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Service delivery, behavioural, and self-management interventions for adults with epilepsy (Review)

Huang Y, Nevitt SJ, Mayer J, Fleeman N, Hill RA, Doherty AJ, Wilson N, Boland P, Clegg AJ, Bilsborough H, Williams EJ, Maden M, Shaw EJ, Tudur Smith C, Kelly R, Marson AG

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[Intervention Review]

Service delivery, behavioural, and self-management interventions for adults with epilepsy

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ABSTRACT

Background

Epilepsy is a common condition, affecting around 660 per 100,000 people worldwide. Despite treatment with anti-seizure medications, one-third of people do not achieve seizure control. There is a need to focus on models of service delivery and therapies that target cognitive, psychological, and behavioural aspects to improve seizure control and quality of life.

Objectives

To assess the effects of service delivery, behavioural, and self-management inventions on seizure control and health-related quality of life in adults with epilepsy.

Search methods

We used the Cochrane Register of Studies, MEDLINE, and two other databases, together with reference checking and contact with study authors, to identify the studies included in the review. The latest search date was 21 August 2023.

Selection criteria

We included randomised controlled trials (RCTs) or quasi-RCTs of any design (double/single-blinded, unblinded; parallel, cross-over, or cluster) involving participants with a mean age of 16 or older. Eligible interventions included behavioural, self-management, or service-delivery approaches. Behavioural and self-management interventions had to report seizure control as an outcome.

Data collection and analysis

Our primary outcome was seizure frequency. Our secondary outcomes were: seizure severity, health-related quality of life (HRQoL), medication usage, knowledge, general health, social and psychological function, and adverse events. We classified outcomes as short-term (up to six months) or long-term (over six months). At least two review authors independently screened all papers, extracted data, assessed the risk of bias, and analysed data. We used GRADE to assess the certainty of the evidence.

Main results

We included 36 studies with 5834 randomised participants. Twenty-six studies included participants with a diagnosis of epilepsy, six studies included participants with severe or drug-resistant epilepsy, and four studies included participants with epilepsy and another comorbidity, including depression, psychosocial problems, or learning disabilities. We rated 16 studies as having an overall low risk of bias, 11 studies as high risk, and nine studies with an unclear risk of bias. Twenty-one studies were conducted in high-income countries, seven in upper-middle-income countries, and eight in lower-middle-income countries. We categorised interventions into psycho-behavioural, mind-body, self-management, physical exercise, nurse-led service delivery, and other service delivery interventions.

Seizure frequency

Two studies showed that psycho-behavioural interventions likely reduce seizure frequency at three to six months (mean seizure frequency reduction 4.42 per month, 95% confidence interval (CI) 6.41 per month lower to 2.43 per month lower; 64 participants; moderate-certainty evidence). However, this intervention may not improve seizure frequency immediately post-intervention.

Three studies showed that mind-body interventions may reduce seizure frequency slightly at six to eight weeks (mean seizure frequency reduction 3.28 per month, 95% CI 6.36 per month lower to 0.20 per month lower; 148 participants; low-certainty evidence). However, evidence from two studies suggests that such interventions have no effect on seizure control.

Evidence from three studies suggests that self-management interventions may not reduce seizure frequency between 20 weeks and six months (mean seizure frequency was 1.61 per month higher, 95% CI 6.08 per month lower to 9.29 per month higher; 222 participants; low-certainty evidence). However, three studies showed these interventions are likely to increase seizure freedom.

In the short term, the effect of physical exercise on seizure control is very uncertain. Evidence from one study suggests that a nurse-led service delivery intervention does not improve seizure frequency. No data were available for other service-based interventions.

The long-term data (> six months) for psycho-behavioural, self-management, and service-based interventions are limited. There are no long-term data available for mind-body, physical exercise, or nurse-led service delivery interventions.

Health-related quality of life

One study reported that psycho-behavioural interventions likely result in no difference in Quality of Life in Epilepsy Inventory (QOLIE)-10 total score at six months (mean total score was 0.89 higher, 95% CI 1.06 lower to 2.84 higher; 120 participants; moderate-certainty evidence). Overall, there is very uncertain evidence of the short- and long-term effect of psycho-behavioural interventions on HRQoL outcomes.

One study showed that mind-body interventions may result in no difference in QOLIE-31-P (31-item questionnaire with patient-weighted scoring system) total scores at six weeks (mean total score was 0.75 higher, 95% CI 5.49 lower to 6.99 higher; 60 participants; low-certainty evidence).

Two studies showed that self-management interventions probably do not improve the mean QOLIE-31 or QOLIE-31-P total scores at six months (mean scores 2.42 higher, 95% CI 2.58 lower to 7.42 higher; 393 participants; moderate-certainty evidence). However, one study showed that these interventions are likely to result in a slight improvement in QOLIE-10 total scores. Four studies showed that this intervention probably does not improve HRQoL outcomes. We are very uncertain about the effect of this intervention on long-term outcomes.

Three studies showed that physical exercise may result in no difference to HRQoL outcomes in the short term. Two studies showed that nurse-led service delivery interventions probably do not improve outcomes in the short or long term. One study showed that a service delivery-based intervention likely results in an improvement in HRQoL in the long term.

