

Impact on families

Introduction

A diagnosis of schizophrenia can have considerable impact not only on the affected individual, but also on the people closest to them. This topic considers the impact of schizophrenia on family members, and on the family as a unit.

Sometimes the family of a person with schizophrenia may experience different types of burden, particularly during acute phases of the illness. Burden is considered in terms of objective effects, such as illness severity or financial strain, but also in terms of subjective effects, such as the emotional impact of the illness on family members. A diagnosis of schizophrenia or psychosis may also have implications for the offspring of a person with schizophrenia.

Method

We have included only systematic reviews with detailed literature search, methodology, and inclusion/exclusion criteria that were published in full text, in English, from the year 2000. Reviews were identified by searching the databases MEDLINE, EMBASE, and PsycINFO. Reviews with pooled data are prioritized for inclusion. Reviews reporting fewer than 50% of items on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses ([PRISMA](#)¹) checklist have been excluded from the library. The evidence was graded guided by the Grading of Recommendations Assessment, Development and Evaluation ([GRADE](#)) Working Group approach². The resulting table represents an objective summary of the available evidence, although the conclusions are solely the opinion of staff of NeuRA (Neuroscience Research Australia).

Results

We found 14 systematic reviews that met our inclusion criteria³⁻¹⁶.

For families and caregivers

- Moderate to low quality evidence suggests caregiving can have tremendous negative and positive impacts. Coping, appraisal/attribution and interpersonal response styles accounted for most of the variation in levels of caregiver distress, with a strong association between emotional over-involvement and high caregiver distress. High expressed emotion is common in families of people with first-episode psychosis, with around 50% of families reporting this trait. Emotional over-involvement, critical comments, hostility, and distress are reported in around 30% of families.
- Siblings of people with schizophrenia experience increased subjective burden, including feelings of guilt, shame, hurt and anxiety. Burden was highest in younger, female or more educated siblings, and the level of burden was associated with symptom severity. Siblings have expressed a need for more information on the illness and treatment, and would like to be involved in family support groups. They also need help managing their own psychosocial issues arising from having a sibling with schizophrenia.
- Family members often have difficulty recognising that an illness is developing in their relative and that the person is in need of help, resulting in delays in timing and type of help sought. The predominant barriers to seeking help by relatives were the perceived stigma of having a mental illness and reluctance of the ill relative to participate in the help-seeking process. The ill individuals' wider social context and informal networks may also inhibit help-seeking. Crises, or overt psychotic symptoms, were the main promoters of active help-seeking and facilitators to accessing services. Relatives' informal networks often served to assist in this process, Service response to relatives' help-seeking was often viewed as a barrier to accessing services, whilst contacts made with formal networks could either facilitate or



Impact on families

inhibit the help-seeking process. There is a significant impact on relatives of individuals with a psychotic illness during the early stages of illness development, recognition, management and help-seeking. The impact for each family member may be different.

Additional factors that may influence this risk have *not* been accounted for.

- Moderate to high quality evidence finds carer psychoeducation improves carers' perceived burden and depression (medium-sized effects), and carers' knowledge of psychosis, negative caregiving experiences, and overall morbidities (small effects). Moderate quality evidence also shows family psychoeducation has a medium-sized benefit for reducing familial expressed emotion. Family intervention, which includes psychoeducation or mutual support groups, can improve long-term family functioning, while also reducing long-term carer support service use. Home-based crisis intervention reduces family disruption and burden, and increases patients' and relatives' satisfaction.

For offspring

- Moderate to high quality evidence suggests an increased risk of foetal mortality among pregnant mothers with a psychotic disorder, though the absolute risk of stillbirth in offspring of mothers with schizophrenia was < 2%. The available evidence does *not* account for the effects of additional factors such as whether the mothers were taking antipsychotics or other medications, or had any concurrent substance use (alcohol, tobacco, or illicit drugs), or any comorbid medical conditions. These factors could have contributed to the observed effects and controlling for these factors may result in a null effect.
- Moderate quality evidence suggests babies of a person with schizophrenia in the perinatal and post-natal periods also show an increased risk of mortality or congenital malformation. Lower quality evidence is unclear about the risk of mortality in older children of parents with schizophrenia.

Impact on families

Amaresha AC, Venkatasubramanian G, Muralidhar D

Needs of Siblings of Persons with Psychosis: A Systematic Descriptive Review

Clinical Psychopharmacology and Neuroscience 2014; 12(2): 111-123

[View review abstract online](#)

Comparison	The need of siblings of people with schizophrenia.
Summary of evidence	Moderate to low quality evidence (unclear sample sizes, unable to assess consistency or precision, direct) suggests siblings of people with schizophrenia need more information on their siblings' illness and treatment. They need to be involved in family support groups, and need help managing their own psychosocial issues arising from having a sibling with schizophrenia.
Needs of siblings	
<p>6/7 studies highlighted the need for more information on their sibling's illness and symptoms. 5/7 studies reported needs related to illness management and rehabilitation which included dealing with and monitoring psychotic symptoms, inactivity, treatment and medications, aggression, depressed mood, self-harm and suicidal behaviour, assistance in long term care, support during acute episodes, living arrangements, getting community resources, advice on daily living problems. 1 study observed that the siblings desired for inclusion in the treatment process of ill sibling such as family and individual therapy.</p> <p>5/7 studies reported a need for participation in family support groups; 2 studies reported that siblings need support groups that specifically include only siblings.</p> <p>5/7 studies reported the need for help in managing their own psychosocial issues; siblings required help from professionals and close relatives in managing negative impact on their emotions, relationship issues with siblings, family issues, stigma, social activities, younger siblings wanted individual attention, respite and support in their academics.</p>	
Consistency in results[‡]	Unable to assess; no measure of consistency is reported.
Precision in results[§]	Unable to assess; no measure of precision is reported.
Directness of results	Direct

Impact on families

Chien WT, Norman I

The effectiveness and active ingredients of mutual support groups for family caregivers of people with psychotic disorders: a literature review

International Journal of Nursing Studies 2009; 46(12): 1604-23

[View review abstract online](#)

Comparison	Effect of mutual support groups for families and caregivers compared to routine care for improving both families' and patients' psychosocial wellbeing.
Summary of evidence	Moderate to low quality evidence (medium-sized samples, unable to assess consistency or precision, direct) suggests mutual support groups for caregivers may improve families' and patients' knowledge about mental illness and coping strategies, and reduce stress and burden.

Mutual support groups for caregivers

Six controlled studies (N = 536) compared mutual support intervention groups with routine care, and four of these studies reported significant benefits for family- and patient-related outcomes:

One study found benefits for reducing patients' personal distress, anxiety, improved management of family life and increased utilisation of community resources.

