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 to the standard levels of knowledge provision.

Search strategy
Electronic searches of CINAHL (1982-1999), The Cochrane Library CENTRAL (Issue 1, 1999), The Cochrane Schizophrenia Group's Register (May 2001), EMBASE (1980-1999), MEDLINE (1966-1999), PsycLit (1974-1999), and Sociofile (1974-1999) were undertaken. These were supplemented by cross-reference searching and personal contact with authors of all included studies.

Selection criteria
All relevant randomised controlled trials focusing on psychoeducation for schizophrenia and/or related serious mental illnesses involving individuals or groups. Quasi-randomised trials were excluded.

Data collection and analysis
Data were extracted independently from included papers by at least two reviewers. Authors of trials were contacted for additional and missing data. Relative risks (RR) and 95% confidence intervals (CI) of homogeneous dichotomous data were calculated. A random effects model was used for heterogeneous dichotomous data. Where possible the numbers needed to treat (NNT) were also calculated. Weighted or standardised means were calculated for continuous data.

Main results
Ten studies are included in this review. All studies of group education included family members. Compliance with medication was significantly improved in a single study using brief group intervention (at one year) but other studies produced equivocal or skewed
data. Any kind of psychoeducational intervention significantly decreased relapse or readmission rates at nine to 18 months follow-up compared with standard care (RR 0.8 CI 0.7-0.9 NNT 9 CI 6-22).

Several of the secondary outcomes (knowledge gain, mental state, global level of functioning, expressed emotion in family members) were measured using scales that are difficult to interpret. Generally, however, findings were consistent with the possibility that psychoeducation has a positive effect on a persons’ well being. No impact was found on insight, medication related attitudes or on overall satisfaction with services of patients or relatives but these findings rested on very few studies. Health economic outcome was only measured in one study and data were skewed. It was not possible to analyse whether different duration or formats of psychoeducation influenced effectiveness.

Authors’ conclusions

Evidence from trials suggests that psychoeducational approaches are useful as a part of the treatment programme for people with schizophrenia and related illness. The fact that the interventions are brief and inexpensive should make them attractive to managers and policy makers. More well-designed, conducted and reported randomised studies investigating the efficacy of psychoeducation are needed.

PLAIN LANGUAGE SUMMARY

Psychoeducation added to standard treatment for schizophrenia

The purpose of psychoeducation (or patient education/teaching) 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. It may be estimated that around twelve relapses can be avoided, or at least postponed, for around a year if 100 patients receive psychoeducation. 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 persons’ well being. 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.
BACKGROUND

According to the Patient’s Bill of Rights adopted by the American Hospital Association (AHA 1975), patients have a right to accurate and complete knowledge regarding their illness and treatment. Patient education is an issue that has been extensively addressed in both research and literature. Teaching patients and families with a view to improving treatment compliance is a major goal in psychiatric nursing (Antai-Otong 1989). 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).

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. 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.

The purpose of patient education is to enable the patient to engage in behaviour change. The goal 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. 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).

OBJECTIVES

The primary objective was to assess the efficacy of psychoeducational interventions as a 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. 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

Primary outcomes were effects of psychoeducation on:

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.

Search methods for identification of studies

Electronic searches
1. CINAHL (1982 to 1999) was searched using the Cochrane Schizophrenia Group's terms for both randomised controlled trials and schizophrenia combined with the phrase:
   [and (explode psychoeducation (SH) or psychoeducation or (patient and (education or teaching or instruction or information or knowledge or explode knowledge (SH))) or (educational and (program* or intervention*))]
2. The Cochrane Library CENTRAL (Issue 1, 1999) was searched using the Cochrane Schizophrenia Group's terms for schizophrenia combined with the phrase:
   [and (psychoeducation or (patient and (education or teaching or instruction or information or knowledge)) or (educational and (program* or intervention*))]
3. The Cochrane Schizophrenia Group's Register (January and May 2001) was searched using the phrase:
   psychoeducation or ((patient or psychoeducat*) and (education or teaching or instruction or information or knowledge)) or ((educational or psychoeduca*) and (program* or intervention*)) or (family and intervention*)
4. EMBASE (1980 to June 1999) was searched using the Cochrane Schizophrenia Group's terms for randomised controlled trials and for schizophrenia combined with the phrase:
   [and (psychoeducation or (patient and (education or teaching or instruction or information or knowledge)) or (educational and (program* or intervention*))]
5. MEDLINE (January 1966 to January 1999) was searched using the Cochrane Schizophrenia Group's terms for randomised controlled trials and for schizophrenia combined with the phrase:
   [and (explode patient education(MeSH) or (patient and (education or teaching or instruction or information or knowledge)) or (educational and (program* or intervention*))]
6. PsycLIT (January 1974 to January 1999) was searched using the Cochrane Schizophrenia Group's terms for randomised controlled trials and for schizophrenia combined with the phrase:
   [and (psychoeducation term or (patient and (education or teaching or instruction or information or knowledge)) or (educational and (program* or intervention*))]
7. SOCIOFILE (January 1974 to January 1999) was searched using the Cochrane Schizophrenia Group's terms for randomised controlled trials and for schizophrenia combined with the phrase:
   [and (psychoeducation or (patient and (education or teaching or instruction or information or knowledge)) or (educational and (program* or intervention*))]

