:

[*Psychoeducat* in interventions of STUDY or title of REFERENCE]

The Cochrane Schizophrenia Group's Trials Register is compiled by systematic searches of major databases, handsearches of relevant journals and conference proceedings (see Group Module). Incoming trials are assigned to relevant existing or new review titles.

Searching other resources

1. Reference searching
We inspected reference lists of identified studies for more trials.

2. Personal contact

We contacted authors of relevant studies to enquire about other sources of relevant information.

Data collection and analysis

Selection of studies

Reviewer JX inspected all abstracts of studies identified as above and identified potentially relevant reports. In addition, to ensure reliability, LBM and MRB inspected a random sample of these abstracts, comprising 10% of the total. Where disagreement occurred we resolve this by discussion, or where there was still doubt, acquired the full article for further inspection. We also acquired the full articles of relevant reports for reassessment and carefully inspected for a final decision on inclusion (see Criteria for considering studies for this review). Once we obtained the full articles, JX and LBM in turn inspected all full reports and independently decided whether they met inclusion criteria. JX and LBM were not blinded to the names of the authors, institutions or journal of publication. Where difficulties or disputes arose, we asked author MRB for help and if it was impossible to decide, added these studies to those awaiting assessment and contacted the authors of the papers for clarification.

Data extraction and management

1. Extraction

JX extracted data from all included studies. In addition, to ensure reliability, LBM and MRB independently extracted data from a random sample of these studies, comprising 10% of the total. Again, we discussed any disagreement, documented decisions and, if necessary, contacted authors of studies for clarification. With remaining problems, LBM helped clarify issues, and we documented those final decisions. We extracted data presented only in graphs and figures whenever possible, but included these only if two authors independently had the same result. We attempted to contact authors through an open-ended request in order to obtain missing information or for clarification whenever necessary. Where possible, we extracted data relevant to each component centre of multi-centre studies separately.

2. Management

2.1 Forms

We extracted data onto standard, simple forms.

2.2 Scale-derived data

We included continuous data from rating scales only if:

a. the psychometric properties of the measuring instrument had been described in a peer-reviewed journal (Marshall 2000); and
b. the measuring instrument was not written or modified by one of the trialists for that particular trial; and
c. the measuring instrument is either i. a self-report or ii. completed by an independent rater or relative (not the therapist).

2.3 Endpoint versus change data

There are advantages of both endpoint and change data. Change data can remove a component of between-person variability from the analysis. On the other hand, calculation of change needs two assessments (baseline and endpoint) which can be difficult in unstable and difficult to measure conditions such as schizophrenia. We decided to primarily use endpoint data and only use change data if the former were not available. We combined endpoint and change data in the analysis as we used mean differences rather than standardised mean differences throughout (Higgins 2008, chapter 9.4.5.2).

2.4 Skewed data

Continuous data on clinical and social outcomes are often not normally distributed. To avoid the pitfall of applying parametric tests to non-parametric data, we aim to apply the following standards to all data before inclusion: a) standard deviations and means are reported in the paper or obtainable from the authors; b) when a scale starts from the finite number zero, the standard deviation, when multiplied by two, is less than the mean (as otherwise the mean is unlikely to be an appropriate measure of the centre of the distribution (Altman 1996); c) if a scale started from a positive value (such as PANSS which can have values from 30 to 210) the calculation described above was modified to take the scale starting point into account. In these cases skew is present if 2SD>(S-S min), where S is the mean score and S min is the minimum score. Endpoint scores on scales often have a finite start and end point and these rules can be applied. When continuous data are presented on a scale which includes a possibility of negative values (such as change data), it is difficult to tell whether data are skewed or not. We entered skewed data from studies of fewer than 200 participants in additional tables rather than into an analysis. Skewed data pose less of a problem when looking at means if the sample size is large and were entered into syntheses.

2.5 Common measure

To facilitate comparison between trials, we intended to convert variables that can be reported in different metrics, such as days in hospital (mean days per year, per week or per month) to a common metric (e.g. mean days per month).

2.6 Conversion of continuous to binary

Where possible, we made efforts to convert outcome measures to dichotomous data. This could be done by identifying cut-off points on rating scales and dividing participants accordingly into 'clinically improved' or 'not clinically improved'. We generally assumed that if there had been a 50% reduction in a scale-derived score such as the Brief Psychiatric Rating Scale (BPRS, Overall 1962) or the Positive and Negative Syndrome Scale (PANSS, Kay 1986), we could consider this as a clinically significant response (Leucht 2005a; Leucht 2005b). If data based on these thresholds were not available, we used the primary cut-off presented by the original authors.

2.7 Direction of graphs

Where possible, we entered data in such a way that the area to the left of the line of no effect indicated a favourable outcome for psychoeducation.

2.8 Summary of findings table

We anticipated including the following short- or medium-term outcomes in a summary of findings table. (JX was not biased by being familiar with the data.)

1. Compliance with medication
2. Loss to follow-up
3. Relapse
4. Satisfaction with care
4.1 Not improved to an important extent

5. Adverse effects
5.1 Specific adverse event
6. Quality of life
6.1 Not improved to an important extent
7. Economic data

Assessment of risk of bias in included studies

Again JX and LMB worked independently to assess risk of bias by using criteria described in the Cochrane Collaboration Handbook (Higgins 2008) to assess trial quality. This set of criteria is based on evidence of associations between overestimate of effect and high risk of bias of the article such as sequence generation, allocation concealment, blinding, incomplete outcome data and selective reporting.

If the raters disagree, the final rating was made by consensus, with the involvement of another member of the review group. Where inadequate details of randomisation and other characteristics of trials were provided, authors of the studies were contacted in order to obtain further information. Non-concurrence in quality assessment was reported, but if disputes arose as to which category a trial was to be allocated, again, resolution were made by discussion.

The level of risk of bias will be noted in both the text of the review and in the Summary of findings for the main comparison.

Measures of treatment effect

1. Binary data

For binary outcomes we calculated a standard estimation of the risk ratio (RR) and its 95% confidence interval (CI). It has been shown that RR is more intuitive (Boissel 1999) than odds ratios and that odds ratios tend to be interpreted as RR by clinicians (Deeks 2000). For statistically significant results we had planned to calculate the number needed to treat to provide benefit/to induce harm statistic (NNTB/H), and its 95% confidence interval (CI) using Visual Rx (http://www.nntonline.net/) taking account of the event rate in the control group. This, however, was superseded by Summary of findings for the main comparison and the calculations therein.

2. Continuous data

For continuous outcomes we estimated mean difference (MD) between groups. We preferred not to calculate effect size measures (standardised mean difference (SMD)). However, had scales of very considerable similarity been used, we would have presumed there was a small difference in measurement, and we would have calculated effect size and transformed the effect back to the units of one or more of the specific instruments. We made a post-hoc decision to pool the GAF scale (APA 1994) and its virtually similar earlier version, the GAS scale (Endicott 1976), using WMD statistics.

Unit of analysis issues

1. Cluster trials

Studies increasingly employ 'cluster randomisation' (such as randomisation by clinician or practice), but analysis and pooling of clustered data poses problems. Firstly, authors often fail to account for intra-class correlation in clustered studies, leading to a 'unit of analysis' error (Divine 1992) whereby P values are spuriously low, confidence intervals unduly narrow and statistical significance overestimated. This causes type I errors (Bland 1997; Gulliford 1999).

Where clustering is not accounted for in primary studies, we presented data in a table, with a (*) symbol to indicate the presence of a probable unit of analysis error. In subsequent versions of this review we will seek to contact first authors of studies to obtain intra-class correlation coefficients for their clustered data and to adjust for this by using accepted methods (Gulliford 1999). Where clustering had been incorporated into the analysis of primary studies, we present these data as if from a non-cluster randomised study, but adjusted for the clustering effect.

We have sought statistical advice and have been advised that the binary data as presented in a report should be divided by a 'design effect'. This is calculated using the mean number of participants per cluster (m) and the intra-class correlation coefficient (ICC) (Design effect = 1+(m-1)*ICC) (Donner 2002). If the ICC was not reported we assumed it to be 0.1 (Ukoumunne 1999).

If cluster studies had been appropriately analysed taking into account intra-class correlation coefficients and relevant data documented in the report, synthesis with other studies would have been possible using the generic inverse variance technique.

2. Cross-over trials

A major concern of cross-over trials is the carry-over effect. It occurs if an effect (e.g. pharmacological, physiological or psychological) of the treatment in the first phase is carried over to the second phase. As a consequence, on entry to the second phase the participants can differ systematically from their initial state despite a wash-out phase. For the same reason, cross-over trials are not appropriate if the condition of interest is unstable (Elbourne 2002). As both effects are very likely in severe mental illness, we only used data of the first phase of cross-over studies.

3. Studies with multiple treatment groups

Where a study involved more than two treatment arms, if relevant, we presented the additional treatment arms in comparisons. Where the additional treatment arms were not relevant, we did not reproduced these data.

Dealing with missing data

1. Overall loss of credibility

At some degree of loss of follow-up data must lose credibility (Xia 2009). For any particular outcome should more than 50% of data be unaccounted for, we did not reproduce these data or use them within analyses. If, however, more than 50% of those in one arm of a study were lost, but the total loss was less than 50%, we marked such data with (*) to indicate that such a result may well be prone to bias.

2. Binary

In the case where attrition for a binary outcome is between 0 and 50% and where these data were not clearly described, we presented data on a 'once-randomised-always-analyse' basis (an intention to treat analysis). We assumed those leaving the study early to have the same rates of negative outcome as those who completed, with the exception of the outcome of death. We undertook a sensitivity analysis testing how prone the primary outcomes were to change

when 'completed' data only were compared to the intention to treat analysis using the above assumption.

3. Continuous

3.1 Attrition

In the case where attrition for a continuous outcome is between 0 and 50% and completer-only data were reported, we have reproduced these.

3.2 Standard deviations

We have first tried to obtain the missing values from the authors. If not, where there are missing measures of variance for continuous data but an exact standard error and confidence interval are available for group means, either P value or T value are available for differences in mean, we will, for the update of this review, calculate them according to the rules described in the Cochrane *Handbook* (Higgins 2008) – but for later versions of this review: When only the standard error (SE) is reported, standard deviations (SDs) are calculated by the formula SD = SE * square root (n). Chapters 7.7.3 and 16.1.3 of the Cochrane *Handbook* (Higgins 2008) present detailed formula for estimating SDs from P values, T or F values, confidence intervals, ranges or other statistics. If these formula do not apply, we will calculate the SDs according to a validated imputation method which is based on the SDs of the other included studies (Furukawa 2006) in later versions of this review. Although some of these imputation strategies can introduce error, the alternative would be to exclude a given study's outcome and thus to lose information. We plan, nevertheless, to examine the validity of the imputations in a sensitivity analysis excluding imputed values.

3.3 Last observation carried forward

We anticipated that in some studies the method of last observation carried forward (LOCF) would be employed within the study report. As with all methods of imputation to deal with missing data, LOCF introduces uncertainty about the reliability of the results. Therefore, where LOCF data has been used in the trial, if less than 50% of the data had been assumed, we reproduced these data and indicated that they are the product of LOCF assumptions.

Assessment of heterogeneity

1. Clinical heterogeneity

We considered all included studies initially, without seeing comparison data, to judge clinical heterogeneity. We simply inspected all studies for clearly outlying situations or people which we had not predicted would arise. When such situations or participant groups arose, we have fully discussed these.

2. Methodological heterogeneity

We considered all included studies initially, without seeing comparison data, to judge methodological heterogeneity. We simply inspected all studies for clearly outlying methods which we had not predicted would arise. Should such methodological outliers arise we will fully discuss these.

3. Statistical heterogeneity

3.1 Visual inspection

We visually inspected graphs to investigate the possibility of statistical heterogeneity.

3.2 Employing the I^2 statistic

We investigated heterogeneity between studies by considering the I^2 method alongside the Chi^2 P value. The I^2 provides an estimate of the percentage of inconsistency thought to be due to chance (Higgins 2003). The importance of the observed value of I^2 depends on i. magnitude and direction of effects and ii. strength of evidence for heterogeneity (e.g. P value from Chi^2 test, or a confidence interval for I^2). We interpreted I^2 estimate greater than or equal to 50% accompanied by a statistically significant Chi^2 statistic as evidence of substantial levels of heterogeneity (Section 9.5.2 - Higgins 2008). When we found substantial levels of heterogeneity in the primary outcome, we explored reasons for heterogeneity (Subgroup analysis and investigation of heterogeneity).

Assessment of reporting biases

Reporting biases arise when the dissemination of research findings is influenced by the nature and direction of results (Egger 1997). These are described in Section 10 of the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2008). We are aware that funnel plots may be useful in investigating reporting biases but are of limited power to detect small-study effects. We did not use funnel plots for outcomes where there were 10 or fewer studies, or where all studies were of similar sizes. In other cases, where funnel plots were possible, we sought statistical advice in their interpretation.

Data synthesis

We understand that there is no closed argument for preference for use of fixed-effect or random-effects models. The random-effects method incorporates an assumption that the different studies are estimating different, yet related, intervention effects. This often seems to be true to us and the random-effects model takes into account differences between studies even if there is no statistically significant heterogeneity. There is, however, a disadvantage to the random-effects model. It puts added weight onto small studies which often are the most biased ones. Depending on the direction of effect, these studies can either inflate or deflate the effect size. Therefore, we chose the fixed-effect model for all analyses. The reader is, however, able to choose to inspect the data using the random-effects model.

Subgroup analysis and investigation of heterogeneity

1. Subgroup analyses

We are interested in whether a brief form of psychoeducation may have as many effects as the standard and more protracted form. For the purposes of this review we define 'brief' as up to 10 sessions and 'standard' as 11 sessions or more. In addition, we are interested whether a group approach would have similar effects to individual psychoeducation. We proposed to undertake comparisons only for primary outcomes to minimise the risk of multiple comparisons.

2. Investigation of heterogeneity

If inconsistency was high, we have reported this. First we investigated whether data had been entered correctly. Second, if data had been correct, we visually inspected the graph and successively removed studies outside of the company of the rest to see if heterogeneity was restored. Should this occur with no more than 10% of the data being excluded, we have presented data. If not, we have not pooled data and discussed issues.

Should unanticipated clinical or methodological heterogeneity be obvious we simply stated hypotheses regarding these for future reviews or versions of this review. We pre-specify no characteristics of studies that may be associated with heterogeneity except quality of trial method. If no clear association could be shown by sorting studies by quality of methods, we have performed a random-effects meta-analysis. Should another characteristic of the studies be highlighted by the investigation of heterogeneity, perhaps some clinical heterogeneity not hitherto predicted but plausible causes of heterogeneity, we have discussed these post hoc reasons, and analyse and present the data. However, should the heterogeneity be substantially unaffected by use of random-effects meta-analysis and no other reasons for the heterogeneity be clear, we have presented the final data without a meta-analysis.

Sensitivity analysis

1. Implication of randomisation

We aimed to include trials in a sensitivity analysis if they were described in some way as to imply randomisation. For the primary outcomes we included these studies and if there was no substantive difference when we added the implied randomised studies to those with better description of randomisation, then we employed all data from these studies.

2. Assumptions for lost binary data

Where assumptions had to be made regarding people lost to follow-up (see Dealing with missing data), we compared the findings of the primary outcomes when we used our assumption compared with completer data only. If there was a substantial difference, we reported results and discuss them but continue to employ our assumption.

Where assumptions had to be made regarding missing SDs data (see Dealing with missing data), we compared the findings on primary outcomes when we used our assumption compared with complete data only. We undertook a sensitivity analysis testing how prone results were to change when 'complete' data only were compared to the imputed data using the above assumption. If there was a substantial difference, we have reported results and discussed them but continue to employ our assumption.

3. Chinese studies

Concerns were raised about the quality of some of the Chinese trials (Wu 2006; Lancet 2010). For this reason, we performed sensitivity analysis for all primary outcomes where Chinese trials were included.

RESULTS

Description of studies

For more detailed description of each studies, please refer to the Characteristics of included studies and Characteristics of excluded studies tables.

Results of the search

1. 2010 update

For the 2010 update we found 210 citations of which we ordered 99 for close inspection. Of these we have included 23, for a total of 44 studies now included in this review.

For results of any previous search, please refer to Appendix 2 and Appendix 3.

Included studies

See Characteristics of included studies for descriptions of each study. We have chosen to use a rather unconventional means of tagging studies. This is usually done by using the key author name accompanied by the date of the main publication, for example 'Smith 2005'. For this review we thought that using a different and more informative convention would be valuable. We have decided to include some details of the experiential intervention in the study tag trying to succinctly describe length of intervention where reported and whether the education was given one-to-one or by group, and finally the date of study. We are aware that this lengthens the tags - but we think it makes them informative and clusters them in the graphs for easier understanding.

1. Methods

All included studies were randomised controlled trials. Only 11 of the included studies described randomisation method. Two studies were randomised by independent institutions (Brief - Group 1995; Brief - Group 1999); five studies used random number table (Brief - Individual 1996; Standard - Group 2006; Standard - Individual 03c; Unclear - Both 2007; 2008); one study drew lots (Standard - Individual 03b); one study used tossing a coin to randomise (Brief - Group 2007a); one study used block randomisation (Standard - Unclear 1996) and one study used computer generated cards (Standard - Both 1996) - this is also the only study that described allocation concealment (concealed with sealed envelop). Blinding was generally not described. One study (Standard - Individual 03c) was double blind. Four studies were single (assessor) blind (Standard - Group 2007; Standard - Both 1996; Standard - Group 2006; Standard - Unclear 1996). One trial did not use blinding (Brief - Individual 1996). Four other studies had some of their outcomes assessed single blind, but not for all outcomes (Brief - Group 1995; Brief - Group 1999; Standard - Group 1988; Standard - Individual 93). Blinding method was not stated in the other 35 included studies.

2. Study duration

Study duration varied from one session (Brief - Group 1995a) to five years (Standard - Unclear 2005a) (but intervention frequency was not stated in this particular study). Standard - Unclear 1988 and Standard - Both 1996 are both of 18 months' duration but the median study duration of all other studies is around 12 weeks.

3. Settings

Most studies were conducted with inpatients, except four (Standard - Group 2007; Standard - Unclear 1996; Standard - Group 2008; Standard - Unclear 2005a). Most of the included trials were carried out in China, while one trial was conducted in France, three in the USA, one in Canada, two in Germany, three in the UK, one in Demark and one in Malaysia.

4. Participants

A total of 5142 participants are included from 44 trials conducted from 1988 and 2009. Participants are patients with schizophrenia or schizoaffective disorder diagnosed using operationalised criteria (DSM, ICD, CCMD). The majority of the studies included patients between the ages of 18 and 60 years, except four that did not describe the age range (Unclear - Group 1996;Unclear - Both 2008;

Brief - Group 2006; Brief - Group 2007b). Four studies included only men (Standard - Unclear 2005; Standard - Unclear 2007; Standard - Both 2008a;Unclear - Both 2007) and one study included female participants only (Standard - Both 2006). Four other studies did not describe gender and all other remaining studies involved both male and female participants. Size of the included studies range from 20 (Standard - Individual 93) participants to 286 (Brief - Unclear 2005). The three other studies with over 200 participants are Standard - Group 2004, Standard - Group 2005 and Standard - Unclear 1996.

5. Interventions

Thirteen trials used brief psychoeducation, 22 standard psychoeducation and nine did not state whether brief or standard intervention was used (tagged in this review as 'unclear'). Of the 44 included studies, 17 used group therapy, six individual therapy, 13 employed a mixture of both group and individual therapy and eight other studies did not state the type of therapy used.

6. Outcomes

A variety of scales were used to assess clinical response and adverse events. We were, however, unable to use some of the scale-derived data due to poor reporting. Details of scales that provided usable data are shown below.

6.1 Compliance

6.1.1 Schedule for Assessment of Insight - SAI (David 1990)
The SAI rates three dimensions of insight: treatment adherence, recognition of illness and symptom re-labelling. These three sub-scales provide a summed total of insight score. High score indicates better insight. One study reported data from this scale.

6.2 Knowledge

6.2.1 Insight Treatment Attitude Questionnaire - ITAQ (McEvoy 1989)
The ITAQ is a 11-item semi-structured interview that measures awareness of illness and attitude to medication and services, as well as follow-up evaluation. Its scores range from 0 to 22, with high score indicating better insight. Four studies reported data from this scale.

6.2.2 Knowledge About Schizophrenia Questionnaire - KASQ (Ascher-Svanum 1999)
This is a 23-item multiple-choice questionnaire, which covers the illness-related topics. The maximum score is 23, indicating a high level of knowledge about the illness. One study reported data from this scale.

6.2.3 Krankheitskonzeptskala - KK (Linden 1988)
KK is a self-rating instrument which consists of 29 Likert-scale items. People are asked to express their agreement or disagreement with each item on a five-point scale. The scale describes seven dimensions of illness-related attitudes: confidence in medication, confidence in physician, negative expectations towards medication, attribution of illness to chance, susceptibility to illness and to relapse, attribution of guilt and fear to side effects of medication. The higher the score, the higher the expression of the respective item. One study reported data from this scale.

6.2.4 Knowledge Questionnaire - KQ (Pitschel-Walz 1997)
The maximum score of this questionnaire is 70. High score indicates better outcome. One study reported data from this scale.

6.2.5 Recovery Attitudes Questionnaire - RAQ (Borkin 2000)
This is a seven-item self-report scale that assesses attitudes about recovery. Score ranges from 7 to 35, with lower scores indicating more appropriate attitudes. One study reported data from this scale.

6.2.6 Schizophrenia Knowledge Questionnaire - SKQ (Wallace 1985)
High score indicates a better outcome. One study reported data from this scale.

6.2.7 The Scale to Assess Unawareness of Mental Disorder - SAUMD (Amador 1994)
There is a total of 20 questions in SAUMD. Score range 1 to 5 points, high score prompted a poor understanding and attribution. Two studies reported data from this scale.

6.2.8 Understanding of medication questionnaire - UMQ (Macpherson 1996)
UMQ measures knowledge of antipsychotic treatment. Fourteen stem questions generate eight sub-scale knowledge scores, relating to factual information, treatment practice, treatment rationale, effects of stopping treatment, side effects, precautions, tardive dyskinesia and risk/benefit evaluation.The UMQ is an extended version of scales measuring knowledge of illness and treatment and knowledge of tardive dyskinesia. Total knowledge score is 35. Knowledge scoring 0 = no understanding and 35 = full understanding. One study reported data from this scale.

6.3 Behaviour

6.3.1 Nurse Observation Scale for Inpatient Evaluation-30 - NOSIE-30 (Honigfeld 1965)
An 80-item scale with items rated on a five-point scale from zero (not present) to four (always present). Ratings are based on behaviour over the previous three days. The seven headings are social competence, social interest, personal neatness, cooperation, irritability, manifest psychosis and psychotic depression. The total score ranges from 0 to 320 with high scores indicating a poor outcome. Three studies reported data from this scale.

6.4 Social functioning*

6.4.1 Inpatient Psychiatric Rehabilitation Outcome Scale - IPROS (Li 1994)
High score indicates poor outcome. One study reported data from this scale.

6.4.2 Morningside Rehabilitation Status Scale - MRSS (McCreadie 1987)
High score indicates worse outcome. One study reported data from this scale.

6.4.3 Zung Self-Rating Anxiety Scale - SAS (Ramirez 2008)
This scale is self-administered and has 20 questions. Each question is scored on a scale of 1-4. High score indicates poor outcome. Three studies reported data from this scale.

6.4.4 Social Adjustment Scale II - SAS II (Schooler 1979)
SAS is an interview-based operationalised instrument with two versions; patient version and family version. SAS has 89 items covering widely social, interpersonal, and household aspects. High score indicates poor outcome. One study reported data from this scale.

6.4.5 Zung Self-Rating Depression Scale - SDS (Gregory 1994)

High score indicates poor outcome. Three studies reported data from this scale.

6.4.6 Social Disability Screening Schedule - SDSS (Tu 1997)
Hign score indicates poor outcome. Two studies reported data from this scale.

6.4.7 Social functioning schedule - SFS (Remington 1979)
Lower scores indicate improved behaviour/function. One study reported data from this scale.

6.4.8 Social Networks Schedule - SNS (Dunn 1990)
Social Networks Schedule modified consists of mean number of total social contacts: daily, weekly and monthly, mean number of different type of contacts with relatives, confidants, and friends. Low score indicates better outcome. One study reported data from this scale.

6.5 Global functioning*

6.5.1 Global Assessment of Functioning - GAF (APA 1994)
The scale is a 90-point rating scale that assesses psychological, social and occupational functioning. GAF is included in DSMIII- R as axis V, but in spite of this there is little research on the reliability and validity of the instrument. A few reliability and validity assessments have been made, indicating that an acceptable interrater reliability can be attained and that modest validity in relation to a disability measure has been demonstrated. High score indicates better outcome.

6.5.2 Global Assessment Scale - GAS (Endicott 1976)
GAS is a 0-100 point rating scale, a global measure of overall functioning and symptomatology. High scores indicate better functioning.

6.5.3 Specific Level of Functioning Scale - SLOF (Schnieder 1983)
A Likert-like scale with high score indicating better outcome. One study reported data from this scale.

6.6 Global state*

6.6.1 Clinical Global Impression - CGI (Guy 1970)
The CGI is a three-item scale commonly used in studies on schizophrenia that enables clinicians to quantify severity of illness and overall clinical improvement. It employs a seven-point scoring system is usually used with low scores indicating decreased severity and/or greater recovery. One study reported data from this scale.

6.7 Mental state*

6.7.1 Brief Psychiatric Rating Scale - BPRS (Overall 1962)
The BPRS is an 18-item scale measuring positive symptoms, general psychopathology and affective symptoms. The original scale has 16 items, but a revised 18-item scale is commonly used. Scores can range from 0 to 126. Each item is rated on a seven-point scale varying from 'not present' to 'extremely severe', with high scores indicating more severe symptoms. Seventeen studies reported data from this scale.

6.7.2 General Well-being Schedule - GWB (Taylor 2003)
This is an 18-item, reliable measurement scale for psychological well-being. High scores indicate better outcome. One study reported data from this scale.

6.7.3 Positive and Negative Syndrome Scale - PANSS (Kay 1986)
This is a 30-item scale, each of which can be defined on a seven-point scoring system from absent to extreme. It has three sub-scales for measuring the severity of general psychopathology, positive symptoms (PANSS-P), and negative symptoms (PANSS-N). A low score indicates lesser severity. Two studies reported data from this scale.

6.7.4 Rosenberg Self-esteem Scale - SES (Rosenberg 1965)
The scale is a 10-item Likert scale with items answered on a four-point scale - from strongly agree to strongly disagree. High scores indicate better outcome. One study reported data from this scale.

6.8 Expressed emotion*

6.8.1 Family Questionnaire - FQ (Feinstein 1989)
The FQ is based on the Camberwell Family Interview and is a 20-item questionnaire developed to enable a less time-consuming evaluation of expressed emotion in relatives. It covers the two dimensions of criticism and emotional over involvement and the items are scored on a four-point scale. The questionnaire is reliability tested and validated in the German language (Feinstein1994 personal communication).

6.9 Quality of life*

6.9.1 Family Assessment Device - FAD (Epstein 1983)
High scores indicate unhealthy family functioning. Two studies reported data from this scale.

6.9.2 Family Burden Interview Schedule - FBIS (Pai 1981)
High scores indicate worse outcome. Two studies reported data from this scale.

6.9.3 Quality of Life - QOL (Heinrichs 1984)
The scale consists of four factors: interpersonal relations and social network, instrumental role functioning, intrapsychic foundations and common objects and activities. The scale consists of 21 items. Each item is rated on a seven-point scale 0-6. Range is 0-126. The scale is rated from a semi-structured interview providing information on symptoms and functioning during the preceding four weeks. High score reflects normal or unimpaired functioning.

6.9.4 General Quality of Life Inventory -74 - GQOLI-74 (Wang 1999)
A 74-item quality of life assessment scale. It contains four sub-scales that assess physical functioning, psychological functioning, social functioning, and standard of living. High scores indicate better quality of life. One study reported data from this scale.

6.9.5 Psychological General Well-being Scale - PGWB (Dupuy 1984)

High scores indicate better well-being. One study reported data from this scale.

6.10 Satisfaction with care*

6.10.1 Verona Service Satisfaction Scale - VSSS (Ruggeri 1993)
The scale consists of 54 items in versions for patients and relatives. It is a questionnaire that covers seven dimensions of satisfaction with service: overall satisfaction, professionals' skills and behaviour, information, access, efficacy, types of intervention and relatives involvement. (Ruggeri 1996) The VSSS satisfaction ratings
are given on a five-point Likert scale. The instrument has been validated in community psychiatric samples (Ruggeri 1994; Ruggeri 1996). One study reported data from this scale.

Outcomes with '*' are extra outcomes added in this 2010 update review.

6.11 Missing outcomes

Most trials reported on primary outcomes that we were interested in, i.e. compliance and relapse. However, there were few data on health economic outcomes; only one study (Standard - Both 1996) reported some skewed data on hospital charges.

Excluded studies

We excluded 68 studies from the review. Many had to be excluded because they were not randomised controlled trials. We excluded 12 studies because there were no usable data reported, usually due to the lack of mean or standard deviation. Liu 2007 had to be excluded because the outcome data in this study are identical (to the decimal points) to another included trial (Unclear - Both 2005). We suspect these two trials are the same study but are not sure and therefore treated Liu 2007 as separate but we felt we could not prove the veracity of the data.

Studies awaiting assessment

Two studies await assessment (Bentall 2001; Day 2000). In both cases we have not been able to locate the full text of the studies and were unable to make a decision regarding inclusion without the full report.

From the 2012 update search 27 studies were added to this section and 29 studies are now awaiting assessment.

Ongoing studies

Kissling 2007 is an ongoing study, which is expected to complete in August 2010.

Risk of bias in included studies

Our overall impression of risk of bias in the included studies is represented in Figure 1. The suggestion is that there is, at the very least, a moderate risk of bias and therefore a risk of overestimating any positive effects of psychoeducation.

Figure 1. Methodological quality summary: review authors' judgements about each methodological quality item for each included study.

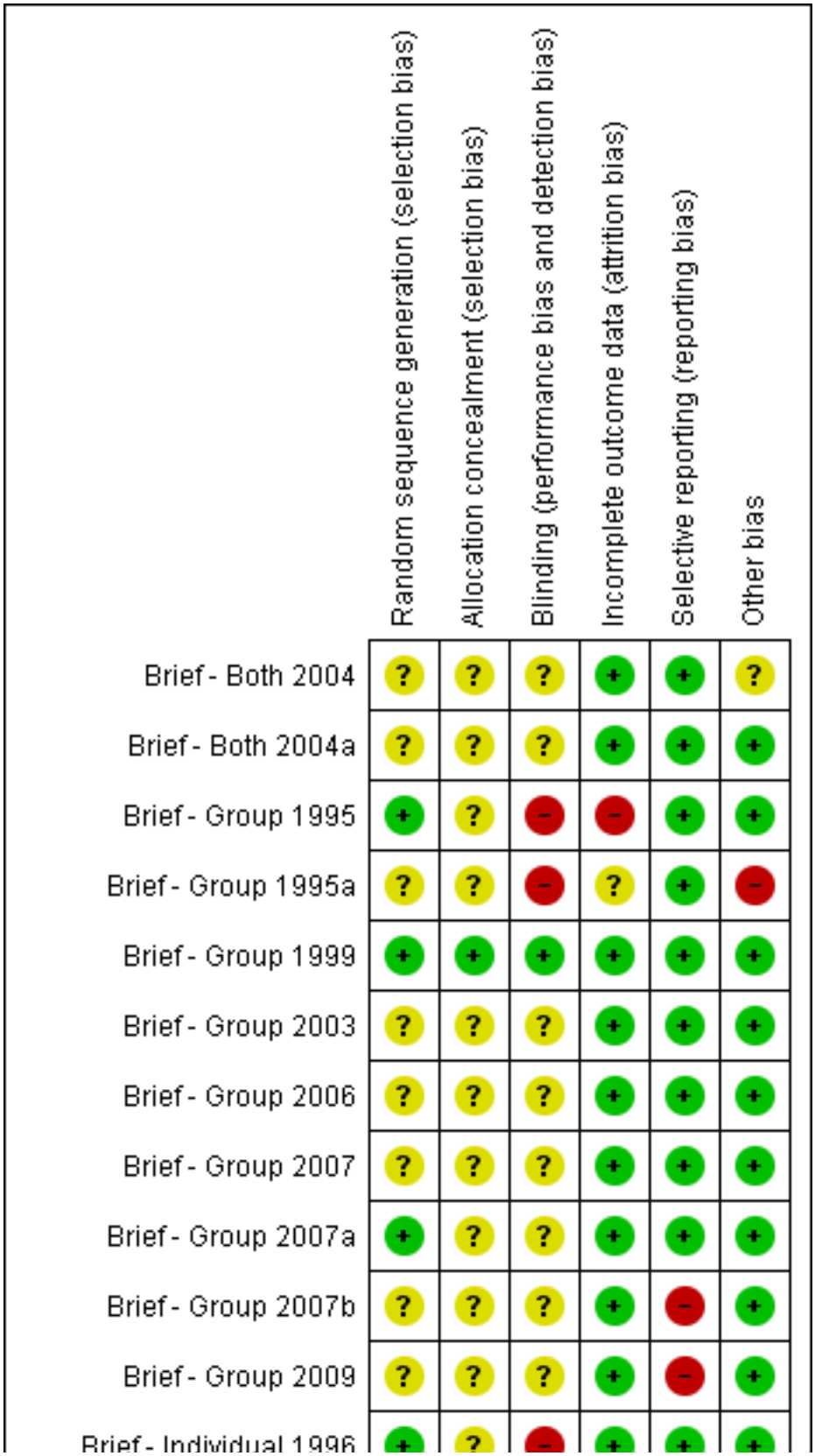
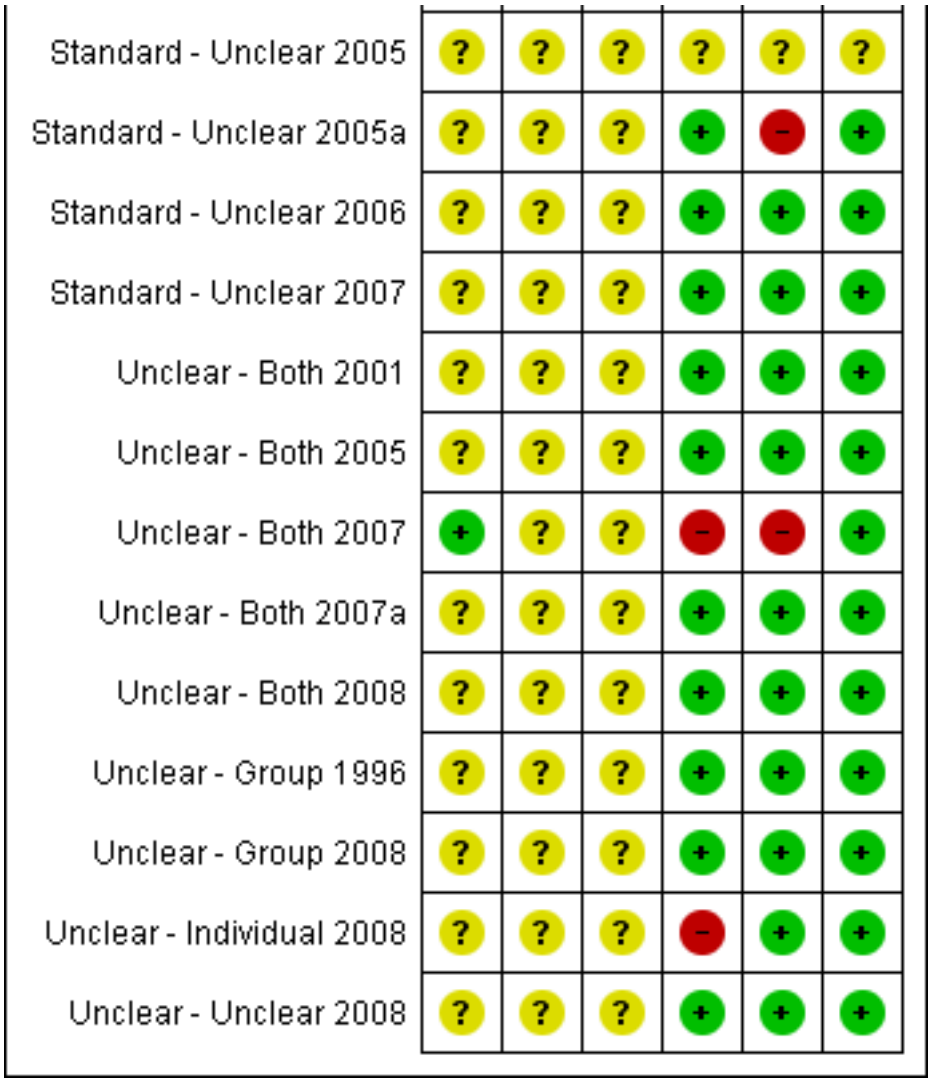


Figure 1. (Continued)

Figure 1. (Continued)



Allocation

All 44 included studies were stated to be randomised, but only seven provided descriptions of the methods used to generate the sequence (Standard - Both 1996; Standard - Unclear 1996; Standard - Both 2008b; Standard - Group 2006; Standard - Individual 03b; Standard - Individual 03c; Unclear - Both 2007). Only Standard - Both 1996 described method of concealment. Most studies, therefore, are classified as of 'unclear' quality with a moderate risk of selection bias and of overestimate of positive effect.

Blinding

Seven studies were stated to have used single (assessor) blinding (Brief - Group 1999; Standard - Both 1996; Standard - Group 1988; Standard - Group 2006; Brief - Group 2007; Standard - Individual 93; Standard - Unclear 1996). One trial was double blind (Standard - Individual 03c) and one open label (Brief - Individual 1996). Of those studies that were blinded in some way, most did not describe the blinding methods used, and none tested the success of blinding for participants or assessors. The remaining studies did not report whether blinding had been used. We therefore had to rate the risk of observer bias as (at best) 'unclear'. This gathers further potential for overestimate of positive effects and underestimate of negative ones.

Incomplete outcome data

Most studies used Intention-to-treat (ITT) method of analysis, except for eight which did not include any data from those who left early (Unclear - Both 2007; Unclear - Individual 2008; Brief - Unclear 2005; Standard - Both 2004; Standard - Individual 03c; Standard - Both 2008b; Standard - Group 2006; Standard - Individual 03b).

Selective reporting

We did not have any protocols for the included studies. Most studies included in this version of the review seemed to report all outcomes measured, except for four. Brief - Group 2007b measured PANSS and ITAQ scores, but did not report numerical data. Brief - Group 2009 measured SSQ-6 and SES score and, again, did not report. Standard - Unclear 2005a and Unclear - Both 2007 collected data on BRRS, SOSS and MRSS, but failed to report these data in the report.

Other potential sources of bias

There were no other obvious potential sources of bias. We are aware that research in China has shown that trials many from China may not be of high quality (Wu 2006). This is a significant issue for this review, in which 31 out of 44 trials are certainly from China. It was problematic to illustrate this in Figure 1 but, until quality control improves in Chinese trials, many of the results from these studies have to be treated with caution.