One study found individual family interventions improved knowledge of mental illness but reported no other family-related benefits.

Two studies reported significant improvements in families' and patients' psychosocial functioning up to 18 months post-intervention.

Two studies reported no significant differences in any family-related outcomes. All six studies reported difficulties engaging with family carers and had high rates of attrition.

Five quasi-experimental studies (N = 363) compared mutual support intervention groups with routine care, and three of these studies reported significant benefits for family- and patient-related outcomes:

Three studies reported significant improvements in knowledge of mental illness but reported no other family-related benefits.

One study reported increased positive attitudes towards the family at 2 months follow up.

One study reported reduced levels of depression in family members at 1 month follow up.

Nine non-experimental studies assessed mutual support groups:

4 studies (N = 423) suggested that families receiving mutual support reported lower levels of burden

Impact on families

<p>and more adaptive coping strategies.</p> <p>3 studies (N = 757) suggested that families of more chronic patients had greater concerns about prognosis and the future, and family-related issues of caregiving. Support groups increased knowledge and coping.</p> <p>1 study (N = 131) suggested support group participants were more likely to have the patient living at home, with greater demands on caregiving and less service utilisation.</p> <p>1 study (N = 55) suggested the support group increased the patients' support network and treatment involvement.</p>	
Consistency in results	Unable to assess; no measure of consistency is reported.
Precision in results	Unable to assess; no measure of precision is reported.
Directness of results	Direct

Dawson S, Jordan Z, Attard M

Carers' experiences of seeking help for relatives with first-episode psychosis: a systematic review of qualitative evidence

JBIC Database of Systematic Reviews & Implementation Reports 2013; 11(11): 183-361

[View review abstract online](#)

Comparison	Qualitative synthesis of family members' experiences.
Summary of evidence	<p>Moderate to low quality evidence (unclear sample sizes, unable to assess consistency or precision, direct) suggests family members often have difficulty recognising that an illness is developing in their relative and that the person is in need of help, resulting in delays in timing and type of help sought. The predominant barriers to seeking help by relatives were the perceived stigma of having a mental illness and reluctance of the ill relative to participate in the help-seeking process. The ill individuals' wider social context and informal networks may also inhibit help-seeking. Crises, or overt psychotic symptoms, were the main promoters of active help-seeking and facilitators to accessing services. Relatives' informal networks often served to assist in this process, Service response to relatives' help-seeking was often viewed as a barrier to accessing services, whilst contacts made with formal networks could either facilitate or inhibit the help-seeking process. There is a significant impact</p>

Impact on families

	on relatives of individuals with a psychotic illness during the early stages of illness development, recognition, management and help-seeking. The impact for each family member may be different.
Mutual support groups for caregivers	
<p><i>22 studies, N not reported</i></p> <p>Authors report the following themes;</p> <p>Recognising that an illness is developing and that the person is in need of help is often delayed; beliefs about mental illness further impact upon the timing as well as type of help sought.</p> <p>The predominant barriers to seeking help by relatives were the perceived stigma of having a mental illness and reluctance of the ill relative to participate in the help-seeking process. The ill individuals' wider social context and informal networks may also inhibit help-seeking.</p> <p>Crises, or overt psychotic symptoms, were the main promoters of active help-seeking and facilitators to accessing services. Relatives' informal networks often served to assist in this process.</p> <p>Service response to relatives' help-seeking was often viewed as a barrier to accessing services, whilst contacts made with formal networks could either facilitate or inhibit the help-seeking process.</p> <p>There is a significant impact on relatives of individuals with a psychotic illness during the early stages of illness development, recognition, management and help-seeking. The impact for each family member may be different.</p>	
Consistency in results	Unable to assess; no measure of consistency is reported.
Precision in results	Unable to assess; no measure of precision is reported.
Directness of results	Direct

Jansen JE, Gleeson J, Cotton S

Towards a better understanding of caregiver distress in early psychosis: A systematic review of the psychological factors involved

Clinical Psychology Review 2015; 35: 56–66

[View review abstract online](#)

Comparison	Factors involved in caregiver distress during early psychosis.
Summary of evidence	Moderate quality evidence (overall large sample, unable to assess consistency and precision, direct) suggests coping,

Impact on families

	appraisal/attribution and interpersonal response styles accounted for most of the variation in caregiver distress.
Psychological factors contributing to caregiver distress levels	
<p><i>15 studies, N = 1,200</i></p> <p>Authors report the following themes;</p> <p>Coping, appraisal/attribution and interpersonal response styles accounted for most of the variation in levels of caregiver distress.</p> <p>There was a strong association between expressed emotion, particularly emotional over-involvement, and high caregiver distress.</p> <p>There is less knowledge as to whether some caregivers are more vulnerable to appraising the caregiving experience as more negative and to having more negative interpersonal responses faced with a difficult caregiving situation.</p>	
Consistency in results	Unable to assess; no measure of consistency is reported.
Precision in results	Unable to assess; no measure of precision is reported.
Directness of results	Direct

Koutra K, Vgontzas AN, Lionis C, Triliva S

Family functioning in first-episode psychosis: a systematic review of the literature

Social Psychiatry and Psychiatric Epidemiology 2014; 49:1023-1036

[View review abstract online](#)

Comparison	Functioning in families with a family member with first-episode psychosis.
Summary of evidence	Moderate to low quality evidence (unclear sample sizes, unable to assess consistency and precision, direct) suggests high expressed emotion is common in families of first-episode psychosis patients with around 50% of families reporting this trait. Emotional over-involvement, critical comments, hostility, and distress are reported in around 30% of families. High expressed emotion and familial distress may improve after contact with services.



Impact on families

Familial expressed emotion

Prevalence of expressed emotion measures;

9 studies reported high expressed emotion, with a range of 35% to 73.5% (mean ~52%).

5 studies reported emotional over-involvement, with a range of 22% to 37.7 (mean ~28%).

3 studies reported critical comments, with a range of 13.2% to 33% (mean ~21%).

1 study reported hostility rates of 30%.

Relationship between familial expressed emotion measures and family/patient characteristics;

2 studies reported that familial critical comments were related to less acute onset of psychosis, and greater elapsed time since first signs of illness and onset of treatment. 1 study reported a relationship with poor adjustment in work or study.

2 studies reported that familial expressed emotion was associated with the patients being young, and carers not being a spouse, in particular the caregiver being the father. One of these studies reported an association with patients not being married, and the other study reported an association with patients being unemployed.

2 studies reported high expressed emotion was associated with patients' longer duration of untreated illness/psychosis. One of these studies also reported an association between emotional over-involvement and patients' longer duration of untreated illness/psychosis. Longer duration of untreated psychosis was associated with high critical comments in 1 study. 1 study found that the patients presenting with more pre-morbid psychosis features lived in high emotional expression households.