All citations identified in this way were inspected for additional terms, and if found these were added to the above searches and the process repeated.

Searching other resources
1. Reference searching
   The references of all identified studies were inspected to identify for more studies.

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.

**RESULTS**

**Description of studies**

See: Characteristics of included studies; Characteristics of excluded studies; Characteristics of ongoing studies.

1. Excluded studies
Eighteen randomised studies were excluded. Reasons for the exclusion of studies were in some cases that samples were diagnostically mixed and that no sub-group analysis based on diagnosis could be performed (Azrin 1998, Chaplin 1998, Kelly 1990) or that the diagnoses of participants were unclear (Youssef 1987). If the studies did not compare psychoeducation or patient teaching with standard care, but instead evaluated two educational interventions (Kleinman 1993); individual versus group intervention (McGill 1983), structured versus unstructured education (Kuipers 1994) or information leaflet versus usual information (Angunawela 1998) then these studies were excluded. Interventions which consisted mainly of skills training, where psychoeducation only constituted a small part of the intervention, were also excluded (Eckman 1992, Kopelowicz 1998). Further, in some studies the focus of the educational intervention was so predominantly oriented towards the family of the patient that no patient-specific education seemed to be included (Hogarty 1986, Mak 1997, Xiong 1994, Zhang 1994). Four studies were excluded due to lack of usable outcome data (Boczkowski 1985, Borell 1995, Cormier 1995, Goldman 1988).

2. Included studies
See Characteristics of included studies for descriptions of each study.

2.1 Methods
All included studies were randomised controlled trials. The means of randomisation was not usually described. Blinding was not reported in four studies. Study duration varied from one month to two years.

2.2 Participants
The total number of participants was 1125, ranging from 20 (Goulet 1993) to 236 (Bäuml 1996) in individual studies. Their ages ranged from 15 to 58 years. Six people were under 15 years of age. In five studies the mean age was between 26 and 36 years (Bäuml 1996, Haas 1988, Hornung 1995, Merinder 1999, Tarrier 1988). Macpherson 1996 included people in an older age bracket (mean 45.2 years). One study (Razali 1995) reported the age distribution of participants as being between 20-30 years. One study did not report the age distribution. All studies reported gender. The studies included 598 male and 527 female participants. All trials, except two, involved outpatients. In one study the education (counselling) started at discharge. Most trials involved stabilised patients and one explicitly stipulated stabilisation as an inclusion criterion (Hornung 1995). The mean duration of illness, where reported, ranged between studies from 6-14 years (Tarrier 1988) or 9-14 years (Atkinson 1996) to at least 12 years in institutions (Macpherson 1996). The compliance history of participants ranged from poor compliance in all participants (Razali 1995) to “good depot clinic attenders” (Atkinson 1996).

2.3 Interventions
Interventions were divided into individual and group interventions. All studies of group education included family members. Only Macpherson 1996 was classified as using a brief individual intervention (1-10 sessions). No studies could be included in the individual standard (11 or more sessions) group. There were six studies using brief group interventions and four studies using standard length group interventions. Tarrier 1988 used both a brief and a standard group intervention. The psychoeducational interventions had many different names. Some were called informational, psychoeducational medication management or counselling sessions, others symbolic behavioural (Tarrier 1988), family in-
intervention, or programme for relapse prevention. Standard care was routine or standard treatment or treatment as usual, standard psychopharmacological treatment, psychosocial rehabilitation efforts, or supportive psychotherapy. Some studies did not specify the exact content of treatment given to the control group, or used a waiting list as control.