Other outcomes

Evidence for improvements in epilepsy knowledge, medication usage, general health, social and psychological function was very limited and showed no consistent differences between interventions and controls.

There were no reported adverse events related to the interventions.

Authors' conclusions

There is no high-certainty evidence that service delivery, behavioural, and self-management interventions improve seizure control or quality of life outcomes for adults with epilepsy. There were wide variations in the size of the effect estimate, depending on how outcomes

were measured. Furthermore, there was significant clinical heterogeneity amongst the populations studied, types of interventions delivered, study setting, and study design, which limit interpretation of the currently available evidence and its overall applicability. Further research is needed from well-designed studies using validated measures to assess long-term improvement in outcomes important to adults with epilepsy.

PLAIN LANGUAGE SUMMARY

Do non-medicinal treatments help adults with epilepsy?

Key messages

- Psycho-behavioural treatments probably reduce seizure frequency slightly, but we do not know their effect on people's quality of life.
- Mind-body treatments (such as yoga) may slightly reduce seizure frequency, and may make little or no difference to quality of life.
- In general, treatment effects were inconsistent across studies and the strength of evidence varied.

What is epilepsy?

Epilepsy is a common condition that affects the brain and causes seizures. In a seizure, the brain's electrical signals are suddenly disrupted or become too active.

What is the role of non-medicinal treatments in epilepsy?

Most people with epilepsy take daily anti-seizure medication to help control seizures. One-third of people with epilepsy don't respond well to medication alone: seizures persist. Additional, non-medicinal treatments may help people with epilepsy manage the mental, emotional, and lifestyle effects of the condition. We divided these treatments into six broad categories, based on how each treatment is designed to work:

- psycho-behavioural treatments, which aim to change a person's behaviour;
- mind-body treatments, such as muscle relaxation and yoga;
- self-management treatments, which aim to help people better understand and manage their condition;
- physical exercise, such as cardiovascular or aerobic training;
- nurse-led service delivery approaches, where epilepsy-specialist nurses deliver health care;
- other service delivery approaches, such as care support via telephone or multidisciplinary team support.

What did we want to find out?

We wanted to find out if treatments in these categories were better than the usual epilepsy care that adults receive at:

- reducing the number of seizures people experience;
- improving their health-related quality of life (HRQoL).

We also wanted to know if these treatments led to any unwanted, harmful events.

What did we do?

We searched for studies that compared two different types of non-medicinal treatments or any of these types of help to usual care. We focused on people aged 16 years old or older. We compared and summarised the results of the studies and rated our confidence in the evidence, based on factors such as study methods and size.

What did we find?

We found 36 studies involving 5834 people with epilepsy. The studies included different groups of people: most involved people with any type of epilepsy (26 studies); six studies focused on those with severe epilepsy or epilepsy that did not respond to medication; and four studies included people with additional health issues like depression or learning difficulties.

The studies were conducted globally: 21 in high-income countries, seven in upper-middle-income, and eight in lower-middle-income countries.

Main results

Seizure frequency

- Two studies showed that psycho-behavioural interventions are likely to reduce the number of seizures in the six months after the intervention started.
- Mind-body methods, such as muscle relaxation or yoga, may reduce seizure frequency slightly.

- Three studies showed that self-management methods may not reduce the number of seizures per month. However, three other studies showed they are likely to help more people become seizure-free. The overall effect remains uncertain.
- We are very uncertain about how physical exercise affects seizures.
- One study showed that service delivery led by specialist epilepsy nurses did not reduce seizure frequency in the short term.
- The results from other service delivery approaches were mixed.

Quality of life

- We are very unsure if psycho-behavioural interventions improve people's quality of life.
- Mind-body and exercise approaches may make little to no difference to people's quality of life.
- Self-management methods may improve quality of life slightly. This benefit was not shown in all the studies.
- Three studies showed that physical exercise may result in no difference to quality of life in the short term.
- Nurse-led service delivery approaches probably make no difference to quality of life.
- One service delivery approach showed likely improvements to some aspects of quality of life.

Other outcomes

There was very limited evidence about the effects of these treatments on helping people learn more about epilepsy, medication use, general health, and social and psychological function. Importantly, none of the interventions caused any harm or worsened seizure control or quality of life.

What are the limitations of the evidence?

In general, we have low or very low confidence in many of the results because the studies were very different from each other. They tested different types of treatments, were carried out in different ways and places, and measured seizure frequency and quality of life differently. Many studies were small and had problems in how they were designed or reported.

Most of the evidence relates to the short-term effects of the treatments, up to six months. Evidence for longer-term effects is very limited, and we are very uncertain about this evidence. The results of this Cochrane review are complex. Lots of the results were mixed, some positive, some negative, and with different strengths of evidence.

How current is the evidence?

The evidence is current to August 2023.