1 study reported that increased symptoms were associated with caregiver-rated and patient-rated high expressed emotion.

1 study reported that emotional over-involvement, but not critical comments, was related to subjective and objective family burden, and 1 study reported an association between increased familial expressed emotion and family burden and carers' avoidant coping styles.

1 study reported increased familial expressed emotion was associated with patients' higher cognitive functioning.

1 study suggested familial expressed emotion was considered a consequence of relatives' extent of external beliefs of control, generalized negative stress response, and general life stressors rather than a direct response to the patients' disorder.

1 study found that high emotional over-involvement and low critical comments were associated with relatives' higher levels of perceived loss. Patients' and relatives' appraisals of loss were strongly associated, particularly in high emotional over-involvement relationships.

1 study reported that emotional over-involvement was more strongly associated with family stress than were critical comments. Critical comments yielded a stronger association with longer duration of untreated psychosis. Emotional over-involvement predicted both family stress and burden of care.

1 study reported critical comments was found to be associated with higher levels of patient-centred



Impact on families

control attributions.

1 study demonstrated that high emotional over-involvement was related to patients' poor quality of life, especially in social relationships.

Relationship between familial expressed emotion measures and relapse;

3/5 studies reported a positive association between high expressed emotion and relapse.

1 study found that expressed emotion was predictive of outcome over a 5 year period. After the third year, patients living with high expressed emotion relatives were significantly more maladjusted and relapsed more than those living with low expressed emotion relatives.

1 study showed that high expressed emotion warmth predicted a lower likelihood of relapse after six and 12 months.

1 study reported that critical comments were related to poor outcome.

Stability of expressed emotion;

1 study found that 42% of the initially high expressed emotion relatives resolving to low expressed emotion by 9 months after initial contact with care.

Differences between high- and low-expressed emotion environments;

1 study found that patients from high expressed emotion homes were likely to use emotion-based confrontational methods to cope with a crisis; they more readily expressed their anger and frustration than patients from low expressed emotion households, who were more likely to use avoidance and denial.

Family burden

Prevalence;

1 study reported that 26% of relatives experienced severe distress and 21% experienced moderate distress.

1 study found that 12% of caregivers presented with psychiatric symptoms, which was comparable to the general population.

Relationship between family burden and family/patient characteristics;

1 study reported that relatives feel pressure to assist the patient in activities of daily living, but reported little need to supervise or control their behaviours. Relatives' worry was as high as has been reported for more chronic patients, although there was a relative absence of displeasure/anger in relatives of first-episode psychosis patients compared to relatives of chronic patients.

1 study reported high levels of distress and negative caregiving experiences.

1 study found that family burden was the most significant predictor of distress in relatives, while patients' severity of symptoms or impaired functioning was not linked to distress in relatives.

1 study reported increased levels of distress were associated with younger patients and a younger age of onset, and it was the families' appraisal of the impact of the illness rather than the severity of

Impact on families

the symptoms themselves that had the greatest impact on relatives' psychological well-being. Ratings of 'difficult experiences of being a caregiver' were associated with patients' negative and positive symptoms and poor social functioning.

1 study reported that the most concerning problems for relatives were patients' difficult behaviours and negative symptoms, and that they used both emotional and practical coping strategies to handle the patients' illness. Women caregivers reported higher distress than men, especially regarding the effects of the illness on family, and caregivers living with the patient had more frequent visits to their general practitioner. Divorced caregivers and caregivers in the professional social class reported higher distress than married caregivers and those in the skilled working class.

1 study on patients with comorbid depression found family burden was significantly associated with high expressed emotion, the extent of their illness-related emotion-focused coping, and their generalized negative stress response. Another study found that relatives' burden was a function of their emotional over-involvement and patients' depressive symptoms.

1 study showed that burden was a strong feature of high emotional over-involvement, and subjective burden of carers was linked to loss, but not to emotional expression status.

1 study found that disorganization symptoms contributed significantly to family burden, while agitation/excitement symptoms predicted worrying. Patients' personality traits have not been shown to play a modifying role in family burden.

1 study found that Chinese caregivers who had a more negative conceptualization of mental illness, were experiencing more objective and subjective burden compared with Euro-Canadian caregivers.

1 study demonstrated that family burden was associated with a reduction in patients' quality of life.

1 study found that higher levels of burden were reported by male caregivers and those of older age, with no differences according to ethnicity or social class. Caregivers who had someone to confide in reported significantly more positive caregiving experiences, but did not report lower levels of burden. Caregivers of compulsorily admitted patients were significantly more likely to report having problems with services', particularly Black Caribbean caregivers.

Stability of family burden;

1 study reported that family burden improved significantly over a 2-year follow-up, which was mainly due to improvement of patients' psychosocial functioning, although caregivers' scores on well-being and self-rated symptoms, especially depressive symptoms, continued to remain elevated.

Consistency in results	Unable to assess; no measure of consistency is reported.
Precision in results	Unable to assess; no measure of precision is reported.
Directness of results	Direct

Ma CF, Chien WT, Bressington DT



Impact on families

**Family intervention for caregivers of people with recent-onset psychosis:
A systematic review and meta-analysis**

Early Intervention in Psychiatry 2018; 12: 535-60

[View review abstract online](#)

<p>Comparison</p>	<p>Family intervention for caregivers vs. usual care. Treatments primarily involved mutual support and psychoeducation. Mean treatment duration was 22 weeks, with an average of 11 sessions and 20 hours of therapy. Mean follow-up was 11.8 months.</p>
<p>Summary of evidence</p>	<p>Moderate quality evidence (medium-sized samples, some inconsistency and imprecision, direct) suggests family intervention can improve caregiver burden, short-term carer experience, long-term carer support service use, and long-term family functioning.</p>
<p>Caregiver outcomes</p>	
<p><i>Significant, medium-sized to large improvements in caregiver burden with family intervention in the short, medium and long-term;</i></p> <p>Short-term (<3 months): 4 RCTs, N = 312, SMD = -0.65, 95%CI -0.87 to -0.42, $p < 0.00001$, $I^2 = 0\%$, $p = 0.79$</p> <p>Medium-term (3-6 months): 3 RCTs, N = 256, SMD = -0.76, 95%CI -1.20 to -0.32, $p = 0.0006$, $I^2 = 62\%$, $p = 0.07$</p> <p>Long-term (>6 months): 3 RCTs, N = 264, SMD = -0.97, 95%CI -1.49 to -0.46, $p = 0.0002$, $I^2 = 74\%$, $p = 0.02$</p> <p><i>A significant, small to medium-sized improvement in caregiver experience with family intervention in the short-term only;</i></p> <p>Short-term: 2 RCTs, N = 226, SMD = -0.37, 95%CI -0.70 to -0.03, $p = 0.03$, $I^2 = 38\%$, $p = 0.21$</p> <p>Medium-term: 2 RCTs, N = 226, SMD = -0.53, 95%CI -1.88 to 0.81, $p = 0.44$, $I^2 = 96\%$, $p < 0.00001$</p> <p><i>A significant, medium-sized reduction in carer support service use with family intervention in the very long-term only (12-24 months);</i></p> <p>Short-term: 4 RCTs, N = 457, SMD = -0.26, 95%CI -0.63 to 0.11, $p = 0.17$, $I^2 = 63\%$, $p = 0.04$</p> <p>Medium-term: 2 RCTs, N = 144, SMD = 0.01, 95%CI -0.38 to 1.40, $p = 0.99$, $I^2 = 93\%$, $p = 0.0002$</p> <p>Long-term: 2 RCTs, N = 203, SMD = -0.38, 95%CI -0.11 to 0.88, $p = 0.13$, $I^2 = 64\%$, $p = 0.10$</p> <p>Very long-term: 3 RCTs, N = 337, SMD = -0.57, 95%CI -0.80 to -0.34, $p < 0.00001$, $I^2 = 0\%$, $p = 0.45$</p>	