Effects of interventions

See: **Summary of findings for the main comparison** ANY FORM OF PSYCHOEDUCATION compared with STANDARD CARE for schizophrenia

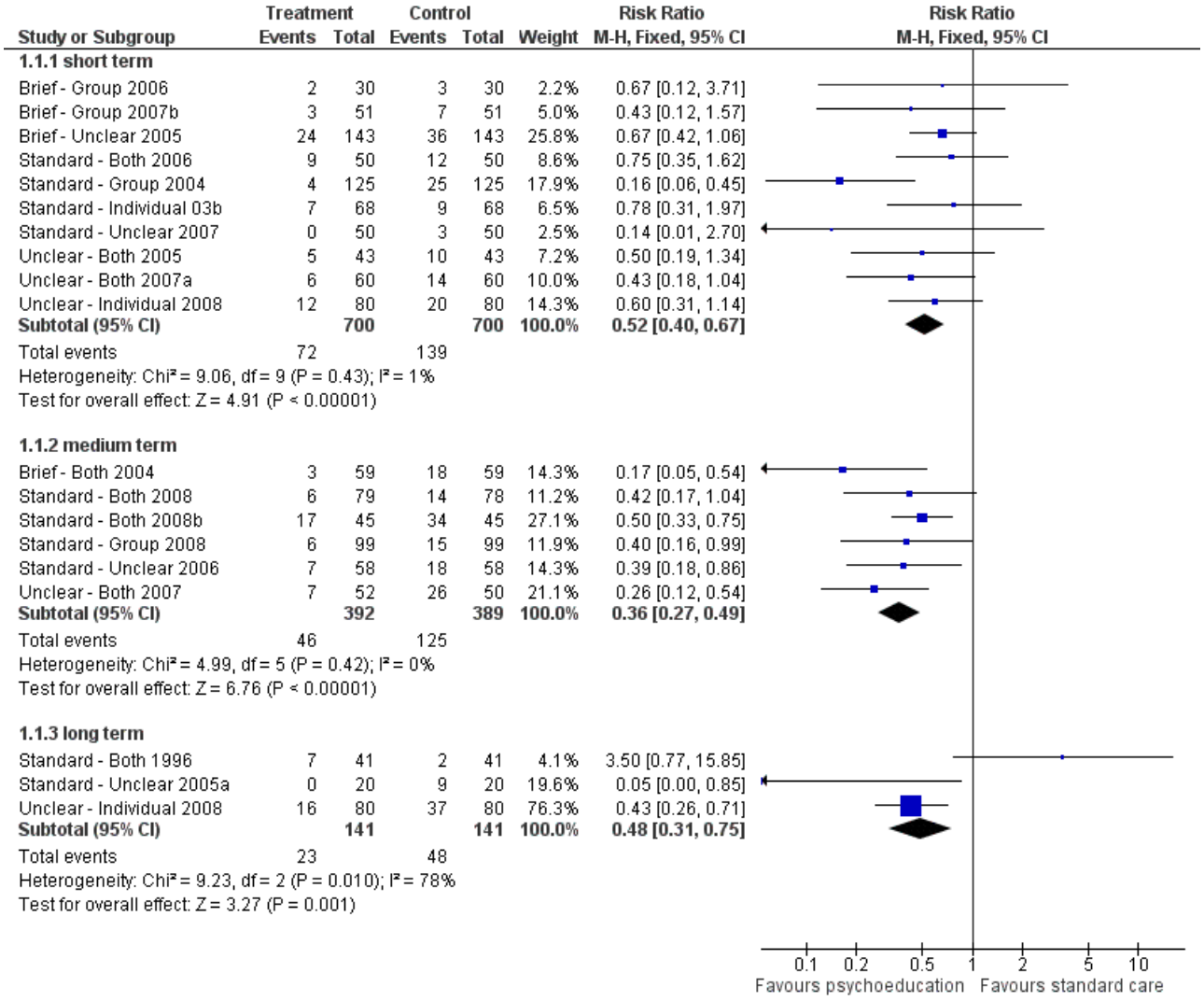
1. Comparison 1. Any form of psychoeducation vs standard care

1.1 Compliance (primary outcomes)

1.1.1 Compliance: 1a. With medication - non-compliance

(Analysis 1.1)
We included 10 short-term studies and found incidences of non-compliance were lower in the psychoeducation group (n = 1400, RR 0.52 CI 0.40 to 0.67, NNT 11 CI 9 to 16) compared with standard care. Medium-term (6 RCTs, n = 781, RR 0.36 CI 0.27 to 0.49, NNT 5 CI 5 to 7) and long-term data (3 RCTs, n = 282) also favoured the psychoeducation group, but long-term data were heterogeneous (RR 0.48 CI 0.31 to 0.75, NNT 6 CI 5 to 12, I^2 = 78%). Also see Figure 2.

Figure 2. Forest plot of comparison: 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, outcome: 1.1 Compliance: 1a. With medication - non-compliance.



1.1.2 Compliance: 1b. With medication - partial compliance

(Analysis 1.2)
Overall, partial compliance data favours the psychoeducation group (n = 590, RR 0.53 CI 0.37 to 0.76, NNT 6 CI 5 to 12). However, medium-term data were not statistically significant (RR 0.57 CI 0.26 to 1.26).

1.1.3 Compliance: 1c. With medication - continuous outcomes - skewed data

(Analysis 1.3)
Brief - Individual 1996 did not demonstrate a significant advantage in compliance for the intervention groups with one or three sessions of education, and presented skewed data at one-month on the compliance sub-scale of SAI.

1.1.4 Compliance: 2a. With follow up - loss to follow-up for any reason

(Analysis 1.4)
We found no significant difference between psychoeducation and standard care groups in terms of loss to follow-up in general. Medium-term (RR 1.0 CI 0.79 to 1.26) and long-term results are equivocal (two years RR 0.83 CI 0.62 to 1.10; five years RR 0.77 CI 0.48 to 1.23).

1.1.5 Compliance: 2b. With follow up - received intervention but left the study early

(Analysis 1.5)
Outcome data show an equivocal effect between two groups. No significant difference was found between group in the short term (RR 3.04 CI 0.36 to 25.67), medium term (RR 0.56 CI 0.29 to 1.10) or long term (RR 0.63 CI 0.38 to 1.04).

1.1.6 Compliance: 2c. With follow up - allocated but never accepted treatment

(Analysis 1.6)
Compared with standard care, more people in the psychoeducation group allocated to the treatment but never accepted it (n = 213, RR 12.27 CI 2.58 to 58.33, NNT 9 CI 64 to 2).

1.2 Relapse (primary outcomes)

1.2.1 Relapse: 1. Relapse for any reason

(Analysis 1.7)
Medium-term relapse outcome included data from 11 RCTs and results favour the psychoeducation group (n = 1214, RR 0.70 CI 0.61 to 0.81, NNT 9 CI 7 to 14). Long-term data up to five years (RR 0.73 CI 0.62 to 0.85, NNT 8 CI 6 to 14, - exclusive of five years) and at seven years (RR 0.62 CI 0.42 0.92, NNT 3 CI 2 to 15) also favour the psychoeducation group. The five-year follow-up result appears to favour the psychoeducation group too, but wasn't statistically significant (RR 0.89 CI 0.73 to 1.08).

1.2.2 Relapse: 2. Relapse with readmission

(Analysis 1.8)
Psychoeducation group had better long-term outcome data on relapse with readmission (n = 206, RR 0.71 CI 0.56 to 0.89, NNT 5 CI 4 to 13). Medium-term data appear to favour the psychoeducation group, but was not statistically significant (n = 206, RR 0.77 CI 0.56 to 1.07).

1.3 Knowledge

1.3.1 Knowledge: 1a. Average endpoint scale scores on various knowledge scales

KQ data favour standard care group in both the short (WMD -12.00 CI -17.67 to -6.33) and long term (WMD -8.00 CI -14.64 to -1.36). Both short-term (WMD 0.20 CI -2.12 to 2.52) and medium-term (WMD 1.60 CI -0.84 to 4.04) KASQ scores showed an equivocal effect between two groups. ITAQ scores favour the psychoeducation group in both the short (WMD 5.53 CI 4.56 to 6.49) and medium term (WMD 4.83 CI 1.51 to 8.15). Short-term SKQ score favours standard care group (WMD -16.26 CI -22.72 to -9.80).

1.3.2 Knowledge: 1b. Average change (UMQ, high = favourable, data skewed)

Brief intervention: in the brief individual intervention group, Macpherson 1996 showed knowledge change at one-month follow-up in favour of the single session intervention as well as the three sessions' intervention, but data were skewed.

1.3.3 Knowledge: 2. Average endpoint scores on various insight scales

Neither short-term SAUMD data (WMD -0.63 CI -1.86 to 0.61) nor medium-term RAQ data (WMD 1.80 CI -0.85 to 4.45) showed any significant differences between groups. These outcome data are also highly heterogeneous (I^2 = 91% and 86% respectively).

1.3.4 Knowledge: 3. Average endpoint score on illness-related attitudes - 4 months (KK, high = high expressed)

Results favoured the psychoeducation group in terms of 'confidence in physician' (MD -1.40 CI -2.73 to -0.07). No significant results were found between groups with any other sub-scales.

1.3.5 Knowledge: 4. Level of knowledge did not improve

More people in the standard care did not have improved knowledge level compared with psychoeducation group (RR 0.13 CI 0.06 to 0.28, NNT 3 CI 3 to 4).

1.4 Behaviour

1.4.1 Behaviour: Average score (NOSIE-30, endpoint, high = poor)

Results were from three RCTs, all favoured standard care group (short-term MD 16.85 CI 11.90 to 21.80; medium-term MD 14.00 CI 3.03 to 24.97; long-term MD 41.33 CI 31.02 to 51.64).

1.5 Social functioning

1.5.1 Social functioning: 1a. Average change scores on various scales - medium term (high = poor)

Medium term MRSS (MD 13.68 CI 12.51 to 14.85) and SDSS (MD 1.96 CI 1.83 to 2.09) data from one small study (Brief - Both 2004) both favour standard care group.

1.5.2 Social functioning: 1b. Average endpoint scores on various scales (high = poor)

Short term IPROS score from one small study (Standard - Individual 03a, n = 116, MD -6.64 CI -11.02 to -2.26), SAS score (n = 378, MD -8.53 CI -10.50 to -6.55), SDS score (n = 378, MD -5.60 CI -7.55 to -3.65) and medium-term SDSS score (n = 85, MD -3.74 CI -6.05 to -1.43) all favoured the psychoeducation group, although SAS outcome data are heterogeneous (I^2 = 99%).

1.5.3 Social functioning: 1c. Average SAS, SFS, SNS scale scores - skewed data (low = favourable)

There did not appear to be any significant differences between groups.

1.6 Global functioning

1.6.1 Global functioning: 1. No clinically significant improvement

Medium-term outcome included two RCTs and result favours psychoeducation group (n = 178, RR 0.59 CI 0.43 to 0.82, NNT 4 CI 3

to 10), but the data were heterogenous (I^2 = 69%). Short-term (n = 208, RR 0.61 CI 0.32 to 1.13) and long-term (n = 132, RR 0.70 CI 0.48 to 1.04) outcomes also appear to favour the psychoeducation group, but results are not statistically significant.

1.6.2 Global functioning: 2. Average endpoint scale score

Medium term GAF/GAS data included four RCTs and results favoured standard care group (n = 321, MD -5.44 CI -8.51 to -2.38), as does the long term GAS outcome at two years' follow-up (MD -6.70 CI -13.38 to -0.02). Short-term outcome data of the same scales were from one small trial (Brief - Group 1999) and were not significant (MD -2.64 CI -12.74 to 7.46). SLOF data came from one small trial (Standard - Group 2007), and both short-term (MD 23.60 CI 11.88 to 35.32) and medium-term (MD 46.40 CI 34.45 to 58.35) outcomes favour the psychoeducation group.

1.7 Service utilisation

1.7.1 Service utilisation: days in hospital

Outcome data were from two small trials (Standard - Group 2007; Standard - Unclear 2006) and results favoured the psychoeducation group in both the short (MD -3.23 CI -5.44 to -1.01) and medium term (MD -8.40 CI -10.44 to -6.36).

1.7.2 Service utilisation: Days in hospital using 'acute services' - during 18 months (data skewed)

These particular outcome data were from one small study (Standard - Both 1996) and were markedly skewed. It did not appear to favour any one particular group.

1.8 Global state

1.8.1 Global state: 1. Medium term average endpoint score (CGI, high = poor)

Medium term CGI severity score favours standard care group (n = 61, MD 0.50 CI 0.08 to 0.92). But medium-term CGI change score favours psychoeducation group (n = 61, MD -0.80 CI -1.45 to -0.15).

1.8.2 Global state: 2. Increased medication dose by 25%

More people in the standard care group required increased medication dose (n = 20, RR 0.43 CI 0.15 to 1.20) compared with the psychoeducation group, but this result was not statistically significant.

1.8.3 Global state: 3. Disability

Long-term disability data from one small trial (Standard - Both 2004) clearly favoured the psychoeducation group (RR 0.29 CI 0.13 to 0.64, NNT 3 CI 3 to 6).

1.9 Mental state

1.9.1 Menal state: 1a. Global - continuous - average total endpoint scale score (high = poor)

BPRS scores generally favoured the psychoeducation group in the short term (10 RCTs, n = 1107, MD -1.00 CI -1.38 to -0.63), medium term (seven RCTs, n = 760, MD -4.73 CI -5.55 to -3.91) and long term up to two years (n = 370, MD -6.89 CI -8.55 to -5.23). However, short-term and medium-term data are heterogeneous (I^2 = 88% and 79% respectively). Longer term BPRS follow-up data (from one small trial up to seven years) did not show any difference between groups (n = 48, MD -0.20 CI -6.55 to 6.15). Medium PANSS outcome also favoured the psychoeducation group (n = 163, MD -2.52 CI -5.01 to -0.04).

1.9.2 Mental state: 1b. Global - continuous - average change scale scores - medium term (high = good)

Data were from one small RCT (Brief - Both 2004). Compared with the standard care group, psychoeducation achieved better outcome with both GWB (n = 118, MD 10.89 CI 9.82 to 11.96) and SES assessments (n = 118, MD 8.00 CI 7.77 to 8.23).

1.9.3 Mental state: 1c. Global - continuous - average total endpoint scale scores - (BPRS, high = poor, data skewed)

The skewed data did not show any significant difference between groups in either the short or long term.

1.9.4 Mental state: 2a. Specific - binary - specific symptoms - short term

Data from a small RCT (Brief - Both 2004a) showed that in the short term, the standard care group had worse outcomes with both anxiety (n = 146, RR 0.49 CI 0.25 to 0.93, NNT 7 CI 5 to 47) and depression (n = 146, RR 0.47 CI 0.25 to 0.88, NNT 5 CI 4 to 20) compared with psychoeducation.

1.9.5 Mental state: 2b. Specific - continuous - average endpoint PANSS scores (high = poor)

Only one small RCT (Standard - Group 2006) reported specific PANSS scores and data did not show any significant differences between groups, except for medium term negative symptoms (n = 61, WMD 3.10 CI 0.16 to 6.04), which favoured the standard care group.

1.10 Expressed emotions

1.10.1 Expressed emotions: Participants with high EE relatives (FQ)

Short-term outcome favoured the psychoeducation group (n = 282, RR 0.84 CI 0.76 to 0.94, NNT 8 CI 5 to 20), whereas outcome at nine to twelve months was not significant (RR 1.07 CI 0.64 to 1.78).

1.11 Quality of life

1.11.1 Quality of life: Average endpoint scores on various scales

Medium term FAD score favoured the psychoeducation group (n = 146, MD -6.79 CI -11.67 to -1.91), although short-term data were equivocal. Short-term GQOLI-74 score was not significant (n = 62, MD 0.63 CI -0.79 to 2.05), but medium-term data favoured the psychoeducation group (n = 62, MD 2.13 CI 1.03 to 3.23). One small trial reported PGWB data (Standard - Group 2006), which did not show any significant differences between groups. QOL data from a small trial (Unclear - Group 1996) favoured standard care group (n = 108, MD -9.70 CI -17.22 to -2.18).

1.11.2 Quality of life: Average endpoint scores FBIS (high = poor)

Psychoeducation group had better outcome on the FBIS scale compared with standard care group in both the short (n = 84, MD -4.70 CI -7.19 to -2.21) and medium term (n = 84, MD -6.24 CI -7.80 to -4.68).

1.12 Satisfaction

1.12.1 Satisfaction with mental health services: 1. Short term - average change score (VSS, high = good)

No significant differences were found between groups either in term of patients' satisfaction (n = 32, MD -2.15 CI -13.96 to 9.66), or relatives' satisfaction (n = 17, MD -8.31 CI -29.72 to13.10).

1.12.2 Satisfaction with mental health services: 2. Average change - at 1 year (VSS scale, high = poor)

Standard care group had better patient satisfaction with relatives' involvement compared with the psychoeducation group (n = 30, MD -4.35 CI -7.09 to -1.61). No other significant differences were found between groups.

1.12.3 Satisfaction with mental health services: 3. Binary outcome

More people in standard care group were unsatisfied with mental health services compared with the psycheducation group (n = 236, RR 0.24 CI 0.12 to 0.50, NNT 5 CI 5 to 8).

1.13 Adverse event: Death

No significant differences were found between groups in terms of death.

1.14 Economic outcome

1.14.1 Economic outcomes: Costs (US$ per person, data skewed)

Economic data were skewed and did not show any significant differences between groups.

2. Subgroup analyses 1. Brief psychoeducation/standard psychoeducation versus standard care

2.1 Compliance (primary outcomes)

2.1.1 Compliance: 1a. With medication - binary outcomes

(Analysis 2.1)
Short-term non-compliance data showed an equivocal effect between brief psychoeducation group (n = 448, RR 0.63 CI 0.41 to 0.96) and standard psychoeducation group (n = 286, RR 0.41 CI 0.25 to 0.67). Equivocal effect was also found for medium-term outcome.

2.1.2 Compliance: 2 With follow up - loss to follow up for any reason

(Analysis 2.2)
While medium-term data favoured brief psychoeducation group (n = 170, RR 0.59 CI 0.37 to 0.94), long-term data showed an equivocal effect between the two types of interventions.

2.1.3 Compliance: 2a With follow up - received intervention but left the study early

(Analysis 2.3)
No significant differences were found between groups.

2.1.4 Relapse: Relapse for any reason

(primary outcomes, Analysis 2.4)
Medium-term relapse data were equivocal between brief psychoeducation group (n = 292, RR 0.61 CI 0.43 to 0.89) and standard psychoeducation group (n = 438, RR 0.87 CI 0.77 to 0.99), but standard group's data were heterogeneous (I^2 = 63%). Long-term relapse data favoured standard psychoeducation group (n = 666, RR 0.70 CI 0.59 to 0.84). Medium-term relapse with readmission data were equivocal, but the long-term data favoured standard psychoeducation group (n = 82, RR 0.53 CI 0.35 to 0.82).

3. Subgroup analyses 2. Group psychoeducation/individual psychoeducation versus standard care

3.1 Compliance (primary outcomes)

3.1.1 Compliance: 1a. With medication - binary outcomes

(Analysis 3.1)
Short-term non-compliance data favoured group psychoeducation (n = 412, RR 0.26 CI 0.13 to 0.52), while short-term partial compliance data favoured individual psychoeducation (n = 136, RR 0.61 CI 0.41 to 0.92).

3.1.2 Compliance: 2. With follow up - leaving the study early/loss to follow-up

(Analysis 3.2)
Equivocal effect was found between group (n = 213, RR 0.52 CI 0.25 to 1.0) and individual psychoeducation (n = 20, RR 3.00 CI 0.14 to 65.90) in terms of receiving intervention but left the study early. No significant differences was found between groups with medium-term loss to follow-up for any reason data. There was a trend that individual psychoeducation group had a better outcome (n = 124, RR 0.70 CI 0.43 to 1.15), but it was not statistically significant. Again, no significant difference was found between groups for long-term loss to follow-up for any reason data.

3.1.3 Relapse: relapse for any reason

(primary outcomes, Analysis 3.3)
Compared with the individual psychoeducation group, medium-term relapse for any reason data slightly favoured group psychoeducation (n = 410, RR 0.74 CI 0.57 to 0.96). But the long-term data were equivocal.

4. Sensitivity analysis

4.1 Chinese studies versus non-Chinese studies

In the 2010 update we included 31 trials that were conducted in China. We performed sensitivity analyses for all primary outcomes and results demonstrated that the outcomes of Chinese trials followed the same general affect as trials conducted in western countries. For instance, the medium-term relapse rate in non-Chinese studies were (n = 514, RR 0.85 CI 0.73 to 0.99). Whilst, in medium-term Chinese studies were (n = 700, RR 0.48 CI 0.35 to 0.66). Similarly, the risk ratio for lost to follow-up in medium term non-Chinese studies were (n = 603, RR 1.04 CI 0.8 to 1.34) compared with three medium-term Chinese studies (n = 346, RR 0.85 CI 0.48 to 1.51).

The only exception was the long-term non-compliance outcome, where the result of two Chinese studies (n = 200, RR 0.35 CI 0.22 TO 0.58) showed significant difference from the only non-Chinese study (Standard - Both 1996) (n = 81, RR 3.5 CI 0.77 to 15.85). However, the difference is unlikely to be due to the settings of the studies, as the compliance outcome of this particular non-Chinese study was significantly different from all other studies under the same outcome, including both Chinese and non-Chinese studies.

4.2 Chinese studies versus full analysis

We also compared primary outcomes of Chinese studies with primary outcomes of the full analysis (full analysis = Chinese studies

+ non-Chinese studies) and found no clear differences. For example, non-compliance rate of Chinese studies was 0.85 CI 0.48 to 1.51 (n = 346) and that of all studies 1.00 CI 0.79 to 1.26 (n = 949). The same applies to the outcome of relapse (Chinese studies n = 700, RR 0.48 CI 0.35 to 0.66; all studies n = 1214 RR 0.7 CI 0.61 to 0.81). Please see Table 1 for details.

4.3 English studies versus full analysis

We performed similar sensitivity analysis for non-Chinese trials(i.e. trials of any other language) and found no significant difference. Please refer to Table 2 for details.

DISCUSSION

Summary of main results

Comparison 1. Any form of psychoeducation versus standard care

(Summary of findings for the main comparison)

1.1 Compliance

This was a primary outcome of this review. Overall, psychoeducation promoted considerably better compliance with medication compared with standard care. This was recorded over different time periods and by different means, but the finding seems to be a consistently favouring the psychoeducation group. Even with the risk of overestimation of effect (Juni 2001) there may be some residual evidence that a psychoeducation approach does help people towards taking medication on a more regular basis. Numbers needed to treat are relatively small, and, although they may inflate in everyday care, where the skill of the psychoeducation therapist may not be as great as was seen in these trials, the effort expended to gain increased medication compliance may be seen as acceptable.

Where it comes to loss to follow-up or leaving the study early, there is no evidence that either treatment is less acceptable than the other. About 25% of people left early in both groups. For the outcome of 'allocated but never accepted treatment' (Analysis 1.6) more people in the psychoeducation group were not compliant (2 RCTs, n = 213, RR 12.27 CI 2.58 to 58.33, NNT 9 CI 64 to 2) but we are unsure if this outcome was available to the standard care group.

1.2 Relapse

Psychoeducation group had less relapse in the medium term and long term, compared with standard care group (short term data are heterogeneous, I^2 = 59%). Overall these data are taken from quite a few trials with large total numbers of participants. Again, biases may have inflated the estimate of effect, but there is more than a suggestion that a psychoeducation approach may have beneficial effects in the short, medium and even long term. Of course, this may be mediated by compliance with medication but may also have other positive effects. In terms of relapse with readmission, psychoeducation also had a better outcome than standard care group although readmission data were only from two small trials (n = 206).

1.3 Knowledge - KQ, KASQ, ITAQ, SKQ and SAUMD data

KQ data found standard care group to have had more improvement on the knowledge of the illness compared with psychoeducation group. Short term SKQ data also favoured the standard care group. KASQ and SAUMD scores showed an equivocal effect between two groups but ITAQ score and the binary outcome on 'level of knowledge' both favoured the psychoeducation group. Standard - Unclear 1996 reported how psychoeducation group promotes confidence in physician, compared with standard group. As can be seen, conflicting conclusions were offered by different measures. Most data are from 1-3 small RCTs. Without better data it is difficult to make any conclusions as to whether psychoeducation improves knowledge of schizophrenia any more than a good standard approach to care.

1.4 Behaviour

All results from three trials using the NOSIE-30 favoured standard care. We are not clear on the clinical meaning of differences of 14-40 points but feel it likely that these may be of clinical importance. It is hard to see how the improvements reported overall for the psychoeducation group fit with a deterioration in behaviour.

1.5 Social functioning

It is also difficult to be clear about the various measures of social functioning. Change scores seem to favour the standard care, whereas psychoeducation promotes better social functioning compared with standard care group according to endpoint scores (although some of these data are unacceptably heterogeneous). It may well have been better to record binary, clinically relevant, outcomes consistently across all studies (eg 'considerably less socially isolated').

1.6 Global functioning

For the gross outcome overall 'no clinically significant improvement', in the medium term, treating four people with psychoeducation instead of standard care resulted in one additional person showing improvement. Short-term and long-term data also favoured the psychoeducation group, but they were not statistically significant. Data from various scales, again, were confusing and conflicting. A consistent approach to recording data would greatly help understand findings. Overall there is a suggestion that global functioning is helped by the psychoeducation approach.

1.7 Service utilisation

On average people treated with psychoeducation had fewer number of days in hospital. These data were from very small studies (total n = 200), and findings could be even more prone to bias than larger trials. If, however, psychoeducation reduces inpatient care by about three days over only 12 weeks, or by eight days across a full year, as these data suggest, this is a finding of considerable clinical and economic importance.

1.8 Global state

Only one small trial (n = 61) reported conflicting data on CGI scale over short and medium terms. More people in the standard care group needed increased medication and longer term disability seemed also to favour the psychoeducation group. All these findings are based on too few numbers and are prone to bias. Nevertheless, psychoeducation does seem to positively affect several important and clinically meaningful outcomes.

1.9 Mental state

We found studies indicated a greater improvement for participants in the psychoeducation group compared with those allocated to standard care, but the data were heterogeneous, the differences in overall reduction were small, and the clinical significance of a difference of this magnitude may be questioned. PANSS scores based on two small trials (n = 163) were also found to favour the psychoeducation group. Also data from one small RCT (Brief - Both 2004, total n = 118) indicated that participants in the psychoeducation group achieved better self-esteem and general well-being compared with standard care. Only one study reported outcome on specific mental state symptoms. Results suggested that less participants in the psychoeducation group suffered from anxiety or depression. As with all findings from few small studies, these findings should be replicated before being considered reliable and conclusive.

1.10 Expressed emotions

Short-term outcome based on two trials (n = 282) demonstrated statistically significant reduction on expressed emotion status of relatives in the psychoeducation group as compared to control group. This improvement was not sustained in the medium term. Without more data, it is difficult to conclude if psychoeducation is indeed better than standard care on reducing expressed emotion in relatives, but these and other findings are consistent with the picture of psychoeducation helping the person as well as the family dealing with the illness.

1.11 Quality of life

Again the various measures serve to confuse rather than clarify. Data tended to be equivocal or favour the psychoeducation group. Consistency of measure as well as more data are needed before anyone can be confident of the effects of psychoeducation on quality of life.

1.12 Satisfaction

Only Brief - Group 1999 reported on patients and relatives' satisfaction using the VSS scale. Most data indicated an equivocal effect between groups. This is an important outcome. It is to the credit of those designing Brief - Group 1999 that they have considered the satisfaction of patients and relatives - but much more data are needed to understand how psychoeducation really effects this outcome.

1.13 Adverse event: Death

Across the time periods of the few studies that reported on this outcome (about two years) about 1% of people died. There was no suggestion that psychoeducation had any effect on this outcome.

1.14 Economic outcome

As is frequent, economic data were few and skewed. It would seem likely that, if psychoeducation does really have an effect on relapse and service use that, if recorded properly and reported clearly, there should be an economic effect to find.

2. Subgroup analyses 1. Brief psychoeducation/standard psychoeducation versus standard care

For subgroup analyses we found no direct comparisons. We therefore compared each approach (brief/standard and group/individual) with the standard (non-psychoeducational) care. We are aware that techniques are available to undertake indirect comparisons of interventions (section 16.6.2 of *Cochrane Handbook*, Higgins 2008) but have not employed these at this juncture on such weak data.

2.1 Compliance

For the various measures of compliance we found no clear difference in measures of effect size between brief versus standard care and standard duration psychoeducation versus standard care. This could be a function of power but there are several hundred participants per sub-group.

2.2 Relapse: Relapse for any reason

The same applies to the outcome of relapse and, certainly, this generates the hypothesis that a brief form of psychoeducation may be cost efficient and effective. Direct comparisons are justified.

3. Subgroup analyses 2. Group psychoeducation/individual psychoeducation versus standard care

There were fewer numbers in each of these subgroup analyses compared with the findings reported in the brief/standard duration set of calculations.

3.1 Compliance

We found no convincing evidence that those given psychoeducation in a group differed in terms of compliance with those where the intervention was delivered individually.

3.1.3 Relapse: Relapse for any reason

There was no suggestion that relapse rates really did differ between those who had the intervention delivered by group compared with people given individual psychoeducation.

These findings were, however, not direct comparisons, were not well powered and serve only to generate theories for future studies.

Overall completeness and applicability of evidence

1. Completeness

We were pleased that most included studies did report the outcomes of compliance and relapse - the outcomes we had chosen as being of primary interest.

A general problem in assessing the efficacy of psychoeducational interventions for people with schizophrenia is, however, the scarcity of data. Poor reporting of data compounds the problem. We excluded 11 studies primarily due to lack of extractable data. This is potentially a truly valuable intervention and policymakers are still left having to make sweeping decisions for services based on outcomes with only a few hundred participants involved in less than ideal studies. This point is especially obvious where it comes to scale-derived continuous measures. It is possible to add data from different but similar scales and perform meta-analysis, but we feel that this gives spurious authority to weak data. There are too many assumptions. Scale-derived data are proxy measures, often not truly continuous and are frequently incomplete. Then to calculate an effect size estimate and then estimate how that would relate to one favoured scale is, we suggest, more of an academic contrivance than of direct clinical value.

Outcomes were mainly physician-oriented. Participant-oriented outcomes, such as quality of life, satisfaction or days out of hospital were seldom reported. Participant satisfaction was only reported in three studies and no studies reported family burden. We would suggest that future research should focus more on participant-oriented aspects, such as general and social functioning, family burden and participants acceptability. Policymakers will certainly want more and better reported economic data.

2. Applicability

Most trials were undertaken in hospital, whereas the majority of people with schizophrenia are treated in the community. We are unsure that, in the context of well-functioning community services, psychoeducation, as a separate package, has a place. This is the sort of information that would not be difficult to generate.

As many of the included trials are conducted in China, the findings of this review are applicable to the Chinese population. Nevertheless, most of the included Chinese trials are also conducted in hospitals, thus raising the same concern that it may be inappropriate to apply the results to community based patients.

Quality of the evidence

Overall, the quality of reporting was poor. Most included studies did not describe how the randomisation was conducted. Blinding was only used in eight studies and blinding concealment was not tested. Therefore, there is a moderate risk of overestimating the estimate of effect. Please refer to Figure 1 for a graphic representation of the methodological quality of included studies.

Potential biases in the review process

The process of searching for studies was thorough. We strictly followed the review protocol in the process of study selection, data extraction and analysis. However, we only worked with published reports in this review and may be perpetuating a publishing bias. Many trials included in this update version were from the People's republic of China. The quality of some of the Chinese trials has been called into question (Wu 2006), as many that are stated to be randomised are not. In this update version, we found two Chinese trials (Liu 2007; Unclear - Both 2005) conducted at different places and time periods to have reported exactly the same numerical outcomes. We excluded the one found at a later date (Liu 2007). However, we did not find any other overt bias in the results and therefore, have left these Chinese trials in.

Agreements and disagreements with other studies or reviews

This review substantially updates and improves past work (Pekkala 2002). It largely concurs with findings from the previous version but puts less emphasis on the positive findings, perhaps because of the new Risk of Bias table function of this version of RevMan.

AUTHORS' CONCLUSIONS

Implications for practice

1. For people with schizophrenia

Psychoeducational interventions may initially seem 'off putting' for the person with schizophrenia, but it can reduce the relapse, readmission and encourage medication compliance, as well as reduce the length of hospital stay. It may well have other outcomes that are, at this point, under-researched.

2. For clinicians

The reduction in relapse and length of hospital stay with psychoeducational interventions and the increase of medication compliance rate should make it useful for clinicians as a part of their treatment programme. More should be known on other important outcomes and efficient ways of implementation.

3. For managers and policy makers

Not much data exist concerning the economic consequences of implementing psychoeducation as a routine service. A single study indicates that the combined costs for hospital and ambulatory services are comparable for the intervention group and standard treatment group. Much better work should be undertaken in this area to explore the true costs of the intervention and variations of approach, such as use of a brief form of psychoeducation or group delivery rather than individual to individual.

4. Note: the new 27 citations in the awaiting classification section of the review may alter the conclusions of the review once assessed.

Implications for research

1. General

We had to exclude 11 trials (please refer to Characteristics of excluded studies for detail), due to the poor quality of data reporting, diminishing the already limited evidence-base. Following CONSORT for good reporting of clinical trials more closely would have helped to considerably increase the amount of data available in this review.

2. Specific

More well-designed, conducted and reported randomised studies investigating the efficacy of psychoeducation are needed. This is an intervention that looks as if it works in terms of compliance and relapse, but we still know relatively little about many important effects. Certainly, any future trials should employ well standardised psychoeducational programmes with clear definitions of the content of interventions to help professionals planning evidence-based psychoeducational interventions, people with schizophrenia and family members participating in psychoeducation programmes. Not only should compliance, relapse and readmission be recorded as outcomes, but also psychosocial function, quality of life and insight. Health economic outcomes should also be measured, as the efficiency of psychoeducation is crucial in making it an attractive option for managers and policy makers. Continuous data should be reported with mean, standard deviations and number of participants. Endpoint scores should always be used when reporting data derived from scales. We have not the experience nor have we invested the effort of thought or commitment of those who have undertaken trials in this difficult area. There are, however, some gains from producing an overview in this way and we suggest an outline design for future trials (Table 3). Further research is also needed for assessment of the efficacy of different formats of psychoeducational interventions as brief or group approaches may well be cost efficient.

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The Methods section of this review uses text from the Cochrane Schizophrenia Group's generic text for methods sections. This has been written over a period of years to ensure consistency and clarity. We fully acknowledge use of this text which we have adapted for relevance to this particular review.

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* Indicates the major publication for the study

CHARACTERISTICS OF STUDIES

Characteristics of included studies *[ordered by study ID]*

Brief - Both 2004

Methods	Allocation: randomised - no further description. Blindness: not stated. Duration: 6 months. Setting: JiNing Psychiatric Prevention Hospital, China.
Participants	Diagnosis: schizophrenia (CCMD-3). N = 118. Age: average age ˜ 41years (SD ˜ 9). Sex: male and female. History: average length of illness ˜ 14.5 years (SD ˜ 9). Inclusion: living in JiNing city district with relative; stabilised condition, BPRS score < 30. Exclusion: patients with heart, liver, renal impairment, drug or alcohol dependency.

Brief - Both 2004 *(Continued)*

Interventions	1. Family intervention + routine rehabilitation therapy: 60-90 minutes/month, for 6 months in the form of outpatient home visit: familiarise patients with basic knowledge of schizophrenia; provide patients with individualised guidance on communication skills, common drug adverse events and coping strategies, as well as how to recognise early warning signs of relapse; answer family members' enquiries regarding patients behaviour and social functioning; organise seminars for patients and family to exchange experience (two seminars in total run at 2-3 hours each). N = 59. 2. Routine rehabilitation therapy. N = 59.
Outcomes	Social functioning: MRSS, SDSS. Mental state: GWB, SES. Unable to use - Knowledge: increase (unpublished scale). Compliance: (unpublished scale).
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Randomised, but no detail described.
Allocation concealment (selection bias)	Unclear risk	Not described.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No incomplete outcome data.
Selective reporting (reporting bias)	Low risk	All measured outcomes were reported.
Other bias	Unclear risk	None obvious.

Brief - Both 2004a

Methods	Allocation: randomised - no further description. Blindness: not stated. Duration: 4 weeks. Setting: JiNing Psychiatric Prevention Hospital, ShangDong, China.
Participants	Diagnosis: schizophrenia (CCMD-3). N = 146. Age: average age ˜ 37 years (SD ˜ 11). Sex: male and female. History: length of illness 3 months - 10 years. Inclusion: patients with stabilised psychotic symptoms after systematic anti-psychotic medication, and most cognitive functioning have recovered; without medication side effects; 4) can independently complete questionnaire.

Brief - Both 2004a *(Continued)*

	Exclusion: patients with either self- or drug-induced depression or anxiety.
Interventions	1. Health belief model: this is delivered in the form of both group and individual therapy - i. analyse cause & nature of illness with patients; ii. guide patients to associate recovery with health education; encourage patients to participate in sports, entertainment activities and travel; help patients to develop hobbies; communicate their feelings with nurses or family, friends; 30 minutes/time, 2 times/week for 4 weeks. N = 74. 2. Routine health education. N = 72.
Outcomes	Social functioning: SAS. Mental state: SDS, anxiety and depression incidence rate*.
Notes	*SAS score>51 is considered as having anxiety; SDS score > 51 is considered as having depression.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Randomised, no further description.
Allocation concealment (selection bias)	Unclear risk	Not described.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No incomplete outcome data.
Selective reporting (reporting bias)	Low risk	All measured outcomes were reported.
Other bias	Low risk	None obvious.

Brief - Group 1995

Methods	Allocation: randomisation in which age, sex, prognosis and medication compliance were balanced by preliminary matching. Randomisation by an independent institution, ZMBT. Blinding: raters were not blind to the treatment conditions except compliance rated by independent raters at 1 year. Duration: 15 weeks and follow-up 5 years. Analysis of drop-outs: withdrawals partially described, modified ITT mentioned (data unclear).
Participants	Diagnosis: schizophrenia (DSM-III-R) with the exception of schizoaffective disorder. N = 191. Age: mean 31.9 years, SD ~ 7.8 years. Sex: male and female. History: 'chronic', outpatients, > 2 acute episodes in last 5 years, illness duration mean 8.3 years (SD 5.7), onset of illness mean ~ 24 years, mean ~ 4 (SD 3.1) hospitalisations, BPRS mean ~ 27 (SD 6.4), GAS mean 55 (SD 10.4), daily neuroleptic dose mean ~ 470 mg CPZ (SD 680).

Brief - Group 1995 *(Continued)*

Interventions	1. Psychoeducational medication training (PT) + leisure time group (LTG) at 7 study centres: 10 sessions in groups of 4-6 patients with one or two psychotherapists during 15 weeks. First 5 sessions once a week, next five twice a fortnight. N = 32. 2. PT + key person counselling 10 sessions (KC) + LTG. N = 35. 3. PT + cognitive psychotherapy (CP). N = 34. 4. PT + KC + CP. N = 33. 5. Control group patients attended a structured but unspecific leisure-time group of same length. N = 57.
Outcomes	Relapse. Global functioning: GAS. Unable to use - Medication compliance (no usable data). Mental state: BPRS (no usable data). Qualification for medication self-management (no usable data). Illness-related attitudes: KK-Skala (no usable data). Satisfaction with knowledge (no usable data).
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Randomised by independent third party.
Allocation concealment (selection bias)	Unclear risk	Unclear.
Blinding (performance bias and detection bias) All outcomes	High risk	Blind rating for readmission (independent criterion as researchers had no influence on this). Relapse data, compliance data and other outcomes where not blindly rated.
Incomplete outcome data (attrition bias) All outcomes	High risk	44 patients dropped out before start of intervention and were not included in analysis but compared on socio-demographic and other characteristics to trial group.
Selective reporting (reporting bias)	Low risk	All measured outcomes reported.
Other bias	Low risk	None obvious.

Brief - Group 1995a

Methods	Allocation: random. Blinding: not reported. Duration: one session and follow-up 1 year. Analysis of drop-outs: withdrawals not described.
Participants	Diagnosis: schizophrenic disorder (DSM-III-R). N = 165. Age: < 15 years 6 patients and > 60 years 2 patients, most between 20-30. Sex: male 69, female 96.

Brief - Group 1995a *(Continued)*

	History: all poor compliance, 46 patients had depot injection, 30% treated with chlorpromazine, haloperidol or trifluoperazine, 30% chronic.
Interventions	1. Counseling session: by trained hospital pharmacist at discharge in presence of key relative; frequency of drug dosage was reduced to twice a day. N = 85. 2. No counselling: also received routine prescription of medication. N = 80.
Outcomes	Relapse.
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Randomisation method not stated.
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	High risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Not stated concerning total dropout and ITT (intention to treat criteria fulfilled).
Selective reporting (reporting bias)	Low risk	Only compliance and readmission measured and reported.
Other bias	High risk	Control patients were not given as much therapist time.