SUMMARY OF FINDINGS

Summary of findings 1. Psycho-behavioural interventions versus control interventions

Psycho-behavioural interventions versus control interventions

Patient or population: adults with epilepsy

Setting: epilepsy / neurology outpatient clinics or community settings in Germany, Australia, and South Africa

Intervention: psycho-behavioural interventions (ACT or CBT)

Comparison: control interventions (usual care, supportive therapy, relaxation)

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	Nº of participants (studies)	Certainty of the evidence (GRADE)
	Risk with control	Risk with psycho-behavioural interventions			
Seizure frequency: seizure frequency per month Follow-up: 3 to 6 months	Mean seizure frequency ranged from 4.42 to 5.86 per month in the control groups	Mean seizure frequency was 4.42 per month lower (6.41 per month lower to 2.43 per month lower) in the psycho-behavioural interventions groups	-	64 (2 RCTs)	⊕⊕⊕⊕ Moderate^a
Health-related quality of life: QOLIE-10 total score Range between 10 and 60; lower score indicates better quality of life Follow-up: 6 months	Mean QOLIE-10 total score was 32.48 in the control group	Mean QOLIE-10 total score was 0.89 higher (1.06 lower to 2.84 higher) in the psycho-behavioural intervention group	-	120 (1 RCT)	⊕⊕⊕⊕ Moderate^b

***The risk in the intervention group** (and its 95% CI) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

ACT: acceptance and commitment therapy; **CBT:** cognitive behavioural therapy; **CI:** confidence interval; **QOLIE:** Quality of Life in Epilepsy Inventory; **RCT:** randomised controlled trial.

GRADE Working Group grades of evidence

High certainty: we are very confident that the true effect lies close to that of the estimate of the effect

Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different

Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect

Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect

^aDowngraded once due to risk of bias: unclear reporting of trial designs (randomisation and blinding methods), unclear handling of missing data and lack of available protocols; study funding information not reported.

^bDowngraded once due to risk of bias: no blinding and risk of attrition bias.

Summary of findings 2. Mind-body interventions versus control interventions

Mind-body interventions versus control interventions

Patient or population: adults with epilepsy

Setting: epilepsy / neurology outpatient clinics in the USA and Hong Kong

Intervention: mind-body interventions (progressive muscle relaxation, mindfulness plus social support)

Comparison: control interventions (focused attention, social support, quiet sitting)

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	Nº of participants (studies)	Certainty of the evidence (GRADE)
	Risk with control	Risk with mind-body interventions			
Seizure frequency: change in seizure frequency per month from baseline Follow-up: 6 to 8 weeks	Mean reduction in seizure frequency ranged from 0.27 to 7.77 seizures per month in the control groups	Mean change in seizure frequency was 3.28 per month lower (6.36 per month lower to 0.20 per month lower) in the mind-body intervention groups	-	148 (3 RCTs)	⊕⊕⊕⊖ Low ^{a,b}
Health-related quality of life: QOLIE-31-P total score Range between 0 and 100; higher scores indicate better well-being Follow-up: 6 weeks	Mean QOLIE-31-P score was 62.64 in the control group	Mean QOLIE-31-P score was 0.75 higher (5.49 lower to 6.99 higher) in the mind-body intervention group	-	60 (1 RCT)	⊕⊕⊕⊖ Low ^{a,b}

***The risk in the intervention group** (and its 95% CI) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval; **QOLIE-31-P:** Quality of Life in Epilepsy Inventory (patient-weighted version); **RCT:** randomised controlled trial.

GRADE Working Group grades of evidence

High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.

Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.

Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

^aDowngraded once due to risk of bias: unclear reporting of trial designs (randomisation and blinding methods), unclear handling of missing data and lack of available protocols; study funding information not reported.

^bDowngraded once due to indirectness: only short-term data (6 to 8 weeks) available.

Summary of findings 3. Self-management interventions versus control interventions

Self-management interventions versus control interventions

Patient or population: adults with epilepsy

Setting: epilepsy / neurology outpatient clinics or community settings in the USA, UK, and France

Intervention: self-management interventions (self-management education programme, self-management picture booklet)

Comparison: control interventions (usual care / waiting list)

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	Nº of participants (studies)	Certainty of the evidence (GRADE)
	Risk with control	Risk with self-management interventions			
Seizure frequency: seizure frequency during the study Follow-up: 20 weeks to 6 months	Mean seizure frequency ranged from 6.94 to 17.63 in the control groups	Mean seizure frequency was 1.61 per month higher (6.08 per month lower to 9.29 per month higher) in the self-management intervention groups	-	222 (3 RCTs)	⊕⊕⊕⊕ Low ^{a,b}
Health-related quality of life: QOLIE-31 and QOLIE-31-P total score Range between 0 and 100; higher score indicates better quality of life Follow-up: 6 months	Mean QOLIE-31 and QOLIE-31-P total scores ranged from 64.9 to 65.6 in the control groups	Mean QOLIE-31 and QOLIE-31-P total score was 2.42 higher (2.58 lower to 7.42 higher) in the self-management intervention groups	-	393 (2 RCTs)	⊕⊕⊕⊕ Moderate ^c

***The risk in the intervention group** (and its 95% CI) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval; **QOLIE-31(-P):** Quality of Life in Epilepsy Inventory (patient-weighted version); **RCT:** randomised controlled trial; **RR:** risk ratio

GRADE Working Group grades of evidence

High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.

Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.

Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

^aDowngraded once due to risk of bias: no blinding and/or a risk of attrition bias.

^bDowngraded once due to imprecision: 95% CIs wide around effect estimates.

Downgraded once due to risk of bias; no blinding.

BACKGROUND

Description of the condition

Epilepsy is a common condition affecting the central nervous system, with an estimated prevalence of 658 per 100,000 people worldwide (GBD Epilepsy Collaborators 2025). Epilepsy is characterised by a tendency to experience recurrent seizures, along with associated neurobiological, cognitive, psychological, and social impacts (Fisher 2014). Despite treatment with anti-seizure medications, epilepsy is drug-resistant in one-third of people with the condition (Perucca 2023). People with epilepsy have higher levels of stress, anxiety, and depression compared to the general population (Beyenburg 2005; Fiest 2013), and chronic stress can be linked to higher frequency of seizures (Maguire 2013). Therefore, there is a focus on developing adjunct therapies that target the cognitive and psychological aspects of the condition to improve seizure control in people with epilepsy. These therapies include behaviour-focused and education-centred interventions designed to support people's self-management of their epilepsy.

How services are delivered impacts on the effectiveness, efficiency, and equity of health systems, and affects health outcomes for people with epilepsy. Models of service delivery – including how services are organised and staff roles used to deliver the service – are also relevant to supporting people with epilepsy. However, there is uncertainty as to which models of service delivery may yield better outcomes for people with epilepsy.

Description of the intervention

Behavioural interventions can be broadly defined as any type of intervention designed to affect the action of an individual (Culter 2004). This review focuses on behavioural interventions designed to promote seizure control and improve quality of life in adults with epilepsy. Types of behavioural interventions include psycho-behavioural interventions (such as cognitive behavioural therapy and mind-body approaches), progressive muscle relaxation, yoga, bio/neurofeedback, and creative arts therapy (Haut 2019).

Self-management can be broadly defined as an intervention that aims to increase accurate, condition-related knowledge, build confidence, and support the individual to choose behaviours that promote management of their condition and overall well-being (Ozuna 2018). Clark and colleagues have described self-management as daily actions a person undertakes to support and control their condition, reduce the impact on their health, and cope with the psychosocial impacts of their condition (Clark 1991).

Interventions to develop and maintain self-management include educational components that aim to develop condition-related knowledge and promote a patient's engagement in and ownership of the management of their condition (self-efficacy) and shared decision-making about their condition (Clark 2010). Self-management interventions also aim to support medication concordance, which is a key element of epilepsy management, and other aspects of a person's health and well-being, such as diet, sleep, stress, and appropriate healthcare attendance (NHS RightCare 2020). Self-management may be developed through in-person educational programmes, self-guided use of digital technologies or through printed materials (Allegante 2019).

A service delivery model describes who provides the service and where it is delivered. A model of service delivery can encompass a

whole system of service delivery, consisting of a range of services. It can also be considered in a narrower sense as a small part of the whole system when service delivery is distributed across a single department or unit (Jessup 2020). There are several ways that healthcare delivery may be modified, including changing the physical location (e.g. hospital to home), providing care in individual or group settings, changing which health professionals provide care, or using technology to assist with the provision of care (e.g. telehealth).

A range of specialist or dedicated models of service delivery are employed in clinical practice for people with epilepsy. Services may include specialist epilepsy outpatient clinics, nurse-based liaison services between primary (general practitioner) and secondary/tertiary (hospital-based) care, and specialist epilepsy multidisciplinary community teams (Culter 2004; Haut 2018; Haut 2019; Tang 2014). Services may also include input from social care or the voluntary sector and target specific groups, such as people with learning disabilities.

How the intervention might work

Behavioural and self-management interventions are theorised to work through a variety of overlapping mechanisms to promote seizure control and overall well-being (Haut 2018).

Psycho-behavioural therapies focus on reducing stress and psychiatric comorbidity, while promoting self-efficacy, including the development of seizure interruption techniques and learning to stop the progression of seizure activity (Tang 2014). Progressive muscle relaxation focuses on stress-reduction (Haut 2018), while yoga may also induce relaxation and stress reduction (Panebianco 2017). Biofeedback is theorised to enhance behavioural self-regulation through operant conditioning, thereby facilitating the voluntary regulation of automatic bodily responses such as cortical electrical activity (Nagai 2011).

Self-management has a base in social cognitive theory, where cognitive (knowledge, understanding, and thinking), emotional, and behavioural (making decisions, actions) aspects relevant to a person's chronic condition(s) are considered (Ozuna 2018). Self-management interventions can also be based on other behavioural science theories or models of change, including trans-theoretical models, self-efficacy, and health belief models. The educational components of self-management aim to build knowledge and understanding, while fostering confidence, engagement in shared decision-making, and adoption of health-promoting behaviours. Self-management interventions may also aim to develop social support, including peer support mechanisms.