2.4 Outcomes

In the studies reviewed, outcomes were presented as dichotomous or continuous data. Outcomes analysed using dichotomous data were presented as such in this meta-analysis.

The following scales were used and provided continuous data for the meta-analysis:

2.4.1 Medication compliance

The medication compliance score (Bäuml 1996) is estimated on a scale with the range 1-4, where 1 is very good, 2 is good, 3 is fair and 4 is poor. In another study (Macpherson 1996) the compliance subscale of the Schedule for Assessment of Insight, SAI (David 1990) was used (see below). Range of SAI is 0-4, where lower score indicates poorer insight.

2.4.2 Mental state

Brief Psychiatric Rating Scale - BPRS (Overall 1962)

BPRS is an 18-item scale used for rating the severity of a range of psychiatric symptoms including schizophrenic and depressive symptoms. Scores range from 18 to 126, with high scores indicating severe symptoms. BPRS has two subscales, one 6-item scale for depression and one 12-item scale for schizophrenia. They are rated with seven scale steps for each item. BPRS has been widely used, reliability tested and validated in different versions and translations. In one study (Merinder 1999) the BPRS was scored according to the instructions of Bech 1986. Here BPRS is scored on a six-step scale for each of the 18 items rated 0-5 and yielding a maximum score of 90.

2.4.3 Expressed emotion - EE

EE-scale of Camberwell Family Interview - CFI (Vaughn 1976)

The CFI includes five scales: critical comments (a frequency count), hostility (a 4-point scale, 0-3), emotional over involvement (a 6-point scale, 0-5), warmth (a 6-point scale, 0-5) and positive remarks (a frequency count). A relative is classified as high-EE if he or she rates as 6 or more on ‘critical comments’ or 1-3 on ‘hostility’, or 3-5 on ‘over involvement’.

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 (Feinstein 1994 personal communication).

2.4.4 Insight

Insight Scale - IS (Birchwood 1994)

IS is an eight-item Likert questionnaire, each item with three response categories (disagree, unsure, agree) assessing insight on psychosis and scoring three factors: awareness of illness, need for treatment and attribution of symptoms. The reliability and validity of the instrument has been evaluated in four samples and found to be satisfactory.

Krankheitskonzeptskaala - 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.

The Schedule for Assessment of Insight - SAI (David 1990)

The SAI has three components: treatment compliance, awareness of illness and ability to relabel psychotic symptoms correctly. Range is 0-14. Low score indicates poor insight.

2.4.5 Knowledge

Knowledge Questionnaire - KQ (KQ=WFB=Wissensfragebogen) (Pitschel-Walz 1997)

WFB has 20 multiple-choice items with maximum score of 70. All the right answers get one point, all the wrong answers are subtracted from the score of the right answers so that the minimum score is -43.

Schizophrenia Knowledge Questionnaire - SKQ (Wallace 1985)

Further information on this scale is currently sought.

Understanding of medication questionnaire - UMQ (Macpherson 1996)

UMQ measures knowledge of antipsychotic treatment. Fourteen stem questions generate eight subscale 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.

2.4.6 Social functioning

Global Assessment of Function - GAF (APA 1994)

The scale is a 90-point rating scale that assesses psychological, social and occupational functioning. GAF is included in DSM-III-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.

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.

If a person scores more than two standard deviations in the direc-
tion of better functioning beyond the mean, this is interpreted as clinically significant (Jacobson 1988).

Quality of life - scale - 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.

Social Adjustment Scale-II - SAS-II (Schooley 1979)
SAS is an interview-based operationalised instrument in two versions; patient version and family version. SAS has 89 items covering widely social, interpersonal, and household aspects.

Social Networks Schedule modified - 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.

Social Functioning Schedule - SFS (Remington 1979)
Lower scores indicate improved behaviour/function.

2.4.7 Satisfaction with mental health services
Verona Service Satisfaction Scale, relatives’ version, 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).

3. Studies awaiting assessment
Seven studies in the original version of this review were awaiting assessment, mainly due to delays in translation. In this updated version, six papers were translated and rejected as being not relevant. One study (Cormier 1995) was moved to the excluded studies section due to lack of usable data. One study (Wilson 2000) is awaiting assessment until the additional information is obtained.

4. Ongoing studies
Four new trials (Barnes 2001; Bentall 2001; Day 2000; Gumley 2000) have been included in this section. See characteristics of ongoing studies for descriptions of each study.