Brief - Group 1999

Methods	Allocation: stratified for gender and for illness duration, randomisation carried out by an independent institution. Blinding: relapse and compliance assessed blindly. Duration: 8 weeks, 1 year follow-up. Analysis of drop-outs: follow-up of withdrawals reported.
Participants	Diagnosis: schizophrenia (F20.2-F20.9) ICD Danish version, OPCRIT. N = 46. Age: median 35.9 years, interquartile range 30.3-39.6 years. Sex: male and female. History: illness duration median 8.2 years, earlier admissions median 5. In treatment at 2 community psychiatric centres.
Interventions	1. Psychoeducational sessions: 8 sessions, using didactic, interactive method standardised with manual for group leaders and booklet for participants; weekly group of 5-8 participants conducted separately for patients and relatives. N = 24. 2. Standard care: psychopharmacological treatment, psychosocial rehabilitation efforts and some supportive psychotherapy. N = 22.

Brief - Group 1999 *(Continued)*

Outcomes	Compliance: non-compliance episodes of 14 days. Relapse. Global functioning: GAF. Mental state: BPRS. Satisfaction: VSSS. Expressed emotion: FQ. Unable to use - Knowledge: (instrument non-validated). Insight: IS (instrument non-validated).
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Randomisation carried out by an independent institution.
Allocation concealment (selection bias)	Low risk	Patients included before randomisation, given participant numbers, separated from patient identification data. Allocation of patent-numbers to intervention/control done subsequently.
Blinding (performance bias and detection bias) All outcomes	Low risk	Single blind (assessor blind).
Incomplete outcome data (attrition bias) All outcomes	Low risk	ITT(Intention treat principle) used.
Selective reporting (reporting bias)	Low risk	ITT(Intention treat principle) used.
Other bias	Low risk	None obvious.

Brief - Group 2003

Methods	Allocation: randomised - no further description. Blindness: not stated. Duration: 6 months. Setting: ChuXiongZhou Psychiatric Hospital, YunNan Province, China.
Participants	Diagnosis: schizophrenia (CCMD-2-R). N = 120. Age: average age ˜ 37 (SD ˜ 10). Sex: male and female. History: average length of illness ˜ 13 years (SD ˜ 9). Inclusion: not stated.
Interventions	1. Family intervention (psychoeducation): introduce to patients and family basic information about schizophrenia, its treatment and rehabilitation, adverse effects of medication & importance of continuous treatment; guidance on communication & social skills; 1/month for 6 months. N = 68. 2. Routine care. N = 52.

Brief - Group 2003 *(Continued)*

Outcomes	Mental state: BPRS. Unable to use -: Mental state: BPRS sub-scale scores. Behavioural outcome - level of symptoms: SCL-90 sub-scale scores.
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Randomised, but no randomisation detail described.
Allocation concealment (selection bias)	Unclear risk	Not described.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No incomplete outcome data.
Selective reporting (reporting bias)	Low risk	All measured outcomes were reported.
Other bias	Low risk	None obvious.

Brief - Group 2006

Methods	Allocation: randomised - no further description. Blinding: not stated. Duration: 8 weeks. Setting: Mental Health Centre of Shantou University, Guangdong, China.
Participants	Diagnosis: schizophrenia (CCMD-3). N = 60. Age: not stated. Sex: not stated. History: not stated. Exclusion: severe physical or other mental illness, drug/alcohol dependent.
Interventions	1. Psychoeducation + standard drug therapy: provide patients with information on cause, development & symptoms of illness, crisis strategy, communication with family member, maintain medication; 30 minutes/session, 1 session/week. N = 30. 2. Standard drug therapy. N = 30.
Outcomes	Compliance with medication. Mental state: BPRS score.
Notes	

Brief - Group 2006 *(Continued)*

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Randomisation method not stated.
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No incomplete outcome data.
Selective reporting (reporting bias)	Low risk	All measured outcomes reported.
Other bias	Low risk	None obvious.

Brief - Group 2007

Methods	Allocation: randomised - no further description. Blinding: not stated. Duration: 2 weeks + 12 months follow-up. Setting: Pamela Youde Nethersole Eastern Hospital, Hongkong, China.
Participants	Diagnosis: schizophrenia (DSM-IV). N = 81. Age: 18-65 years. Sex: male and female. History: not stated. Exclusion: not stated.
Interventions	1. Psychoeducation: didactic presentation on mental health, schizophrenia, rehabilitation resources, medication management & compliance, relapse prevention & stress management; 50 minutes/session, 10 sessions. N = 44. 2. Routine care. N = 37.
Outcomes	Relapse. Insignt: SAUMD scores. Unable to use - Quality of life: SF-36 (sub-scores only).
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement

Brief - Group 2007 *(Continued)*

Random sequence generation (selection bias)	Unclear risk	Randomisation method not stated.
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No incomplete data.
Selective reporting (reporting bias)	Low risk	All measured outcomes reported.
Other bias	Low risk	None obvious.

Brief - Group 2007a

Methods	Allocation: randomised - by tossing a coin. Blinding: not stated. Duration: 8 weeks + 9 months. Setting: Jinhua Number 2 Hospital, Zhejiang, China.
Participants	Diagnosis: schizophrenia (inpatients). N = 62. Age: mean ˜ 35 years, SD ˜ 6 years. Sex: male and female. History: not stated. Exclusion: severe physical illness.
Interventions	1. Psychoeducation: background knowledge on schizophrenia; importance of family environment; role of family members; group therapy, one session/week. N = 30. 2. Routine care. N = 30.
Outcomes	Quality of life: FAD, GQOLI-74.
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Randomised by tossing a coin.
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.

Brief - Group 2007a *(Continued)*

Incomplete outcome data (attrition bias) All outcomes	Low risk	No incomplete data.
Selective reporting (reporting bias)	Low risk	All measured outcomes reported.
Other bias	Low risk	None obvious.

Brief - Group 2007b

Methods	Allocation: randomised. Blinding: not stated. Duration: 8 weeks. Setting: Yangzhou Wutaishan Hospital, Jiangsu Province, China.
Participants	Diagnosis: schizophrenia (CCMD-3). N = 102. Age: not stated. Sex: not stated. History: not stated. Exclusion: severe physical or other mental illness.
Interventions	1. Psychoeducation + routine drug therapy: provide patients with information on cause, development & symptoms of illness, crisis strategy, communication with family member, maintain medication; 30-60 minutes/week. N = 51. 2. Routine drug therapy. N = 51.
Outcomes	Compliance: with medication. Behaviour: NOSIE score.
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Randomisation method not stated.
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No incomplete outcome data.
Selective reporting (reporting bias)	High risk	PANSS, ITAQ scores measured, but not reported.

Brief - Group 2007b *(Continued)*

Other bias	Low risk	None obvious.

Brief - Group 2009

Methods	Allocation: randomised. Blinding: not stated. Duration: 3 months treatment + 12 months follow-up. Setting: Hong Kong, China.
Participants	Diagnosis: schizophrenia (DSM -4). N = 73. Age: 18-65 years. Sex: male and female. History: not stated. Exclusion: clients with secondary diagnosis of a mental or physical disorder.
Interventions	1. Psychoeducation + routine care: providing information on cause, development & treatment of schizophrenia, its recovery, relapse & early warning signs; 10 sessions over 3 months. N = 36. 2. Routine care. N = 37.
Outcomes	Knowledge: ITAQ endpoint scale score. Mental state: BPRS endpoint scale score (data skewed). Unable to use - Satisfaction: continuous satisfaction data - unclear from which scale they are derived from. Quality of life: FBIS endpoint scale score, no n number reported, data are skewed.
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Randomisation method not stated.
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No incomplete data.
Selective reporting (reporting bias)	High risk	Some scale data (SSQ-6, SES) were not reported.
Other bias	Low risk	None obvious.

Brief - Individual 1996

Methods	Allocation: random - a random numbers table. Blinding: all ratings were carried out by the author, without blinding procedures. Duration: 7 weeks. Analysis of drop outs: withdrawals described.
Participants	Diagnosis: schizophrenia (DSM-III-R). N = 67. Age: mean 45.2 years, SD ~ 13 years. Sex: male 48, female 16. History: largely (54/64) community based, chronic, institutionalised population, at least 6 months cumulative antipsychotic drug exposure and clinical stability. Years in institution mean 12.8 (SD 11.8). Education mean 11 y (SD 1.9).
Interventions	1. Single individualised educational session: followed manual guidelines based on psychoeducation literature & principles of general health education. N = 24. 2. Individualised teaching: in 3 education sessions 25-35 minutes/session at weekly interval. N = 23. 3. No education. N = 20.
Outcomes	Compliance: SAI - compliance sub-scale. Knowledge change: UMQ. Insight: SAI. Unable to use - Mental state (no usable data).
Notes	All education was performed by the author RM.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Using a random numbers table
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	High risk	Open label.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No incomplete data.
Selective reporting (reporting bias)	Low risk	All measured outcomes reported.
Other bias	Low risk	None obvious.

Brief - Unclear 2005

Methods	Allocation: randomised. Blinding: not stated.

Brief - Unclear 2005 *(Continued)*

	Duration: 8 weeks intervention + 3 months follow-up. Setting: Kangning Hospital, Shenzhen City, China.
Participants	Diagnosis: schizophrenia (CCMD-3-R). N = 286. Age: mean ˜ 32.5 years, SD ˜ 17.2 years. Sex: male and female. History: < 10 years. Exclusion: with combined other mental health problem, or if their conditions are obviously deteriorating.
Interventions	1. Psychoeducation: introduce patients to i. background of prescribed medication; ii. importance of taking medication; iii. review on benefit of medication; iv. discussion on schizophrenia as an illness; v. medication management after discharge; frequency 1/week. N = 143. 2. Routine health education:provided as a part of standard care. N = 143.
Outcomes	Compliance: with medication and follow up (leaving the study early). Unable to use - Compliance: with medication continuous data - derived from unpublished scale.
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Randomisation method not stated.
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	High risk	Drop out was excluded in the analysis.
Selective reporting (reporting bias)	Low risk	All measured outcomes reported.
Other bias	Low risk	None obvious.

Standard - Both 1996

Methods	Allocation: randomly assigned - computer generated cards stored in sealed envelopes. Blinding: assessments done by research interviewers blinded to patient's group assignment, not associated with clinical care & instructed not to inquire about patient's treatment. Duration: 18 months. Analysis of drop-outs: withdrawals reported.
Participants	Diagnosis: schizophrenia or schizoaffective disorder (DSM-III-R). N = 82.

Standard - Both 1996 *(Continued)*

	Age: study group mean 33.3 years (SD 8.8), control mean 26 years (SD 9.3). Sex: male 53, female 29. History: outpatients at high risk for relapse, maintained on standard doses of antipsychotic medication, previous hospitalisations study group 2.27(SD 1.29), control 2.64(SD 1.28), participants were included in the study even if they did not comply with the medication.
Interventions	1. Program for relapse prevention: education for patients & family members about process of relapse in schizophrenia & how to recognise prodromal symptoms & behaviours, active monitoring for prodromal symptoms, clinical intervention within 24-48 hours, when prodromal episodes detected, one-hour weekly supportive group or individual therapy emphasising improving coping skills; 90 minute multi-family psychoeducation groups biweekly for six months and monthly thereafter. N = 41. 2. Treatment as usual: individual 15'-30' biweekly sessions of medication management, symptom monitoring & individual supportive therapy. N = 41.
Outcomes	Compliance. Relapse. Service utilisation: length of hospital stay. Health economic outcomes: costs.
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Using computer generated random number card.
Allocation concealment (selection bias)	Low risk	Sealed envelopes.
Blinding (performance bias and detection bias) All outcomes	Low risk	Single blind.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No incomplete outcome data.
Selective reporting (reporting bias)	Low risk	All measured outcomes reported.
Other bias	Low risk	None obvious.

Standard - Both 2004

Methods	Allocation: randomised - no further description. Blindness: not stated. Duration: 9 months treatment, 1 year follow-up. Setting: ZhuMaDian City Psychiatric Hospital, HeNan Province, China.
Participants	Diagnosis: first episode schizophrenia (CCMD-2-R). N = 86. Age: average age ˜ 23 (SD ˜ 6). Sex: male and female.

Standard - Both 2004 *(Continued)*

	History: average length of illness ˜ 6.5 months (SD ˜ 5.5). Inclusion: without learning disability or severe physical impairment, educated to middle school level minimum; there is at least one carer/relative living with the patient after discharge.
Interventions	1. Family psychological intervention + routine drug therapy: 3 stages, i. familiarise patients & family with knowledge of schizophrenia, information on medication & coping with side effects; 30 minutes/2weeks; ii. crisis intervention & communication skills was demonstrated to patients & family, patient's harmful behaviours corrected; 60 minutes/month; iii. organise seminars for patients & family member to exchange experience; 120 minutes/2 months. N = 43. 2. Routine drug therapy. N = 42.
Outcomes	Compliance: leaving the study early Relapse*. Global state: no clinical improvement**. Mental state: BPRS endpoint score. Unable to use - Satisfaction: FES-CV sub-scale scores.
Notes	* Any one of the following items, 10, 11, 12, 15, 17, in BPRS scored > 3 (inclusive of 3), or BPRS total score > 36 (inclusive of 36) is considered as relapse. ** BPRS total score < 25 (inclusive of 25) is considered as full recovery.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Randomised, but further detail provided on randomisation.
Allocation concealment (selection bias)	Unclear risk	Not described.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	High risk	Drop-out was excluded from final analysis.
Selective reporting (reporting bias)	Low risk	All measured outcomes were reported.
Other bias	Low risk	None obvious.

Standard - Both 2006

Methods	Allocation: randomised. Blinding: not stated. Duration: 3 months. Setting: Taiyuan mental health hospital, Shanxi province, China.
Participants	Diagnosis: schizophrenia (CCMD-2-R). N = 100. Age: mean ˜ 48.63 years, SD ˜ 1.33 years.

Standard - Both 2006 *(Continued)*

	Sex: female. History: mean ˜ 25.34 years, SD ˜ 1.33 years. Exclusion: not stated.
Interventions	1. Psychoeducatin + routine drug therapy: introduce to patients and their family basic information about schizophrenia, treatment & rehabilitation, adverse effects of medication & importance of continuous treatment, group therapy; 30 minutes/session, 2 session/week; individual therapy; 15-20 minutes/session, 3 sessions/week. N = 50. 2. Routine drug therapy: N = 50.
Outcomes	Compliance with medication.
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Randomisation method not stated.
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No incomplete outcome data.
Selective reporting (reporting bias)	Low risk	All measured outcomes reported.
Other bias	Low risk	None obvious.

Standard - Both 2008

Methods	Allocation: randomised. Blinding: not stated. Duration: 6 months. Setting: Xiangya Mental Health Centre, Changsha City, China.
Participants	Diagnosis: schizophrenia (CCMD-3). N = 156. Age: 18-60 years. Sex: male and female. History: mean ˜ 4.2 years, SD ˜ 1.6 years, Exclusion: severe physical or other mental illnesses.
Interventions	1. Psychoeducation + standard drug therapy: provide patients with information on illness, crisis strategy, communication with family member, maintain medication; 60 minutes/session, 2 sessions/month. N = 79.

Standard - Both 2008 *(Continued)*

	2. Standard drug therapy. N = 78.
Outcomes	Compliance: with follow up, with treatment. Mental state: BPRS. Quality of life: FBIS.
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Randomisation method not stated.
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	Low risk	ITT was used.
Selective reporting (reporting bias)	Low risk	All measured outcomes reported.
Other bias	Low risk	None obvious.

Standard - Both 2008a

Methods	Allocation: randomised. Blinding: not stated. Duration: 12 weeks. Setting: Wuxi Mental Health Centre, China.
Participants	Diagnosis: schizophrenia (CCMD-3). N = 60. Age: mean ˜ 31.2 years, SD ˜ 10.4 years. Sex: male only. History: mean ˜ 10.2 months, SD ˜ 8.5 months. Exclusion: severe physical illness, history of medication allergy.
Interventions	1. Psychoeducation + standard care: provide patients with information on illness, crisis strategy, communication with family member, maintain medication, small group sessions; 2 session/week, 30-60 minutes/session; also big group sessions; 1 session/fortnight, 60-120 minutes/session. N = 30. 2. Standard care. N = 30.
Outcomes	Mental state: BPRS. Unable to use - Behaviour: NOSIE sub-scale score (sub-scale not validated).

Standard - Both 2008a *(Continued)*

Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Randomisation method not stated.
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not described.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No incomplete outcome data.
Selective reporting (reporting bias)	Low risk	All measured outcomes reported.
Other bias	Low risk	None obvious.

Standard - Both 2008b

Methods	Allocation: randomised using random number table. Blinding: not stated. Duration: 8 weeks treatment + 12 months follow-up. Setting: Rongjun Hospital, Jiangxi Province, China.
Participants	Diagnosis: schizophrenia (CCMD-3). N = 90. Age: 18-60 years. Sex: not stated. History: < 1 year. Exclusion: severe physical or other mental illness.
Interventions	1. Psychoeducation + standard drug therapy: provide patients with information on causes, development symptoms of illness, crisis strategy, communication with family member, maintain medication; 30 minutes/session, 2 sessions/week. N = 45. 2. Standard drug therapy. N = 60.
Outcomes	Compliance with medication. Relapse. Social functioning: SDSS. Mental state: BPRS
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement

Standard - Both 2008b *(Continued)*

Random sequence generation (selection bias)	Low risk	Randomised with random number table.
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	High risk	ITT was not used, drop-outs were excluded from analysis.
Selective reporting (reporting bias)	Low risk	All measured outcomes reported.
Other bias	Low risk	None obvious.

Standard - Group 1988

Methods	Allocation: random. High and low EE groups were randomised separately, stratified for multiple episodes and presence/absence of residual symptoms. Blinding: at follow-up EE, PSE ratings and assessment of relapse blindly. Duration: 9 months. Analysis of drop-outs:non-participators and withdrawals described.
Participants	Diagnosis: schizophrenia (PSE). N = 83. Age: mean 35.3 years, SD ~ 12.8 years. Sex: male 29, female 54. History: acute case ward patients, first episode 25 patients, mean number of admissions 2.8 (SD 3,6), mean duration ill 6.3 years (SD 7.4), mean time since last admission 1.6 years (SD 3.1), mean days in hospital prior to index admission 91 (SD 149), mean days in hospital (index admission) 35.5 (SD 25); neuroleptic medication - 10 discharged with oral medication only, of 63 on depot injection 24 also received oral neuroleptics.
Interventions	1. Education: 2 sessions high EE-group N = 16, low EE-group. N = 9. 2. Behavioral intervention: symbolic 13 sessions high EE-group. N = 16. 3. Routine treatment: high EE-group N = 16, low EE group N = 10. 4. Behavioral intervention: inactive. N = 16.
Outcomes	Relapse. Expressed emotion: CFI. Unable to use - Compliance: with medication (no usable data). Contact with psychiatric services (no usable data). Social functioning: SAS (no usable data).
Notes	Interventions 1-3 are taken into account. Only high EE group was randomised to intervention 2, therefore have all outcomes of intervention group 2 been compared only to high EE group of control intervention 3.

Standard - Group 1988 *(Continued)*

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Randomization stated as stratified but no further information concerning method
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Low risk	Some outcomes (relapse, EE, PSE ratings) are assessed single blind.
Incomplete outcome data (attrition bias) All outcomes	Low risk	All treatment or assessment dropouts were included in analyses
Selective reporting (reporting bias)	Low risk	None obvious.
Other bias	Low risk	None obvious.

Standard - Group 2004

Methods	Allocation: randomised - no further description. Blindness: not stated. Duration: 3 months. Setting: JiNing Medical College Hospital, JiNing City, China.
Participants	Diagnosis: schizophrenia (CCMD-3). N = 250. Age: average age ~ 30 (SD ~ 9). Sex: male and female. Inclusion: stabilized condition, BPRS rating < 30, not suffer from drug side effect and educated to primary school 11 or above. Exclusion: patients with severe physical illnesses; patients with drug and alcohol dependency.
Interventions	1.Psychoeducation + routine care: information given on i. cause and clinical symptoms; ii. medication management and compliance; iii. side effects & coping strategies; iv. prevention of relapse & recognition of early warning sign; v. control temper & release anger; vi. marriage & having family; viii. recovery; frequency 20-40 minutes each time, 4 times per week for 3 months. N = 125. 2. Routine care only: 3 months. N = 125.
Outcomes	Compliance: with medication*. Mental state: BRPS. Unable to use - Curative effect: did not clarify how categorised result. Behaviour: improvement in hostile behaviour (scales used not stated).
Notes	*conclusion derived from self-designed questionnaire; divided into compliance, partial compliance and non-compliance.

Risk of bias

Standard - Group 2004 *(Continued)*

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Patients were randomly divided into two groups, no further detail on randomisation method.
Allocation concealment (selection bias)	Unclear risk	Not described.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No incomplete outcome data.
Selective reporting (reporting bias)	Low risk	All measured outcomes reported.
Other bias	Low risk	None obvious.

Standard - Group 2005

Methods	Allocation: randomised - no further description. Blinding: not stated. Duration:21 sessions + 2 years follow-up. Setting: multi-centred, France.
Participants	Diagnosis: schizophrenia (diagnostic standard not stated). N = 220 Sex: not stated. Age: ˜ 33 years old. History: not stated. Exclusion criteria: not stated.
Interventions	1. Psychoeducational Soleduc programme + amisulpride: including eight modules concerning disease, assumption of responsibility, neuroleptic treatments, course, methods of care & specialised follow-up, reintegration & psychosocial rehabilitation. N = 111. 2. Control group: usual information + amisulpride. N = 109.
Outcomes	Relapse: defined as "a schizophrenia episode leading to hospitalisation whatever its duration".
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Randomised - each participating Centre received a list with randomisation order (from a central study site)
Allocation concealment (selection bias)	Unclear risk	Not stated.

Standard - Group 2005 *(Continued)*

Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	No incomplete outcome.
Selective reporting (reporting bias)	Low risk	None obvious.
Other bias	Unclear risk	Control group contained many protocol deviating patients.

Standard - Group 2006

Methods	Allocation: randomised - using random number table. Blinding: single blind (assessor blind). Duration: 24 weeks. Setting: University of Medicine and Dentistry of New Jersey, USA.
Participants	Diagnosis:schizophrenia or schizoaffective disorder (DSM-IV). N = 71 (+3 dropped out). Age: ~ 22-65 years old. Sex: male and female. History: not stated. Exclusion criteria: patients with comorbid diagnosis of demential or mental retardation, severely impaired intellectual functioning, or unable/willing to give informed consent, had been exposed to more than oneTeam Solutions workbook, at risk of suicide are excluded from the study.
Interventions	1. Team solutions + routine care: first 8 week sessions covered understanding illness & recovering from schizophrenia; second 8 week sessions covered understanding treatment & getting best results from medication; third 8 week sessions covered helping prevent relapse & avoiding crisis situations; frequency met twice per day, 2 days per week for 24 weeks. N = 38. 2. Treatment as usual: all aspects of day treatment programmes. N = 33.
Outcomes	Knowledge/attitude: KASQ, RAQ, ROMI. Mental state: PANSS Quality of life/Well being: GAF-DIS, PGWB. Unable to use - General functioning: GAF - only sub-scale scores reported (sub-scores not validated). Global state: CGI - only sub-scale scores reported (sub-scores not validated). Insight: SUMD (only non-validated sub-scale scores). Knowledge: IAPSRS, TSCKAS (Team Solutions comprehensive knowledge assessment scale) (not clearly validated scale). Complance: TCI (Treatment Compliance Interview) (not clearly validated scale).
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Randomised with random number table.

Standard - Group 2006 *(Continued)*

Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Low risk	Single blind - assessor blind.
Incomplete outcome data (attrition bias) All outcomes	High risk	Drop-outs were excluded from final analysis.
Selective reporting (reporting bias)	Low risk	All measured outcomes were reported.
Other bias	Low risk	None obvious.

Standard - Group 2007

Methods	Allocation: randomised. Blinding: single blind (assessor blind). Duration: approximately 36 weeks of intervention + 12 months follow-up. Setting: community, Hong Kong, China.
Participants	Diagnosis: Schizophrenia (diagnostic standard not stated). N = 84 families. Age: 22-60 years. Sex: male and female. History: unclear. Exclusion: if family member care for more than one relative with a chronic mental or physical illness.
Interventions	1. Psychoeducation + routine care: 4 stage intervention including - orientation and engagement, educational workshop, therapeutic family role & strength rebuilding; 2 hours/session, 1 session every 2 weeks, 18 sessions. N = 42. 2. Routine care. N = 42.
Outcomes	Relapse/re-admission. Global functioning: SLOF. Mental state: BPRS. Quality of life: FBIS. Service utilisation: length of hospital stay. Unable to use - Family functioning: FAD (usually high score indicate unhealthy family functioning, but author of paper reported high score as indication of better family functioning. When data incorporated (high score = favourable), these caused heterogeneity. We, therefore, think there was some mistake in reporting of these data).
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Randomisation method not stated.

Standard - Group 2007 *(Continued)*

Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Low risk	Single blind.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No incomplete data.
Selective reporting (reporting bias)	Low risk	All outcome reported.
Other bias	Low risk	None obvious.

Standard - Group 2008

Methods	Allocation: randomised. Blinding: not stated. Duration: 6 months. Setting: community, Wuhan city, China.
Participants	Diagnosis: schizophrenia (CCMD-3). N = 198. Age: 18-60 years. Sex: male and female. History: not stated. Exclusion: severe physical illness.
Interventions	1. Psychoeducation: background knowledge of schizophrenia, importance of medication compliance, medication side effects, ways of expressing feelings & emotion, guidance on family life; frequency 2 per week, group therapy. N = 99. 2. Routine care. N = 99.
Outcomes	Complance: with medication.
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Randomisation method not stated.
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias)	Low risk	No incomplete outcome data.

Standard - Group 2008 *(Continued)*

All outcomes

Selective reporting (reporting bias)	Low risk	All measured outcomes reported.
Other bias	Low risk	None obvious.

Standard - Individual 03a

Methods	Allocation: randomised - no further description. Blindness: not stated. Duration: 8 weeks. Setting: Psychiatric prevention hospital, JiNing City, China.
Participants	Diagnosis: schizophrenia (CCMD-2-R). N = 116. Age: average age ˜ 32 years (SD ˜ 10). Sex: male and female. History: average history ˜ 5.5 years (SD ˜ 3.19). Inclusion: stabilised with BPRS < 30, no drug side effects, education > 5 years (inclusive of 5), without heart, liver or renal illnesses or history of drug/alcohol dependency.
Interventions	1. Psychoeducation + routine drug therapy: individualised guidance about onset, nature and symptoms, guided to differentiate before & after treatment, to associate improvement with good medication compliance, counselling when necessary, asked to write reflective diary; 45-60 minutes/session, 2/week. N = 58. 2. Routine drug therapy. N = 58.
Outcomes	Social functioning: SAS. Global state: IPROS. Mental state: BPRS, SDS. Unable to use - Global state: IPROS factor scores (non-validated sub-scale scores).
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Patients randomly divided into two group, no further detail on randomisation.
Allocation concealment (selection bias)	Unclear risk	Not described.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Blinding is not stated.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No incomplete outcome data

Standard - Individual 03a *(Continued)*

Selective reporting (reporting bias)	Low risk	No selective reporting.
Other bias	Low risk	None obvious.

Standard - Individual 03b

Methods	Allocation: random (draw lots). Blindness: not stated. Duration: 8 weeks treatment, 2 years follow-up. Setting: JiNing Psychiatric Prevention Hospital, JiNing City, China.
Participants	Diagnosis: first onset schizophrenia (CCMD-2-R). N = 136. Age: < 50 years (inclusive of 50). Sex: male and female. History: average length of illness ˜ 1.4 years (SD ˜ 0.8). Inclusion: first onset; never received systematic anti-psychotic treatment before hospitalisation; family members agree the patient to receive at least 8 weeks treatment in hospital. Exclusion: severe physical impairment; drug allergy, or alcohol dependency.
Interventions	1. Routine drug therapy (Clozapine < 300mg/d) + psychoeducation: i. therapist explained symptoms to patients & enlighten them on the difference between now (ill) and before (well), to increase ability to recognise psychotic symptoms; ii. guide patients to associate improvement with good medication compliance & to realize benefit of anti-psychotics; iii. encourage patients to write reflective diary; 30-40 minutes/time, 2-3 times/week for 8 weeks. N = 68. 2. Routine drug therapy (Clozapine < 300mg/d). N = 68.
Outcomes	Compliance: leaving the study early*. Relapse* Knowledge: ITAQ. Mental state: BPRS.
Notes	* Data entered with intention-to-treat method.

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Randomised by draw lots.
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	High risk	Incomplete outcome data at follow-up was excluded from analysis.
Selective reporting (reporting bias)	Low risk	All measured outcomes were reported.

Standard - Individual 03b *(Continued)*

Other bias	Low risk	None obvious.

Standard - Individual 03c

Methods	Allocation: randomised with random number table. Blindness: double blind. Duration: 12 weeks treatment + 1 year follow-up. Setting: JiNing Veterans' Hospital, ShanDong, China.
Participants	Diagnosis: schizophrenia (CCMD-2-R). N = 110. Age: average age ˜ 36.5 years(SD ˜ 11). Sex: male and female. History: average length of illness ˜ 13.5 years (SD ˜ 10.5). Inclusion: living with at least one member of the family after discharge. Exclusion: patients with severe physical impairment or mental retardation.
Interventions	1. Conventional psychoeducation + psychological stress education + routine drug therapy: 1.5 hours/week for 12 weeks. N = 37*. 2. Conventional psychoeducation + routine drug therapy: delivered in form of individual therapy, included basic knowledge about schizophrenia, symptoms & causes, encourage patients to write reflective diary; 1 hour/week for 12 weeks. N = 37. 3. Routine drug therapy. 12 weeks. N = 36.
Outcomes	Relapse.** Global state: NOSIE-30. Mental state: BPRS. Unable to use - Behaviour: NOSIE-30 (non-validated sub-scale scores only). Cognitive function: Simplified Coping Style Questionnaire (not clearly validated).
Notes	*Results of this group is not included in analysis. ** Any of the following items in BRPS, 4, 7, 11, 12, 15, scored > 5, or any combined two items scored > 4 is considered as relapsed.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Randomised with random number table.
Allocation concealment (selection bias)	Unclear risk	Not described.
Blinding (performance bias and detection bias) All outcomes	Low risk	Double blind.
Incomplete outcome data (attrition bias) All outcomes	High risk	Addressed in some outcomes, but not others.

Standard - Individual 03c *(Continued)*

Selective reporting (reporting bias)	Low risk	All measured outcomes were reported.
Other bias	Low risk	None obvious.

Standard - Individual 93

Methods	Allocation: random, from a list of 30 patients attending a specialised clinic for young adults, the research team identified with the clinicians those with stable enough clinical state, considered able to attend group therapy. Blinding: knowledge, social functions and symptomatology assessed blindly. Duration: 2-3 months. Analysis of drop-outs: withdrawal reported.
Participants	Diagnosis: schizophrenia or schizophreniform or schizoaffective disorder (DSM-III). N = 20. Age: mean ˜ 23 years (SD 3.4), range 18-30 years. Sex: male 15, female 5. History: outpatients.
Interventions	1. Medication management group: 3 times per week for 2-3 months. N = 10. 2. Control group. N = 10.
Outcomes	Knowledge: SKQ. Social functions: SAS II. Mental state: BPRS. Increased medication.
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Randomisation method used: dice.
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Low risk	Some outcomes are assessed single blind.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Not stated, but only one subject retired from the study.
Selective reporting (reporting bias)	Low risk	None obvious.
Other bias	Low risk	None obvious.

Standard - Unclear 1988

Methods	Allocation: stratification patients with schizophrenia/schizophreniform disorder and schizoaffective disorders, respectively, was based on the average level of pre-hospital functioning rated by RPTS using a cutting score of 3.5 (the median on this scale). Within each of these four groups randomly - no further description Blinding: not reported. Duration: 18 months. Analysis of drop-outs: inadequate description.
Participants	Diagnosis: schizophrenia DSM-III, schizoaffective or schizophreniform disorder. N = 92. Age: mean ~ 27(SD 8.2), range 15-58 years. Sex: male 49, female 43. History: recent admission to the unit, prior episodes 2.1 (SD 2.2), previous admissions 2.0 (SD 2.7), GAS score mean 25.0 (SD 6.2), PRF mean 4 (SD 1.2).
Interventions	1. Inpatient family intervention (IFI): brief family treatment with emphasis on psychoeducation; average number of sessions 8.6, mode 6, 1 or 2 per week during hospitalisation. N = 37. 2. Standard hospital treatment: included medication, individual supportive psychotherapy, occupational therapy & other activities common to hospital treatment. N = 55.
Outcomes	Global functioning: GAS. Unable to use - General symptoms: PEF (no usable data). Family attitudes and behaviour: FAI (no usable data). Rehospitalisation: (no usable data). Complance: with treatment and medication - TMCDS (no usable data). Role functioning: RAPS (no usable data). Negative outcomes (no usable data).
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Method not described.
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No incomplete outcome data.
Selective reporting (reporting bias)	High risk	Some scale scores were measured, but no mean or SD reported.
Other bias	Low risk	None obvious.

Standard - Unclear 1996

Methods	Allocation: randomised (block randomisation using computer) Blinding: single blind. Duration: 4-5 months and 1 year follow-up. Analysis of drop-outs: withdrawals described and analysed.
Participants	Diagnosis: schizophrenia, schizophreniform disorder, schizoaffective disease (ICD9, DSM-III-R). N = 236. Age: mean 33 years. Sex: male 109, female 127. History: outpatients, GAS mean 49, BPRS mean 42, illness duration mean 7 years, hospitalisations mean 4, first episode 24% of patients.
Interventions	1. Information group: 8 sessions using information booklet. 4 sessions weekly, followed by 4 further sessions at monthly interval. N = 125. 2. Control group. N = 111.
Outcomes	Readmission. Knowledge: KQ. Insight: KK-skala. Expressed emotion: FQ. Negative outcomes. Unable to use - Complance: with medication (no usable data, continuous data derived from unpublished scale). Mental state: BPRS (no usable data). Social functioning: GAS (no usable data).
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Block randomisation using computer.
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Low risk	Single blind.
Incomplete outcome data (attrition bias) All outcomes	Low risk	ITT-analysis and completer analysis performed and drop-out reported.
Selective reporting (reporting bias)	Low risk	None obvious.
Other bias	Low risk	None obvious.

Standard - Unclear 2005

Methods	Allocation: randomised. Blinding: not stated. Duration: 2 weeks intervention + 2 years follow-up. Setting: Shangqiu number 2 hospital, Henan province, China.
Participants	Diagnosis: schizophrenia (CCMD-2-R). N = 142. Age: 18-55 years. Sex: male only. History: mean ˜ 10.2 months, SD ˜ 6.5 months. Exclusion: severe physical illness, history of medication allergy.
Interventions	1. Psychoeducation + standard care: provide patients with information on illness, crisis strategy, communication with family member, maintain medication; 12 session provided within 2 weeks prior to discharge, 1 hour/session. N = 69. 2. Standard care. N = 73.
Outcomes	Relapse. Unable to use - Mental state: N-BPRS (not published scale).
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Randomisaiton method not stated.
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	No incomplete data.
Selective reporting (reporting bias)	Unclear risk	All measured outcomes reported.
Other bias	Unclear risk	None obvious.

Standard - Unclear 2005a

Methods	Allocation: randomised. Blinding: not stated. Duration: 5 years. Setting: community, Binzhou, Shandong province, China.
Participants	Diagnosis: schizophrenia (CCMD-3).

Standard - Unclear 2005a *(Continued)*

	N = 40. Age: 16-60 years. Sex: male and female. History: 6-20 months. Exclusion: other illnesses.
Interventions	1. Psychoeducation: provide patients with information on causes, development symptoms of illness, crisis strategy, communication with family member, maintain medication; frequency not clear. N = 20. 2. Routine care. N = 20.
Outcomes	Compliance: with medication. Global state: no clinical improvement.
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Randomisation method not described.
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No incomplete outcome data.
Selective reporting (reporting bias)	High risk	BPRS and SOSS score measured but not reported.
Other bias	Low risk	None obvious.

Standard - Unclear 2006

Methods	Allocation: randomised - no further description. Blinding: not stated. Duration: 1 month intervention + 1 year follow-up. Setting: Tianshui mental health hospital, Gansu province, China.
Participants	Diagnosis: schizophrenia (CCMD-3). N = 116. Age: 21-58 years. Sex: male and female. History: not stated. Exclusion: severe physical or other mental illness.
Interventions	1. Psychoeducation + routine care: patients & family members given booklets to read on cause, development & treatment of schizophrenia, relapse & relapse prevention; frequency > 2 times each week for 4 weeks. N = 58.

Standard - Unclear 2006 *(Continued)*

	2. Routine care. N = 58.
Outcomes	Compliance: with follow-up. Relapse. Global state: no clinical improvement. Mental state: SDS, SAS. Satisfaction with care.
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Randomisation method not stated.
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No incomplete data.
Selective reporting (reporting bias)	Low risk	All measured outcomes reported.
Other bias	Low risk	None obvious.

Standard - Unclear 2007

Methods	Allocation: randomised. Blinding: not stated. Duration: 8 weeks. Setting: Shizhu number 2 hospital, Chongqing city, China.
Participants	Diagnosis: schizophrenia (CCMD-3). N = 100. Age: 17-68 years. Sex: male. History: 4 months to 28 years. Exclusion: severe physical illness.
Interventions	1. Psychoeducation + standard care: provide patients with information on cause, development & symptoms of illness, crisis strategy, communication with family member, maintain medication; 2 sessions/week for 8 weeks. N = 50. 2. Standard care. N = 50.
Outcomes	Compliance: with medication.
Notes	

Standard - Unclear 2007 *(Continued)*

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Randomisation method not stated.
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No incomplete outcome data.
Selective reporting (reporting bias)	Low risk	All measured outcomes reported.
Other bias	Low risk	None obvious.

Unclear - Both 2001

Methods	Allocation: randomised - no further description. Blindness: not stated. Duration: 12 weeks. Setting: Psychiatric prevention hospital, JiNing City, China.
Participants	Diagnosis: schizophrenia (CCMD-2-R). N = 80. Age: 18-60 years old. Sex: male and female. History/inclusion: duration ill 3 months-10 years, BRPS >/= 36, no severe physical illness, drug/alcohol dependency, heart, liver, renal functioning test normal.
Interventions	1. Psychoeducation + routine drug therapy: intervention given both individually & in groups; individual psychoeducation emphasise on reminding patients to take medication & to receive routine care; group psychoeducation focused on cause of illness & benefit of good medication compliance, prior to discharge focus of intervention on relapse prevention, self-monitoring & returning to family/society; frequency not stated. N = 40. 2. Routine drug therapy only. N = 40.
Outcomes	Knowledge: SAUMD. Unable to use - Knowlege: SAUMD total and factor scores (two groups' data combined and cannot be separated). Mental state: BPRS total and factor scores (two groups' data combined and cannot be separated).
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement

Unclear - Both 2001 *(Continued)*

Random sequence generation (selection bias)	Unclear risk	Patients randomly divided into two groups, no further detail on randomisation.
Allocation concealment (selection bias)	Unclear risk	Not described.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No incomplete outcome data.
Selective reporting (reporting bias)	Low risk	All measured outcomes reported.
Other bias	Low risk	None obvious.

Unclear - Both 2005

Methods	Allocation: randomised - no further description. Blindness: not stated. Duration: > 8 weeks (no further detail). Setting: HeNan Psychiatric Hospital, HeNan Province, China.
Participants	Diagnosis: schizophrenia (CCMD-3). N = 86. Age: 16-62 years old. Sex: male and female. History: not stated. Exclusion: patients with organic mental health problem, or severe physical impairment.
Interventions	1. Psychoeducation + routine drug therapy: promote treatment compliance, independent living, recognition of psychotic symptoms, analyse causes of illness & effect of medication with patients, associate improvement with good medication compliance; 8 weeks, frequency not stated. N = 43. 2. Routine drug therapy. N = 43
Outcomes	Compliance: with medication.* Knowledge: ITAQ. Mental state: BPRS.
Notes	*assessment based on nurse observation; divided into compliance, partial compliance and non-compliance.

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Randomised, without further description.
Allocation concealment (selection bias)	Unclear risk	Not described.

Unclear - Both 2005 *(Continued)*

Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No incomplete outcome data.
Selective reporting (reporting bias)	Low risk	All measured outcomes were reported.
Other bias	Low risk	None obvious.