Specialist or dedicated models of care may improve the quality of care, promote more systematic multidisciplinary follow-up of individuals, and enhance communication between professionals, patients, and other services (Haut 2019). Delivering care in the context of integrated health and social care should better address the wider burden of epilepsy while offering improved psychosocial support (Bell 2015). Importantly, care should enable people with epilepsy to cope with all aspects of the disease, and improve behavioural and self-management skills (Haut 2019; Panebianco 2017).

Why it is important to do this review

Epilepsy care has been criticised for its limited impact, particularly in addressing the broader health and social needs of people living with the condition (Betts 1992; Chappell 1992; Elwyn 2003; Thapar 1996).

Behavioural interventions, self-management education, and alternative service delivery models are increasingly used in epilepsy care. However, their effectiveness – especially in improving seizure control – remains uncertain. This is largely due to methodological challenges in the design and evaluation of relevant studies, particularly randomised controlled trials (RCTs).

An earlier Cochrane review examined various models of service delivery, including specialist nurse services, alternative outpatient care models, the use of risk profiles, and enhanced clinical guidelines for general practitioners (Bradley 2016). While the review found evidence of benefit from some interventions, it concluded that their overall effectiveness in improving seizure control was unclear, and highlighted significant methodological limitations.

An up-to-date systematic review of RCTs assessing the full range of behavioural, self-management, and service delivery interventions is warranted, given the continued development and implementation of these therapeutic approaches in epilepsy care. This review assesses the current level and certainty of evidence for these interventions in order to inform best practice and improve outcomes for adults with epilepsy.

OBJECTIVES

To assess the effects of service delivery, behavioural, and self-management interventions on seizure control and health-related quality of life in adults with epilepsy.

METHODS

Criteria for considering studies for this review

Types of studies

We included randomised controlled trials (RCTs) or quasi-RCTs (where methods of allocation are not truly random) of any design: double- or single-blinded, or unblinded; parallel-group, cross-over, or cluster design.

Types of participants

We considered studies of behavioural or self-management interventions eligible for this review if they included anyone aged over 16 years with any clinical diagnosis of new or recurrent epilepsy. We included studies that enrolled adults and children if at least 50% of the participants were adults (i.e. > 16 years) or the study authors reported separate results for those participants. If a study did not report on the proportion of the population aged 16 or older, we included the study if participants' mean age exceeded 16 years. In this latter scenario, we consulted with clinical experts to establish that the interventions were applicable to adults.

For studies assessing service delivery models, we included models specifically targeting adults, and excluded models targeting children. We carefully considered studies assessing models that targeted a range of age groups. To be included in the review, at least 50% of participants had to be over 16 years old, or the mean age had

to exceed 16 years. For models that did not clearly focus on adults and did not report the age range of service users, we consulted clinical experts to decide on inclusion. If included, we labelled these studies as "age not specified."

We also considered studies that enrolled participants with other medical conditions (not epilepsy) if they reported results separately for each condition.

Types of interventions

We included any type of behavioural or self-management intervention used to promote seizure control and improve the health-related quality of life of adults with epilepsy.

Behavioural interventions for epilepsy can be broadly grouped into (but are not limited to) the following categories:

1. psycho-behavioural interventions, such as motivational interviewing, psychoeducation interventions, and cognitive behavioural therapy;
2. mind-body approaches, such as mindfulness, yoga, meditation, exercise programmes, progressive muscle relaxation, and neurofeedback;
3. creative arts therapy, such as music and art therapy.

Self-management interventions for epilepsy can be broadly grouped into (but are not limited to) the following categories:

1. educational programmes with provider-led self-management education components, which aim to develop knowledge, understanding, decision-making skills, or a combination of these;
2. self-guided self-management materials and health condition tracking, including digital platforms such as apps with automated interactivity and programmed user outputs;
3. social support from peers; in person or via digital media.

We included models of service delivery that aimed to improve the quality of care and outcomes for adults with epilepsy. To be eligible for inclusion, the study needed to focus on the efficiency of the service delivery model. Examples include where the same type of intervention is delivered by a specialist nurse versus a non-specialist nurse, or when the same elements of a service are compared in different settings, such as a clinic-based service versus an online service.

To be included in the review, studies involving service delivery models that incorporated behavioural or self-management interventions had to report at least one of the following.

1. Provider: information about who delivered the service, such as comparing epilepsy specialist nurses to usual care providers.
2. Service model: description of a specific or named model of care compared to usual care.
3. Contextual factors: details of the setting (e.g. specialist centre, hospital, community, urban/rural), mode of delivery (e.g. remote via video conferencing), timing along the care pathway, or frequency of care contacts.

We focused on behavioural and self-management interventions aimed at improving seizure control for adults with epilepsy. Therefore, to be eligible for inclusion, studies on behavioural and

self-management interventions must have reported a measure of seizure control as a primary or secondary outcome.

We grouped the behavioural and self-management interventions by likely mechanism(s) of action and compared different groups of behavioural or self-management interventions with usual care for adults with epilepsy. Where possible, we compared one group of behavioural interventions with another group or compared different behavioural interventions within the same group.

We imposed no restrictions on the mode, setting, or duration of delivery of the interventions.

We listed all treatment arms of each study in the [Characteristics of included studies](#) table.