Impact on families

Significant, medium to large improvements in family functioning with family intervention in the long-term and very long-term only;

Short-term: 5 RCTs, N = 441, SMD = 0.24, 95%CI -0.04 to 0.53, $p = 0.09$, $I^2 = 51%$, $p = 0.08$

Long-term: 3 RCTs, N = 387, SMD = 0.82, 95%CI 0.45 to 1.18, $p < 0.0001$, $I^2 = 53%$, $p = 0.12$

Very long-term: 2 RCTs, N = 241, SMD = 0.58, 95%CI 0.31 to 0.65, $p < 0.0001$, $I^2 = 0%$, $p = 0.74$

Subgroup analyses found mutual support was more effective than psychoeducation in improving family functioning in the very long-term, with no differences at other time points, or for carer support service use.

Consistency in results	Some inconsistency.
Precision in results	Some imprecision.
Directness of results	Direct

Murphy S, Irving CB, Adams CE, Driver R

Crisis intervention for people with severe mental illnesses

Cochrane Database of Systematic Reviews 2012; (5): CD001087

[View review abstract online](#)

Comparison	Home-based care plus crisis intervention (24-hour emergency care) vs. standard care (hospitalisation), treatment duration 1-2 years.
Summary of evidence	<p>Moderate quality evidence (small samples, some inconsistency, precise, direct) suggests crisis intervention reduced family disruption, particularly in the short term, compared to standard care.</p> <p>Moderate to low quality evidence (mostly from 1 RCT) suggests crisis intervention may be associated with greater patient and relative satisfaction and lower family burden, compared to standard care.</p>

Family Impact

Significantly fewer families of patients receiving crisis intervention reported that the overall family burden is substantial when compared to families receiving standard care:

3 months: 1 RCT, N = 120, RR = 0.57, 95%CI 0.41 to 0.80, $p = 0.00098$

Impact on families

6 months: 1 RCT, N = 120, RR = 0.34, 95%CI 0.20 to 0.59, $p = 0.00013$

Families of patients receiving crisis intervention reported significantly less disruption to daily routine in the short term:

3 months: 2 RCT, N = 220, RR = 0.76, 95%CI 0.59 to 0.97, $p = 0.031$, $Q_w = 0.76$, $p = 0.38$, $I^2 = 0\%$

6 months: 2 RCT, N = 220, RR = 0.67, 95%CI 0.37 to 1.21, $p = 0.19$, $Q_w = 3.28$, $p = 0.07$, $I^2 = 69\%$

Families of patients receiving crisis intervention reported significantly less disruption to social lives in the short term:

3 months: 2 RCT, N = 220, RR = 0.69, 95%CI 0.53 to 0.91, $p = 0.0083$, $Q_w = 1.12$, $p = 0.29$, $I^2 = 10\%$

6 months: 2 RCT, N = 220, RR = 0.72, 95%CI 0.43 to 1.22, $p = 0.23$, $Q_w = 3.88$, $p = 0.05$, $I^2 = 74\%$

Families of patients receiving crisis intervention reported significantly fewer instances of physical illness due to the patient's illness:

3 months: 1 RCT, N = 100, RR = 0.78, 95%CI 0.65 to 0.95, $p = 0.012$

6 months: 1 RCT, N = 100, RR = 0.71, 95%CI 0.55 to 0.92, $p = 0.010$

There was no difference between groups in family reports of financial strain:

3 months: 1 RCT, N = 120, RR = 0.76, 95%CI 0.52 to 1.10, $p = 0.15$

6 months: 1 RCT, N = 120, RR = 0.84, 95%CI 0.53 to 1.33, $p = 0.45$

Authors report that the methods of these six studies were considered poor.

Consistency in results	Some inconsistency
Precision in results	Imprecise
Directness of results	Direct

Nechmad A, Fennig S, Ternochiano P, Treves I, Fennig-Naisberg S, Levkovich Y

Siblings of schizophrenic patients-a review

Israel Journal of Psychiatry & Related Sciences 2000; 37(1): 3-11

[View review abstract online](#)

Comparison	Emotional and objective impact of schizophrenia on family members.
Summary of evidence	Moderate to low quality evidence (small to medium-sized samples, indirect, unable to assess consistency or precision)

Impact on families

suggests that siblings of people with schizophrenia experienced increased subjective burden, including feelings of guilt, shame, hurt and anxiety. Burden was highest in younger, female or more educated siblings, and level of burden was associated with symptom severity.

Early studies: Familial transmission

Early studies (1950-60s) of family impact in schizophrenia considered the family as an aetiological (causal) factor in the illness. For example, five studies have suggested factors such as mother-child or parents-child interactions, family communication, and marital difficulties as contributing to the development of schizophrenia.

Four further studies and three case studies from this time suggested higher prevalence of schizophrenia or psychotic symptoms in siblings of people with schizophrenia, compared to siblings of other patient groups (such as neuroticism, personality or affective disorders).

However, three studies reported little evidence to support increased psychiatric disturbance in siblings of people with schizophrenia.

Later studies: Family burden

Studies from the late 1960's consider the family burden of schizophrenia in terms of objective burden (OB, symptomatic behaviour, disturbance of routine, financial cost, health cost) and subjective burden (SB, the range of emotions experienced in the presence of abnormal behaviour).

In general, studies reported levels of SB to be higher than levels of OB for family members.

One study (N = 60) suggested that among parents, male gender and younger age are associated with higher levels of burden. Another study (N not reported) found no correlation between social class and burden.