Unclear - Both 2007

Methods	Allocation: randomised with random number table. Blinding: not stated. Duration: 1 year. Setting: Xinxiang Mental Health Hospital, Henan Province, China.
Participants	Diagnosis: schizophrenia (CCMD-3). N = 129 (but only 102 completed study). Age: mean ˜ 20.4 years, SD ˜ 6 years. Sex: male and female. History: mean ˜ 6.5 years, SD ˜ 3.2 years. Exclusion: not stated.
Interventions	1. Psychoeducation + standard care: provide patients with information on illness, crisis strategy, communication with family member, maintain medication; sessions held once every 1-2months for 1 year. N = 52. 2. Standard care. N = 50.
Outcomes	Compliance: with medication. Relapse. Mental state: PANSS.
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Randomised with random number table.
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	High risk	Drop-outs were excluded from analysis.

Unclear - Both 2007 *(Continued)*

Selective reporting (reporting bias)	High risk	MRSS was measured but not reported.
Other bias	Low risk	None obvious.

Unclear - Both 2007a

Methods	Allocation: randomised. Blinding: not stated. Duration: unclear. Setting: Rongjun Hospital, Jiangxi Province, China.
Participants	Diagnosis: schizophrenia (CCMD-3). N = 120. Age: 18-36 years. Sex: male. History: > 2 years. Exclusion: not stated.
Interventions	1. Psychoeducation + standard drug therapy: provide patients with information on causes, development symptoms of illness, crisis strategy, communication with family member, maintain medication; frequency not stated. N = 60. 2. Standard drug therapy. N = 60.
Outcomes	Compliance: with medication.
Notes	Outcome is analysed as short term.

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Randomisation method not stated.
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No incomplete data.
Selective reporting (reporting bias)	Low risk	All measured outcomes reported.
Other bias	Low risk	None obvious.

Unclear - Both 2008

Methods	Allocation: randomised. Blinding: not stated. Duration: intervention period unclear + 6 months follow-up. Setting: inpatients, China.
Participants	Diagnosis: schizophrenia (CCMD-3). N = 96. Age: unclear. Sex: male and female. History: unclear. Exclusion: not stated.
Interventions	1. Psychoeducation: provide patients with information on causes, development symptoms of the illness, crisis strategy, communication with family member, maintain medication. 40 minutes/session, 1 session/week. N = 48. 2. Routine care. N = 48.
Outcomes	Relapse. Knowledge.
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Randomisation method not stated.
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No incomplete outcome data.
Selective reporting (reporting bias)	Low risk	All measured outcomes reported.
Other bias	Low risk	None obvious.

Unclear - Group 1996

Methods	Allocation: random - no further description. Blinding: not described. Duration: 20 weeks, follow-up 3 months. Analysis of drop-outs: the data is presented for study group attenders, rather than those allocated to groups.
Participants	Diagnosis: schizophrenia (SADS and DSM-III-R). N = 146.

Unclear - Group 1996 *(Continued)*

	Age: not reported Sex: male 92, female 54. History: community based outpatients good depot clinic attenders, illness length 9-14 years.
Interventions	1. Education groups: on 8 geographical areas, each session 90' including break; sessions alternated between information & problem solving; manual outlining the content was given. N = 73. 2. Waiting list. N = 73.
Outcomes	Social functioning: SFS, modified SNS. Quality of life: Heinrichs' scale. Unable to use - Compliance with medication (no usable data). Mental state: BPRS (no data).
Notes	Knowledge + self-esteem assessed but reported elsewhere.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	No description.
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No incomplete outcome.
Selective reporting (reporting bias)	Low risk	Everything measured are reported.
Other bias	Low risk	None obvious.

Unclear - Group 2008

Methods	Allocation: randomised. Blinding: not stated. Duration: 4 weeks. Setting: Zigong Mental Health Centre, Sichuan City, China.
Participants	Diagnosis: schizophrenia (CCMD-3). N = 100. Age: 15-60 years. Sex: male and female. History: not stated. Exclusion: not stated.
Interventions	1. Psychoeducation + routine care: education on causes, development & treatment of schizophrenia, group therapy; frequency not stated. N = 50.

Unclear - Group 2008 *(Continued)*

	2. Routine care. N = 50
Outcomes	Behaviour: NOSIE.
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Randomisation method not stated.
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No incomplete data.
Selective reporting (reporting bias)	Low risk	All measured outcomes reported.
Other bias	Low risk	None obvious.

Unclear - Individual 2008

Methods	Allocation: randomised. Blinding: not stated. Duration: length of treatment period unclear + 2 years follow-up. Setting: Henan Zhumadian Mental Health Hospital, China.
Participants	Diagnosis: schizophrenia (CCMD-3). N = 160. Age: 15-55 years. Sex: male and female. History: 3 months to 6 years. Exclusion: severe physical illness.
Interventions	1. Psychoeducaiton + routine care: provide patients with information on the illness, crisis strategy, communication with family member, maintain medication. 30 ~ 50 minutes/session, 3 sessions/week. N = 80. 2. Routine care. N = 80.
Outcomes	Compliance: with medication, and follow-up. Mental state: BPRS.
Notes	

Risk of bias

Unclear - Individual 2008 *(Continued)*

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Randomisation method not stated.
Allocation concealment (selection bias)	Unclear risk	Not stated.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	High risk	Drop outs were excluded from analysis.
Selective reporting (reporting bias)	Low risk	All measured outcomes reported.
Other bias	Low risk	None obvious.

Unclear - Unclear 2008

Methods	Allocation: randomised. Blinding: not stated. Duration: 4 weeks. Setting: Number 6 Renmin Hospital, Hebei Province, China.
Participants	Diagnosis: schizophrenia (CCMD-3). N = 120. Age: mean ˜ 20.5 years, SD ˜ 7.2 years.. Sex: male and female. History: mean ˜ 4.6 years, SD ˜ 5.6 years.. Exclusion: not stated.
Interventions	1. Psychoeducation: provide patients with information on the causes, development symptoms of the illness, crisis strategy, communication with family member, maintain medication. Intervention frequency unclear. N = 60. 2. Routine care. N = 60.
Outcomes	Knowledge. Satisfaction.
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Randomisation method not stated.
Allocation concealment (selection bias)	Unclear risk	Not stated.

Unclear - Unclear 2008 *(Continued)*

Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No incomplete data.
Selective reporting (reporting bias)	Low risk	All measured outcomes reported.
Other bias	Low risk	None obvious.

Rating scale abbreviations
BPRS - Brief Psychiatric Rating Scale
CGI - Clinical Global Impression
FAD - Family Assessment Device
FBIS - Family Burden Interview Schedule
GAS - Global Assessment Scale
GAF - Global Assessment of Functioning
GQOLI-74 - General Quality of Life Inventory -74
GWB - General Well-being Schedule
IPROS - Inpatient Psychiatric Rehabilitation Outcome Scale
ITAQ - Insight Treatment Attitude Questionnaire
KASQ - Knowledge About Schizophrenia Questionnaire
KK-skala - Krankenheitskonzept Skala
KQ - Knowledge Questionnaire
MRSS - Morningside Rehabilitation Status Scale
NOSIE-30 - Nurse Observation Scale for Inpatient Evaluation-30
PANSS - Positive and Negative Syndrome Scale
PGWB - psychological general well being scale
QOL - Quality of Life
RAQ - Recovery Attitudes Questionnaire
SAI - Schedule for Assessment of Insight
SAS - Zung Self-Rating Anxiety Scale
SAS II - Social Adjustment Scale II
SAUMD - The Scale to Assess Unawareness of Mental Disorder
SDS - Zung Self-Rating Depression Scale
SDSS - Social Disability Screening Schedule
SES - Rosenberg Self-esteem Scale
SFS - Social functioning schedule
SKQ - Schizophrenia Knowledge Questionnaire
SLOF - Specific Level of Functioning Scale
SNS - Social Networks Schedule
TCI - Treatment Compliance Interview
TSCKAS - Team Solutions comprehensive knowledge assessment scale
UMQ - Understanding of medication questionnaire
VSSS - Verona Service Satisfaction Scale
General abbreviations
DSM - Diagnostic and Statistical Manual of Mental Disorders
EE - expressed emotion
ICD - International Classification of Diseases
ITT - intention to treat
SD - standard deviation
ZMBT - Statistics and Data Center for Clinical Trials at the Institute of Medical Biometry and Informatics
CP
CPZ
FAI
FBIS

FQ
IAPSRS
IS
KC
OPCRIT
PEF
PT
RAPS
ROMI
RPTS
SSQ
SUMD
TMCDS

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Agara 2007	Allocation: randomised. Participants: schizophrenia and depressive disorders. Intervention: psychoeducation vs standard care. Outcomes: no usable data - no mean or SD reported, only P values.
Aguglia 2007	Allocation: random. Participants: schizophrenia. Intervention: Psychoeducation vs standard care. Outcome: no usable data - no mean or SD reported, only P values reported.
An 2005	Allocation: randomised. Participants: schizophrenia. Intervention: psychoeducation with elements of skill training and token economy vs standard care.
Angunawela 1998	Allocation: random. Participants: adult general psychiatry patients with schizophrenia 21%, affective disorder 57%, neurotic, personality, other non-psychotic disorder 14% and others 8%. No analyses on diagnostic subgroups. Intervention: patient information leaflet vs usual information.
Azrin 1998	Allocation: patients matched and randomly assigned. Participants: chronically mentally ill patients: schizophrenia, bipolar and major depressive disorder. No analyses on diagnostic subgroups.
Barnes 2001	Allocation: planned to be randomised - trial was not conducted in the end.
Bauml 2006	Allocation: not randomised.
Bechdolf 2005a	Allocation: randomised. Participants: schizophrenia. Intervention: CBT vs psychoeducation.
Bechdolf 2007	Allocation: randomised. Participants: schizophrenia. Interventon: CBT vs routine care.
Bi 2000	Allocation: randomised. Participants: schizophrenia. Intervention: health education with elements of training and token economy vs routine care.
Boczkowski 1985	Allocation: random.

Study	Reason for exclusion
	Participants: schizophrenia patients. Interventions: psychoeducation vs control group. Outcomes: no usable data.
Borell 1995	Allocation: random. Participants: schizophrenia DSM-III. Interventions: information program versus control waiting list group. Outcomes: no usable data.
Cao 2002	Allocation: randomised. Participants: schizophrenia. Intervention: psychoeducation vs standard care. Outcome: no usable data - only sub-scale scores were reported.
Castrogiovanni 2006	Allocation: randomised. Participants: not schizophrenia patients.
Chaplin 1998	Allocation: random. Participants: diagnosis functional psychosis, not limited to patients with schizophrenia. No analyses on diagnostic subgroups.
Chen 2005	Allocation: randomised. Participants: schizophrenia. Intervention: health education with elements of training vs standard care.
Cormier 1995	Allocation: random. Participants: schizophrenia patients. Intervention: psychoeducation (French version of the Medication and Symptom Management Modules) group, two control groups 1) with leisure activities and 2) usual follow-up activities (support therapy with their treating psychiatrist and neuroleptic medication). Outcomes: no usable data.
Dang 2007	Allocation: randomised. Participants: chronic schizophrenia. Intervention: psychological intervention with elements of independent living skills training.
Degmecic 2007	Allocation: not stated. Participants: schizophrenia ICD-10. Intervention: psychoeducation versus control group.
Eckman 1992	Allocation: random. Participants: schizophrenia. Intervention: skills training versus supportive group psychotherapy, not psychoeducation.
Goldman 1988	Allocation: random. Participants: schizophrenia. Interventions: didactic program versus standard ward activities Outcomes: no usable data (means, no standard deviations), number of drop-outs unclear.
Gumley 2003	Allocation: randomised. Participants: schizophrenia. Intervention: CBT vs treatment as usual.
He 2008	Allocation: randomised. Participants: schizophrenia. Intervention: CBT vs standard care.
Hogarty 1986	Allocation: random.

Study	Reason for exclusion
	Participants: schizophrenia or schizoaffective disorder. Intervention: family intervention with minimal psychoeducation versus social skills training versus combination of family intervention and social skills training versus drug treatment.
Hu 1998	Allocation: random. Participants: schizophrenia Intervention: insight education + routine drug therapy versus routine drug therapy alone.
Hua 2008	Allocation: randomised. Participants: schizophrenia. Intervention: psychoeducation with elements of skills training and token economy vs standard care.
Huang 2007	Allocation:randomised. Participants: schizophrenia. Intervention: health education with elements of CBT and token economy vs standard care.
Kelly 1990	Allocation: random. Participants: non-psychoses 7-11%, schizophrenia 59-71%, no analyses of diagnostic subgroups.
Kleinman 1993	Allocation: block randomisation after stratifying for hospital affiliation. Participants: schizophrenia. Intervention: educational process group versus single educational session. No standard care group.
Klingberg 2009	Allocation: randomised. Participants: schizophrenia. Intervention: CBT vs psychoeducation. Outcome: no numerical data reported. No n numbers for groups.
Kopelowicz 1998	Allocation: random. Participants: schizophrenia or schizoaffective disorder. Intervention: community re-entry program, not psychoeducation.
Kuipers 1994	Allocation: random. Participants: schizophrenia and affective disorder. Interventions: structured medication education versus unstructured teaching. No standard care group.
Lester 2004a	Allocation: random. Participants: general practitioners, not people with schizophrenia.
Li 2002	Allocation: randomised. Participants: schizophrenia. Intervention: psychoeducation vs routine care. Outcome: no usable data - no numerical data reported.
Li 2004	Allocation: not randomised, case control study.
Li Zheng 2004	Allocation: random. Participants: schizophrenia. Interventions: problem solving and skills training.
Liu 2007	Allocation: randomised. Participants: schizophrenia. Intervention: psychoeducation + standard drug therapy vs standard drug therapy. Outcome: ITAQ and BPRS scale scores.

Study	Reason for exclusion
	Authors agreed to exclude this study found in 2010 update search, as all of the continuous scale scores are exactly the same (down to the decimal points) as study 'Unclear - both 2005'. Review authors felt this unlikely to be true.
Liu 2008	Allocation: not randomised, quasi randomisation.
Liu 2008a	Allocation: not randomised, quasi randomisation.
Liu 2008b	Allocation: randomised. Participants: schizophrenia. Intervention: health education with elements of skill training vs routine care.
Lv 2005	Allocation: randomised. Participants: schizophrenia. Intervention: psychoeducation with elements of CBT vs standard care.
Ma 1998	Allocation: randomisation not mentioned and received open management. Participants: schizophrenia, initial onset. Interventions: family intervention versus traditional treatment, not psychoeducation.
Magliano 2006	Allocation: random. Participants: schizophrenia. Intervention: family psychoeducation with elements of skills training.
Mak 1997	Allocation: random. Participants: schizophrenia DSM-III outpatients. Intervention: group and individual behavioral family management with psychoeducation provided through printed information versus conventional care. (Psychoeducation component did not involve interaction between information provider and recipients and was thus excluded from the review.)
McGill 1983	Allocation: random. Participants: PSE schizophrenia. Intervention: complex family therapy intervention versus individual supportive psychotherapy.
Mo 2007	Allocation: randomised. Participants: schizophrenia. Intervention: psychoeducation with elements of skill training vs standard care.
Motlova 2003	Allocation: Case Control design. Participants: ICD-10: schizophrenia, schizoaffective disorder and acute psychotic episode with psychotic symptoms. Intervention: the program provided a combination of education about mental illness, family support, crisis intervention, communication and problem-solving skills training.
Pei 2008	Allocation: randomised. Participants: schizophrenia. Intervention: psychoeducation vs standard care. Outcome: no usable data - data are from sub-scale of NOSIE and another unvalidated scale.
Poplawska 2004	Allocation: randomised. Participants: schizophrenia. Intervention: psychoeducation vs standard care. Outcome: no usable data (IMHC scale score reported, but the scale is unvalidated).
Rotondi 2005	Allocation: randomised. Participants: schizophrenia.

Study	Reason for exclusion
	Intervention: telehealth psychoeducation - a package of care including elements of problem-solving training.
Scocco 2006	Allocation: randomised. Participants: schizophrenia. Intervention: a depot olanzapine trial where one group of patients were told that the drug might cause weight gain - not a psychoeducation programme.
Shin 2002	Allocation: random. Participants: DSM-IV: schizophrenia, schizoaffective or schizophreniform disorder. Intervention: complex intervention including communication and stress management skills, self-help and community resources.
Song 2008	Allocation: quasi randomisation.
Su 2007	Allocation: randomised. Participants: schizophrenia. Intervention: psychoeducation with elements of skill training vs standard care.
Sun 2005	Allocation: randomised. Participants: schizophrenia. Intervention: CBT vs standard care.
Wang 2004	Allocation: random. Participants: schizophrenia. Intervention: complex family cognition insight therapy and family intervention and the control group treated with common psychotherapy.
Wang 2007	Allocaiton: randomised. Participants: schizophrenia. Intervention: health education with elements of skills training vs standard care.
Wang 2008	Allocation: randomised. Participants: schizophrenia. Intervention: psychoeducation with elements of music and exercise therapy vs standard care.
Wei 2005	Allocation: randomised. Participants: schizophrenia. Intervention: CBT vs standard care.
Xiang 2007	Allocation: randomised. Participants: schizophrenia. Intervention: community re-entry module (a module of a structured social skills training programme) vs psychoeducation.
Xiong 1994	Allocation: random. Participants: DSM-III-R schizophrenia. Intervention: family intervention with minimal psychoeducation vs standard care.
Xiong 2007	Allocation: randomised. Participants: schizophrenia. Intervention: health education with elements of social and independent living skills training vs standard care.
Youssef 1987	Allocation: random. Participants: diagnosis unclear: schizo-affective or affective disorder, data not available for a non-affective subgroup.

Study	Reason for exclusion
	Intervention: education sessions vs standard care.
Zhang 1994	Allocation: random. Participants: schizophrenia. Intervention: family intervention with minimal psychoeducation vs standard care.
Zhang 2005	Allocation: randomised. Participants: schizophrenia. Intervention: psychoeducation with elements of social skill training vs standard care.
Zhang 2006	Allocaiton: randomised. Participants: schizophrenia. Intervention: health education with social and independent living skills training vs standard care.
Zheng 2008	Allocation: randomised. Participants: schizophrenia. Intervention: health education with practical help on social activities and independent living vs standard care.
Zhu 2002	Allocation: quasi randomisation.

BPRS =
CBT = cognitive behaviour therapy
DSM-III = Diagnostic and Statistical Manual of Mental Disorders, third edition
DSM-III-R = Diagnostic and Statistical Manual of Mental Disorders, third edition, revised
DSM-IV = Diagnostic and Statistical Manual of Mental Disorders, fourth edition
ICD-10 = International classification of diseases, tenth revision
IMHC =
ITAQ =
KD-10 =
NOSIE =
PSE = Present State Examination

Characteristics of studies awaiting assessment *[ordered by study ID]*

Aho-Mustonen 2011

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

Bentall 2001

Methods	Allocation: unclear.
Participants	Diagnosis: schizophrenia DSM-IV or schizoaffective disorder. N = 228. History: admitted to acute psychiatric wards.

Bentall 2001 *(Continued)*

Interventions	1. Compliance intervention (patients educated about benefits of neuroleptic medication). 2. Alliance intervention (structured intervention in which patients are encouraged to rationally appraise the costs and benefits of their neuroleptic medication). 3. Treatment as usual.
Outcomes	1. Attitudes towards neuroleptic as measured by the Drug Attitudes Inventory. 2. Psychotic symptoms as measured by the Positive and Negative Syndromes Scale.
Notes	Further information needed on 'Methods'. Publication being sought.

Day 2000

Methods	Allocation: unclear.
Participants	Diagnosis: schizophrenia. N = 180-225. History: inpatients on acute psychiatric admission wards presenting with psychotic symptoms, who have been prescribed neuroleptic medication.
Interventions	1. An educational intervention. 2. A collaborative intervention. 3. A control condition.
Outcomes	Compliance with prescribed neuroleptic medication regimens.
Notes	Further information needed on 'methods', publication being sought

Fiorillo 2011

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

Gassmann 2011

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

Hegde 2012

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

ISRCTN32545295

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

ISRCTN33576045

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

Jahn 2011

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

Medalia 2012

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

Mueser 2012

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

Navidian 2010

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

NCT01547026

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

NCT01601587

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

Nischk 2011

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

Nordentoft 1999 b

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

Rabovsky 2012

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

Ran 2002

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

Rotondi 2011

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

Schlosser 2011

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

Schlosser 2012

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

Schulze 2011

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

Sharif 2012

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

Shaygan 2011

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

Silverman 2011

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

Silverman 2011a

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

Smeerdijk 2010

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

Valencia 2012

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

Zarafonitis 2012

Methods	
Participants	
Interventions	
Outcomes	
Notes	To be assessed.

Characteristics of ongoing studies *[ordered by study ID]*

Kissling 2007

Trial name or title	"How can rehospitalisations of patients with schizophrenia be avoided? A comparison between different compliance programs."
Methods	Allocation: randomised. Blinding: open label, placebo control.
Participants	Diagnosis: schizophrenia Age: 18-67 years.
Interventions	1. Psychoeducation by professionals vs placebo comparator. 2. Psychoeducation with video vs placebo comparator.
Outcomes	
Starting date	September 2006
Contact information	Dr Werner Kissling Technical University Munich, Germany.
Notes	Estimated completion date: August 2010.

DATA AND ANALYSES

Comparison 1. ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Compliance: 1a. With medication - non-compliance	18		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
1.1 short term	10	1400	Risk Ratio (M-H, Fixed, 95% CI)	0.52 [0.40, 0.67]
1.2 medium term	6	781	Risk Ratio (M-H, Fixed, 95% CI)	0.36 [0.27, 0.49]
1.3 long term	3	282	Risk Ratio (M-H, Fixed, 95% CI)	0.48 [0.31, 0.75]
2 Compliance: 1b. With medication - partial compliance	4		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
2.1 short term	3	472	Risk Ratio (M-H, Fixed, 95% CI)	0.64 [0.49, 0.85]
2.2 medium term	1	118	Risk Ratio (M-H, Fixed, 95% CI)	0.68 [0.39, 1.18]
3 Compliance: 1c. With medication - continuous outcomes - skewed data			Other data	No numeric data
3.1 single session - average compliance with medication (SAI			Other data	No numeric data

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
sub-scale endpoint score, high = favourable)				
3.2 three sessions - average compliance with medication (SAI sub-scale endpoint score, high = favourable)			Other data	No numeric data
4 Compliance: 2a. With follow up - loss to follow-up for any reason	10		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
4.1 medium term - loss to follow-up for any reason	8	949	Risk Ratio (M-H, Fixed, 95% CI)	1.00 [0.79, 1.26]
4.2 long term - loss to follow-up for any reason (by 2 years)	3	420	Risk Ratio (M-H, Fixed, 95% CI)	0.83 [0.62, 1.10]
4.3 long term - loss to follow-up for any reason (by 5 years or more)	2	172	Risk Ratio (M-H, Fixed, 95% CI)	0.77 [0.48, 1.23]
5 Compliance: 2b. With follow-up - received intervention but left the study early	7		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
5.1 short term	2	87	Risk Ratio (M-H, Fixed, 95% CI)	3.04 [0.36, 25.67]
5.2 medium term	4	319	Risk Ratio (M-H, Fixed, 95% CI)	0.56 [0.29, 1.10]
5.3 long term	2	206	Risk Ratio (M-H, Fixed, 95% CI)	0.63 [0.38, 1.04]
6 Compliance: 2c. With follow-up - allocated but never accepted treatment	2	213	Risk Ratio (M-H, Fixed, 95% CI)	12.27 [2.58, 58.33]
6.1 medium term	2	213	Risk Ratio (M-H, Fixed, 95% CI)	12.27 [2.58, 58.33]
7 Relapse: 1. Relapse for any reason	16		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
7.1 medium term	11	1214	Risk Ratio (M-H, Fixed, 95% CI)	0.70 [0.61, 0.81]
7.2 long term	6	790	Risk Ratio (M-H, Fixed, 95% CI)	0.73 [0.62, 0.85]
7.3 long term (at 5 years follow-up)	1	124	Risk Ratio (M-H, Fixed, 95% CI)	0.89 [0.73, 1.08]
7.4 long term (at 7 years follow-up)	1	48	Risk Ratio (M-H, Fixed, 95% CI)	0.62 [0.42, 0.92]
8 Relapse: 2. Relapse with readmission	2		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
8.1 medium term	2	206	Risk Ratio (M-H, Fixed, 95% CI)	0.77 [0.56, 1.07]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
8.2 long term	2	206	Risk Ratio (M-H, Fixed, 95% CI)	0.71 [0.56, 0.89]
9 Knowledge: 1a. Average endpoint scale scores on various knowledge scales	6		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
9.1 short term - at end of intervention (KQ, high = favourable)	1	75	Mean Difference (IV, Fixed, 95% CI)	-10.00 [-17.67, -6.33]
9.2 short term (KASQ, high = favourable)	1	71	Mean Difference (IV, Fixed, 95% CI)	0.20 [-2.12, 2.52]
9.3 short term (ITAQ, high = favourable)	3	295	Mean Difference (IV, Fixed, 95% CI)	5.53 [4.56, 6.49]
9.4 short term (SKQ, high = favourable)	1	19	Mean Difference (IV, Fixed, 95% CI)	-16.26 [-22.72, -9.80]
9.5 medium term (ITAQ, high = favourable)	1	73	Mean Difference (IV, Fixed, 95% CI)	4.83 [1.51, 8.15]
9.6 medium term (KASQ, high = favourable)	1	61	Mean Difference (IV, Fixed, 95% CI)	1.60 [-0.84, 4.04]
9.7 long term (KQ, high = favourable)	1	75	Mean Difference (IV, Fixed, 95% CI)	-8.0 [-14.64, -1.36]
10 Knowledge: 1b. Average change (UMQ, high = favourable, data skewed)			Other data	No numeric data
10.1 single session psychoeducation			Other data	No numeric data
10.2 three session psychoeducation			Other data	No numeric data
11 Knowledge: 2. Average endpoint scores on various insight scales	3	217	Mean Difference (IV, Fixed, 95% CI)	-0.19 [-1.31, 0.93]
11.1 short term (SAUMD, high = poor)	2	161	Mean Difference (IV, Fixed, 95% CI)	-0.63 [-1.86, 0.61]
11.2 medium term (RAQ, high = poor)	1	56	Mean Difference (IV, Fixed, 95% CI)	1.80 [-0.85, 4.45]
12 Knowledge: 3. Average endpoint score on illness-related attitudes - 4 months (KK, high = high expressed)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
12.1 confidence in medication	1	75	Mean Difference (IV, Fixed, 95% CI)	-1.5 [-3.21, 0.21]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
12.2 confidence in physician	1	75	Mean Difference (IV, Fixed, 95% CI)	-1.40 [-2.73, -0.07]
12.3 negative expectations toward medication as such	1	75	Mean Difference (IV, Fixed, 95% CI)	-0.5 [-2.07, 1.07]
12.4 susceptibility to illness and to relapse	1	75	Mean Difference (IV, Fixed, 95% CI)	0.60 [-0.78, 1.98]
12.5 attribution of illness to chance	1	75	Mean Difference (IV, Fixed, 95% CI)	-0.70 [-2.30, 0.90]
12.6 attribution of guilt	1	75	Mean Difference (IV, Fixed, 95% CI)	-0.80 [-2.07, 0.47]
12.7 fear of side effects of medication	1	75	Mean Difference (IV, Fixed, 95% CI)	-1.60 [-2.74, -0.46]
13 Knowledge: 4. level of knowledge did not improve	2	216	Risk Ratio (M-H, Fixed, 95% CI)	0.13 [0.06, 0.28]
14 Behaviour: Average score (NOSIE-30, endpoint, high = poor)	3		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
14.1 short term	2	202	Mean Difference (IV, Fixed, 95% CI)	16.85 [11.90, 21.80]
14.2 medium term	1	73	Mean Difference (IV, Fixed, 95% CI)	14.0 [3.03, 24.97]
14.3 long term	1	70	Mean Difference (IV, Fixed, 95% CI)	41.33 [31.02, 51.64]
15 Social functioning: 1a. Average change scores on various scales - medium term (high = poor)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
15.1 MRSS	1	118	Mean Difference (IV, Fixed, 95% CI)	13.68 [12.51, 14.85]
15.2 SDSS	1	118	Mean Difference (IV, Fixed, 95% CI)	1.96 [1.83, 2.09]
16 Social functioning: 1b. Average endpoint scores on various scales (high = poor)	5		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
16.1 short term - IPROS	1	116	Mean Difference (IV, Fixed, 95% CI)	-6.64 [-11.02, -2.26]
16.2 short term - SAS	3	378	Mean Difference (IV, Fixed, 95% CI)	-8.53 [-10.50, -6.55]
16.3 short term - SAS-II	1	19	Mean Difference (IV, Fixed, 95% CI)	-0.10 [-0.37, 0.17]
16.4 short term - SDS	3	378	Mean Difference (IV, Fixed, 95% CI)	-5.60 [-7.55, -3.65]
16.5 medium term - SDSS	1	85	Mean Difference (IV, Fixed, 95% CI)	-3.74 [-6.05, -1.43]
17 Social functioning 1c. Average SAS, SFS, SNS scale scores - skewed data (low = favourable)			Other data	No numeric data

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
18 Global functioning: 1. No clinically significant improvement	4		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
18.1 short term	2	208	Risk Ratio (M-H, Fixed, 95% CI)	0.61 [0.32, 1.13]
18.2 medium term	2	178	Risk Ratio (M-H, Fixed, 95% CI)	0.59 [0.43, 0.82]
18.3 long term	2	132	Risk Ratio (M-H, Fixed, 95% CI)	0.70 [0.48, 1.04]
19 Global functioning: 2. Average endpoint scale score	5		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
19.1 short term - (GAF/GAS, high = good)	1	41	Mean Difference (IV, Fixed, 95% CI)	-2.64 [-12.74, 7.46]
19.2 short term - (SLOF, high = good)	1	84	Mean Difference (IV, Fixed, 95% CI)	23.60 [11.88, 35.32]
19.3 medium term - (GAF/GAS, high = good)	4	321	Mean Difference (IV, Fixed, 95% CI)	-5.44 [-8.51, -2.38]
19.4 medium term - (SLOF, high = good)	1	84	Mean Difference (IV, Fixed, 95% CI)	46.40 [34.45, 58.35]
19.5 long term (GAS, high = good) - at 2 years	1	59	Mean Difference (IV, Fixed, 95% CI)	-6.70 [-13.38, -0.02]
19.6 long term - (GAS, high = good) - at 5 years or more	2	108	Mean Difference (IV, Fixed, 95% CI)	-3.36 [-7.24, 0.52]
20 Service utilisation: days in hospital	2		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
20.1 short term - days in hospital	2	200	Mean Difference (IV, Fixed, 95% CI)	-3.23 [-5.44, -1.01]
20.2 medium term - days in hospital	1	84	Mean Difference (IV, Fixed, 95% CI)	-8.4 [-10.44, -6.36]
21 Service utilisation: Days in hospital using 'acute services' - during 18 months (data skewed)			Other data	No numeric data
22 Global state: 1. Average endpoint score - medium term (CGI, high = poor)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
22.1 severity	1	61	Mean Difference (IV, Fixed, 95% CI)	0.50 [0.08, 0.92]
22.2 change	1	61	Mean Difference (IV, Fixed, 95% CI)	-0.80 [-1.45, -0.15]
23 Global state: 2. Increased medication dose by 25%	1	20	Risk Ratio (M-H, Fixed, 95% CI)	0.43 [0.15, 1.20]

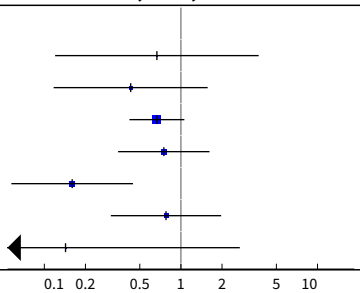
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
24 Global state: 3. Disability - long term	1	86	Risk Ratio (M-H, Fixed, 95% CI)	0.29 [0.13, 0.64]
25 Mental state: 1a. Global - continuous - average total endpoint scale scores (high = poor)	17		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
25.1 short term (BPRS)	11	1107	Mean Difference (IV, Fixed, 95% CI)	-1.00 [-1.38, -0.63]
25.2 medium term (BPRS)	7	760	Mean Difference (IV, Fixed, 95% CI)	-4.73 [-5.55, -3.91]
25.3 medium term (PANSS)	2	163	Mean Difference (IV, Fixed, 95% CI)	-2.52 [-5.01, -0.04]
25.4 long term (BPRS - 1 ~ 2 year follow-up)	3	370	Mean Difference (IV, Fixed, 95% CI)	-6.89 [-8.55, -5.23]
25.5 long term (BPRS - 7 year follow-up)	1	48	Mean Difference (IV, Fixed, 95% CI)	-0.20 [-6.55, 6.15]
26 Mental state: 1b. Global - continuous - average change scale scores - medium term (high = good)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
26.1 GWB	1	118	Mean Difference (IV, Fixed, 95% CI)	10.89 [9.82, 11.96]
26.2 SES	1	118	Mean Difference (IV, Fixed, 95% CI)	8.00 [7.77, 8.23]
27 Mental state: 1c. Global - continuous - average total endpoint scale scores - (BPRS, high = poor, data skewed)			Other data	No numeric data
28 Mental state: 2a. Specific - binary - specific symptoms - short term	1		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
28.1 anxiety	1	146	Risk Ratio (M-H, Fixed, 95% CI)	0.49 [0.25, 0.93]
28.2 depression	1	146	Risk Ratio (M-H, Fixed, 95% CI)	0.47 [0.25, 0.88]
29 Mental state: 2b. Specific - continuous - average endpoint PANSS scores (high = poor)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
29.1 short term - negative symptoms	1	71	Mean Difference (IV, Fixed, 95% CI)	0.40 [-1.98, 2.78]
29.2 short term - positive symptoms	1	71	Mean Difference (IV, Fixed, 95% CI)	1.5 [-0.99, 3.99]
29.3 medium term - negative symptoms	1	61	Mean Difference (IV, Fixed, 95% CI)	3.1 [0.16, 6.04]

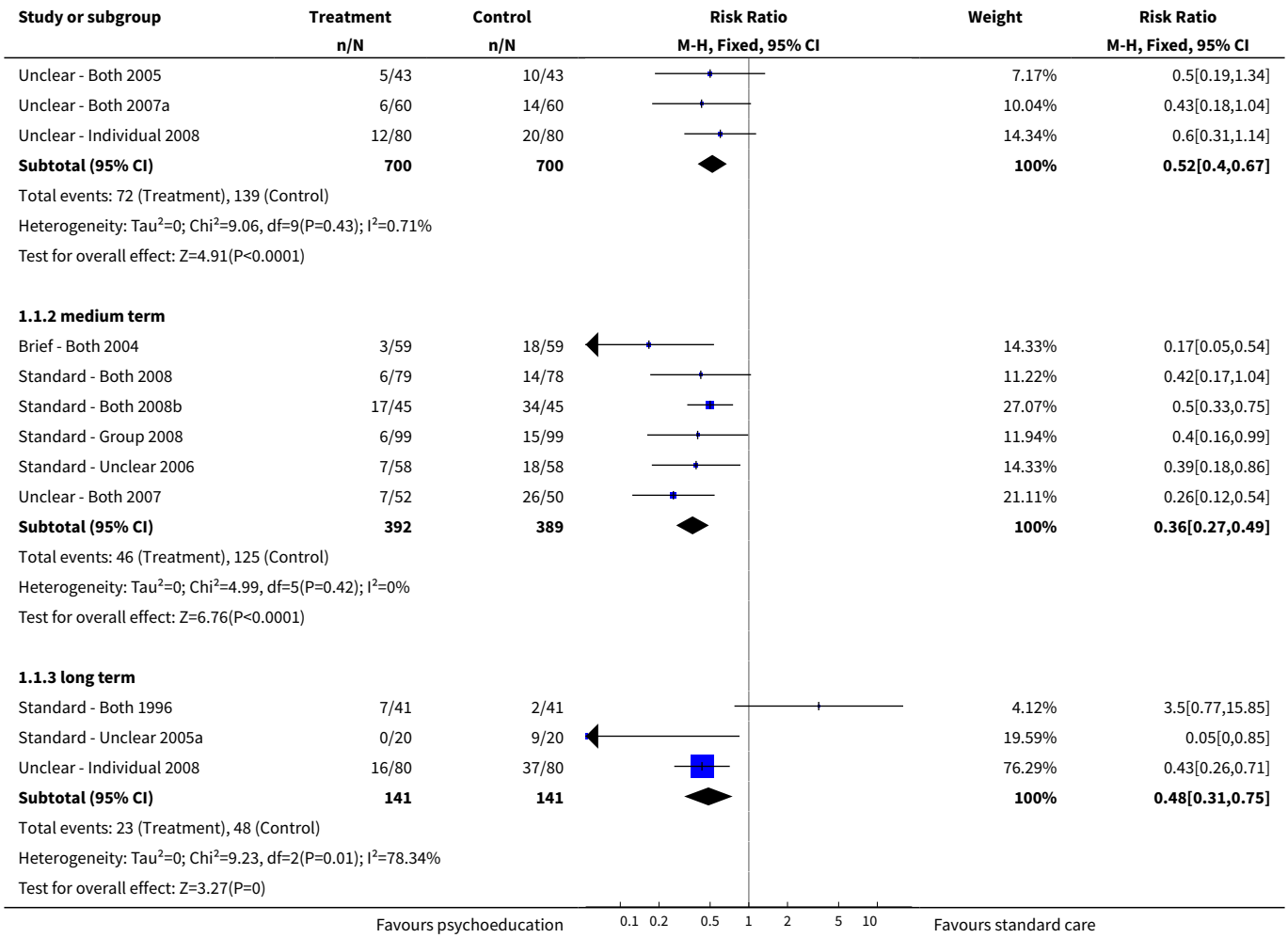
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
29.4 medium term - positive symptoms	1	61	Mean Difference (IV, Fixed, 95% CI)	2.40 [-0.46, 5.26]
30 Expressed emotion: Participants with high EE relatives (FQ)	2		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
30.1 short term - at end of interventions	2	282	Risk Ratio (M-H, Fixed, 95% CI)	0.84 [0.76, 0.94]
30.2 medium term - at 9-12 months	1	46	Risk Ratio (M-H, Fixed, 95% CI)	1.07 [0.64, 1.78]
31 Quality of life: Average endpoint scores on various scales (high = favourable)	3		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
31.1 short term - GQOLI-74	1	62	Mean Difference (IV, Fixed, 95% CI)	0.63 [-0.79, 2.05]
31.2 short term - PGWB	1	71	Mean Difference (IV, Fixed, 95% CI)	2.0 [-6.08, 10.08]
31.3 medium term - GQOLI-74	1	62	Mean Difference (IV, Fixed, 95% CI)	2.13 [1.03, 3.23]
31.4 medium term - QOL	1	108	Mean Difference (IV, Fixed, 95% CI)	-9.70 [-17.22, -2.18]
31.5 medium term - PGWB	1	61	Mean Difference (IV, Fixed, 95% CI)	2.80 [-5.40, 11.00]
32 Quality of life: Average endpoint scores on various scales (high = poor)	3		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
32.1 short term - FAD	1	62	Mean Difference (IV, Fixed, 95% CI)	-0.42 [-5.45, 4.61]
32.2 short term - FBIS	1	84	Mean Difference (IV, Fixed, 95% CI)	-4.70 [-7.19, -2.21]
32.3 medium term - FAD	1	62	Mean Difference (IV, Fixed, 95% CI)	-6.79 [-11.67, -1.91]
32.4 medium term - FBIS	2	241	Mean Difference (IV, Fixed, 95% CI)	-6.24 [-7.80, -4.68]
33 Satisfaction with mental health services: 1. Short term - average change score (VSS, high = good)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
33.1 patients' satisfaction	1	32	Mean Difference (IV, Fixed, 95% CI)	-2.15 [-13.96, 9.66]
33.2 relatives' satisfaction	1	17	Mean Difference (IV, Fixed, 95% CI)	-8.31 [-29.72, 13.10]
34 Satisfaction with mental health services: 2. Average change - at 1 year (VSS Scale, high = good)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
34.1 patients' satisfaction with relatives' involvement - mean change	1	30	Mean Difference (IV, Fixed, 95% CI)	-4.35 [-7.09, -1.61]
34.2 relatives' involvement satisfaction	1	21	Mean Difference (IV, Fixed, 95% CI)	-2.17 [-6.11, 1.77]
34.3 relatives' efficacy satisfaction	1	24	Mean Difference (IV, Fixed, 95% CI)	-2.16 [-7.29, 2.97]
34.4 relatives' intervention satisfaction	1	26	Mean Difference (IV, Fixed, 95% CI)	-3.43 [-9.83, 2.97]
35 Satisfaction with mental health services: 3. Binary outcome	2	236	Risk Ratio (M-H, Fixed, 95% CI)	0.24 [0.12, 0.50]
35.1 short term - unsatisfied	1	120	Risk Ratio (M-H, Fixed, 95% CI)	0.11 [0.03, 0.46]
35.2 medium term - unsatisfied	1	116	Risk Ratio (M-H, Fixed, 95% CI)	0.4 [0.17, 0.96]
36 Adverse event: Death	4	626	Risk Ratio (M-H, Fixed, 95% CI)	1.15 [0.31, 4.21]
36.1 medium term	2	282	Risk Ratio (M-H, Fixed, 95% CI)	0.90 [0.13, 6.35]
36.2 long term	2	344	Risk Ratio (M-H, Fixed, 95% CI)	1.39 [0.24, 8.11]
37 Economic outcomes: Costs (US$ per person, data skewed)			Other data	No numeric data
37.1 acute hospital charges			Other data	No numeric data
37.2 ambulatory charges			Other data	No numeric data
37.3 total charges			Other data	No numeric data

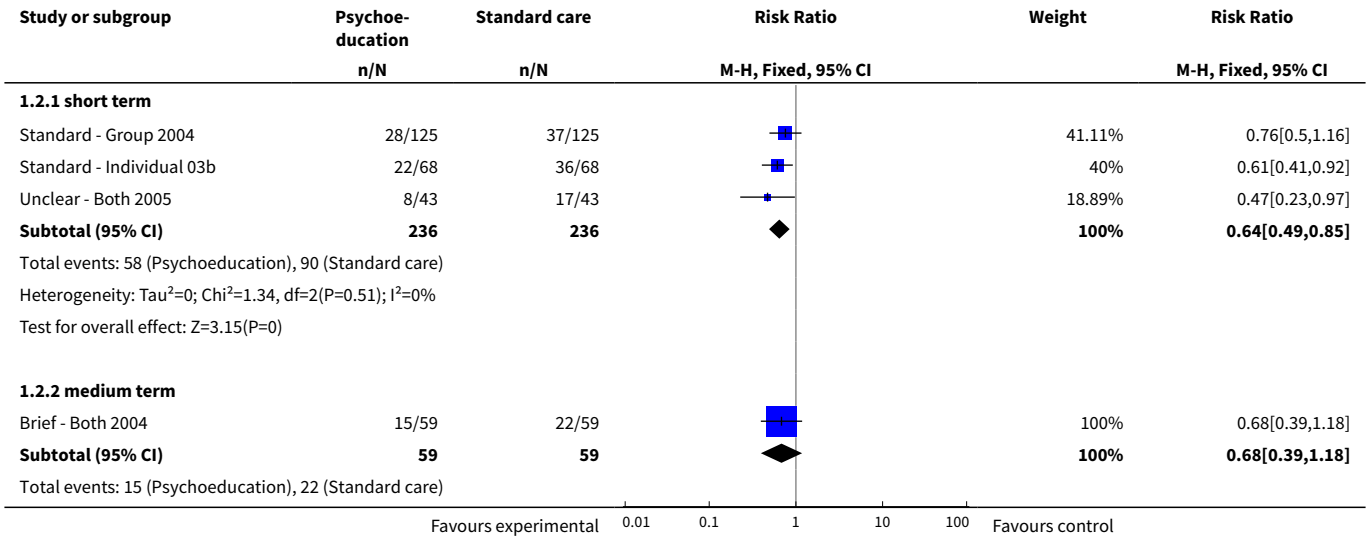
Analysis 1.1. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 1 Compliance: 1a. With medication - non-compliance.