Types of outcome measures

Primary outcomes

1. Seizure frequency
 - a. Recorded seizure frequency in a defined period
 - b. Reduction in seizure frequency compared to baseline
 - c. Seizure remission of one year or longer
 - d. Seizure freedom (or remission) for another defined time period

Secondary outcomes

1. Seizure severity
 - a. Validated measurements of seizure severity
2. Participant-reported health-related quality of life using validated scales
 - a. A validated scale for measuring the health-related quality of life
 - b. Other aspects relating to quality of life can include measures of depression, anxiety, stress, self-efficacy, self-management, self-esteem, disability, stigma, sleep quality, cognitive ability, ability to cope with epilepsy, and overall functioning.
3. Appropriateness and volume of medications, including evidence of drug toxicity: including the number of medications prescribed per participant, changes to medications, prescription refill frequency, measurements of blood anti-seizure medication drug concentrations, participant and clinician reports of medication compliance and adherence, participant or clinician reports of adverse drug reactions, and participants' beliefs about medications.
4. Participant-reported knowledge of information and advice received from professionals: including assessment of participant knowledge about epilepsy (such as the Epilepsy Knowledge Scale), their beliefs, awareness, attitudes towards epilepsy and misinformation regarding epilepsy. Advice received from professionals could be self-reported by participants.
5. Measure of general health status: including self-completed questionnaires on issues such as the number of attendances to emergency departments in a defined period, injury as a result of epilepsy episode, and long-term health problems.
6. Measure of social or psychological function: including self-report of impact on social activities, employment status, number of days absent from school or work due to sick leave.

7. Adverse events: any adverse events related to the intervention received.

We assessed all outcome measures for reliability and validity; for example, their clinical relevance and whether validated tools were used for outcome measures.

We presented immediate post-intervention, short-term (up to six months) and long-term (beyond six months) primary and secondary outcome measurements separately. Where more than one result was reported for a study during our specified 'short-term' or 'long-term' time frames, we present the latest reported result within each time frame and/or results at a time point where meta-analysis was possible.

Search methods for identification of studies

Electronic searches

We searched the following databases on 21 August 2023.

1. Cochrane Register of Studies (CRS Web) using the search strategy shown in [Appendix 1](#). CRS Web includes randomised or quasi-randomised controlled trials from the Specialised Registers of Cochrane Review Groups including Epilepsy, the Cochrane Central Register of Controlled Trials (CENTRAL), PubMed, Embase, ClinicalTrials.gov and the World Health Organization International Clinical Trials Registry Platform (ICTRP).
2. MEDLINE (Ovid, 1946 to 18 August 2023) using the search strategy shown in [Appendix 2](#). In MEDLINE (Ovid), the coverage end date always lags a few days behind the search date.
3. CINAHL Plus (EBSCOhost, 1937 onwards) using the search strategy shown in [Appendix 3](#).
4. PsycINFO (EBSCOhost, 1887 onwards) using the search strategy shown in [Appendix 4](#).

There were no language restrictions in our searches. The search strategies did not specify any age range, to allow us to capture studies with mixed adult/child populations.

Searching other resources

We checked the reference lists of retrieved studies for additional reports of relevant studies.

Data collection and analysis

Selection of studies

We merged and deduplicated the search results and used Rayyan to manage the results of our searches ([Ouzzani 2016](#); www.rayyan.ai/). We grouped multiple reports and papers related to a single study under a single reference ID from the first publication of the study. We screened papers in two stages, as follows.

1. At stage one, at least two review authors (NW, PB, AC, AD, YH, JM) independently screened all titles and abstracts of papers identified in the searches. We excluded papers that were clearly irrelevant at this stage. We retrieved the full texts of the remaining records.
2. At stage two, at least two review authors (NW, PB, AC, AD, YH, JM) independently screened the full-text papers and assessed the eligibility of studies for inclusion.

We resolved any discrepancies through discussion; if unable to reach a consensus, we involved a third review author (AGM, NF).

The selection process is detailed in a PRISMA flow diagram ([Figure 1](#)), and we have listed all records excluded at stage two in the [Characteristics of excluded studies](#) section.