Lower levels of education, and the ill family member living at home were inconsistently associated with higher SB (3 studies, N not reported). Burden was increased in correlation with the severity of positive symptoms in studies, and with negative symptom severity in two studies (N not reported). A social support network for the family may also help to reduce burden, reported in one of two studies.

One study (N not reported) suggested siblings of people with schizophrenia reported altered education and career plans, concerns over their own mental well-being, social isolation. Two studies (N not reported) reported a need for more information from health care providers. One case study (N = 3) reported siblings often had increased SB, including feeling guilt, shame, hurt and anxiety.

One study (N = 14) identified three classes of siblings who respond differently to their ill sibling: collaborative siblings were actively involved in their sibling's health care, crisis-oriented siblings became involved only where there was a problem, and detached siblings avoided the issue completely.

Another study (N = 108) reported that the absence of parents was more likely to facilitate sibling support, and older siblings were more likely to provide help. Illness severity, gender and education

Impact on families

were not associated with the level of sibling assistance.

One study (N = 164) utilised the Wisconsin Family Burden and Services Questionnaire and reported several findings, including a higher level of care from sisters than brothers; SB was greater in younger siblings, females siblings and more educated siblings; more symptomatic patients evoked higher SB; patients with self-controlled symptoms evoked more SB than uncontrolled symptoms; and SB was higher for siblings of schizophrenia patients than other mental disorders.

Consistency in results	Unable to assess; no measure of consistency is reported.
Precision in results	Unable to assess; no measure of precision is reported.
Directness of results	Direct

Pfammatter M, Junghan UM, Brenner HD

Efficacy of psychological therapy in schizophrenia: conclusions from meta-analyses

Schizophrenia Bulletin 2006; 32(Suppl 1): S64-80

[View review abstract online](#)

Comparison	Psychoeducational coping-oriented interventions involving families and relatives vs. unspecified control groups.
Summary of evidence	Moderate quality evidence (medium to large samples, indirect, consistent, precise) shows family psychoeducation has a medium-sized benefit for reduced familial expressed emotion and a small benefit for increasing relatives' knowledge about the disorder.

Family knowledge and expressed emotion (over-involvement, hostility, critical comments)

A significant, medium-sized effect of reduced familial high-expressed emotion in the education group;

7 RCTs, patient N = 284, $g = 0.59$, 95%CI 0.36 to 0.83, $p < 0.05$, $Q = 3.56$, $p = 0.74$

A significant, small increase in relatives' knowledge about the disorder in the education group;

8 RCTs, patient N = 3,662, $g = 0.39$, 95%CI 0.31 to 0.46, $p < 0.05$, $Q = 2.04$, $p = 0.96$

Consistency in results	Consistent
Precision in results	Precise

Impact on families

Directness of results	Indirect comparison (mixed control conditions combined).
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<p><i>Sin J, Jordan C, Barley E, Henderson C, Norman IJ</i></p> <p>Psychoeducation for siblings of people with severe mental illness</p> <p>Cochrane Database of Systematic Reviews 2015; Issue 5: DOI: 10.1002/14651858.CD010540 View review abstract online</p>	
Comparison	Psychoeducation for siblings of people with schizophrenia vs. standard care.
Summary of evidence	Low quality evidence (1 very small RCT) is unable to determine the benefits of psychoeducation for siblings.
Sibling quality of life and family burden	
<p><i>Better coping with family burden in siblings receiving psychoeducation:</i> At 12 months: 1 RCT, N = 9, MD = -8.80, 95%CI -15.22 to -2.34, $p = 0.007$</p> <p><i>Trend effect of better quality of life in siblings receiving psychoeducation:</i> At 12 months: 1 RCT, N = 9, MD = 3.80, 95%CI -0.26 to 7.86, $p = 0.07$</p> <p>Note: there were no differences in patient outcomes (mental state and service use) between sibling psychoeducation and control.</p>	
Consistency in results	Unable to assess (1 RCT)
Precision in results	Unable to assess (MD not standardised)
Directness of results	Direct

<p><i>Sin J, Gillard S, Spain D, Cornelius V, Chen T, Henderson C</i></p> <p>Effectiveness of psychoeducational interventions for family carers of people with psychosis: A systematic review and meta-analysis</p> <p>Clinical Psychology Review 2017; 56: 13-24 View review abstract online</p>	
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Impact on families

<p>Comparison</p>	<p>Psychoeducation for family carers of people with psychosis (mostly schizophrenia) vs. standard care.</p> <p>Intervention duration ranged from 4 to 52 weeks, and contact times ranged from 6 to 42 hours.</p>
<p>Summary of evidence</p>	<p>Moderate to high quality evidence (medium to large samples, mostly inconsistent, precise, direct) suggests carer psychoeducation improves carers' perceived burden and depression (medium-sized effects), carers' knowledge of psychosis, negative caregiving experiences and overall morbidities (small effects). There were no benefits over standard care for wellbeing, expressed emotion, quality of life, positive caregiving experiences, family functioning, perceived social support and stress levels.</p>
<p>Carer wellbeing</p>	
<p style="text-align: center;"><i>Medium-sized, significant improvements with psychoeducation for;</i></p> <p style="text-align: center;"><u>Perceived burden</u></p> <p>10 RCTs vs. inactive controls, N = 878, SMD = -0.434, 95%CI -0.567 to -0.31, $p < 0.05$, $I^2 = 0\%$</p> <p style="text-align: center;"><u>Depression</u></p> <p>2 RCTs, N = 245, SMD = -0.70, 95%CI -0.97 to -0.44, $p < 0.05$, $I^2 = 97.2\%$</p> <p style="text-align: center;"><i>Small, significant improvements with psychoeducation for;</i></p> <p style="text-align: center;"><u>Carers' knowledge of psychosis</u></p> <p>4 RCTs, N = 310, SMD = 0.361, 95%CI 0.136 to 0.586, $p < 0.05$, $I^2 = 49.8\%$</p> <p style="text-align: center;"><u>Negative caregiving experiences</u></p> <p>5 RCTs, N = 446, SMD = -0.210, 95%CI -0.396 to -0.025, $p < 0.05$, $I^2 = 0\%$</p> <p style="text-align: center;"><u>Carers' global morbidities</u></p> <p>7 RCTs, N = 656, SMD = -0.230, 95%CI -0.386 to -0.075, $p < 0.05$, $I^2 = 26\%$</p> <p>This result was similar when one study comparing psychoeducation with posted information was removed from the analysis.</p> <p style="text-align: center;"><i>There were no significant differences in;</i></p> <p style="text-align: center;"><u>Familial expressed emotion</u></p> <p>5 RCTs, N = 337, SMD = -0.161, 95%CI -0.367 to 0.045, $p > 0.05$, $I^2 = 0\%$</p> <p style="text-align: center;"><u>Carers' wellbeing</u></p> <p>2 RCTs N = 184, SMD = 0.103, 95%CI -0.186 to 0.392, $p > 0.05$, $I^2 = 0\%$</p> <p style="text-align: center;"><u>Quality of life</u></p>	