Study or subgroup	Treatment n/N	Control n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
1.1.1 short term					
Brief - Group 2006	2/30	3/30		2.15%	0.67[0.12,3.71]
Brief - Group 2007b	3/51	7/51		5.02%	0.43[0.12,1.57]
Brief - Unclear 2005	24/143	36/143		25.81%	0.67[0.42,1.06]
Standard - Both 2006	9/50	12/50		8.6%	0.75[0.35,1.62]
Standard - Group 2004	4/125	25/125		17.92%	0.16[0.06,0.45]
Standard - Individual 03b	7/68	9/68		6.45%	0.78[0.31,1.97]
Standard - Unclear 2007	0/50	3/50		2.51%	0.14[0.01,2.7]

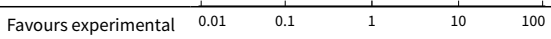




Analysis 1.2. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 2 Compliance: 1b. With medication - partial compliance.



Study or subgroup	Psychoe-ducation n/N	Standard care n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
Heterogeneity: Not applicable					
Test for overall effect: Z=1.37(P=0.17)					

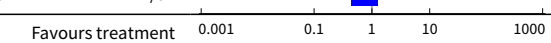


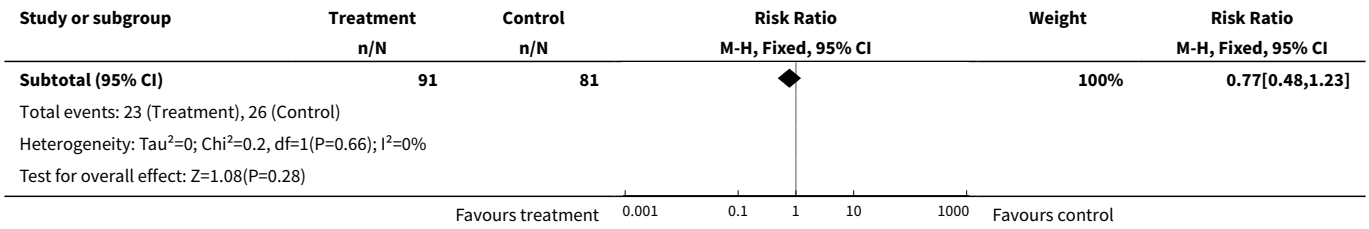
Analysis 1.3. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 3 Compliance: 1c. With medication - continuous outcomes - skewed data.

Compliance: 1c. With medication - continuous outcomes - skewed data						
Study	**Psychoed. mean**	**Psychoed. SD**	**Psychoed. N**	**Standard care mean**	**Standard care SD**	**Standard care N**
single session - average compliance with medication (SAI sub-scale endpoint score, high = favourable)						
Brief - Individual 1996	2.6	1.2	22	2.1	1.3	20
three sessions - average compliance with medication (SAI sub-scale endpoint score, high = favourable)						
Brief - Individual 1996	2.18	1.3	22	2.1	1.3	20

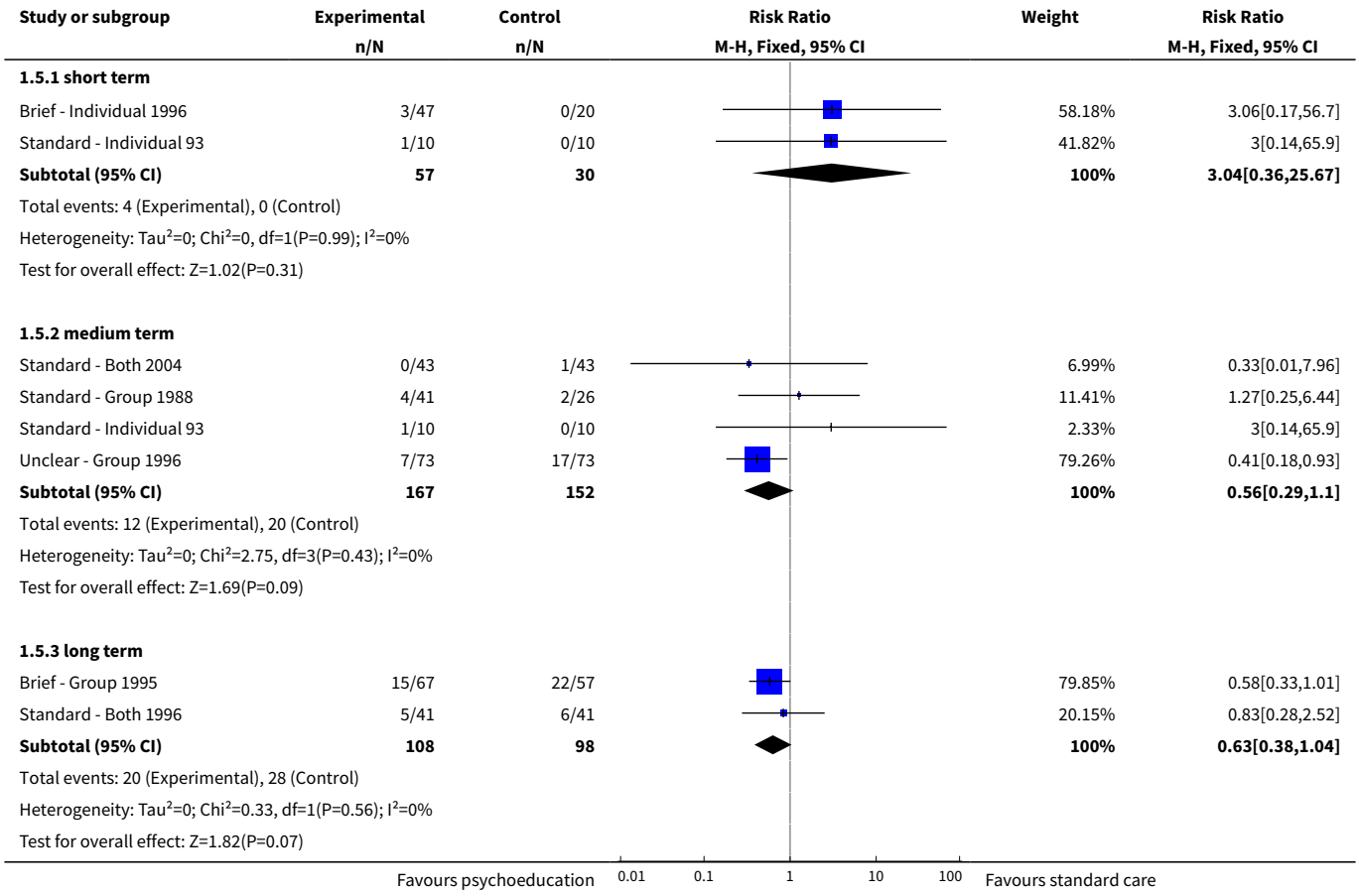
Analysis 1.4. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 4 Compliance: 2a. With follow up - loss to follow-up for any reason.

Study or subgroup	Treatment n/N	Control n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
1.4.1 medium term - loss to follow-up for any reason					
Standard - Individual 03c	2/37	1/36		0.97%	1.95[0.18,20.53]
Standard - Group 1988	2/25	2/26		1.87%	1.04[0.16,6.83]
Standard - Unclear 2006	5/58	4/58		3.81%	1.25[0.35,4.42]
Brief - Group 1999	6/24	9/22		8.95%	0.61[0.26,1.44]
Unclear - Group 1996	23/73	17/73		16.2%	1.35[0.79,2.31]
Standard - Both 2008	12/79	17/78		16.3%	0.7[0.36,1.36]
Brief - Group 1995	15/67	22/57		22.65%	0.58[0.33,1.01]
Standard - Unclear 1996	44/125	29/111		29.27%	1.35[0.91,2]
Subtotal (95% CI)	**488**	**461**		**100%**	**1[0.79,1.26]**
Total events: 109 (Treatment), 101 (Control)					
Heterogeneity: Tau^2=0; Chi^2=9.97, df=7(P=0.19); I^2=29.8%					
Test for overall effect: Z=0.01(P=0.99)					
1.4.2 long term - loss to follow-up for any reason (by 2 years)					
Unclear - Individual 2008	8/80	11/80		16.7%	0.73[0.31,1.71]
Brief - Group 1995	19/67	23/57		37.74%	0.7[0.43,1.15]
Standard - Individual 03b	29/68	30/68		45.55%	0.97[0.66,1.42]
Subtotal (95% CI)	**215**	**205**		**100%**	**0.83[0.62,1.1]**
Total events: 56 (Treatment), 64 (Control)					
Heterogeneity: Tau^2=0; Chi^2=1.14, df=2(P=0.57); I^2=0%					
Test for overall effect: Z=1.29(P=0.2)					
1.4.3 long term - loss to follow-up for any reason (by 5 years or more)					
Standard - Unclear 1996	4/24	4/24		14.4%	1[0.28,3.54]
Brief - Group 1995	19/67	22/57		85.6%	0.73[0.44,1.21]

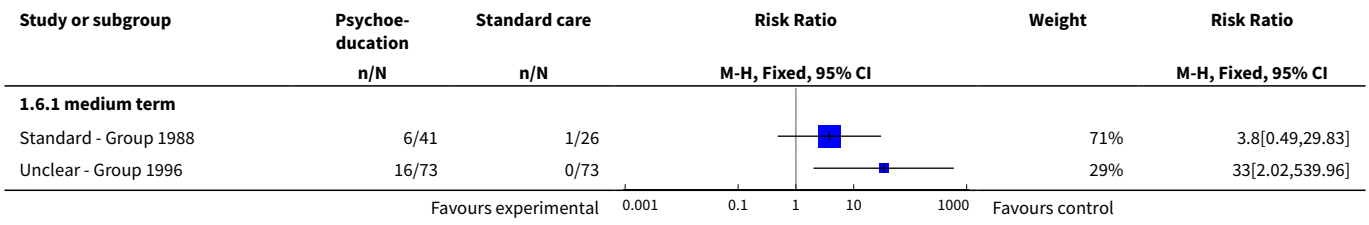


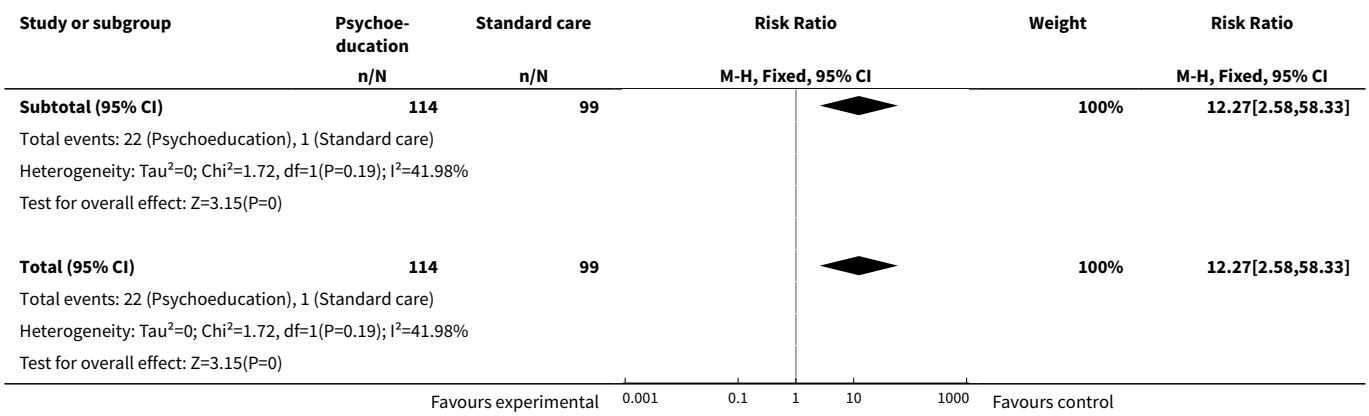


Analysis 1.5. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 5 Compliance: 2b. With follow-up - received intervention but left the study early.

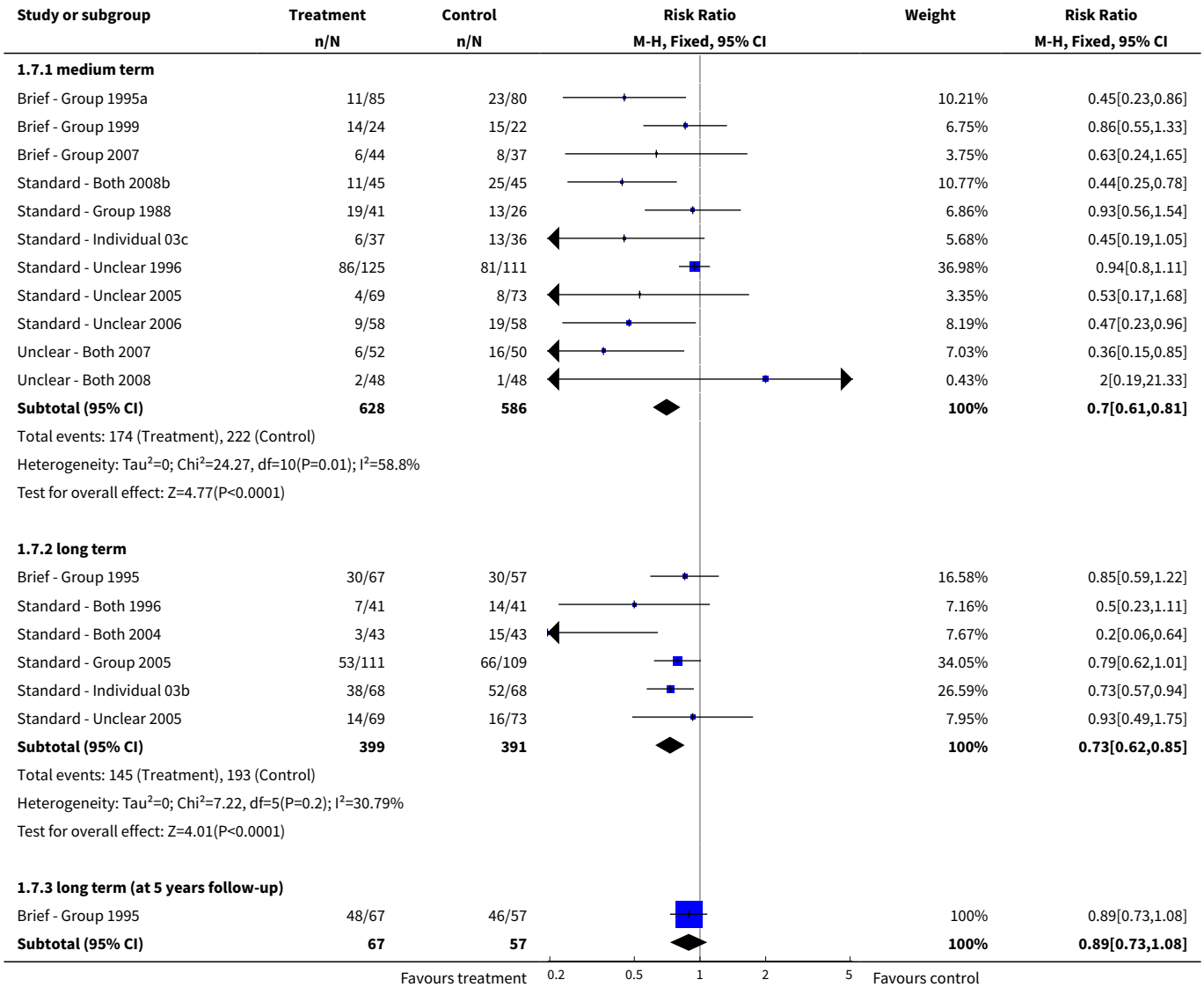


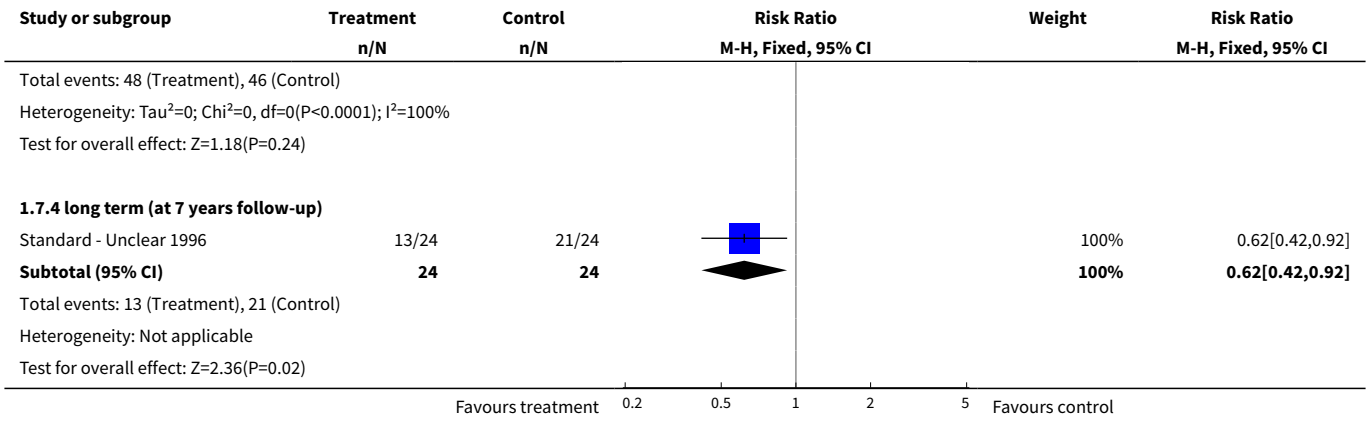
Analysis 1.6. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 6 Compliance: 2c. With follow-up - allocated but never accepted treatment.



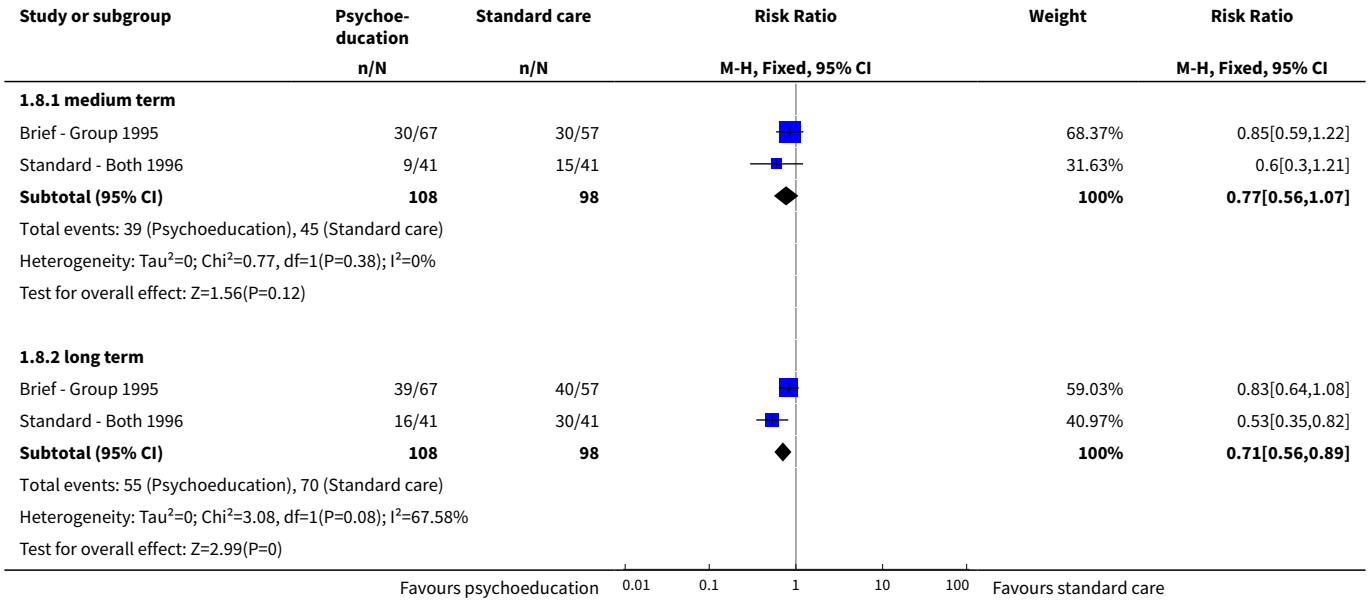


Analysis 1.7. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 7 Relapse: 1. Relapse for any reason.

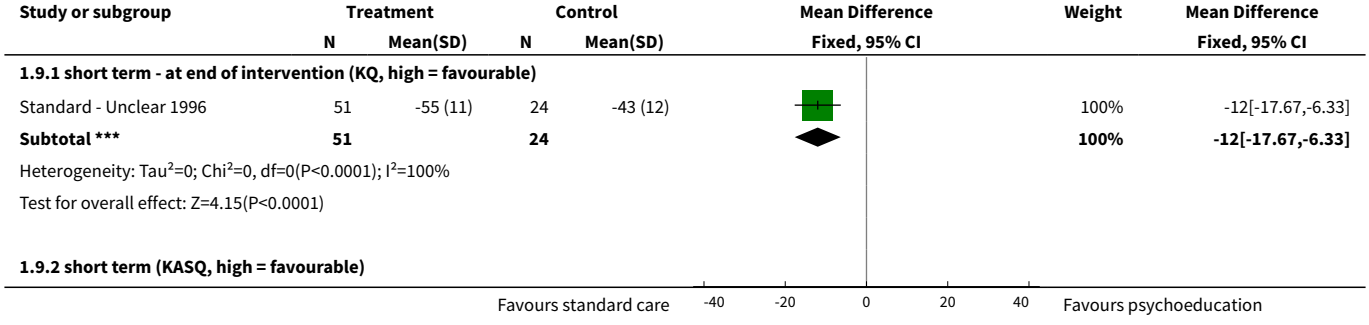


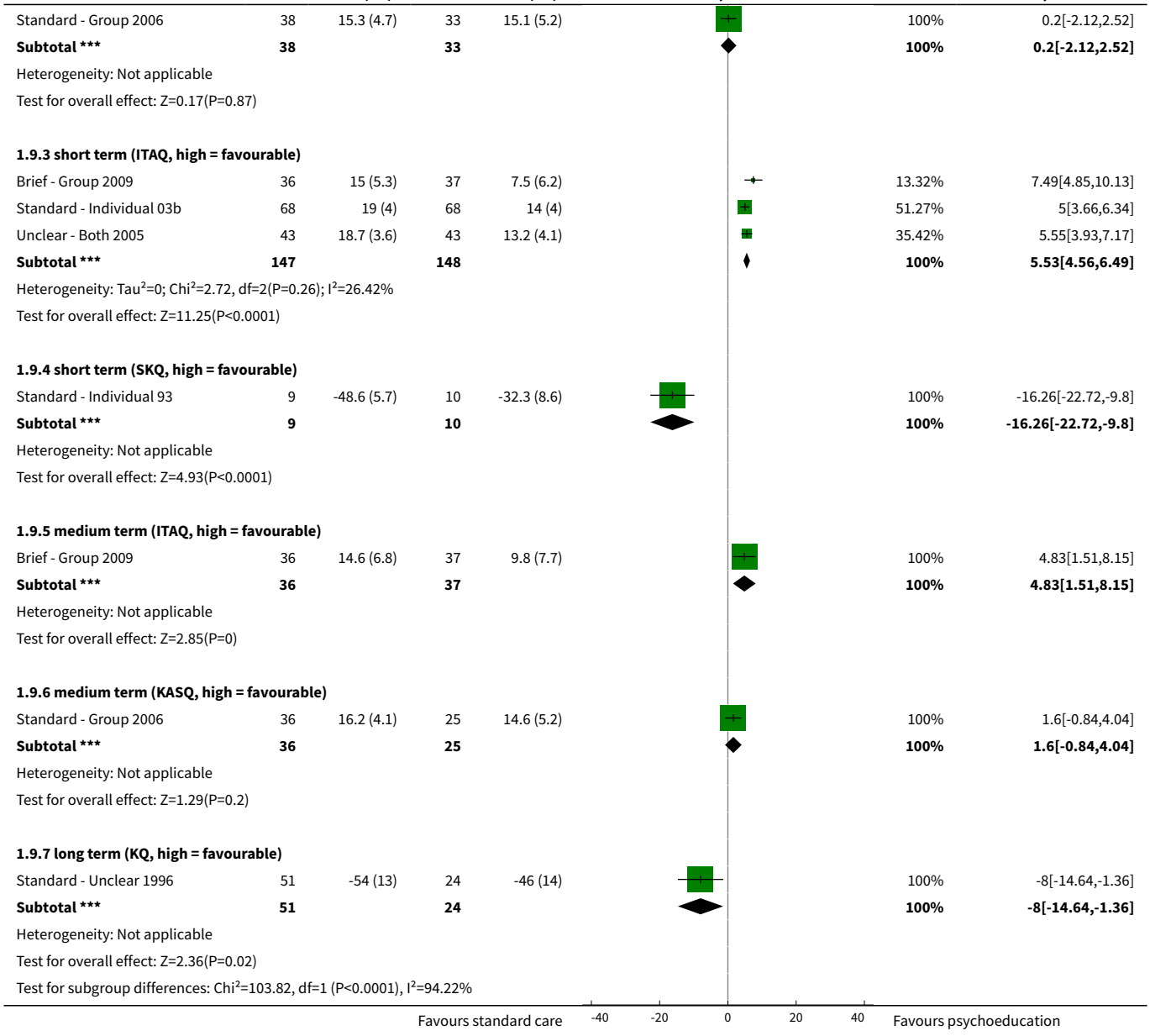


Analysis 1.8. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 8 Relapse: 2. Relapse with readmission.



Analysis 1.9. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 9 Knowledge: 1a. Average endpoint scale scores on various knowledge scales.

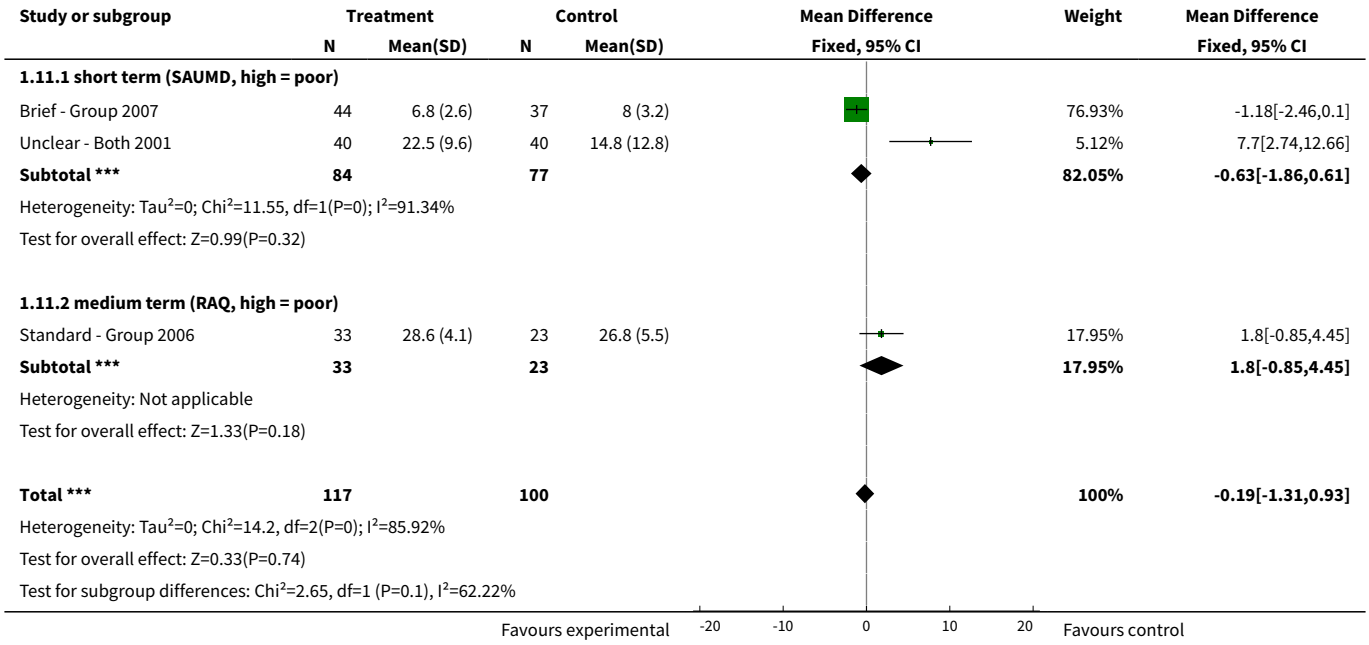




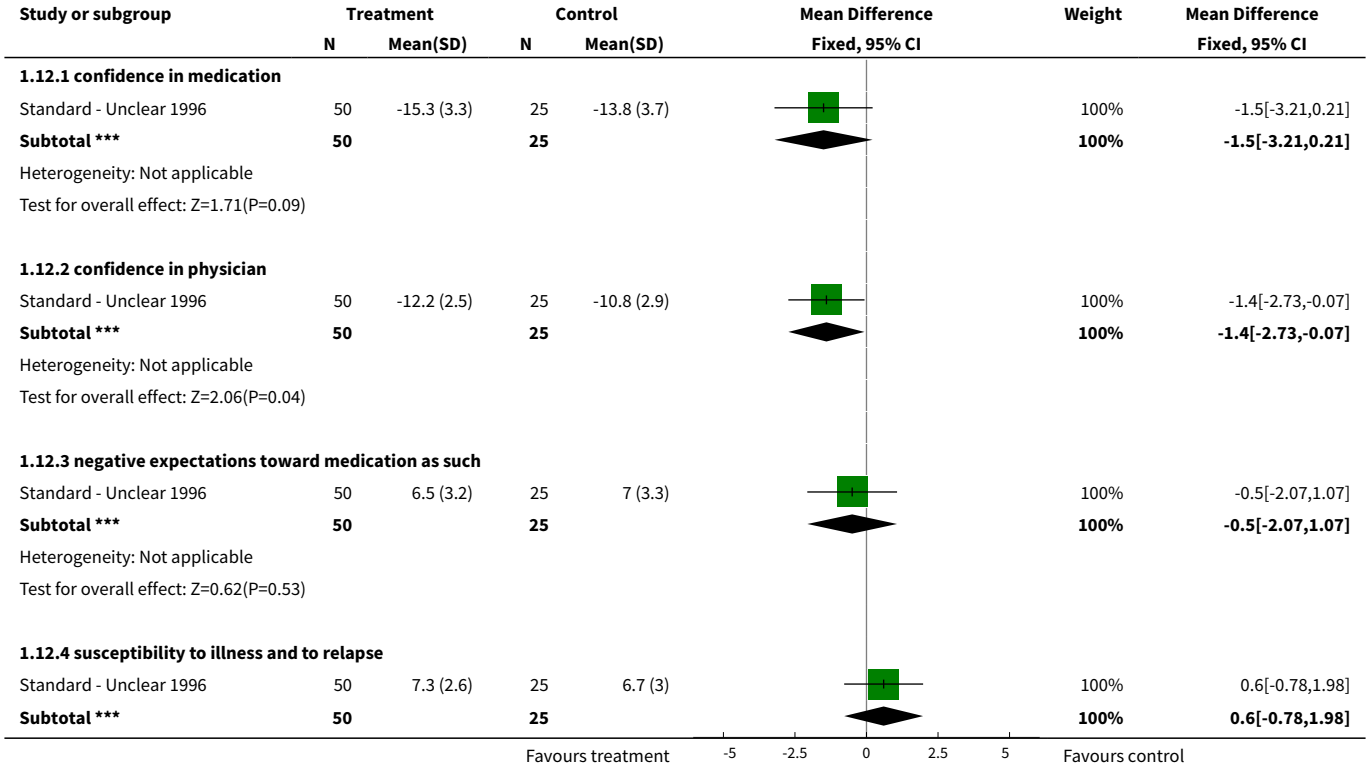
Analysis 1.10. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 10 Knowledge: 1b. Average change (UMQ, high = favourable, data skewed).

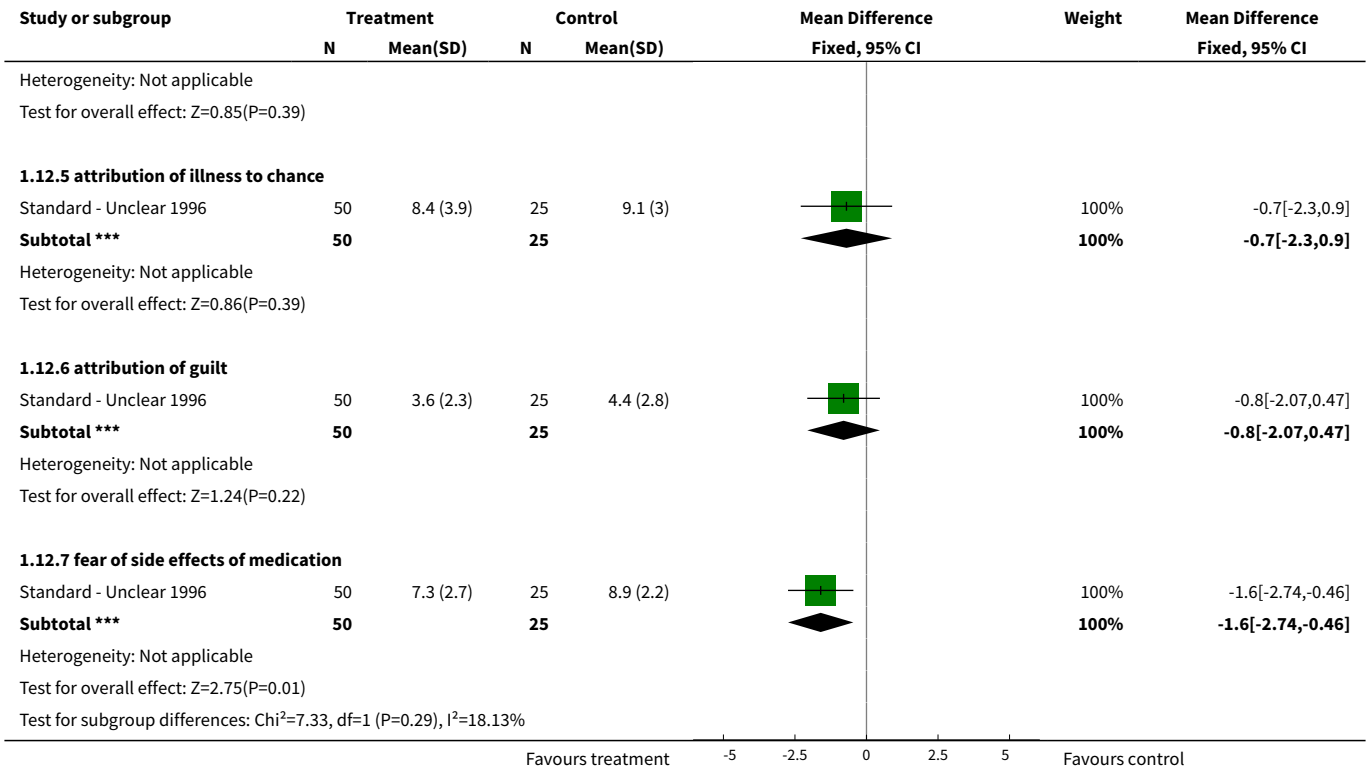
Knowledge: 1b. Average change (UMQ, high = favourable, data skewed)						
Study	**Psychoed. mean**	**Psychoed. SD**	**Psychoed. N**	**Standard care mean**	**Standard care SD**	**Standard care N**
single session psychoeducation						
Brief - Individual 1996	6.4	5.9	22	1.0	2.8	20
three session psychoeducation						
Brief - Individual 1996	15.00	7.4	22	1.0	2.8	20

Analysis 1.11. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 11 Knowledge: 2. Average endpoint scores on various insight scales.

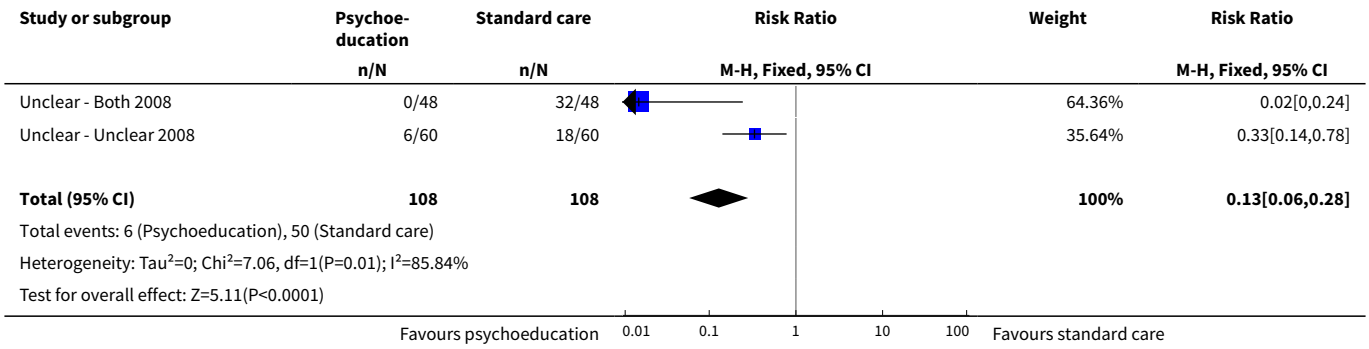


Analysis 1.12. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 12 Knowledge: 3. Average endpoint score on illness-related attitudes - 4 months (KK, high = high expressed).