Risk of bias in included studies

1. Randomisation
All included studies were stated to be randomised but only four provided details of the randomisation (Bäuml 1996, Herz 1996, Hornung 1995, Merinder 1999 - randomisation made by independent institution). One study used block randomisation (Bäuml 1996). Stratification was used in three studies (Haas 1988, Merinder 1999, Tarrier 1988). Overall, methods of randomisation were poorly described.

2. Blinding of outcome measurement
Few studies adequately described the attempts to make evaluation of outcome measures blind. Four trials did not mention blinding at all. One reported that all ratings were carried out without blinding procedures. Another four studies reported that some outcome measures were rated or assessed blindly and one stated that all assessments were undertaken by blinded research interviewers.

3. Non-entry and treatment dropouts
Two studies reported usable data concerning those that did not receive allocated treatment despite randomisation (Arkinson 1996, Tarrier 1988). A partial description of withdrawals was provided in two studies (Haas 1988, Hornung 1995); another did not include a description of treatment withdrawals (Razali 1995).

4. Outcome reporting
In some studies data on outcome were unusable due to inadequate reporting or due to the use of unvalidated scales or questionnaires.

5. Overall quality
All included studies were assessed to be in Category B.

Effects of interventions

1. The search
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.

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. The remaining 30 papers were considered. During 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 ex-
cluded studies section and 10 studies dating from 1988 to 1999 in the included studies section. The results of the review have not changed.

2. Primary outcomes
2.1 Compliance
2.1.1 Standard length interventions: dichotomous data on treatment and medication compliance was presented in one study using standard length group intervention (Herz 1996). These data tended to favour the control group but showed no statistically significant differences (RR 3.5 CI 0.8-15.9).
2.1.2 Brief interventions: in the group of studies using brief group interventions, Bäuml 1996 demonstrated a statistically significant advantage on a continuous measure (WMD -0.4 CI -0.6 to -0.2) for compliance with medication of the intervention group compared with the control group at one year follow-up. Another study, using brief individual intervention (Macpherson 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 subscale of SAI.

2.2 Relapse
2.2.1 Standard length interventions: in the standard group psychoeducation, pooling of the results from two studies yielded a significant reduction of relapse without readmission after 9-18 months follow-up (RR 0.6 CI 0.34-0.99, NNT 6 CI 3-83).
2.2.2 Brief interventions: there was a lack of extractable data on relapse or readmission/readmission in studies using brief individual intervention. Concerning the brief group interventions, pooled data show a significant reduction of relapse or readmission in the intervention group (RR 0.85 CI 0.74-0.98, NNT 12 CI 6-83).

Due to the scarcity of studies in the different intervention groups, an analysis of efficacy of all kinds of psychoeducational interventions was made. The analysis of relapse with and without readmission included six studies and demonstrated at nine to 18 months follow-up that psychoeducation decreased relapse rates significantly (RR 0.8 CI 0.7-0.9 NNT 9 CI 6-22).

2.3 Death
Data on deaths were available from only two studies (Hornung 1995, Merinder 1999). No difference between intervention groups was detected in the pooled results (RR 0.5 CI 0.07-3.95).

3. Secondary outcomes
3.1 Knowledge
Very few studies reported extractable data relating to knowledge of condition.
3.1.1 Standard length intervention: in the standard group intervention group one study (Goulet 1993) presented usable data on knowledge gain, again in favour of the psychoeducation group (WMD -16.3 CI -22.7 to -9.8).
3.1.2 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. In the brief group intervention group Bäuml 1996 demonstrated significant changes in favour of the intervention group at post intervention (WMD -12.0 CI -17.7 to -6.3) as well as at one year follow-up (WMD -8.0 CI -14.6 to -1.4).

3.2 Behavioural outcomes - brief interventions only
Global psychosocial functioning was measured by three studies using brief group intervention with GAF/GAS scales at follow-up of one year and this outcome demonstrated a significant change in favour of the intervention (WMD -5.2 CI -8.8 to -1.7). At two years follow-up, but not at five years, Hornung 1995 showed a significant increase in global functioning (WMD -0.7 CI -13.4 to -0.02). Haas 1988 presented dichotomous data on clinically significant improvement of psychosocial functioning; at discharge an improvement in the psychoeducation group was found but not to a statistically significant extent (RR 0.8 CI 0.5-1.4). At six months and at 18 months follow-up there was no difference between the groups.