Impact on families

1 RCT N = 121, SMD = 0.145, 95%CI -0.205 to 0.495, $p > 0.05$

Positive caregiving experiences

5 RCTs, N = 452, SMD = 0.032, 95%CI -0.151 to 0.216 $p > 0.05$, $I^2 = 0\%$

Family functioning

3 RCTs, N = 238, SMD = 0.135, 95%CI -0.120 to 0.391, $I^2 = 0\%$

Perceived social support

4 RCTs, N = 303, SMD = 0.133, 95%CI -0.093 to 0.360, $I^2 = 0\%$

Stress levels

4 RCTs, N = 266, SMD = -0.169, 95%CI -0.410 to 0.072, $p > 0.05$, $I^2 = 0\%$

This result was similar when one study comparing psychoeducation with posted information was removed from the analysis.

Meta-regression revealed no significant associations between intervention modality, duration, or contact time and outcomes.

Consistency in results	Inconsistent, apart from depression.
Precision in results	Precise
Directness of results	Direct

Tungpunkom P, Napa W, Chaniang S, Srikhachin P

Caregiving experiences of families living with persons with schizophrenia: a systematic review

JBI Database of Systematic Reviews & Implementation Reports 2013; 11(8): 415-564

[View review abstract online](#)

Comparison	Qualitative assessment of caregiving experiences.
Summary of evidence	Moderate to low quality evidence (overall medium-sized sample, unable to assess consistency or precision, direct) suggests caregiving can have tremendous negative and positive impacts. Schizophrenia-orientated caregiver training, and long-term sustainable support is necessary.
Qualitative findings	

Impact on families

27 studies, N = 360

Once a diagnosis of schizophrenia has been made, and family caregivers have responded, health care providers need to be aware and sensitive to their response, and provide care accordingly.

Living with and taking care of a person with schizophrenia has a tremendous impact on caregivers' lives, both negatively and positively. It requires caregivers to adjust to the caregiving role and to their own emotional needs, with the ultimate goal of integrating the caregiving role into their lives.

Caregivers need to receive caregiving training, information and support from professional health care providers, other family members, friends, and community level self-help groups.

Caregivers need to learn and apply various skills to provide care for their ill relatives by dealing with aggressive behavior, psychotic symptoms, and other aspects of daily living.

Caregivers expressed their needs and concerns about the long term care facilities and seek sustainable help for their ill relatives.

Consistency in results	Unable to assess; no measure of consistency is reported.
Precision in results	Unable to assess; no measure of precision is reported.
Directness of results	Direct

Webb R, Abel K, Pickles A, Appleby L

Mortality in offspring of parents with psychotic disorders: a critical review and meta-analysis

American Journal of Psychiatry 2005; 162(6): 1045-56

[View review abstract online](#)

Comparison	Risk of foetal, infant or childhood mortality in offspring of people with psychosis compared to the general population.
Summary of evidence	<p>Moderate to high quality evidence (large sample, consistent, imprecise, direct) suggests a small increase in the risk of any-cause foetal mortality in pregnant mothers with a psychotic disorder.</p> <p>Moderate quality evidence (large samples, unable to assess consistency, some imprecision, direct) suggests a baby of a person with a psychotic disorder has an increased risk of any cause mortality or congenital malformation. Lower quality evidence is unclear about the risk of mortality in older children of parents with schizophrenia.</p>



Impact on families

Pre-natal mortality risk	
<p><i>Small, significant increased risk of foetal mortality in mothers with a psychotic disorder;</i> 6 studies, N = 1,688,137, RR = 1.89, 95%CI 1.36 to 2.62, $p < 0.05$, $\chi^2 = 6.35$, $p = 0.27$ The absolute risk of stillbirth was less than 2%.</p>	
Post-natal and childhood mortality risk	
<p>Peri-natal mortality (neonatal death due to any cause) was reported to be increased in offspring of people with schizophrenia in four controlled studies, N = 1,834, RR range 2.0 to 8.0.</p> <p>Two additional population-based studies also reported increased risk of neonatal mortality. One study (N = 125,774) reported small but non-significant increased risk of neonatal death (RR = 1.4, 95%CI 0.9-2.3, $p \geq 0.05$) or congenital malformation (RR = 1.8, 95%CI 0.8-2.1, $p \geq 0.05$). Post-neonatal risk of death was also increased (RR = 2.8, 95%CI 1.7-4.5, $p < 0.05$). Another study (N = 1,563,232) reported increased risk (non-significant) for infant death (RR = 1.4, 95%CI 0.7-2.8, $p > 0.05$) in offspring of maternal schizophrenia (diagnosed before birth). If diagnosis occurred during pregnancy, the risk was higher and significant (RR = 3.1, 95%CI 1.0-9.8, $p \leq 0.05$).</p> <p>One study (N = 2,120) reported equivalent mortality risk for children with two affected parents versus one affected parent, similarly for children with maternal versus paternal schizophrenia.</p> <p>However, one study (N = 1,873) found no difference in mortality rates between exposed and unexposed offspring, including neonatal death (OR 1.0, 95%CI 0.3-3.0, $p > 0.05$), and small but not significant increases in risk were reported in early childhood (OR 2.2, 95%CI 0.7-7.3, $p > 0.05$).</p> <p>Another study (N = 1,718) reported reduced risk of all-cause mortality in exposed babies age 0-1, (females RR = 0.4; and males RR = 0.7). No difference in risk was reported in offspring aged 1-4 or 5-15 compared to general population.</p> <p>One study (N = 336) conducted a 60 year follow up (93% retained), and reported all-cause mortality rates were slightly lower than national population rates, at all ages, in offspring of people with schizophrenia.</p>	
Consistency in results	Consistent for pre-natal risk, unable to assess other outcomes.
Precision in results	Imprecise for pre- and peri-natal mortality risk, unable to assess other outcomes.
Directness of results	Direct

Impact on families

Yesufu-Udechuku A, Harrison B, Mayo-Wilson E, Young N, Woodhams P, Shiers D, Kuipers E, Kendall T

Interventions to improve the experience of caring for people with severe mental illness: systematic review and meta-analysis

The British Journal of Psychiatry 2015; 206: 268-274

[View review abstract online](#)