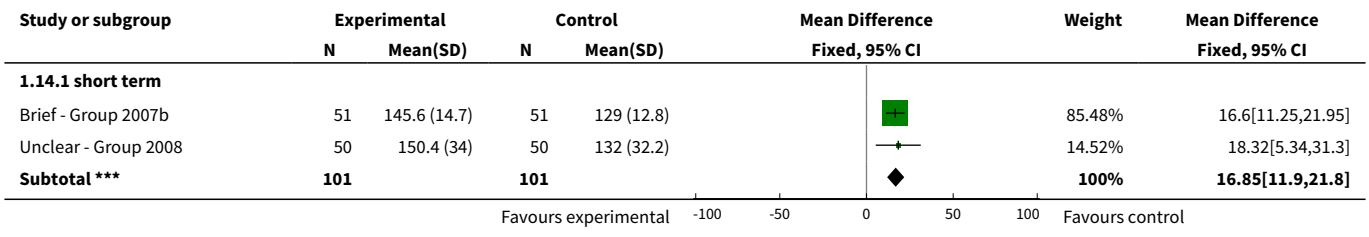


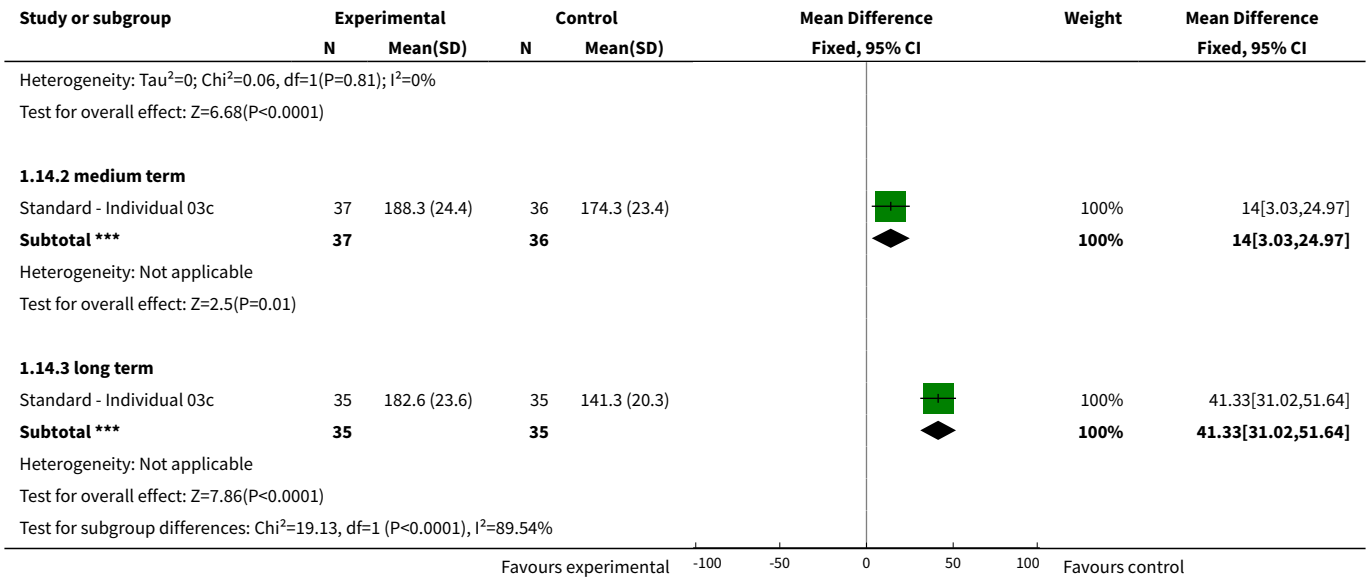


Analysis 1.13. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 13 Knowledge: 4. level of knowledge did not improve.

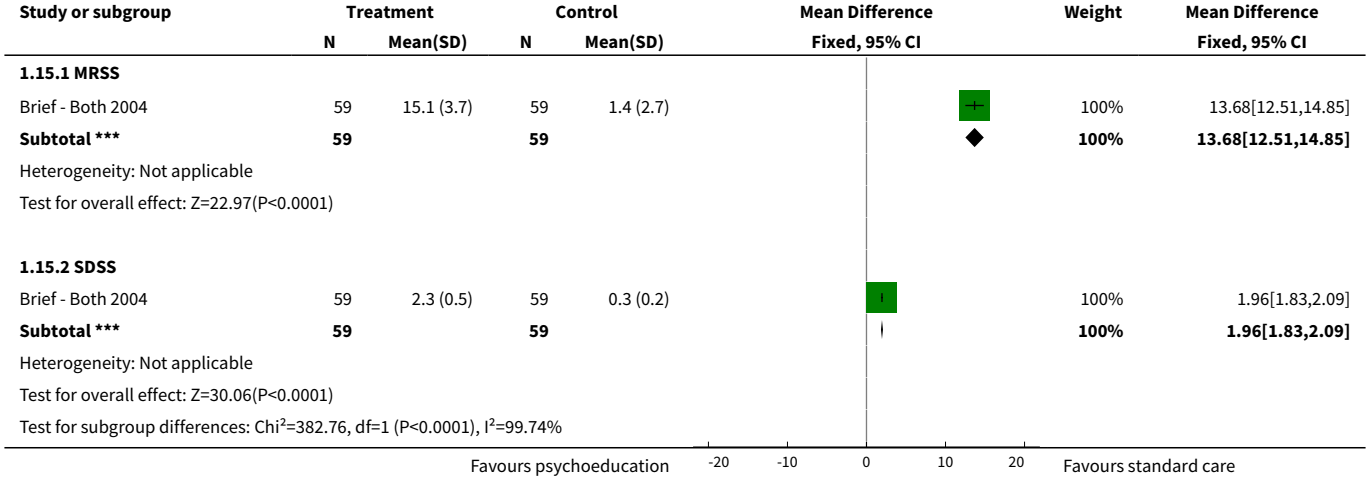


Analysis 1.14. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 14 Behaviour: Average score (NOSIE-30, endpoint, high = poor).

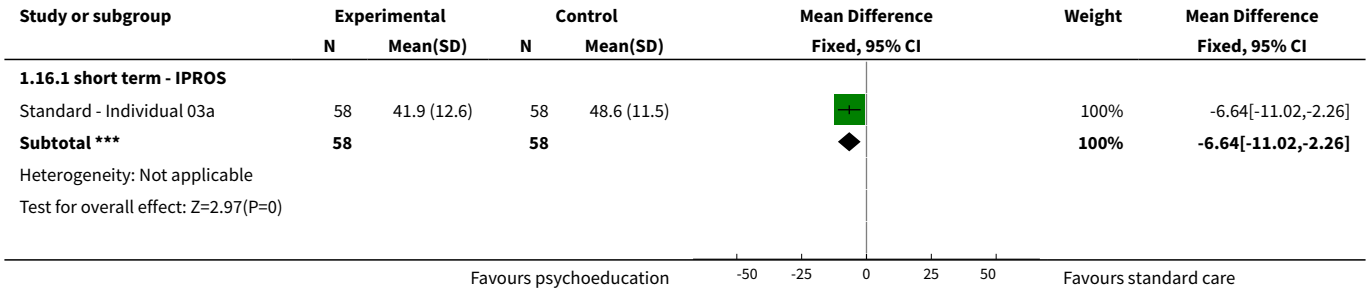




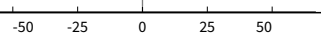
Analysis 1.15. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 15 Social functioning: 1a. Average change scores on various scales - medium term (high = poor).



Analysis 1.16. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 16 Social functioning: 1b. Average endpoint scores on various scales (high = poor).



Study or subgroup	Experimental N	Experimental Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
1.16.2 short term - SAS							
Brief - Both 2004a	74	40.6 (9.9)	72	46.8 (9.4)		39.84%	-6.11[-9.24,-2.98]
Standard - Individual 03a	58	46.1 (9.3)	58	42 (10.1)		31.5%	4.12[0.6,7.64]
Standard - Unclear 2006	58	31.9 (9.3)	58	57.7 (11)		28.66%	-25.79[-29.48,-22.1]
Subtotal ***	**190**		**188**			**100%**	**-8.53[-10.5,-6.55]**
Heterogeneity: Tau^2=0; Chi^2=136.03, df=2(P<0.0001); I^2=98.53%							
Test for overall effect: Z=8.46(P<0.0001)							
1.16.3 short term - SAS-II							
Standard - Individual 93	9	2.9 (0.3)	10	3 (0.3)		100%	-0.1[-0.37,0.17]
Subtotal ***	**9**		**10**			**100%**	**-0.1[-0.37,0.17]**
Heterogeneity: Not applicable							
Test for overall effect: Z=0.73(P=0.47)							
1.16.4 short term - SDS							
Brief - Both 2004a	74	40.4 (9.5)	72	48 (10.8)		35.17%	-7.62[-10.91,-4.33]
Standard - Individual 03a	58	47.9 (9.6)	58	51.9 (9.2)		32.81%	-4.02[-7.43,-0.61]
Standard - Unclear 2006	58	35.6 (8.7)	58	40.6 (10.2)		32.02%	-4.99[-8.44,-1.54]
Subtotal ***	**190**		**188**			**100%**	**-5.6[-7.55,-3.65]**
Heterogeneity: Tau^2=0; Chi^2=2.4, df=2(P=0.3); I^2=16.51%							
Test for overall effect: Z=5.62(P<0.0001)							
1.16.5 medium term - SDSS							
Standard - Both 2008b	44	5.3 (0.4)	41	9 (7.5)		100%	-3.74[-6.05,-1.43]
Subtotal ***	**44**		**41**			**100%**	**-3.74[-6.05,-1.43]**
Heterogeneity: Tau^2=0; Chi^2=0, df=0(P<0.0001); I^2=100%							
Test for overall effect: Z=3.17(P=0)							
Test for subgroup differences: Chi^2=112.88, df=1 (P<0.0001), I^2=96.46%							



Favours psychoeducation — Favours standard care

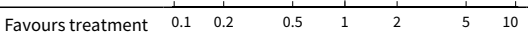
Analysis 1.17. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 17 Social functioning 1c. Average SAS, SFS, SNS scale scores - skewed data (low = favourable).

Social functioning 1c. Average SAS, SFS, SNS scale scores - skewed data (low = favourable)

Study	Scale	Experimental N	Exp. mean + SD	Control N	Control mean + SD
Unclear - Group 1996	Social Adjustment Scale II at end of study	52	2.40 + 1.30	62	2.60 + 1.30
Unclear - Group 1996	Social Functioning Schedule score at 3 months	50	2.00 + 1.10	58	2.50 + 1.20
Unclear - Group 1996	Total number of contacts (SNS, modified): post treatment	52	16.80 + 8.60	60	13.10 + 10.30
Unclear - Group 1996	Total number of contacts (SNS, modified): at 3 months follow-up	50	17.50 + 10.70	56	13.50 + 10.80

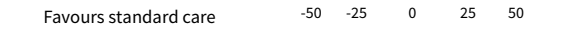
Analysis 1.18. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 18 Global functioning: 1. No clinically significant improvement.

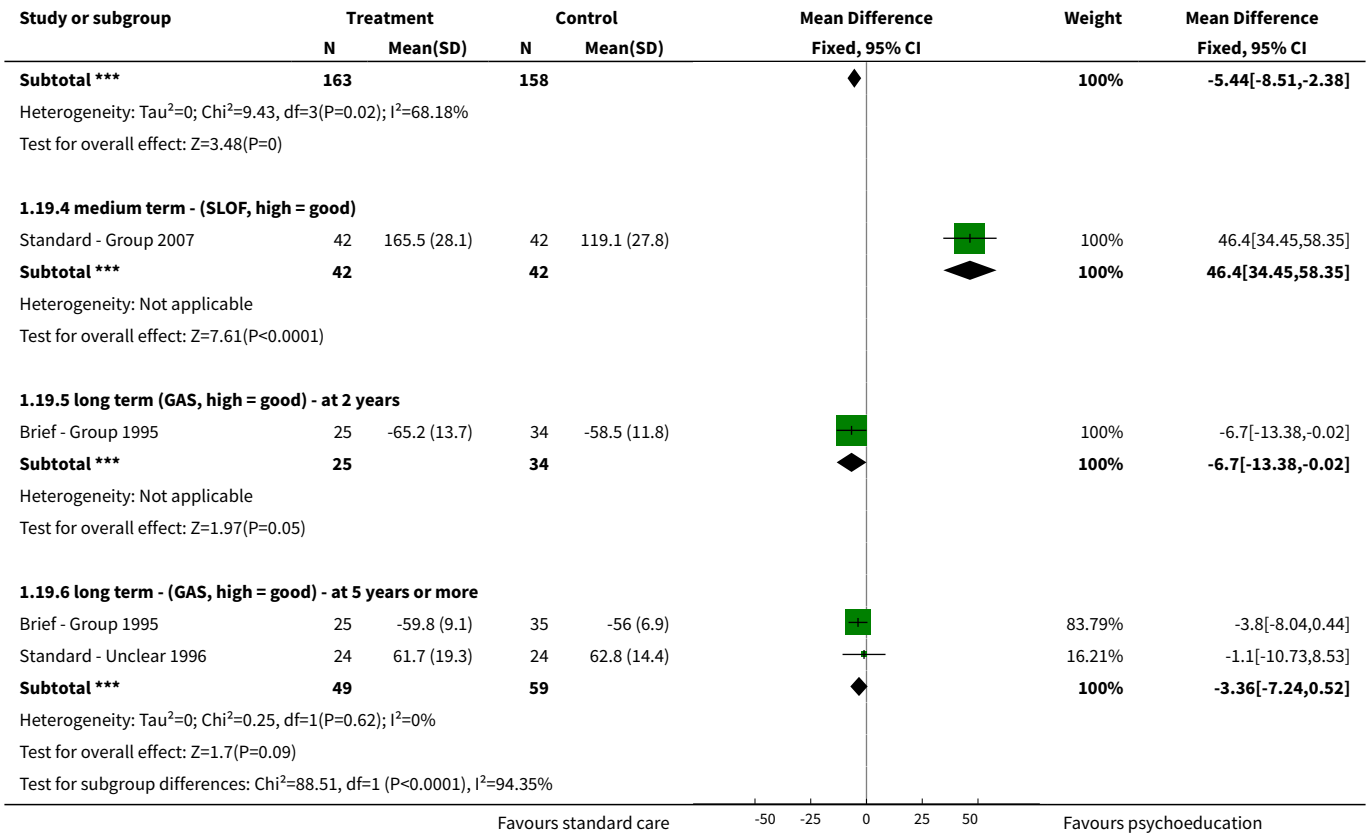
Study or subgroup	Treatment n/N	Control n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
1.18.1 short term					
Standard - Unclear 1988	7/37	20/55		72.83%	0.52[0.24,1.1]
Standard - Unclear 2006	5/58	6/58		27.17%	0.83[0.27,2.58]
Subtotal (95% CI)	**95**	**113**		**100%**	**0.61[0.32,1.13]**
Total events: 12 (Treatment), 26 (Control)					
Heterogeneity: Tau^2=0; Chi^2=0.46, df=1(P=0.5); I^2=0%					
Test for overall effect: Z=1.58(P=0.11)					
1.18.2 medium term					
Standard - Both 2004	16/43	35/43		63.51%	0.46[0.3,0.69]
Standard - Unclear 1988	14/37	25/55		36.49%	0.83[0.5,1.38]
Subtotal (95% CI)	**80**	**98**		**100%**	**0.59[0.43,0.82]**
Total events: 30 (Treatment), 60 (Control)					
Heterogeneity: Tau^2=0; Chi^2=3.26, df=1(P=0.07); I^2=69.32%					
Test for overall effect: Z=3.22(P=0)					
1.18.3 long term					
Standard - Unclear 1988	17/37	28/55		65.24%	0.9[0.58,1.39]
Standard - Unclear 2005a	4/20	12/20		34.76%	0.33[0.13,0.86]
Subtotal (95% CI)	**57**	**75**		**100%**	**0.7[0.48,1.04]**
Total events: 21 (Treatment), 40 (Control)					
Heterogeneity: Tau^2=0; Chi^2=3.64, df=1(P=0.06); I^2=72.55%					
Test for overall effect: Z=1.75(P=0.08)					



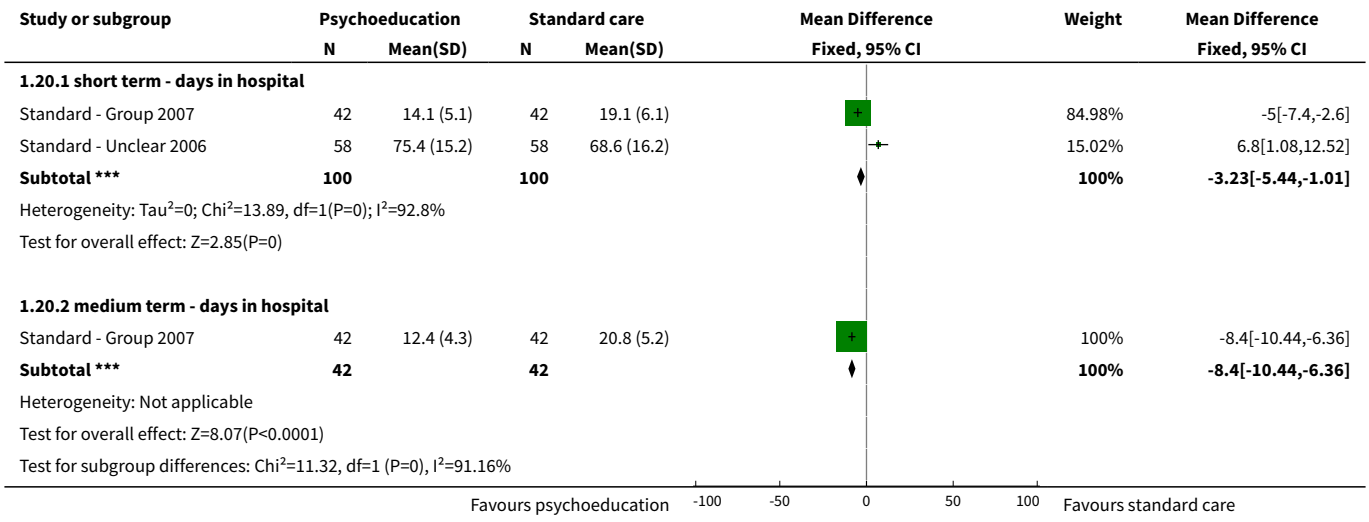
Analysis 1.19. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 19 Global functioning: 2. Average endpoint scale score.

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
1.19.1 short term - (GAF/GAS, high = good)							
Brief - Group 1999	22	-53.3 (17.8)	19	-50.6 (15.2)		100%	-2.64[-12.74,7.46]
Subtotal ***	**22**		**19**			**100%**	**-2.64[-12.74,7.46]**
Heterogeneity: Not applicable							
Test for overall effect: Z=0.51(P=0.61)							
1.19.2 short term - (SLOF, high = good)							
Standard - Group 2007	42	148.7 (25.8)	42	125.1 (28.9)		100%	23.6[11.88,35.32]
Subtotal ***	**42**		**42**			**100%**	**23.6[11.88,35.32]**
Heterogeneity: Not applicable							
Test for overall effect: Z=3.95(P<0.0001)							
1.19.3 medium term - (GAF/GAS, high = good)							
Brief - Group 1995	26	-56.1 (13)	35	-57.8 (8.3)		28.95%	1.7[-4,7.4]
Brief - Group 1999	22	-62.9 (16.3)	18	-55.4 (16.4)		9.08%	-7.52[-17.7,2.66]
Standard - Group 2006	36	47.6 (13.2)	25	53.7 (11.5)		24.2%	-6.1[-12.34,0.14]
Standard - Unclear 1996	79	-78 (14.5)	80	-68 (17.5)		37.77%	-10[-14.99,-5.01]





Analysis 1.20. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 20 Service utilisation: days in hospital.



Analysis 1.21. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 21 Service utilisation: Days in hospital using 'acute services' - during 18 months (data skewed).

Service utilisation: Days in hospital using 'acute services' - during 18 months (data skewed)

Study	Psychoed. mean	Psychoed. SD	Psychoed. N	Standard care mean	Standard care SD	Standard care N
Standard - Both 1996	37.2	33.3	41	27.9	12.6	41

Analysis 1.22. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 22 Global state: 1. Average endpoint score - medium term (CGI, high = poor).

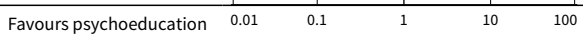
Study or subgroup	Favours control N	Mean(SD)	Control N	Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
1.22.1 severity							
Standard - Group 2006	36	4.4 (0.7)	25	3.9 (0.9)		100%	0.5[0.08,0.92]
Subtotal ***	**36**		**25**			**100%**	**0.5[0.08,0.92]**
Heterogeneity: Not applicable							
Test for overall effect: Z=2.33(P=0.02)							
1.22.2 change							
Standard - Group 2006	36	2.7 (1.6)	25	3.5 (1)		100%	-0.8[-1.45,-0.15]
Subtotal ***	**36**		**25**			**100%**	**-0.8[-1.45,-0.15]**
Heterogeneity: Not applicable							
Test for overall effect: Z=2.4(P=0.02)							
Test for subgroup differences: Chi^2=10.76, df=1 (P=0), I^2=90.7%							

Analysis 1.23. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 23 Global state: 2. Increased medication dose by 25%.

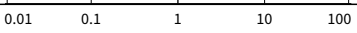
Study or subgroup	Treatment n/N	Control n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
Standard - Individual 93	3/10	7/10		100%	0.43[0.15,1.2]
Total (95% CI)	**10**	**10**		**100%**	**0.43[0.15,1.2]**
Total events: 3 (Treatment), 7 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1.61(P=0.11)					

Analysis 1.24. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 24 Global state: 3. Disability - long term.

Study or subgroup	Treatment n/N	Control n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
Standard - Both 2004	6/43	21/43		100%	0.29[0.13,0.64]
Total (95% CI)	**43**	**43**		**100%**	**0.29[0.13,0.64]**



Study or subgroup	Treatment n/N	Control n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
Total events: 6 (Treatment), 21 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=3.06(P=0)					



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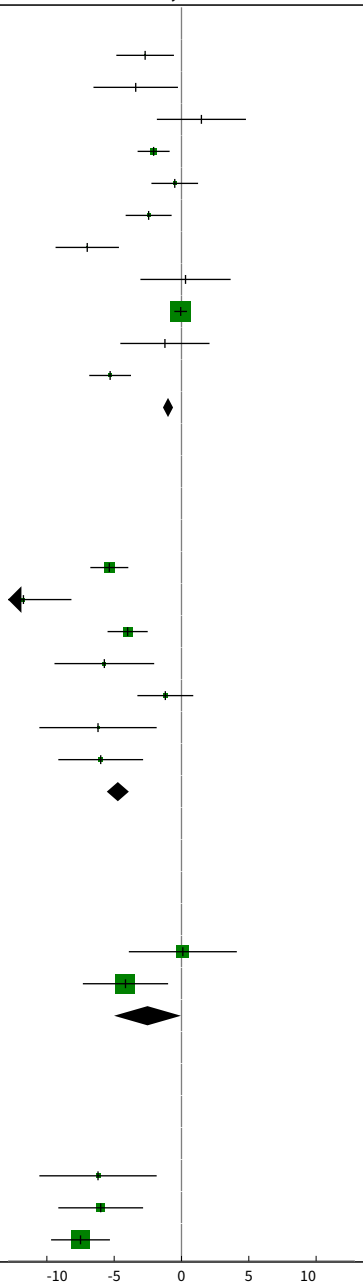
Analysis 1.25. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 25 Mental state: 1a. Global - continuous - average total endpoint scale scores (high = poor).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
1.25.1 short term (BPRS)							
Brief - Group 2006	30	20.6 (4.3)	30	23.3 (4.2)		3.08%	-2.7[-4.84,-0.56]
Standard - Both 2008a	30	20.4 (3.8)	30	23.8 (7.9)		1.43%	-3.4[-6.54,-0.26]
Standard - Both 2008b	44	30 (8)	41	28.5 (7.6)		1.29%	1.48[-1.83,4.79]
Standard - Group 2004	125	21.9 (4.5)	125	23.9 (5.1)		9.97%	-2.07[-3.26,-0.88]
Standard - Group 2007	42	10 (4)	42	10.5 (4.1)		4.7%	-0.5[-2.23,1.23]
Standard - Individual 03a	58	21.6 (4.2)	58	24 (5.1)		4.84%	-2.44[-4.15,-0.73]
Standard - Individual 03b	68	22 (7)	68	29 (7)		2.55%	-7[-9.35,-4.65]
Standard - Individual 03c	35	24.6 (7.1)	35	24.3 (7.2)		1.26%	0.3[-3.05,3.65]
Standard - Individual 93	9	1 (0.6)	10	1.1 (0.5)		63.72%	-0.06[-0.53,0.41]
Unclear - Both 2005	43	26.9 (8.4)	43	28.1 (7.2)		1.29%	-1.23[-4.54,2.08]
Unclear - Individual 2008	72	24.3 (4.1)	69	29.6 (5.2)		5.87%	-5.3[-6.85,-3.75]
Subtotal * **	**556**		**551**			**100%**	**-1[-1.38,-0.63]**
Heterogeneity: Tau^2=0; Chi^2=83.48, df=10(P<0.0001); I^2=88.02%							
Test for overall effect: Z=5.22(P<0.0001)							
1.25.2 medium term (BPRS)							
Brief - Group 2003	68	20.6 (4.7)	52	26 (3.2)		33.75%	-5.36[-6.77,-3.95]
Standard - Both 2004	43	19.1 (5.3)	42	30.9 (10.6)		5.28%	-11.74[-15.31,-8.17]
Standard - Both 2008	79	23.2 (4.4)	78	27.2 (5.1)		30.19%	-4[-5.49,-2.51]
Standard - Both 2008b	44	28.1 (7.5)	41	33.9 (9.7)		4.89%	-5.73[-9.43,-2.03]
Standard - Group 2007	42	9.7 (4.8)	42	10.9 (4.9)		15.59%	-1.2[-3.27,0.87]
Standard - Individual 03c	35	32.3 (8.3)	35	38.5 (10.2)		3.53%	-6.2[-10.56,-1.84]
Standard - Unclear 1996	79	26 (7.7)	80	32 (12.1)		6.77%	-6[-9.15,-2.85]
Subtotal * **	**390**		**370**			**100%**	**-4.73[-5.55,-3.91]**
Heterogeneity: Tau^2=0; Chi^2=29.01, df=6(P<0.0001); I^2=79.32%							
Test for overall effect: Z=11.32(P<0.0001)							
1.25.3 medium term (PANSS)							
Standard - Group 2006	36	30.9 (7.5)	25	30.8 (8.1)		38.39%	0.1[-3.91,4.11]
Unclear - Both 2007	52	40.9 (8.8)	50	45.1 (7.5)		61.61%	-4.16[-7.33,-0.99]
Subtotal * **	**88**		**75**			**100%**	**-2.52[-5.01,-0.04]**
Heterogeneity: Tau^2=0; Chi^2=2.67, df=1(P=0.1); I^2=62.55%							
Test for overall effect: Z=1.99(P=0.05)							
1.25.4 long term (BPRS - 1 ~ 2 year follow-up)							
Standard - Individual 03c	35	32.3 (8.3)	35	38.5 (10.2)		14.51%	-6.2[-10.56,-1.84]
Standard - Unclear 1996	79	26 (7.7)	80	32 (12.1)		27.79%	-6[-9.15,-2.85]
Unclear - Individual 2008	72	27.2 (5.1)	69	34.7 (7.8)		57.7%	-7.5[-9.69,-5.31]



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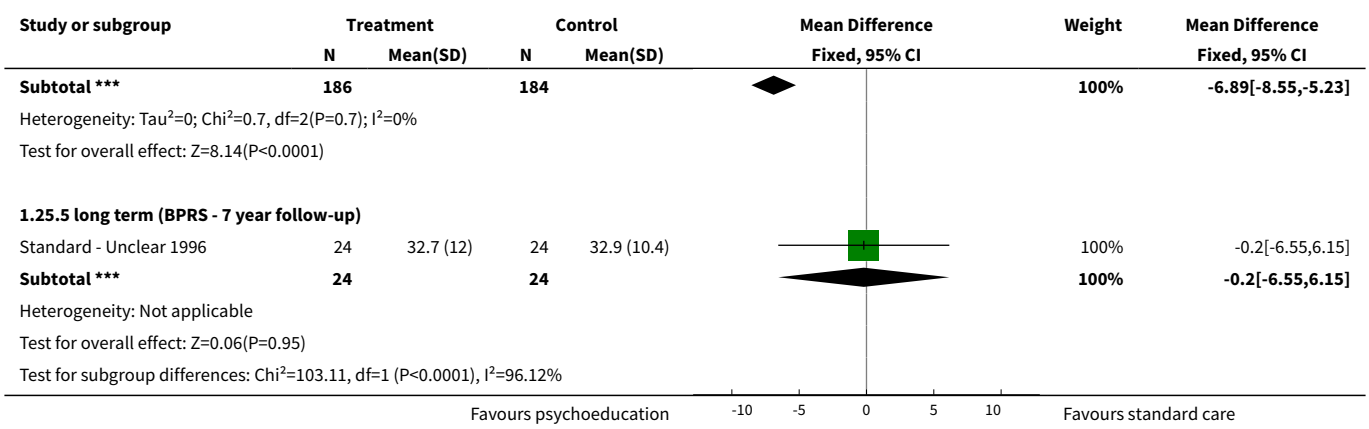
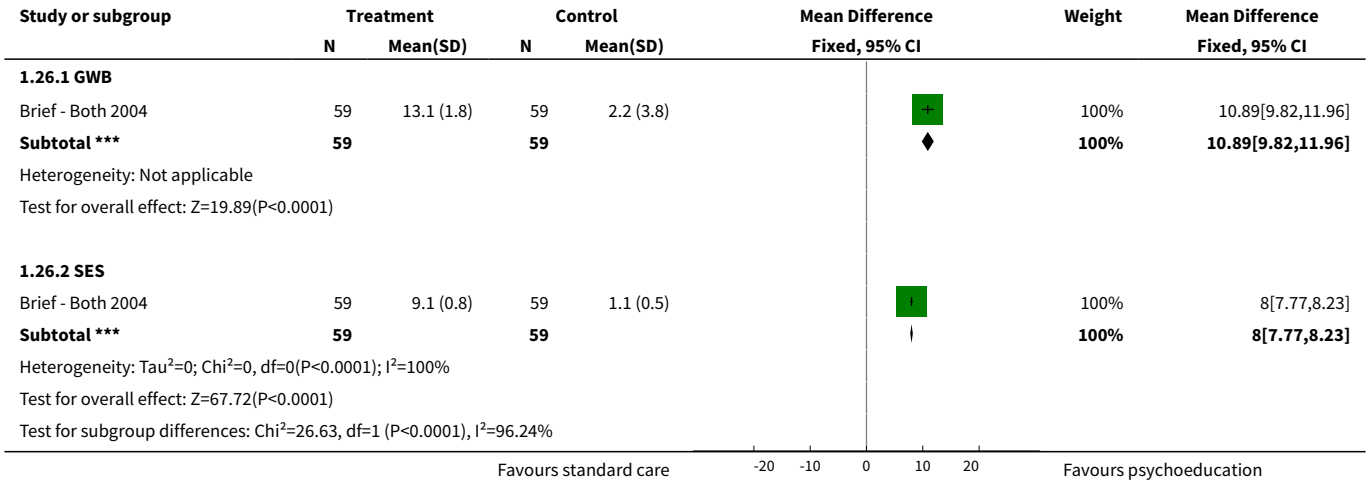


Analysis 1.26. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 26 Mental state: 1b. Global - continuous - average change scale scores - medium term (high = good).



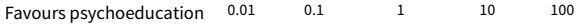
Analysis 1.27. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 27 Mental state: 1c. Global - continuous - average total endpoint scale scores - (BPRS, high = poor, data skewed).

Mental state: 1c. Global - continuous - average total endpoint scale scores - (BPRS, high = poor, data skewed)

Study	Length of follow-up	Psychoed. N	Exp. mean + SD	Control N	Control mean + SD
Brief - Group 1999	at end of study (8 weeks)	22	11.41±7.91	19	13.50±9.54
Brief - Group 1999	at 1 year	22	8.86±6.19	18	10.50±7.37
Brief - Group 2009	at end of study (3 months)	36	5.69±7.91	37	8.81±9.58
Brief - Group 2009	at 1 year	36	4.5±5.11	37	8.81±9.12

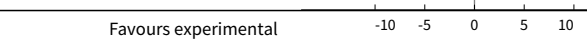
Analysis 1.28. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 28 Mental state: 2a. Specific - binary - specific symptoms - short term.

Study or subgroup	Experimental n/N	Control n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
1.28.1 anxiety					
Brief - Both 2004a	11/74	22/72		100%	0.49[0.25,0.93]
Subtotal (95% CI)	**74**	**72**		**100%**	**0.49[0.25,0.93]**
Total events: 11 (Experimental), 22 (Control)					
Heterogeneity: Tau^2=0; Chi^2=0, df=0(P<0.0001); I^2=100%					
Test for overall effect: Z=2.18(P=0.03)					
1.28.2 depression					
Brief - Both 2004a	11/74	23/72		100%	0.47[0.25,0.88]
Subtotal (95% CI)	**74**	**72**		**100%**	**0.47[0.25,0.88]**
Total events: 11 (Experimental), 23 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=2.34(P=0.02)					



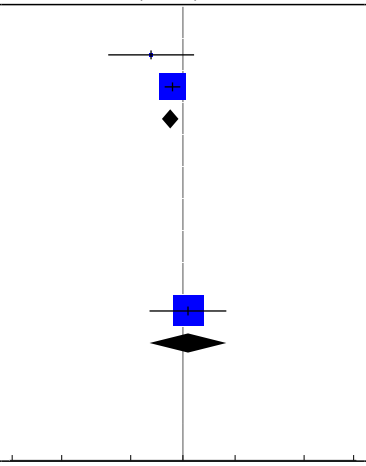
Analysis 1.29. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 29 Mental state: 2b. Specific - continuous - average endpoint PANSS scores (high = poor).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
1.29.1 short term - negative symptoms							
Standard - Group 2006	38	15.7 (5.1)	33	15.3 (5.1)		100%	0.4[-1.98,2.78]
Subtotal ***	**38**		**33**			**100%**	**0.4[-1.98,2.78]**
Heterogeneity: Not applicable							
Test for overall effect: Z=0.33(P=0.74)							
1.29.2 short term - positive symptoms							
Standard - Group 2006	38	16.5 (5)	33	15 (5.6)		100%	1.5[-0.99,3.99]
Subtotal ***	**38**		**33**			**100%**	**1.5[-0.99,3.99]**
Heterogeneity: Not applicable							
Test for overall effect: Z=1.18(P=0.24)							
1.29.3 medium term - negative symptoms							
Standard - Group 2006	36	18 (6.9)	25	14.9 (4.8)		100%	3.1[0.16,6.04]
Subtotal ***	**36**		**25**			**100%**	**3.1[0.16,6.04]**
Heterogeneity: Tau^2=0; Chi^2=0, df=0(P<0.0001); I^2=100%							
Test for overall effect: Z=2.07(P=0.04)							
1.29.4 medium term - positive symptoms							
Standard - Group 2006	36	16.6 (6)	25	14.2 (5.3)		100%	2.4[-0.46,5.26]
Subtotal ***	**36**		**25**			**100%**	**2.4[-0.46,5.26]**
Heterogeneity: Not applicable							
Test for overall effect: Z=1.65(P=0.1)							
Test for subgroup differences: Chi^2=2.28, df=1 (P=0.52), I^2=0%							



Analysis 1.30. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 30 Expressed emotion: Participants with high EE relatives (FQ).

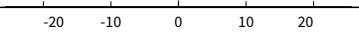
Study or subgroup	Treatment n/N	Control n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
1.30.1 short term - at end of interventions					
Brief - Group 1999	10/24	14/22		11.91%	0.65[0.37,1.16]
Standard - Unclear 1996	100/125	102/111		88.09%	0.87[0.78,0.97]
Subtotal (95% CI)	**149**	**133**		**100%**	**0.84[0.76,0.94]**
Total events: 110 (Treatment), 116 (Control)					
Heterogeneity: Tau^2=0; Chi^2=1.09, df=1(P=0.3); I^2=8.44%					
Test for overall effect: Z=3(P=0)					
1.30.2 medium term - at 9-12 months					
Brief - Group 1999	14/24	12/22		100%	1.07[0.64,1.78]
Subtotal (95% CI)	**24**	**22**		**100%**	**1.07[0.64,1.78]**
Total events: 14 (Treatment), 12 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.26(P=0.8)					



Analysis 1.31. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 31 Quality of life: Average endpoint scores on various scales (high = favourable).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
1.31.1 short term - GQOLI-74							
Brief - Group 2007a	30	17.4 (2.6)	32	16.7 (3.1)		100%	0.63[-0.79,2.05]
Subtotal ***	**30**		**32**			**100%**	**0.63[-0.79,2.05]**
Heterogeneity: Not applicable							
Test for overall effect: Z=0.87(P=0.38)							
1.31.2 short term - PGWB							
Standard - Group 2006	38	-70.9 (17.1)	33	-72.9 (17.5)		100%	2[-6.08,10.08]
Subtotal ***	**38**		**33**			**100%**	**2[-6.08,10.08]**
Heterogeneity: Not applicable							
Test for overall effect: Z=0.49(P=0.63)							
1.31.3 medium term - GQOLI-74							
Brief - Group 2007a	30	18.5 (2.3)	32	16.3 (2.2)		100%	2.13[1.03,3.23]
Subtotal ***	**30**		**32**			**100%**	**2.13[1.03,3.23]**
Heterogeneity: Not applicable							
Test for overall effect: Z=3.79(P=0)							
1.31.4 medium term - QOL							
Unclear - Group 1996	51	-67.9 (20.7)	57	-58.2 (19)		100%	-9.7[-17.22,-2.18]
Subtotal ***	**51**		**57**			**100%**	**-9.7[-17.22,-2.18]**
Heterogeneity: Not applicable							
Test for overall effect: Z=2.53(P=0.01)							
1.31.5 medium term - PGWB							
Standard - Group 2006	36	75.9 (17)	25	73.1 (15.4)		100%	2.8[-5.4,11]

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
Subtotal ***	**36**		**25**			**100%**	**2.8[-5.4,11]**
Heterogeneity: Not applicable							
Test for overall effect: Z=0.67(P=0.5)							
Test for subgroup differences: Chi^2=11.3, df=1 (P=0.02), I^2=64.61%							



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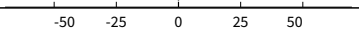
Analysis 1.32. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 32 Quality of life: Average endpoint scores on various scales (high = poor).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
1.32.1 short term - FAD							
Brief - Group 2007a	30	71.3 (9.8)	32	71.7 (10.4)		100%	-0.42[-5.45,4.61]
Subtotal ***	**30**		**32**			**100%**	**-0.42[-5.45,4.61]**
Heterogeneity: Not applicable							
Test for overall effect: Z=0.16(P=0.87)							
1.32.2 short term - FBIS							
Standard - Group 2007	42	25.1 (4.8)	42	29.8 (6.7)		100%	-4.7[-7.19,-2.21]
Subtotal ***	**42**		**42**			**100%**	**-4.7[-7.19,-2.21]**
Heterogeneity: Not applicable							
Test for overall effect: Z=3.7(P=0)							
1.32.3 medium term - FAD							
Brief - Group 2007a	30	63.1 (9.9)	32	69.9 (9.7)		100%	-6.79[-11.67,-1.91]
Subtotal ***	**30**		**32**			**100%**	**-6.79[-11.67,-1.91]**
Heterogeneity: Tau^2=0; Chi^2=0, df=0(P<0.0001); I^2=100%							
Test for overall effect: Z=2.73(P=0.01)							
1.32.4 medium term - FBIS							
Standard - Both 2008	79	13.7 (5.6)	78	18.9 (6.2)		71.17%	-5.2[-7.05,-3.35]
Standard - Group 2007	42	21.4 (6)	42	30.2 (7.5)		28.83%	-8.8[-11.7,-5.9]
Subtotal ***	**121**		**120**			**100%**	**-6.24[-7.8,-4.68]**
Heterogeneity: Tau^2=0; Chi^2=4.2, df=1(P=0.04); I^2=76.19%							
Test for overall effect: Z=7.84(P<0.0001)							
Test for subgroup differences: Chi^2=5.44, df=1 (P=0.14), I^2=44.86%							

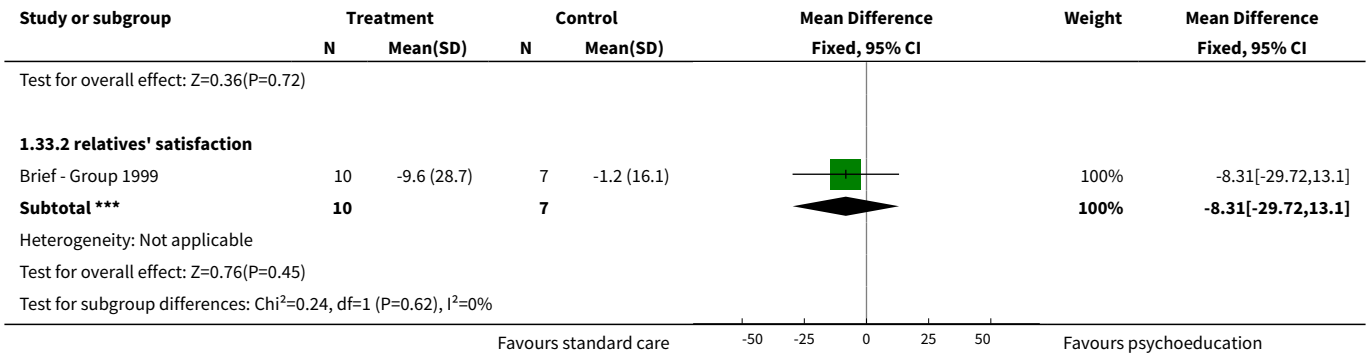
Favours psychoeducation — Favours standard care

Analysis 1.33. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 33 Satisfaction with mental health services: 1. Short term - average change score (VSS, high = good).