Figure 1. PRISMA study flow diagram

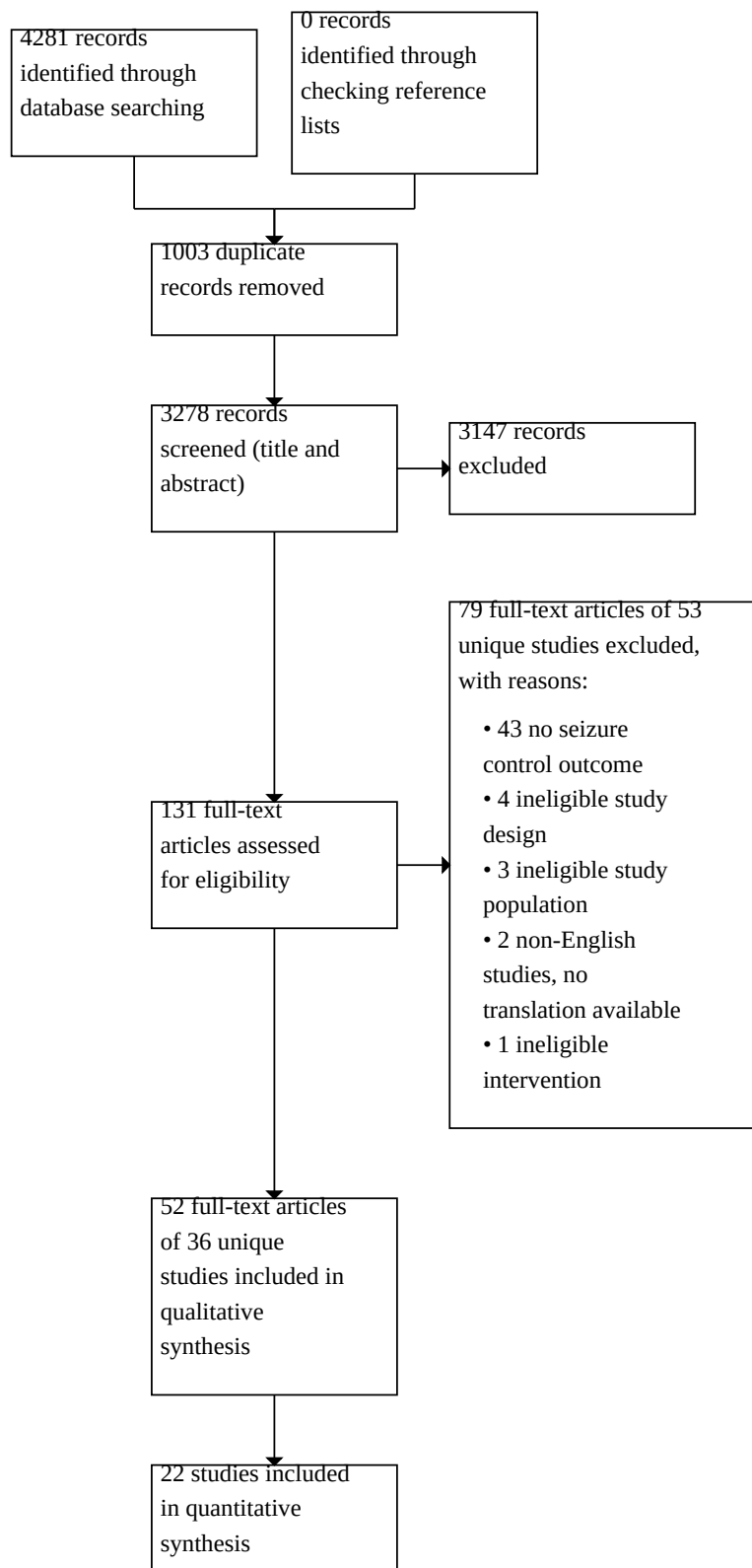


Figure 1. (Continued)

synthesis
(meta-analysis)

Data extraction and management

At least two review authors (NW, PB, AD, MM, EW, HB, SN) independently performed data extraction. Two review authors checked the data (SN, YH, NF, AC), and we resolved any potential discrepancies via discussion. We extracted the following information from all studies, using a piloted data extraction form. The data extraction form was initially piloted on a selection of included studies from the original Cochrane review's [Characteristics of included studies](#) table (Bradley 2016).

1. Methods
 - a. Study design
 - b. Date of study
 - c. Method of randomisation
 - d. Allocation concealment
 - e. Blinding
 - f. Duration of participation
2. Participants
 - a. Population characteristics
 - b. Setting
 - c. Method of recruitment
 - d. Total number recruited, randomised, and analysed
 - e. Baseline seizure type, seizure frequency, and disease duration
3. Interventions
 - a. Details of the intervention(s)
 - i. Type
 - ii. Duration
 - iii. Timing
 - iv. Delivery
 - v. Provider
 - vi. Was the delivery to individuals or groups?
 - b. Details of the comparison(s)
4. Outcomes
 - a. Definitions, unit of measurement, and person measuring
 - b. Time point measured
 - c. Missing data
5. Adverse events
 - a. Whether any adverse events relating to the interventions were reported
 - b. The nature and frequency of adverse events
6. Notes: any conflicts of interest of trial authors

We contacted study authors if there was inadequate information within available reports. We identified which studies had outcome data available for meta-analysis, outcome data from single studies which could be presented in forest plots, and outcome data that

were suitable for a narrative synthesis. Data were transferred to Review Manager (RevMan) (RevMan 2025).

We synthesised the characteristics of all studies contributing to each comparison and presented these in the [Characteristics of included studies](#) table.

Assessment of risk of bias in included studies

We used the original Cochrane risk of bias (RoB 1) tool for the assessment of the included studies. We followed guidance in the *Cochrane Handbook for Systematic Reviews of Interventions* for the assessment of risk of bias in studies (Higgins 2011).