3.3 Mental state
3.3.1 Standard length intervention: Goulet 1993 found no significant effect on the symptomatology post intervention.
3.3.2 Brief interventions: Bäuml 1996 demonstrated significant differences in favour of the intervention group for mental state outcomes (psychopathology or symptoms), at one year follow-up (WMD -6.0 CI -9.1 to -2.9) but Merinder 1999, using brief group interventions and a continuous measure (BPRS), did not demonstrate significant changes in favour of either group, post intervention or at one year.

3.4 Social functioning - standard length interventions only
A small study by Goulet 1993 did not show evidence of any difference in level of social functioning as measured by the SAS-II scale. Most scale data on social functioning were skewed.

3.5 Leaving the studies early
Eight studies provided data on attrition. The overall pooled data did not indicate a difference between psychoeducation and standard care (RR 1.1, CI 0.9-1.4). Data from two studies on drop-outs before entering treatment indicate that psychoeducation may be less acceptable to some patients, initially, than standard care (n=213, RR 12.3 CI 2.6-58.3).

3.6 Family members’ understanding of, and attitudes to, psychiatric illness and to the services - brief interventions only
One study (Bäuml 1996) using brief group intervention demonstrated a statistically significant reduction in expressed emotion status of relatives in the experimental group as compared to the control group (RR 0.87, CI 0.78 - 0.97, NNT 8 CI 5-33). Two studies using brief group intervention (Bäuml 1996, Merinder 1999) measured the impact of education on attitudes to, and understanding of, psychiatric illness. Pooled results of these two studies showed significant changes in expressed emotion status of relatives in favour of the intervention (RR 0.8 CI 0.8-0.9, NNT 7
CI 5-20) at post intervention to four and half months. Merinder 1999 measured this outcome also at one year but no significant changes were found between the intervention and control groups. Merinder 1999 measured the impact of the educational programme on different dimensions of relatives' attitudes to/satisfaction with psychiatric services. No significant differences in improvement were recorded in total satisfaction scores. Illness-related attitudes post intervention, were measured by Hornung 1995 but no significant differences were recorded.

3.7 Insight - brief interventions only
One study using brief group intervention (Merinder 1999) measured efficacy of the educational programme in improving insight of the ill participant. There was also skewed data from the Macpherson 1996 study on brief individual psychoeducation. The studies did not demonstrate efficacy concerning this outcome measure.

3.8 Service utilisation - standard length interventions only
One study (Herz 1996) in the standard intervention group measured impact of the educational programme on length of hospitalisation. Skewed data indicated that the absolute number of days of admission during the follow-up period of 18 months, including acute hospital days, was higher in the intervention group, but not significantly so. Herz 1996 also presented data concerning readmission by 18 months showing a near significant advantage for the experimental group (RR 0.6, CI 0.3 - 1.1).

3.9 Health economic outcomes - standard length interventions only
Health economic outcomes were measured in one study in the standard intervention group (Herz 1996). Combined costs for hospital and ambulatory services were not significantly different but the data were skewed.

4. Sensitivity analyses
Sensitivity analyses were impossible as so few data were available.

DISCUSSION

1. General issues

1.1 Paucity of data
A general problem in assessing the efficacy of psychoeducational interventions for people with schizophrenia is the scarcity of data. In this meta-analysis only ten small studies could be included. Poor reporting of data compounds the problem. Four studies were excluded primarily due to lack of extractable data.

1.2 Heterogeneity and fidelity
Both interventions and outcomes were heterogeneous. Interventions were insufficiently described in study reports which casts doubt on their fidelity. Even in the included studies, psychoeducational programmes were given many names (counselling, programme for relapse prevention, family education, psychoeducational medication training, etc) but all these approaches did include similar contents. Nevertheless, it is quite possible that other trials have been missed because of the many names given to psychoeducation packages.

The scarcity of studies and comparable outcome measurements made the comparison between the efficacy of different formats (brief individual, brief group, and standard group intervention) weak. We have also analysed the efficacy of any kind of psychoeducational intervention on different outcome measures but may have introduced heterogeneity by doing so. More studies and further information on the results of available studies are necessary before a comparison of the efficacy of different intervention categories on most outcome measures can be made. Thus the present analysis compares results from studies with very different durations.

2. Primary outcomes

2.1 Compliance
Brief interventions present some usable data that is difficult to interpret. Bäuml 1996 reports a statistically significant advantage on a continuous measure in favour of the psychoeducation group but fails to explain what the result may mean. Macpherson 1996 did not demonstrate a significant advantage in compliance for the intervention groups with one or three sessions of education. There seems to be some suggestion that psychoeducation may improve compliance with medications but the extent of improvement remains unclear.