Comparison 1	Psychoeducation vs. control (treatment as usual).
Summary of evidence	Moderate to low quality evidence (inconsistent, imprecise, direct, large samples) suggests psychoeducation may be more effective than control conditions for improving the experience of caregiving. Moderate to low quality evidence (consistent, mostly imprecise, direct, small samples) suggests no effect for psychological distress. Low quality evidence (imprecise, very small samples) is unable to assess benefits for quality of life or satisfaction with services
Experience of caregiving, psychological distress, quality of life, and satisfaction with services	
<p><i>Large, significant effect of improved experience of caregiving in carers receiving psychoeducation compared with controls:</i></p> <p>End of intervention: 8 studies, N = 428, $g = -1.03$, 95%CI -1.69 to -0.36, I^2 89%, $p < 0.00001$ 6 month follow-up: 4 studies, N = 215, $g = -0.92$, 95%CI -1.51 to -0.32, I^2 79%, $p = 0.003$ > 6 month follow-up: 3 studies, N = 151, $g = -1.29$, 95%CI -2.40 to -0.18, I^2 86%, $p = 0.0009$</p> <p><i>No differences in psychological distress, apart from at > 6 months reported in 1 very small study:</i></p> <p>End of intervention: 2 studies, N = 86, $g = -0.30$, 95%CI -0.84 to 0.24, I^2 38%, $p = 0.20$ 6 month follow-up: 2 studies, N = 86, $g = -0.34$, 95%CI -0.76 to 0.08, I^2 0%, $p = 0.33$ > 6 month follow-up: 1 study, N = 18, $g = -1.79$, 95%CI -3.01 to -0.56</p> <p><i>No differences in quality of life:</i></p> <p>End of intervention: 1 study, N = 41, $g = -0.31$, 95%CI -0.93 to 0.31</p> <p><i>No differences in satisfaction with services:</i></p> <p>End of intervention: 1 study, N = 39, $g = -0.42$, 95%CI -1.06 to 0.22 6 month follow-up: 1 study, N = 39, $g = -0.41$, 95%CI -1.04 to 0.23</p> <p>Authors report high risk of bias in primary studies.</p>	

Impact on families

Consistency in results	Inconsistent for overall experiences, consistent for distress Not applicable for analyses with 1 study
Precision in results	Precise for psychological distress at 6 month follow-up only
Directness of results	Direct
Comparison 2	Support groups vs. control (treatment as usual).
Summary of evidence	Moderate to low quality evidence (inconsistent, imprecise, direct, large samples) suggests support groups may be more effective than control conditions for improving the experience of caregiving. Low quality evidence (imprecise, small sample) is unable to determine any benefits for psychological distress.
Experience of caregiving, and psychological distress	
<p><i>Large, significant effect of improved experience of caregiving in carers receiving support groups intervention compared with controls:</i></p> <p>End of intervention: 3 studies, N = 194, $g = -1.16$, 95%CI -1.96 to -0.36, I^2 85%, $p < 0.00001$ 6 month follow-up: 3 studies, N = 166, $g = -0.67$, 95%CI -0.99 to -0.35, I^2 0%, $p = 0.37$ > 6 month follow-up: 2 studies, N = 123, $g = -1.95$, 95%CI -4.22 to -0.31, I^2 96%, $p < 0.00001$</p> <p><i>Large, significant effect of improved psychological distress in carers receiving support groups intervention compared with controls:</i></p> <p>End of intervention and 6 month follow-up: 1 study, N = 70, $g = -0.99$, 95%CI -1.48 to -0.49</p> <p>Authors report high risk of bias in primary studies.</p>	
Consistency in results	Inconsistent for experience of caregiving (apart from 6 month follow-up) Not applicable for distress (1 study)
Precision in results	Imprecise for distress and experience of caregiving (apart from 6 month follow-up)
Directness of results	Direct
Comparison 3	Psychoeducation plus support groups vs. control (treatment as usual).
Summary of evidence	Low quality evidence (imprecise, small sample) is unable to determine any benefits of psychoeducation plus support groups for experience of caregiving or psychological distress.

Impact on families

Experience of caregiving, and psychological distress	
<p><i>No differences in overall experience of caregiving:</i> > 6 month follow-up: 1 study, N = 49, $g = -0.05$, 95%CI -0.61 to 0.51</p> <p><i>No differences in psychological distress:</i> > 6 month follow-up: 1 study, N = 49, $g = -0.28$, 95%CI -0.84 to 0.29</p> <p>Authors report high risk of bias in primary study.</p>	
Consistency in results	Not applicable (1 study)
Precision in results	Imprecise
Directness of results	Direct
Comparison 4	Problem-solving bibliotherapy vs. control (treatment as usual).
Summary of evidence	Moderate to low quality evidence (precise, small samples) suggests problem-solving bibliotherapy may improve psychological distress. Low quality evidence (imprecise) is unable to determine any benefit for quality of life or experience of caregiving.
Experience of caregiving, psychological distress, quality of life	
<p><i>No differences in overall experience of caregiving:</i> End of intervention: 1 study, N = 114, $g = -0.17$, 95%CI -2.45 to 2.11 6 month follow-up: 1 study, N = 114, $g = -1.09$, 95%CI -2.52 to 0.34</p> <p><i>Large, significant effect of improved psychological distress in carers receiving problem-solving bibliotherapy compared with controls:</i> End of intervention: 1 study, N = 114, $g = -1.57$, 95%CI -1.79 to -1.35 6 month follow-up: 1 study, N = 111, $g = -1.54$, 95%CI -1.95 to -1.13</p> <p><i>No differences in quality of life at the end of intervention, but a medium sized effect of improved quality of life was reported at 6 months in those receiving problem-solving bibliotherapy:</i> End of intervention: 1 study, N = 114, $g = -0.14$, 95%CI -0.50 to 0.23 6 month follow-up: 1 study, N = 114, $g = -0.50$, 95%CI -0.87 to -0.12</p> <p>Authors report high risk of bias in primary study.</p>	
Consistency in results	Not applicable (1 study)
Precision in results	Precise for psychological distress only

Impact on families

Directness of results	Direct
Comparison 5	Self-management vs. control (treatment as usual).
Summary of evidence	Moderate to low quality evidence (precise, small sample) suggests no benefits of self-management for experience of caregiving. Low quality evidence (imprecise, small sample) is unable to determine any benefits of self-management for psychological distress.
Experience of caregiving, and psychological distress	
<p><i>No differences in overall experience of caregiving:</i> End of intervention: 1 study, N = 86, $g = -0.19$, 95%CI -0.58 to 0.02</p> <p><i>No differences in psychological distress:</i> End of intervention: 1 study, N = 86, $g = -0.32$, 95%CI -0.73 to 0.09</p> <p>Authors report high risk of bias in primary study.</p>	
Consistency in results	Not applicable (1 study)
Precision in results	Precise for experience of caregiving only
Directness of results	Direct
Comparison 6	Enhanced psychoeducation vs. standard psychoeducation.
Summary of evidence	Low quality evidence (imprecise, small sample) is unable to determine any benefits of enhanced psychoeducation for experience of caregiving.
Experience of caregiving	
<p><i>Medium sized effect of improved overall experience of caregiving in those receiving enhanced psychoeducation compared with standard psychoeducation:</i> End of intervention: 1 study, N = 43, $g = -0.64$, 95%CI -1.25 to -0.03</p> <p>Authors report high risk of bias in primary study.</p>	
Consistency in results	Not applicable (1 study)
Precision in results	Imprecise
Directness of results	Direct
Comparison 7	Practitioner-delivered v. postal psychoeducation.