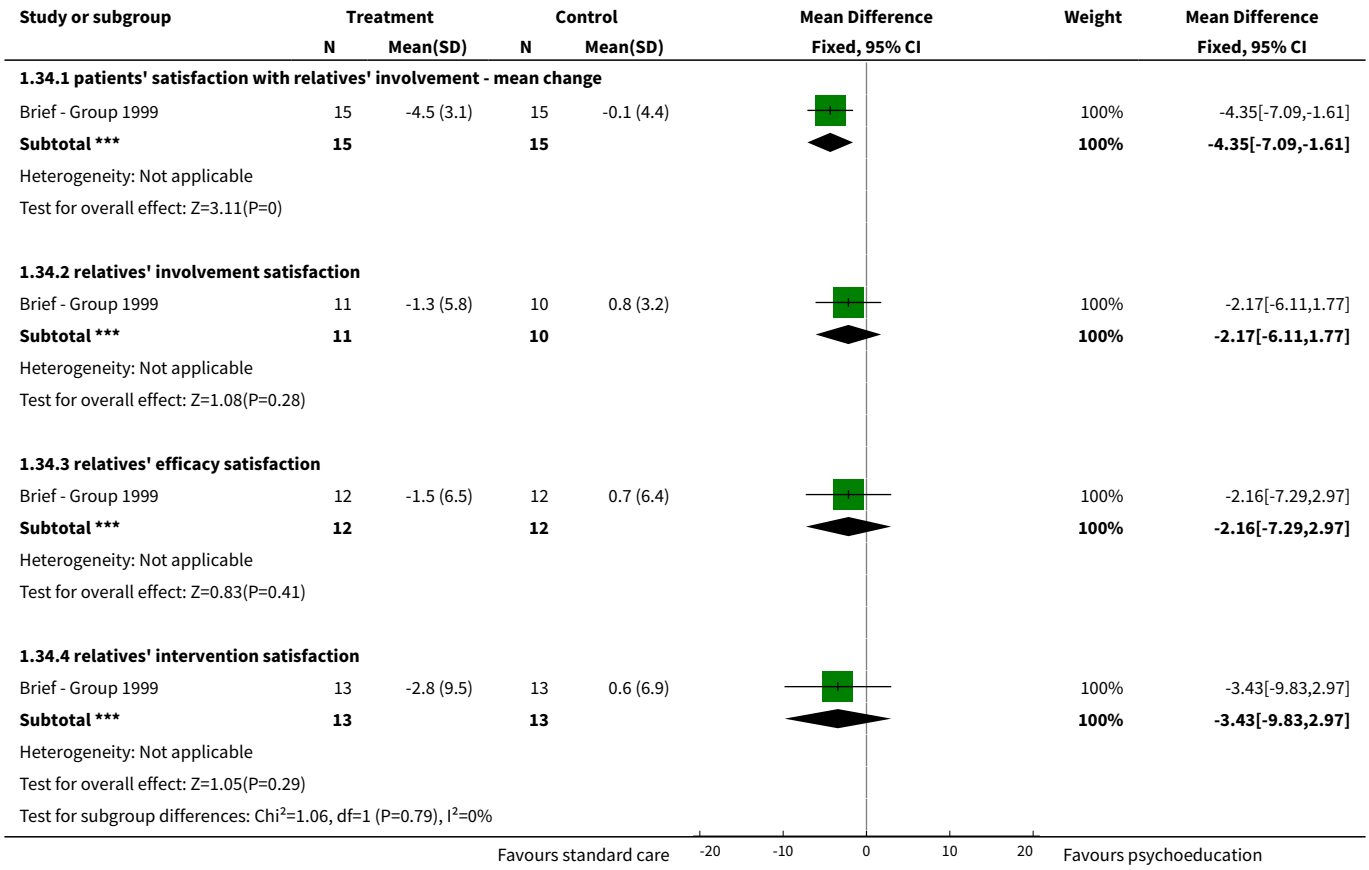
Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
1.33.1 patients' satisfaction							
Brief - Group 1999	18	-9.5 (17.5)	14	-7.3 (16.5)		100%	-2.15[-13.96,9.66]
Subtotal ***	**18**		**14**			**100%**	**-2.15[-13.96,9.66]**
Heterogeneity: Not applicable							



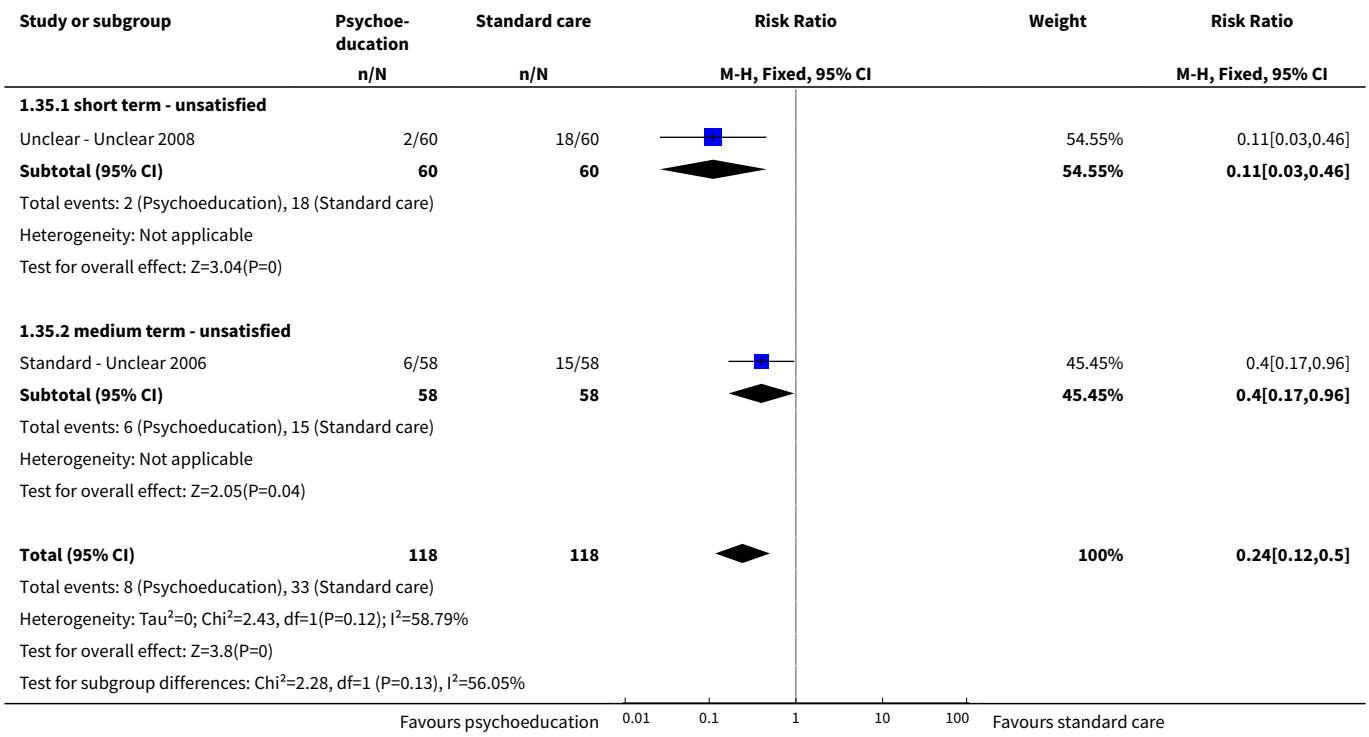
Favours standard care — Favours psychoeducation



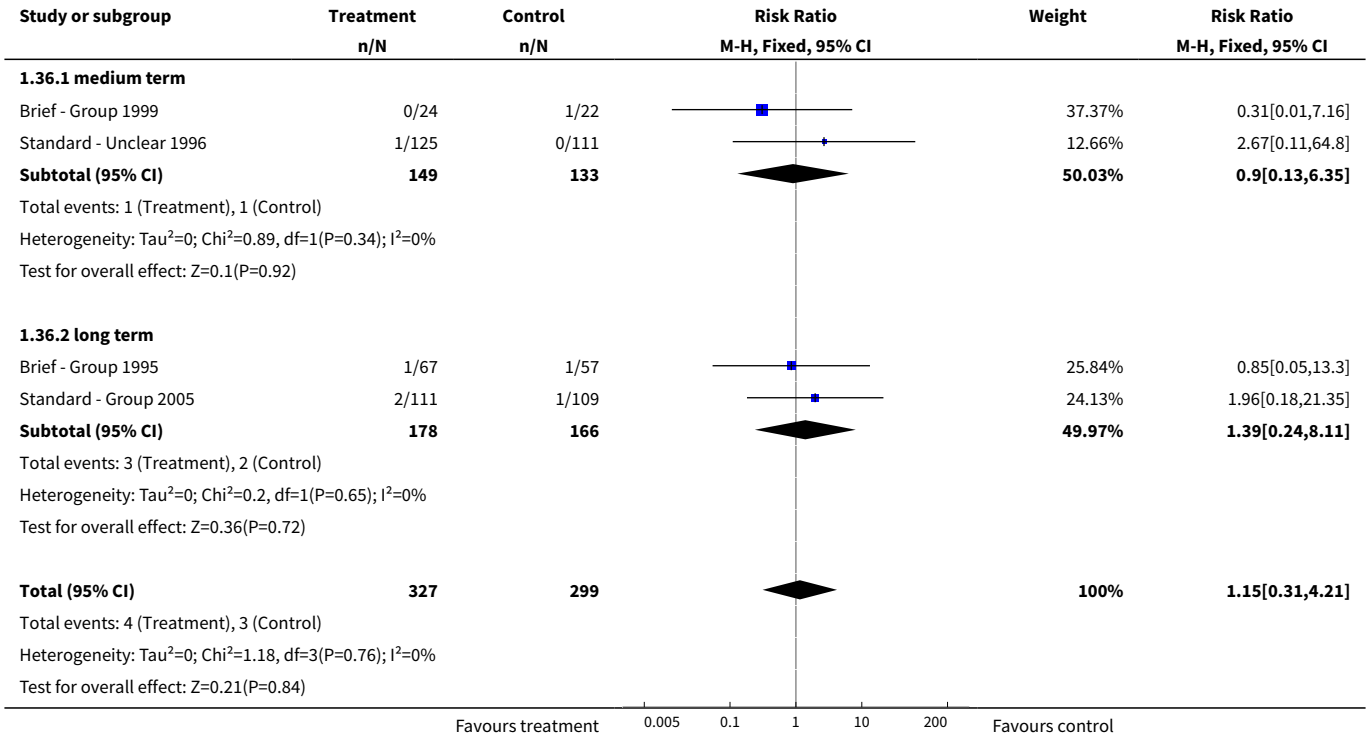
Analysis 1.34. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 34 Satisfaction with mental health services: 2. Average change - at 1 year (VSS Scale, high = good).



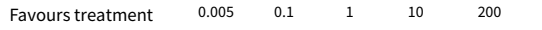
Analysis 1.35. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 35 Satisfaction with mental health services: 3. Binary outcome.



Analysis 1.36. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 36 Adverse event: Death.



Study or subgroup	Treatment n/N	Control n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
Test for subgroup differences: Chi²=0.1, df=1 (P=0.75), I²=0%					



Analysis 1.37. Comparison 1 ANY FORM OF PSYCHOEDUCATION vs STANDARD CARE, Outcome 37 Economic outcomes: Costs (US$ per person, data skewed).

Economic outcomes: Costs (US$ per person, data skewed)						
Study	Psychoed. mean	Psychoed. SD	Psychoed. N	Standard care mean	Standard care SD	Standard care N
acute hospital charges						
Standard - Both 1996	6537	17248.0	41	7863	12038	41
ambulatory charges						
Standard - Both 1996	6488	4332.8	41	5212	3500.1	41
total charges						
Standard - Both 1996	13025	16358.4	41	13075	12000	41

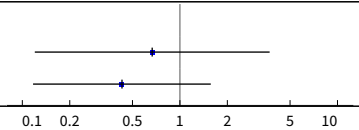
Comparison 2. SUBGROUP ANALYSES 1. BRIEF PSYCHOEDUCATION/STANDARD PSYCHOEDUCATION vs STANDARD CARE

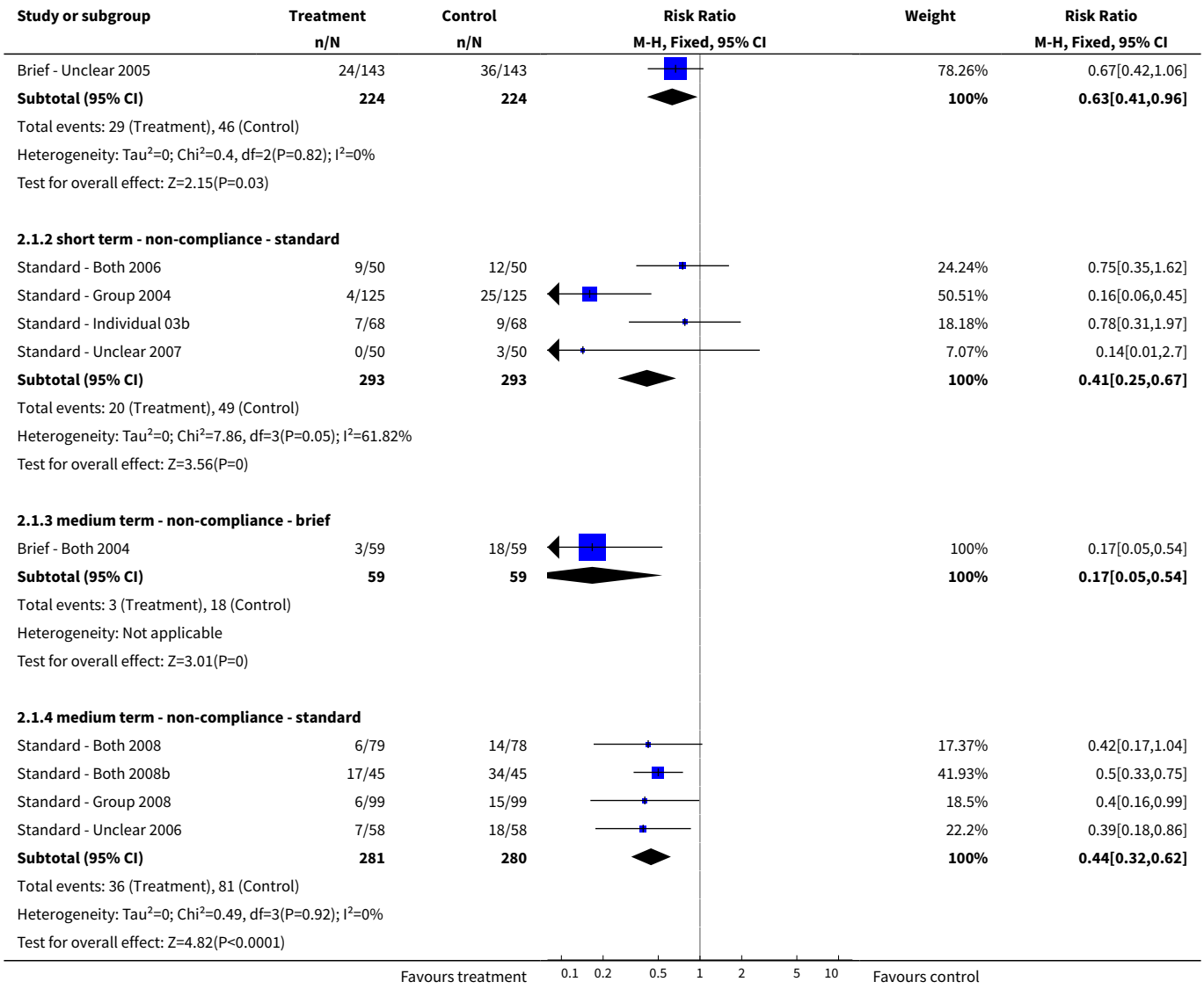
Outcome or subgroup title	No. of studies	No. of partici-pants	Statistical method	Effect size
1 Compliance: 1a. With medication - binary outcomes	12		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
1.1 short term - non-compliance - brief	3	448	Risk Ratio (M-H, Fixed, 95% CI)	0.63 [0.41, 0.96]
1.2 short term - non-compliance - standard	4	586	Risk Ratio (M-H, Fixed, 95% CI)	0.41 [0.25, 0.67]
1.3 medium term - non-compli-ance - brief	1	118	Risk Ratio (M-H, Fixed, 95% CI)	0.17 [0.05, 0.54]
1.4 medium term - non-compli-ance - standard	4	561	Risk Ratio (M-H, Fixed, 95% CI)	0.44 [0.32, 0.62]
2 Compliance: 2. With follow-up - loss to follow-up for any reason	10		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
2.1 medium term - brief	2	170	Risk Ratio (M-H, Fixed, 95% CI)	0.59 [0.37, 0.94]
2.2 medium term - standard	7	739	Risk Ratio (M-H, Fixed, 95% CI)	1.13 [0.83, 1.55]
2.3 long term (by 2 years) - brief	1	124	Risk Ratio (M-H, Fixed, 95% CI)	0.70 [0.43, 1.15]
2.4 long term (by 2 years) - stan-dard	1	136	Risk Ratio (M-H, Fixed, 95% CI)	0.97 [0.66, 1.42]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
2.5 long term (by 5 years or more) - brief	1	124	Risk Ratio (M-H, Fixed, 95% CI)	0.73 [0.44, 1.21]
2.6 long term (by 5 years or more) - standard	1	48	Risk Ratio (M-H, Fixed, 95% CI)	1.0 [0.28, 3.54]
3 Compliance: 2a. with follow-up - received intervention but left the study early	4		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
3.1 short term - brief	1	67	Risk Ratio (M-H, Fixed, 95% CI)	3.06 [0.17, 56.70]
3.2 short term - standard	1	20	Risk Ratio (M-H, Fixed, 95% CI)	3.0 [0.14, 65.90]
3.3 long term - brief	1	124	Risk Ratio (M-H, Fixed, 95% CI)	0.58 [0.33, 1.01]
3.4 long term - standard	1	82	Risk Ratio (M-H, Fixed, 95% CI)	0.83 [0.28, 2.52]
4 Relapse: Relapse for any reason	14		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
4.1 relapse - medium term - brief	3	292	Risk Ratio (M-H, Fixed, 95% CI)	0.61 [0.43, 0.89]
4.2 relapse - medium term - standard	6	1011	Risk Ratio (M-H, Fixed, 95% CI)	0.87 [0.77, 0.99]
4.3 relapse with readmission - medium term - brief	1	124	Risk Ratio (M-H, Fixed, 95% CI)	0.85 [0.59, 1.22]
4.4 relapse with readmission - medium term - standard	1	82	Risk Ratio (M-H, Fixed, 95% CI)	0.6 [0.30, 1.21]
4.5 relapse - long term - brief	1	124	Risk Ratio (M-H, Fixed, 95% CI)	0.85 [0.59, 1.22]
4.6 relapse - long term - standard	5	666	Risk Ratio (M-H, Fixed, 95% CI)	0.70 [0.59, 0.84]
4.7 relapse with readmission - long term - brief	1	124	Risk Ratio (M-H, Fixed, 95% CI)	0.83 [0.64, 1.08]
4.8 relapse with readmission - long term - standard	1	82	Risk Ratio (M-H, Fixed, 95% CI)	0.53 [0.35, 0.82]

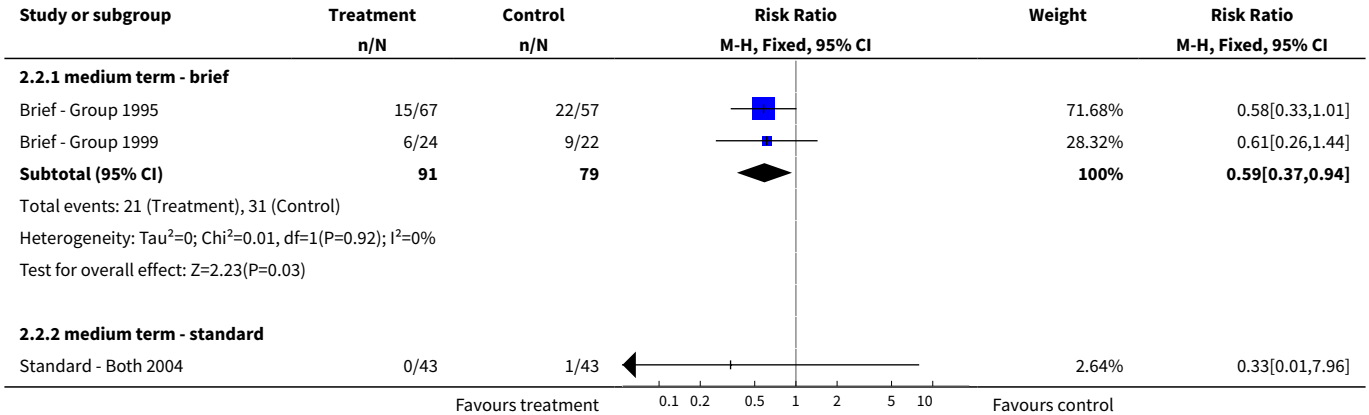
Analysis 2.1. Comparison 2 SUBGROUP ANALYSES 1. BRIEF PSYCHOEDUCATION/STANDARD PSYCHOEDUCATION vs STANDARD CARE, Outcome 1 Compliance: 1a. With medication - binary outcomes.

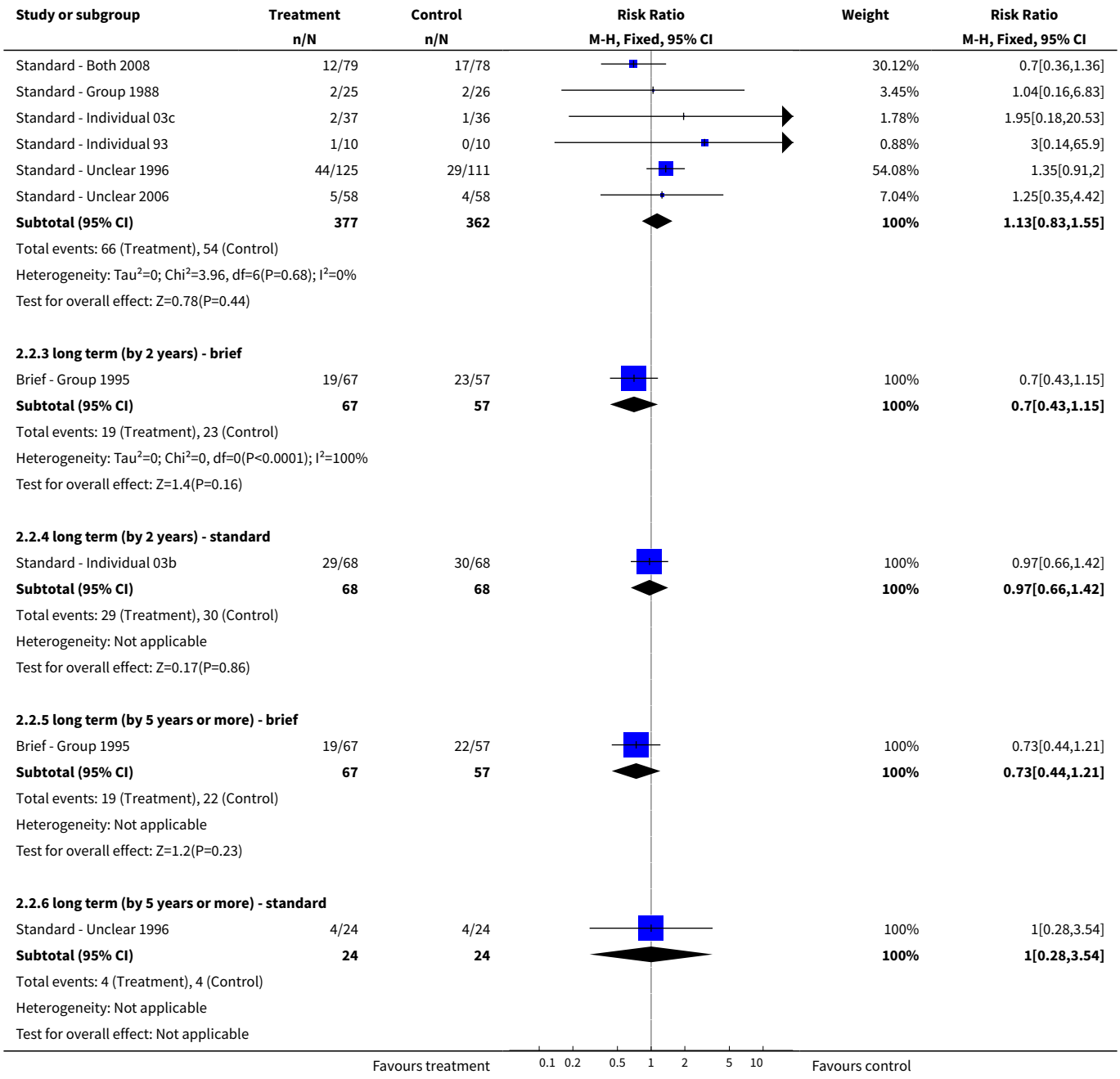
Study or subgroup	Treatment n/N	Control n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
2.1.1 short term - non-compliance - brief					
Brief - Group 2006	2/30	3/30		6.52%	0.67[0.12,3.71]
Brief - Group 2007b	3/51	7/51		15.22%	0.43[0.12,1.57]



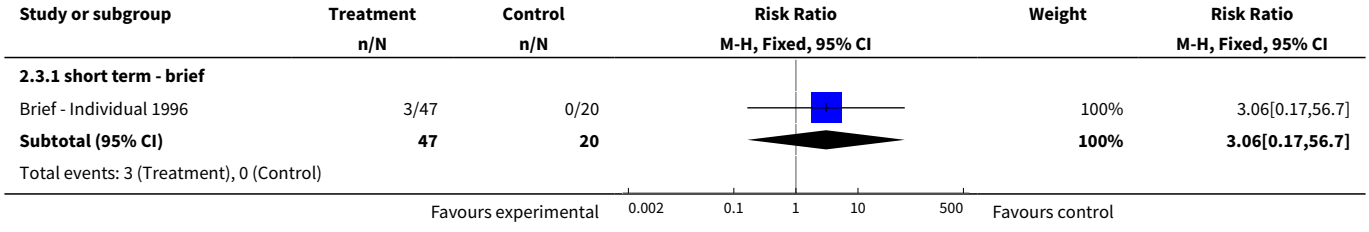


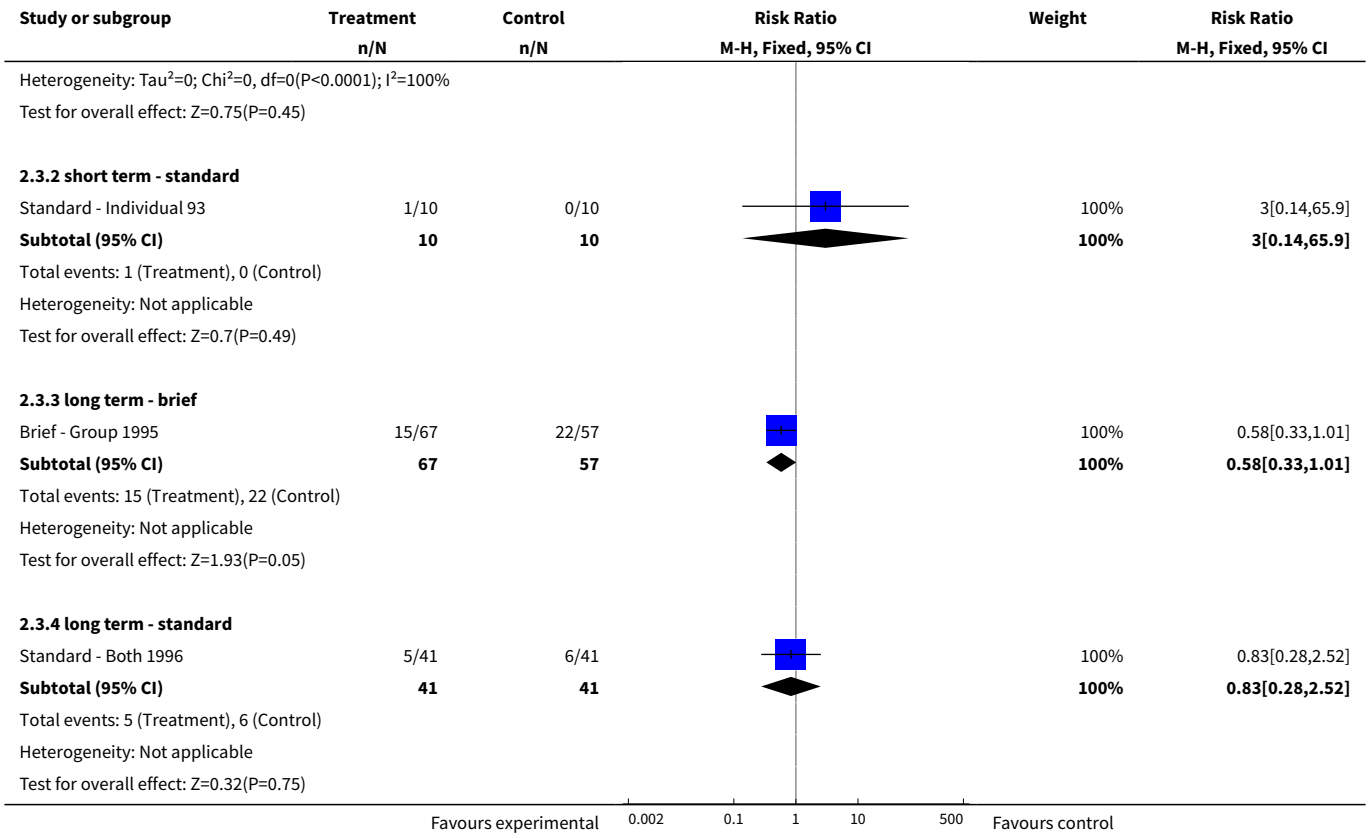
Analysis 2.2. Comparison 2 SUBGROUP ANALYSES 1. BRIEF PSYCHOEDUCATION/STANDARD PSYCHOEDUCATION vs STANDARD CARE, Outcome 2 Compliance: 2. With follow-up - loss to follow-up for any reason.



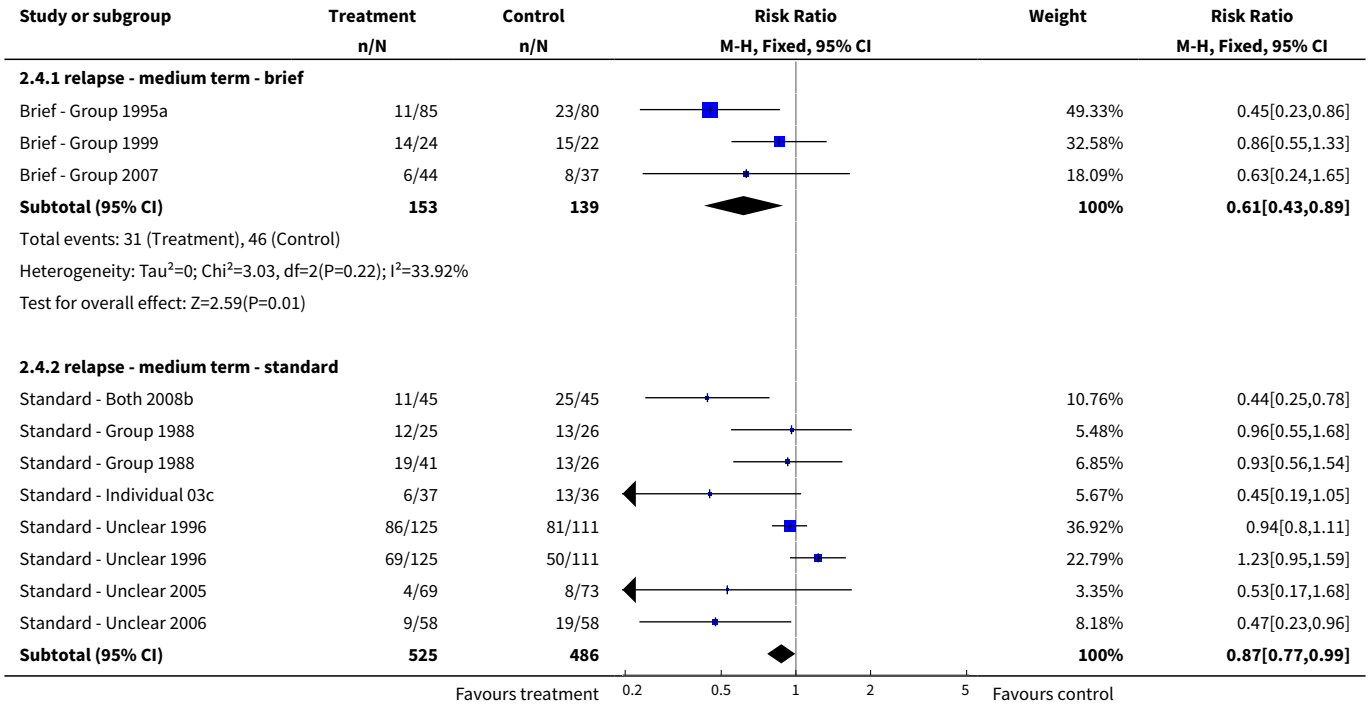


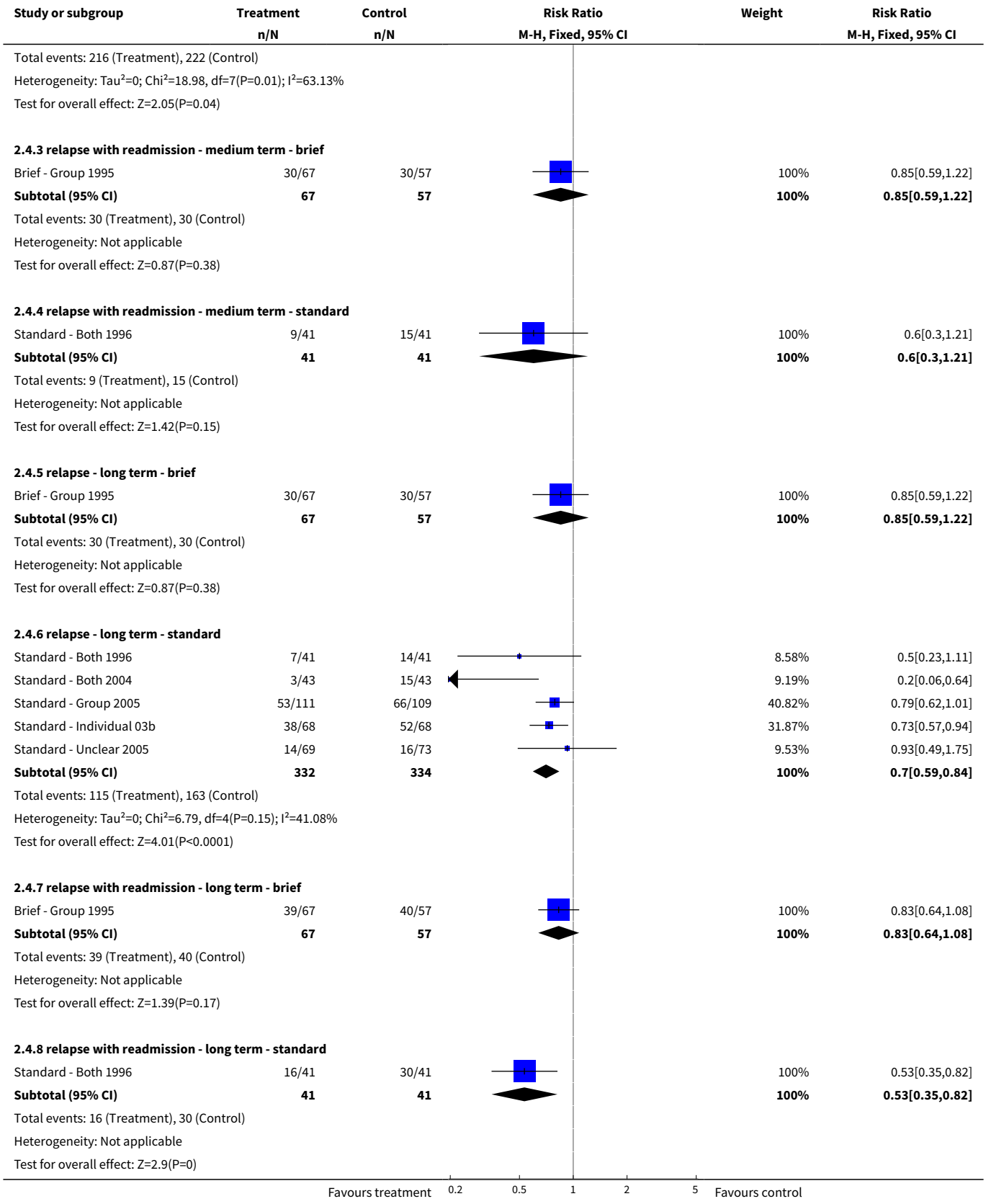
Analysis 2.3. Comparison 2 SUBGROUP ANALYSES 1. BRIEF PSYCHOEDUCATION/STANDARD PSYCHOEDUCATION vs STANDARD CARE, Outcome 3 Compliance: 2a. with follow-up - received intervention but left the study early.





Analysis 2.4. Comparison 2 SUBGROUP ANALYSES 1. BRIEF PSYCHOEDUCATION/STANDARD PSYCHOEDUCATION vs STANDARD CARE, Outcome 4 Relapse: Relapse for any reason.