2.2 Relapse
Both standard length interventions and brief group pooled data show a significant reduction of relapse or readmission in the intervention group (NNT 6 CI 3-83, NNT 12 CI 6-83 respectively). It may be estimated that around twelve relapses can be avoided, or at least postponed, for around a year if 100 patients receive psychoeducation. This is an important finding and, although based on small trials, total numbers of participants reach over 700. The numbers needed to treat compare favourably with other non-pharmacological packages of care (Jones 2000, Pharoah 2000) and should lead to a debate of advantages of one approach over the other and the cost effectiveness of each package.

2.3 Death
There is far too little data on death for any conclusions to be drawn regarding this outcome.

3. Secondary outcomes

3.1 Knowledge
Rather surprisingly, very few studies report extractable data relating to knowledge of condition. There is some evidence favouring the...
standard length intervention for knowledge gain. Similar findings
are presented for brief intervention, suggesting a consistent effect,
if of unknown clinical value.

3.2 Behavioural outcomes - brief interventions only

At one year, global psychosocial functioning was improved in three
studies using brief group intervention (WMD -5.2 CI - 8.8 to -
1.7). This held for two years follow-up, but not for five. Haas 1988
presented data suggesting a clinically significant improvement of
psychosocial functioning post intervention - although this did not
reach statistical significance. No differences between the groups
were found at six months or at 18 months follow-up.

3.3 Mental state

Continuous measures of mental state, used in both standard length
intervention and brief interventions, were not entirely consistent
in their findings, although two out of three studies favoured psy-
choeducational treatments. It is likely that the outcome of relapse
is a more accurate representation of participants’ mental state.

3.4 Social functioning - standard length interventions only

Little can be concluded from the equivocal results from the small
study by Goulet 1993.

3.5 Leaving the studies early

It is reassuring that overall pooled data did not indicate a differ-
ence between psychoeducation and standard care (RR 1.1, CI 0.9-
1.4), but it is, perhaps a warning against complacency that two
studies indicated that early attrition is more likely in the psychoe-
ducational groups.

3.6 Family members’ understanding of, and attitudes to, psychi-
atriic illness and to the services - brief interventions only

Brief group intervention may positively affect attitudes to, and
understanding of, psychiatric illness. This, could be a result of
better compliance with medication, or could be independent of,
and mediate, better compliance. Important outcomes, such as the
impact of the educational programme on different dimensions of
relatives’ attitudes to/satisfaction with psychiatric services, are
dogged by being measured on different scales of dubious clinical
meaning. It is important that common, clear, valid and clinically
meaningful measures are used in future trials.

3.7 Insight

There is no convincing evidence that psychoeducational interven-
tions substantially affect the insight of the ill participant.

3.8 Service utilisation - standard length interventions only

The one study (Herz 1996) that measured impact of the educa-
tional programme on length of hospitalisation suggested that the
absolute number of days of admission during the follow-up period
of 18 months was higher in the intervention group, but not sig-
nificantly so. Such a finding is in need of replication and strength-
ening by additional data.

3.9 Health economic outcomes - standard length interventions

Herz 1996 produced combined costs for hospital and ambulatory
services (not significantly different skewed data) but more studies
are needed to fully investigate health economic outcomes before
conclusions can be drawn.

AUTHORS’ CONCLUSIONS

Implications for practice

For people with schizophrenia
Psychoeducational interventions may initially seem off putting for
the person with schizophrenia, but can reduce the relapse and
readmission rates at nine to 18 months follow-up and can also
improve psychosocial functioning in people with schizophrenia.

For clinicians
The decrease in relapse with psychoeducational interventions
should make them useful for clinicians as a part of their treatment
programme.

For managers and policy makers
The fact that the interventions studied are brief and not very costly
to implement should increase their attractiveness not only for clin-
cians but also for managers. Not much data exist, however, con-
cerning the economic consequences of implementing psychoedu-
cation as a routine service. A single study indicates that the com-
bined costs for hospital and ambulatory services are comparable
for the intervention group and standard treatment group.

Implications for research

More well-designed, conducted and reported randomised stud-
ies investigating the efficacy of psychoeducation are needed. 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 par-
ticipating in psychoeducation programmes. Not only should com-
pliance, 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 psychoed-
ucation is crucial in making it an attractive option for managers
and policy makers. Further research is also needed into the efficacy
of different formats of psychoeducational interventions.

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Psychoeducation for schizophrenia (Review)
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