Impact on families

Summary of evidence	Low quality evidence (imprecise, small sample) is unable to determine any benefits of practitioner-delivered psychoeducation over postal psychoeducation for family burden or distress.
Family burden, and psychological distress	
<p><i>No differences in family burden:</i></p> <p>End of intervention: 1 study, N = 40, $g = -0.41$, 95%CI -1.04 to 0.21</p> <p>6 month follow-up: 1 study, N = 40, $g = -0.41$, 95%CI -1.03 to 0.22</p> <p><i>No differences in psychological distress:</i></p> <p>End of intervention: 1 study, N = 40, $g = -0.38$, 95%CI -1.00 to 0.2</p> <p>6 month follow-up: 1 study, N = 40, $g = 0.0$, 95%CI -0.62 to 0.61</p> <p>Authors report high risk of bias in primary study.</p>	
Consistency in results	Not applicable (1 study)
Precision in results	Imprecise
Directness of results	Direct

Explanation of acronyms

CI = confidence interval, g = Hedge's g , standardised mean difference, I^2 = magnitude of heterogeneity between study results, N = number of participants, OB = objective burden, p = statistical probability of obtaining that result ($p < 0.05$ generally regarded as significant), Q_w = Q statistic for the test of within studies heterogeneity, RR = risk ratio, SB = subjective burden, SMD = standardised mean difference, vs. = versus

Impact on families

Explanation of technical terms

* Bias has the potential to affect reviews of both RCT and observational studies. Forms of bias include; reporting bias – selective reporting of results; publication bias - trials which are not formally published tend to show less effect than published trials, further if there are statistically significant differences between groups in a trial, these trial results tend to get published before those of trials without significant differences; language bias – only including English language reports; funding bias - source of funding for the primary research with selective reporting of results within primary studies; outcome variable selection bias; database bias - including reports from some databases and not others; citation bias - preferential citation of authors. Trials can also be subject to bias when evaluators are not blind to treatment condition and selection bias of participants if trial samples are small.¹⁷

† Different effect measures are reported by different reviews.

Prevalence refers to how many existing cases there are at a particular point in time. Incidence refers to how many new cases there are per population in a specified time period. Incidence is usually reported as the number of new cases per 100,000 people per year. Alternatively some studies present the number of new cases that have accumulated over several years against a person-years denominator. This denominator is the sum of individual units of time that the persons in the population are at risk of becoming a case. It takes into account the size of the underlying population sample and its age structure over the duration of observation.

Reliability and validity refers to how accurate the instrument is. Sensitivity is the proportion

of actual positives which are correctly identified (100% sensitivity = correct identification of all actual positives) and specificity is the proportion of negatives which are correctly identified (100% specificity = not identifying anyone as positive if they are truly not).

Weighted mean difference scores refer to mean differences between treatment and comparison groups after treatment (or occasionally pre to post treatment) and in a randomized trial there is an assumption that both groups are comparable on this measure prior to treatment. Standardised mean differences are divided by the pooled standard deviation (or the standard deviation of one group when groups are homogenous) which allows results from different scales to be combined and compared. Each study's mean difference is then given a weighting depending on the size of the sample and the variability in the data. Less than 0.4 represents a small effect, around 0.5 a medium effect, and over 0.8 represents a large effect.¹⁷

Odds ratio (OR) or relative risk (RR) refers to the probability of a reduction (< 1) or an increase (> 1) in a particular outcome in a treatment group, or a group exposed to a risk factor, relative to the comparison group. For example, a RR of 0.75 translates to a reduction in risk of an outcome of 25% relative to those not receiving the treatment or not exposed to the risk factor. Conversely, a RR of 1.25 translates to an increased risk of 25% relative to those not receiving treatment or not having been exposed to a risk factor. A RR or OR of 1.00 means there is no difference between groups. A medium effect is considered if $RR > 2$ or < 0.5 and a large effect if $RR > 5$ or < 0.2 ¹⁸. InOR stands for logarithmic OR where a InOR of 0 shows no difference between groups. Hazard ratios measure the effect of an explanatory variable on the hazard or risk of an event.

Impact on families

Correlation coefficients (eg, r) indicate the strength of association or relationship between variables. They can provide an indirect indication of prediction, but do not confirm causality due to possible and often unforeseen confounding variables. An r of 0.10 represents a weak association, 0.25 a medium association and 0.40 and over represents a strong association. Unstandardized (b) regression coefficients indicate the average change in the dependent variable associated with a 1 unit change in the independent variable, statistically controlling for the other independent variables. Standardized regression coefficients represent the change being in units of standard deviations to allow comparison across different scales.

‡ Inconsistency refers to differing estimates of effect across studies (i.e. heterogeneity or variability in results) which is not explained by subgroup analyses and therefore reduces confidence in the effect estimate. I^2 is the percentage of the variability in effect estimates that is due to heterogeneity rather than sampling error (chance) - 0% to 40%: heterogeneity might not be important, 30% to 60%: may represent moderate heterogeneity, 50% to 90%: may represent considerable heterogeneity and over this is considerable heterogeneity. I^2 can be calculated from Q (chi-square) for the test of heterogeneity with the following formula;¹⁷

$$I^2 = \left(\frac{Q - df}{Q} \right) \times 100\%$$

§ Imprecision refers to wide confidence intervals indicating a lack of confidence in the effect estimate. Based on GRADE

recommendations, a result for continuous data (standardised mean differences, not weighted mean differences) is considered imprecise if the upper or lower confidence limit crosses an effect size of 0.5 in either direction, and for binary and correlation data, an effect size of 0.25. GRADE also recommends downgrading the evidence when sample size is smaller than 300 (for binary data) and 400 (for continuous data), although for some topics, these criteria should be relaxed.¹⁹

|| Indirectness of comparison occurs when a comparison of intervention A versus B is not available but A was compared with C and B was compared with C which allows indirect comparisons of the magnitude of effect of A versus B. Indirectness of population, comparator and/or outcome can also occur when the available evidence regarding a particular population, intervention, comparator, or outcome is not available and is therefore inferred from available evidence. These inferred treatment effect sizes are of lower quality than those gained from head-to-head comparisons of A and B.



Impact on families

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