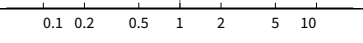


Comparison 3. SUBGROUP ANALYSES 2. GROUP PSYCHOEDUCATION/INDIVIDUAL PSYCHOEDUCATION vs STANDARD CARE

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Compliance: 1a. With medication - binary outcomes	5		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
1.1 short term - non-compliance - group	3	412	Risk Ratio (M-H, Fixed, 95% CI)	0.26 [0.13, 0.52]
1.2 short term - non-compliance - individual	2	296	Risk Ratio (M-H, Fixed, 95% CI)	0.66 [0.39, 1.11]
1.3 short term - partial compliance - group	1	250	Risk Ratio (M-H, Fixed, 95% CI)	0.76 [0.50, 1.16]
1.4 short term - partial compliance - individual	1	136	Risk Ratio (M-H, Fixed, 95% CI)	0.61 [0.41, 0.92]
2 Compliance: 2. With follow-up - leaving the study early/loss to follow-up	8		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
2.1 medium term - received intervention but left the study early - group	2	213	Risk Ratio (M-H, Fixed, 95% CI)	0.52 [0.25, 1.06]
2.2 medium term - received intervention but left the study early - individual	1	20	Risk Ratio (M-H, Fixed, 95% CI)	3.0 [0.14, 65.90]
2.3 medium term - loss to follow-up for any reason - group	4	367	Risk Ratio (M-H, Fixed, 95% CI)	0.86 [0.61, 1.20]
2.4 medium term - loss to follow-up for any reason - individual	1	73	Risk Ratio (M-H, Fixed, 95% CI)	1.95 [0.18, 20.53]
2.5 long term - loss to follow-up for any reason (by 2 years) - group	1	124	Risk Ratio (M-H, Fixed, 95% CI)	0.70 [0.43, 1.15]
2.6 long term - loss to follow-up for any reason (by 2 years) - individual	2	296	Risk Ratio (M-H, Fixed, 95% CI)	0.90 [0.63, 1.29]
3 Relapse: Relapse for any reason	8		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
3.1 relapse - medium term - group	4	410	Risk Ratio (M-H, Fixed, 95% CI)	0.74 [0.57, 0.96]
3.2 relapse - medium term - individual	1	73	Risk Ratio (M-H, Fixed, 95% CI)	0.45 [0.19, 1.05]
3.3 relapse - long term - group	2	344	Risk Ratio (M-H, Fixed, 95% CI)	0.81 [0.66, 0.99]
3.4 relapse - long term - individual	1	136	Risk Ratio (M-H, Fixed, 95% CI)	0.73 [0.57, 0.94]

Analysis 3.1. Comparison 3 SUBGROUP ANALYSES 2. GROUP PSYCHOEDUCATION/INDIVIDUAL PSYCHOEDUCATION vs STANDARD CARE, Outcome 1 Compliance: 1a. With medication - binary outcomes.

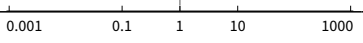
Study or subgroup	Psychoeducation n/N	Standard care n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
3.1.1 short term - non-compliance - group					
Brief - Group 2006	2/30	3/30		8.57%	0.67[0.12,3.71]
Brief - Group 2007b	3/51	7/51		20%	0.43[0.12,1.57]
Standard - Group 2004	4/125	25/125		71.43%	0.16[0.06,0.45]
Subtotal (95% CI)	**206**	**206**		**100%**	**0.26[0.13,0.52]**
Total events: 9 (Psychoeducation), 35 (Standard care)					
Heterogeneity: Tau^2=0; Chi^2=2.6, df=2(P=0.27); I^2=23.15%					
Test for overall effect: Z=3.76(P=0)					
3.1.2 short term - non-compliance - individual					
Standard - Individual 03b	7/68	9/68		31.03%	0.78[0.31,1.97]
Unclear - Individual 2008	12/80	20/80		68.97%	0.6[0.31,1.14]
Subtotal (95% CI)	**148**	**148**		**100%**	**0.66[0.39,1.11]**
Total events: 19 (Psychoeducation), 29 (Standard care)					
Heterogeneity: Tau^2=0; Chi^2=0.2, df=1(P=0.65); I^2=0%					
Test for overall effect: Z=1.57(P=0.12)					
3.1.3 short term - partial compliance - group					
Standard - Group 2004	28/125	37/125		100%	0.76[0.5,1.16]
Subtotal (95% CI)	**125**	**125**		**100%**	**0.76[0.5,1.16]**
Total events: 28 (Psychoeducation), 37 (Standard care)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1.29(P=0.2)					
3.1.4 short term - partial compliance - individual					
Standard - Individual 03b	22/68	36/68		100%	0.61[0.41,0.92]
Subtotal (95% CI)	**68**	**68**		**100%**	**0.61[0.41,0.92]**
Total events: 22 (Psychoeducation), 36 (Standard care)					
Heterogeneity: Not applicable					
Test for overall effect: Z=2.35(P=0.02)					



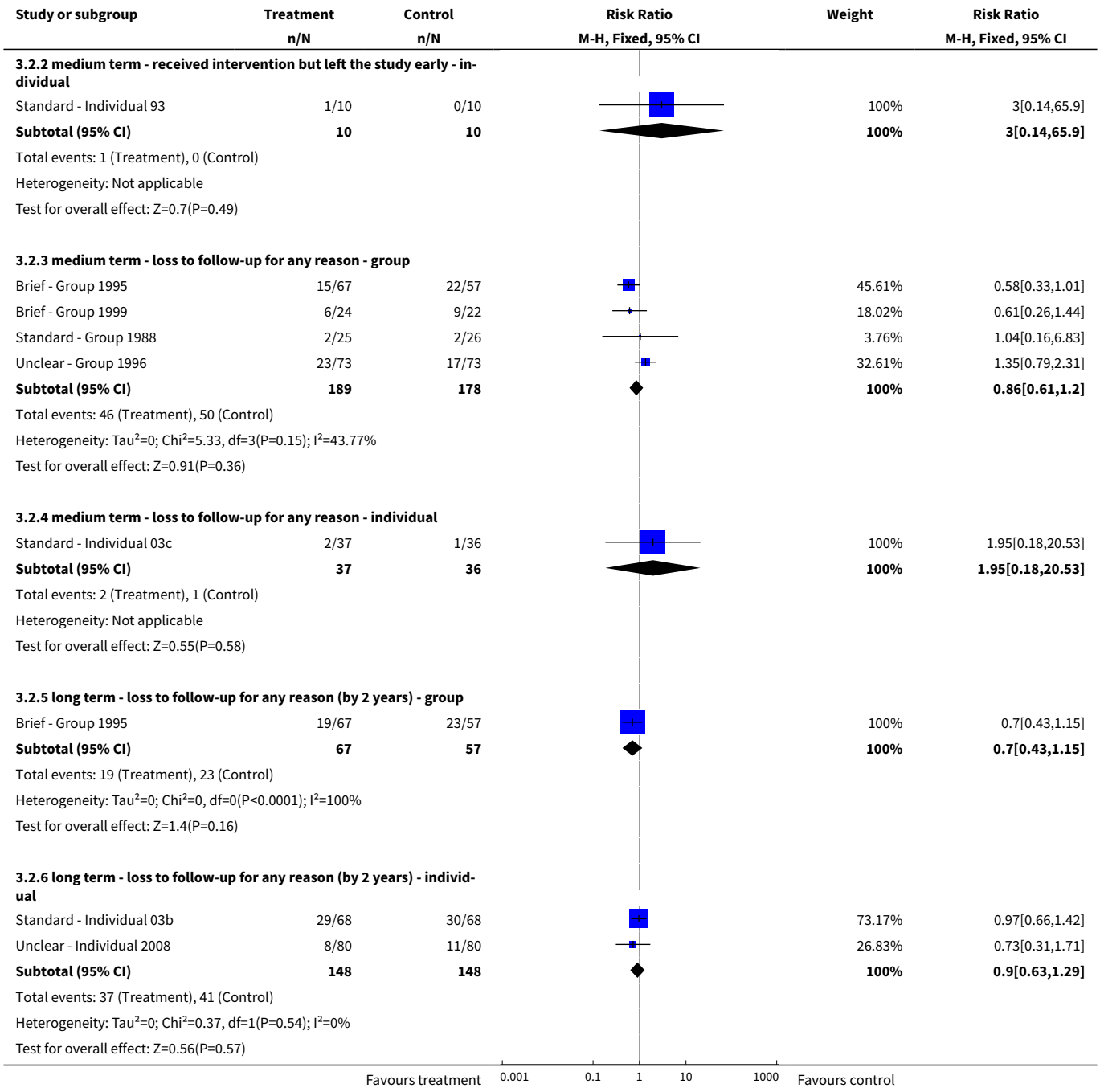
Favours psychoeducation — Favours standard

Analysis 3.2. Comparison 3 SUBGROUP ANALYSES 2. GROUP PSYCHOEDUCATION/INDIVIDUAL PSYCHOEDUCATION vs STANDARD CARE, Outcome 2 Compliance: 2. With follow-up - leaving the study early/loss to follow-up.

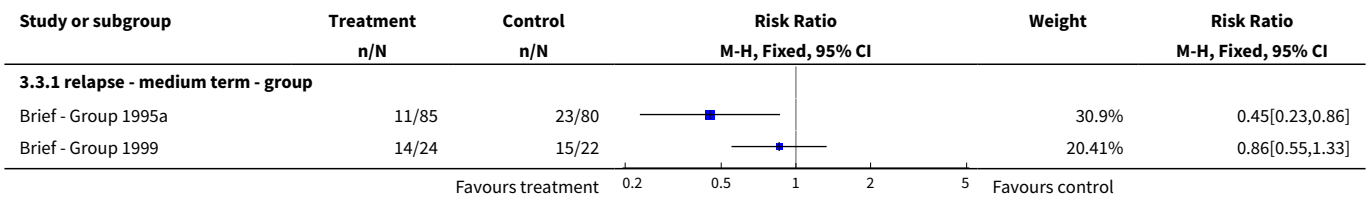
Study or subgroup	Treatment n/N	Control n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
3.2.1 medium term - received intervention but left the study early - group					
Standard - Group 1988	4/41	2/26		12.59%	1.27[0.25,6.44]
Unclear - Group 1996	7/73	17/73		87.41%	0.41[0.18,0.93]
Subtotal (95% CI)	**114**	**99**		**100%**	**0.52[0.25,1.06]**
Total events: 11 (Treatment), 19 (Control)					
Heterogeneity: Tau^2=0; Chi^2=1.47, df=1(P=0.23); I^2=31.94%					
Test for overall effect: Z=1.8(P=0.07)					

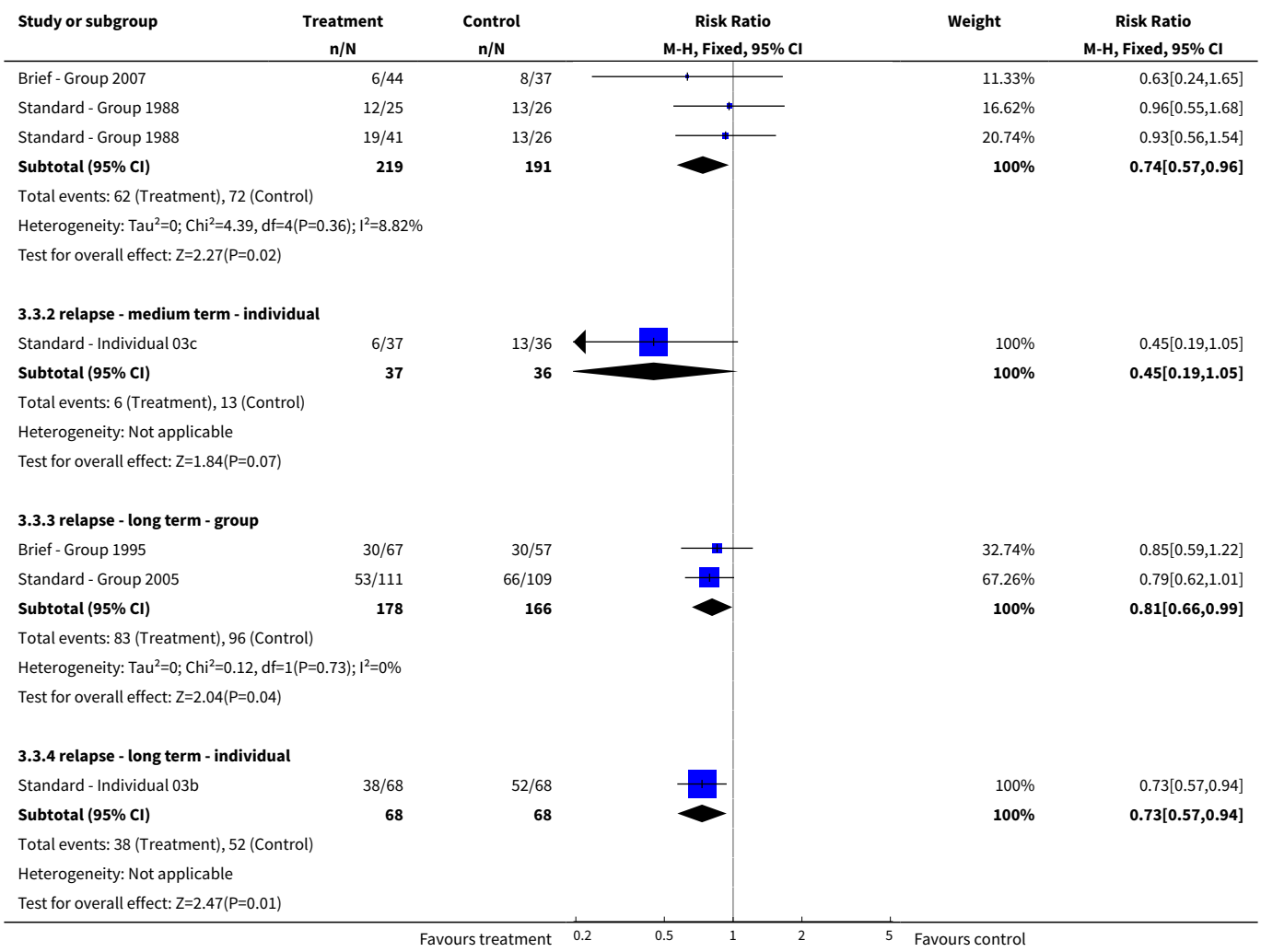


Favours treatment — Favours control



Analysis 3.3. Comparison 3 SUBGROUP ANALYSES 2. GROUP PSYCHOEDUCATION/INDIVIDUAL PSYCHOEDUCATION vs STANDARD CARE, Outcome 3 Relapse: Relapse for any reason.





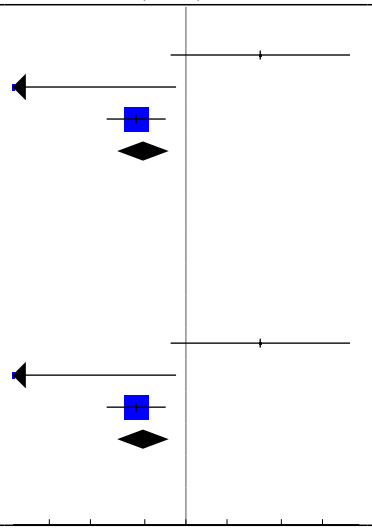
Comparison 4. SENSITIVITY ANALYSIS - Chinese studies vs non-Chinese studies

Outcome or subgroup title	No. of studies	No. of partici-pants	Statistical method	Effect size
1 Compliance: 1a. With medication - non-compliance	3		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
1.1 long term	3	282	Risk Ratio (M-H, Fixed, 95% CI)	0.48 [0.31, 0.75]
1.2 long term - Chinese studies	3	282	Risk Ratio (M-H, Fixed, 95% CI)	0.48 [0.31, 0.75]
2 Compliance: 2a. With follow-up - loss to follow-up for any reason	10		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
2.1 medium term - loss to follow-up for any reason	8	949	Risk Ratio (M-H, Fixed, 95% CI)	1.00 [0.79, 1.26]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
2.2 medium term - loss to follow-up for any reason - Chinese studies	8	949	Risk Ratio (M-H, Fixed, 95% CI)	1.00 [0.79, 1.26]
2.3 long term - loss to follow-up for any reason (by 2 years)	3	420	Risk Ratio (M-H, Fixed, 95% CI)	0.83 [0.62, 1.10]
2.4 long term - loss to follow-up for any reason (by 2 years) - Chinese studies	3	420	Risk Ratio (M-H, Fixed, 95% CI)	0.83 [0.62, 1.10]
3 Compliance: 2b. With follow-up - received intervention but left the study early	4		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
3.1 medium term	4	319	Risk Ratio (M-H, Fixed, 95% CI)	0.56 [0.29, 1.10]
3.2 medium term - Chinese studies	4	319	Risk Ratio (M-H, Fixed, 95% CI)	0.56 [0.29, 1.10]
4 Relapse: 1. Relapse for any reason	16		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
4.1 medium term	11	1214	Risk Ratio (M-H, Fixed, 95% CI)	0.70 [0.61, 0.81]
4.2 medium term - Chinese studies	11	1214	Risk Ratio (M-H, Fixed, 95% CI)	0.70 [0.61, 0.81]
4.3 long term	6	790	Risk Ratio (M-H, Fixed, 95% CI)	0.73 [0.62, 0.85]
4.4 long term - Chinese studies	6	790	Risk Ratio (M-H, Fixed, 95% CI)	0.73 [0.62, 0.85]

Analysis 4.1. Comparison 4 SENSITIVITY ANALYSIS - Chinese studies vs non-Chinese studies, Outcome 1 Compliance: 1a. With medication - non-compliance.

Study or subgroup	Treatment n/N	Control n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
4.1.1 long term					
Standard - Both 1996	7/41	2/41		4.12%	3.5[0.77,15.85]
Standard - Unclear 2005a	0/20	9/20		19.59%	0.05[0,0.85]
Unclear - Individual 2008	16/80	37/80		76.29%	0.43[0.26,0.71]
Subtotal (95% CI)	**141**	**141**		**100%**	**0.48[0.31,0.75]**
Total events: 23 (Treatment), 48 (Control)					
Heterogeneity: Tau^2=0; Chi^2=9.23, df=2(P=0.01); I^2=78.34%					
Test for overall effect: Z=3.27(P=0)					
4.1.2 long term - Chinese studies					
Standard - Both 1996	7/41	2/41		4.12%	3.5[0.77,15.85]
Standard - Unclear 2005a	0/20	9/20		19.59%	0.05[0,0.85]
Unclear - Individual 2008	16/80	37/80		76.29%	0.43[0.26,0.71]
Subtotal (95% CI)	**141**	**141**		**100%**	**0.48[0.31,0.75]**
Total events: 23 (Treatment), 48 (Control)					
Heterogeneity: Tau^2=0; Chi^2=9.23, df=2(P=0.01); I^2=78.34%					



Study or subgroup	Treatment n/N	Control n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
Test for overall effect: Z=3.27(P=0)					

Favours psychoeducation 0.1 0.2 0.5 1 2 5 10 Favours standard care

Analysis 4.2. Comparison 4 SENSITIVITY ANALYSIS - Chinese studies vs non-Chinese studies, Outcome 2 Compliance: 2a. With follow-up - loss to follow-up for any reason.

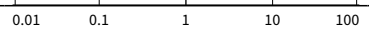
Study or subgroup	Treatment n/N	Control n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
4.2.1 medium term - loss to follow-up for any reason					
Standard - Individual 03c	2/37	1/36		0.97%	1.95[0.18,20.53]
Standard - Group 1988	2/25	2/26		1.87%	1.04[0.16,6.83]
Standard - Unclear 2006	5/58	4/58		3.81%	1.25[0.35,4.42]
Brief - Group 1999	6/24	9/22		8.95%	0.61[0.26,1.44]
Unclear - Group 1996	23/73	17/73		16.2%	1.35[0.79,2.31]
Standard - Both 2008	12/79	17/78		16.3%	0.7[0.36,1.36]
Brief - Group 1995	15/67	22/57		22.65%	0.58[0.33,1.01]
Standard - Unclear 1996	44/125	29/111		29.27%	1.35[0.91,2]
Subtotal (95% CI)	**488**	**461**		**100%**	**1[0.79,1.26]**
Total events: 109 (Treatment), 101 (Control)					
Heterogeneity: Tau^2=0; Chi^2=9.97, df=7(P=0.19); I^2=29.8%					
Test for overall effect: Z=0.01(P=0.99)					
4.2.2 medium term - loss to follow-up for any reason - Chinese studies					
Standard - Individual 03c	2/37	1/36		0.97%	1.95[0.18,20.53]
Standard - Group 1988	2/25	2/26		1.87%	1.04[0.16,6.83]
Standard - Unclear 2006	5/58	4/58		3.81%	1.25[0.35,4.42]
Brief - Group 1999	6/24	9/22		8.95%	0.61[0.26,1.44]
Unclear - Group 1996	23/73	17/73		16.2%	1.35[0.79,2.31]
Standard - Both 2008	12/79	17/78		16.3%	0.7[0.36,1.36]
Brief - Group 1995	15/67	22/57		22.65%	0.58[0.33,1.01]
Standard - Unclear 1996	44/125	29/111		29.27%	1.35[0.91,2]
Subtotal (95% CI)	**488**	**461**		**100%**	**1[0.79,1.26]**
Total events: 109 (Treatment), 101 (Control)					
Heterogeneity: Tau^2=0; Chi^2=9.97, df=7(P=0.19); I^2=29.8%					
Test for overall effect: Z=0.01(P=0.99)					
4.2.3 long term - loss to follow-up for any reason (by 2 years)					
Unclear - Individual 2008	8/80	11/80		16.7%	0.73[0.31,1.71]
Brief - Group 1995	19/67	23/57		37.74%	0.7[0.43,1.15]
Standard - Individual 03b	29/68	30/68		45.55%	0.97[0.66,1.42]
Subtotal (95% CI)	**215**	**205**		**100%**	**0.83[0.62,1.1]**
Total events: 56 (Treatment), 64 (Control)					
Heterogeneity: Tau^2=0; Chi^2=1.14, df=2(P=0.57); I^2=0%					
Test for overall effect: Z=1.29(P=0.2)					
4.2.4 long term - loss to follow-up for any reason (by 2 years) - Chinese studies					
Unclear - Individual 2008	8/80	11/80		16.7%	0.73[0.31,1.71]
Brief - Group 1995	19/67	23/57		37.74%	0.7[0.43,1.15]

Favours treatment 0.001 0.1 1 10 1000 Favours control

Study or subgroup	Treatment n/N	Control n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
Standard - Individual 03b	29/68	30/68		45.55%	0.97[0.66,1.42]
Subtotal (95% CI)	**215**	**205**		**100%**	**0.83[0.62,1.1]**
Total events: 56 (Treatment), 64 (Control)					
Heterogeneity: Tau^2=0; Chi^2=1.14, df=2(P=0.57); I^2=0%					
Test for overall effect: Z=1.29(P=0.2)					

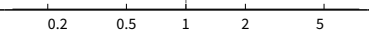
Analysis 4.3. Comparison 4 SENSITIVITY ANALYSIS - Chinese studies vs non-Chinese studies, Outcome 3 Compliance: 2b. With follow-up - received intervention but left the study early.

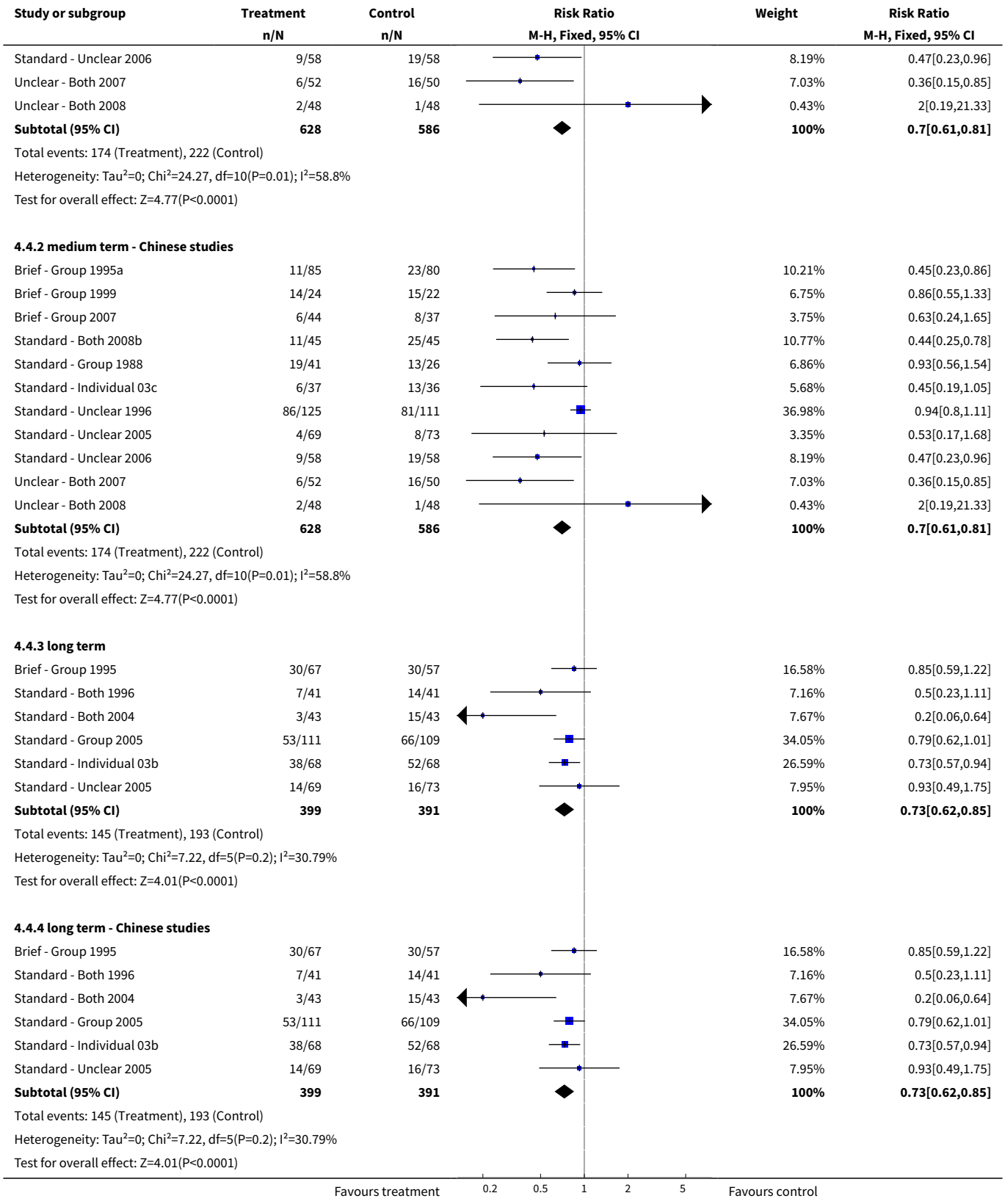
Study or subgroup	Experimental n/N	Control n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
4.3.1 medium term					
Standard - Both 2004	0/43	1/43		6.99%	0.33[0.01,7.96]
Standard - Group 1988	4/41	2/26		11.41%	1.27[0.25,6.44]
Standard - Individual 93	1/10	0/10		2.33%	3[0.14,65.9]
Unclear - Group 1996	7/73	17/73		79.26%	0.41[0.18,0.93]
Subtotal (95% CI)	**167**	**152**		**100%**	**0.56[0.29,1.1]**
Total events: 12 (Experimental), 20 (Control)					
Heterogeneity: Tau^2=0; Chi^2=2.75, df=3(P=0.43); I^2=0%					
Test for overall effect: Z=1.69(P=0.09)					
4.3.2 medium term - Chinese studies					
Standard - Both 2004	0/43	1/43		6.99%	0.33[0.01,7.96]
Standard - Group 1988	4/41	2/26		11.41%	1.27[0.25,6.44]
Standard - Individual 93	1/10	0/10		2.33%	3[0.14,65.9]
Unclear - Group 1996	7/73	17/73		79.26%	0.41[0.18,0.93]
Subtotal (95% CI)	**167**	**152**		**100%**	**0.56[0.29,1.1]**
Total events: 12 (Experimental), 20 (Control)					
Heterogeneity: Tau^2=0; Chi^2=2.75, df=3(P=0.43); I^2=0%					
Test for overall effect: Z=1.69(P=0.09)					



Analysis 4.4. Comparison 4 SENSITIVITY ANALYSIS - Chinese studies vs non-Chinese studies, Outcome 4 Relapse: 1. Relapse for any reason.

Study or subgroup	Treatment n/N	Control n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
4.4.1 medium term					
Brief - Group 1995a	11/85	23/80		10.21%	0.45[0.23,0.86]
Brief - Group 1999	14/24	15/22		6.75%	0.86[0.55,1.33]
Brief - Group 2007	6/44	8/37		3.75%	0.63[0.24,1.65]
Standard - Both 2008b	11/45	25/45		10.77%	0.44[0.25,0.78]
Standard - Group 1988	19/41	13/26		6.86%	0.93[0.56,1.54]
Standard - Individual 03c	6/37	13/36		5.68%	0.45[0.19,1.05]
Standard - Unclear 1996	86/125	81/111		36.98%	0.94[0.8,1.11]
Standard - Unclear 2005	4/69	8/73		3.35%	0.53[0.17,1.68]





ADDITIONAL TABLES

Table 1. Chinese studies vs full analysis (sensitivity analyses)

Primary outcome	China Experimental	China Control	China RR (CI)	Full analysis Experimental	Full analysis Control	Full analysis RR (CI)
Compliance	19/174	22/172	0.85 (0.48-1.51)	109/488	101/461	1.00 (0.79-1.26)
Relapse	44/353	90/347	0.48 (0.35-0.66)	174/628	22/586	0.7 (0.61-0.81)

Table 2. English studies vs full analysis (sensitivity analyses)

Primary outcome	English Experimental	English Control	English RR (CI)	Full analysis Experimental	Full analysis Control	Full analysis RR (CI)
Compliance	90/314	79/289	1.04 (0.8-1.34)	109/488	101/461	1.00 (0.79-1.26)
Relapse	130/275	132/239	0.85 (0.73-0.99)	174/628	22/586	0.7 (0.61-0.81)

Table 3. Suggested design of study

Methods	Allocation: randomised, fully explicit description of methods of randomisation and allocation concealment. Blinding: single, tested. Setting: community rather than hospital. Duration: 12 weeks treatment, and then follow-up to at least 52 weeks.
Participants	Diagnosis: schizophrenia (ICD). N = 300.* Age: adults. Sex: both.
Interventions	1. Psychoeducation. N = 150. 2. Standard care. N = 150.
Outcomes	General: time to all-cause treatment failure marked by its discontinuation, relapse, general impression of clinician (CGI), career/other, compliance with treatment, healthy days. Mental state: BPRS and PANSS. Global state: CGI (Clinical Global Impression). Quality of life. QOL (Quality of Life Questionnaire). Family burden: FBQ (Family Burden Questionnaire). Social functioning: return to everyday living for 80% of time.* Adverse events: any adverse event recorded. Economic outcomes.
Notes	* Powered to be able to identify a difference of ~ 20% between groups for primary outcome with adequate degree of certainty.

APPENDICES

Appendix 1. Methods section of original review

Criteria for considering studies for this review
Types of studies
All relevant randomised controlled trials. Quasi-randomised trials, using, for example, alternation as the method of randomisation, were excluded.

Types of participants
People suffering from severe non-affective mental disorders such as schizophrenia and schizophreniform, schizoaffective or schizotypal disorders, and including those with multiple diagnoses.

Types of interventions
1. All didactic interventions of psychoeducation or patient teaching involving individuals or groups were included. Psychoeducational interventions were defined as any group or individual programme involving interaction between information provider and patient. These programmes address the illness from a multidimensional viewpoint, including familial, social, biological and pharmacological perspectives. Patients are provided with support, information and management strategies. Programmes of 10 sessions or less were considered as 'brief', and 11 or more as 'standard' for the purposes of this review. Interventions including elements of behavioural training, such as social skills or life skills training, as well as education performed by patient peers, were excluded from this review. Staff education studies were also excluded.

2. Standard care was defined as the normal level of psychiatric care provided in the area where the trial was carried out.

Types of outcome measures
Primary outcomes
1. Patient compliance, defined as:
1.1 compliance with medication;
1.2 compliance with follow-up.

2. Relapse.

Secondary outcomes
1. Level of knowledge:
1.1 improvement of understanding of his/her illness and need for treatment;
1.2 level of knowledge about expected and undesired effects of medication.

2. Behavioural outcomes:
2.1 level of psychiatric symptoms;
2.2 symptom control skills;
2.3 problem-solving skills;
2.4 social skills.

3. Family members' level of knowledge:
3.1 family members' understanding of medication and psychiatric illness.

4. Service utilisation:
4.1 use of outpatient treatment;
4.2 length of hospitalisation.

5. Health economic outcomes:
5.1 treatment costs.

Data collection and analysis
1. Selection of trials
The search for trials was performed independently by two reviewers. Potentially relevant abstracts were identified and full papers were assessed for inclusion and methodological quality. Any disagreement was resolved by discussion.

2. Quality assessment
Trials were allocated to three quality categories by each reviewer, as described in the Cochrane Collaboration Reviewers' Handbook (Clarke 2000). When disputes arose as to which category a trial was allocated, again, resolution was attempted by discussion. When this was not

possible and further information was necessary to clarify into which category to allocate the trial, data was not entered and the trial was allocated to the list of those awaiting assessment. Only trials in Category A or B were included in the review.

3. Data management
3.1 Data extraction
This was performed independently by at least two reviewers and the authors of trials were contacted to provide missing data where possible.

3.2 Intention-to-treat analysis
Data were excluded from studies where more than 50% of participants in any group were lost to follow-up. A sensitivity analysis was performed to assess the impact of this decision. In studies with less than 50% dropout rate, withdrawals were considered as negative outcome.

4. Data analysis
4.1 Binary data
For binary outcomes an estimation of the relative risk (RR) and its 95% confidence interval (CI) was calculated. The weighted number needed to treat statistic (NNT) was also calculated. The chi-squared test for heterogeneity was used to establish heterogeneity, as well as visual inspection of graphs. When heterogeneity ($P < 0.1$) occurred, the reviewers tried to establish if there were reasons for true heterogeneity. If studies were found to be comparable in spite of heterogeneous outcomes, a random effects model was used in statistical calculations.

4.2 Continuous data
4.2.1 Skewed data: continuous data on clinical and social outcomes are often not normally distributed. To avoid the pitfall of applying parametric tests to non-parametric data, the following standards were applied to all data before inclusion: i. standard deviations and means were reported in the paper or were obtainable from the authors; ii. when a scale started from a finite number (such as 0), the standard deviation, when multiplied by 2, was less than the mean (as otherwise the mean was unlikely to be an appropriate measure of the centre of the distribution (Altman 1996)). Endpoint scores on scales often have a finite start and end point and this rule can be applied to them.
4.2.2 Summary statistic: for continuous outcomes a weighted mean difference (WMD) or a standardised mean difference (SMD) between groups was estimated. Again, if heterogeneity was found a random effects model was used. A post-hoc decision was made to pool the GAF scale (APA 1994) and its virtually similar earlier version, the GAS scale (Endicott 1976), using WMD statistics.
4.2.3 Valid scales: continuous data from rating scales were included only if the measuring instrument had been described in a peer-reviewed journal and the instrument was either a self report or completed by an independent rater or relative (not the therapist).
4.2.4 Endpoint versus change data: where possible, endpoint data were presented and if both endpoint and change data were available for the same outcomes, then only the former were reported in this review.

5. Addressing publication bias
Data from all identified and selected trials were entered into a funnel graph (trial effect against trial size) in an attempt to investigate the likelihood of overt publication bias (Egger 1997).

6. Sensitivity analyses
A sensitivity analysis was performed to assess the impact of the reviewers' decision to exclude trials with more than 50% loss of participants.

Appendix 2. 2001 Search

2001 update (Pekkala 2002)
To update this review the searches were repeated in January 2001 and in May 2001. The search in January 2001 yielded 213 citations and 235 in May 2001, of which both 200 were quickly rejected as not relevant for the following mutually exclusive reasons: duplicate references, not a randomised controlled trial, participants were not people with schizophrenia, the intervention was not psychoeducation defined as interaction between information provider and patient or the control intervention was not standard care defined as the normal level of psychiatric care provided in the area where the trial was carried out. No new trials were identified for the comparison of psychoeducation vs. standard care. In this process four ongoing studies were recognised by the reviewers to be relevant and were included in the section of ongoing studies. Six papers awaiting assessment were translated and rejected as not relevant, one study (Cormier 1995) was moved to the excluded studies section due to lack of usable data. Secondary reports of included studies were found and added to the list of references.

The total number of studies that matched with the reviewers' inclusion criteria closely enough to be mentioned in either the included studies or excluded studies section was 28. One paper is awaiting assessment until the additional information is obtained. The review cites 18 studies dating from 1983 to 1998 in the excluded studies section and 10 studies dating from 1988 to 1999 in the included studies section. The results of the review have not changed.

Appendix 3. 1999 Search

Original 1999 search (Pekkala 2002)

The original searches in 1999 yielded 583 electronic records, of which 495 were rejected during the first inspection. The other 88 papers were ordered, inspected and 58 were quickly rejected as not relevant. The remaining 30 papers were considered. During this process a further four studies were recognised by the reviewers to be relevant.

Appendix 4. 2010 Search

Update 2010 - Cochrane Schizophrenia Group Trials Register (February 2010)
We searched the register using the phrase:

[*Psychoeducat* in interventions of STUDY]

This register is compiled by systematic searches of major databases, handsearches and conference proceedings (see Group Module).

WHAT'S NEW

Date	Event	Description
28 November 2012	Amended	Update search of Cochrane Schizophrenia Group's Trial Register (see Search methods for identification of studies), 27 studies added to awaiting classification.

HISTORY

Protocol first published: Issue 2, 1999
Review first published: Issue 4, 2000

Date	Event	Description
28 April 2011	New citation required but conclusions have not changed	Results from 2010 search added weight to previous results but did not substantially change previous conclusions.
3 May 2010	New search has been performed	Update search results incorporated into review. All included data were double checked and analysis performed.
30 April 2008	New citation required but conclusions have not changed	Substantive amendment
2 July 2002	New citation required but conclusions have not changed	First update
25 November 1999	New citation required and conclusions have changed	First version of this review

CONTRIBUTIONS OF AUTHORS

1. Original review
Eila Pekkala - initiation of the review, protocol production, searching, data extraction, analysis, data interpretation and writing the final report.
Lars Bertil Merinder - protocol production, analysis, data interpretation and writing the final report of the original review.

2. 2010 update
Jun Xia - selected studies, extracted data and wrote up report during the 2010 update.
Madhvi R Belgamwa - extracted and input English trial data during 2010 update.
Lars Bertil Merinder - extracted data of English trials and handled all queries relating to trials from the original review.

DECLARATIONS OF INTEREST

None.

SOURCES OF SUPPORT

Internal sources

- Department of Psychiatry, Porvoo Hospital, Finland.
- Department of Psychiatric Demography, Institute of Basic Psychiatric Research, University Hospital of Aarhus, Denmark.

External sources

- Finnish Office for Health Technology Assessment (FinOHTA), Finland.

DIFFERENCES BETWEEN PROTOCOL AND REVIEW

1. Wording of protocol
We have substantively reworded the protocol of this review. We think that this rewording represents an improvement in clarity but, also, that it did not substantively change the procedures by which we undertook the review. For the record the methods section of the previous version of this review is reproduced in Appendix 1.

2. Additional outcomes
Many studies found in the 2010 update search reported data on outcomes such as social function, mental state, adverse event etc, which were not listed in the original protocol. But we feel that these outcome data are of significant clinical value and important to this review. Therefore, we amended the original protocol and added/supplemented the following secondary outcomes: social function, global function, global state, mental state, expressed emotion, quality of life, satisfaction with care and adverse events.

NOTES

This review has undergone anonymous external peer review by two experts in the field.

INDEX TERMS

Medical Subject Headings (MeSH)

Awareness; Family; Patient Compliance; Patient Education as Topic [*methods]; Psychotic Disorders [rehabilitation]; Randomized Controlled Trials as Topic; Schizophrenia [*rehabilitation]; Schizophrenic Psychology

MeSH check words

Female; Humans; Male