At least two review authors (NW, PB, MM, EJW, HB, YH, JM) independently assessed each study and compared their assessments, with any differences resolved through discussion or recourse to a third review author (AJD, SN). The RoB 1 tool examines: random sequence allocation, allocation concealment, blinding of participants and personnel, blinding of outcome assessors, incomplete outcome data, selective outcome reporting, and other biases. Bias for each of the parameters and other biases (biases due to problems not covered elsewhere in the table) were assessed ('low', 'high', or 'unclear') according to the *Cochrane Handbook for Systematic reviews of Interventions* (Higgins 2011, table 8.5.d). We used the approach suggested in Higgins 2011 (table 8.7.a) to determine the overall risk of bias of included studies.

The risk of bias assessment informed our GRADE ratings and the summary of findings tables.

Measures of treatment effect

Where it was possible to include studies in a meta-analysis or forest plot, for outcome measures reported as continuous data, we used mean differences (MDs) with 95% confidence intervals (CIs) where studies used the same scales. For dichotomous/binary data, we used risk ratios (RRs) with 95% CI. Where studies could not be included in a meta-analysis or forest plot, we presented the measures of treatment effect or summary statistics narratively, as reported in the published papers.

Unit of analysis issues

We managed the following unit of analysis issues according to the *Cochrane Handbook for Systematic reviews of Interventions* (Higgins 2022).

1. Cluster-randomised and cross-over trials: we used adjusted effect sizes as reported in the included studies. If studies did not report appropriate adjusted effect sizes, we reported these studies narratively.
2. Multiple arms: we analysed separate comparisons. We did not attempt to pool treatment arms or split control groups. If studies included different 'doses' or 'intensities' of the same

intervention versus a control, then we attempted to pool intervention arms after consulting with topic experts as to the relevance of this approach to practice.

3. Multiple measurements: we did not attempt to pool multiple measurements over time in meta-analyses. We presented short-term (up to six months) and long-term (longer than six months) outcome data separately.

Dealing with missing data

We contacted study authors directly to obtain missing relevant outcome data, and we calculated the missing data using other data from the trial where possible, as advised in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2022).

Assessment of heterogeneity

We assessed clinical heterogeneity amongst studies by reviewing differences across trials, including population factors, interventions, and study design. We evaluated statistical heterogeneity using the following I^2 statistic ranges (Higgins 2022):

1. 0% to 40%: might not be important;
2. 30% to 60%: may represent moderate heterogeneity;
3. 50% to 90%: may represent substantial heterogeneity;
4. 75% to 100%: considerable heterogeneity.

We also considered the number of studies included in the meta-analysis and the magnitude and direction of effect reported in the studies when interpreting I^2 statistics.

Where considerable clinical heterogeneity of study or participant characteristics was present, we did not conduct meta-analyses. If substantial statistical heterogeneity was present in a meta-analysis (e.g. I^2 greater than 75% and/or differences in the direction of effect of included studies), we explored potential sources of heterogeneity which may have impacted on study results, and we downgraded the certainty of the evidence due to inconsistency.

Assessment of reporting biases

For all studies, we checked whether outcomes intended to be measured (reported in the methods section) were reported in the results section of the papers. Where the data were missing, we attempted to contact the study authors.

We were unable to assess publication bias using statistical methods due to the limited numbers of trials included in the meta-analysis. However, searches were conducted by an experienced information specialist with broad search criteria and all studies were double-screened by experienced review authors. Therefore, we are confident we have found the relevant published evidence. However, we cannot exclude the possibility of unpublished evidence on this topic.

Data synthesis

We presented results of data extraction and quality assessment for each study in structured tables and as a narrative summary.

Where it was possible to conduct meta-analyses, we used a random-effects model due to moderate to substantial clinical heterogeneity identified. A broad range of behavioural and self-management interventions were reported, and these studies used a variety of different outcome measures; therefore, the results are

likely to follow a distribution across studies rather than a single true effect.

We expected secondary outcomes to be heterogeneous, with respect to different types of metrics and measurement tools used, how measurements were reported, and who reported the measurements. Therefore, we have provided a narrative synthesis for most of these outcome measures, where a meta-analysis was not feasible. We presented results for each outcome in tables and forest plots accompanied by a narrative synthesis. We followed the guidance in Chapter 12 of the *Cochrane Handbook for Systematic Reviews of Interventions* on synthesis without meta-analysis (McKenzie 2022).

Subgroup analysis and investigation of heterogeneity

We did not plan any subgroup analysis a priori, and we did not perform any post hoc subgroup analyses due to the limited numbers of studies included in separate meta-analyses of short-term and long-term time points.

Sensitivity analysis

We did not plan any sensitivity analysis a priori, and we did not perform any post hoc sensitivity analyses due to the limited meta-analyses performed.

Summary of findings and assessment of the certainty of the evidence

We made decisions after the data analysis to prioritise three comparisons with the most data available, and therefore, the most relevant to clinical decision-making:

1. psycho-behavioural interventions;
2. mind-body interventions;
3. self-management interventions.

We presented these three comparisons in separate summary of findings tables. We prioritised the 6-month time point and reported data as close to the 6-month time point as possible for each comparison.

For the reporting of outcome measurements, we focused on seizure frequency as a measure of seizure control, and the various versions of the Quality of Life in Epilepsy Inventory (QOLIE; validated questionnaires specifically developed to assess health-related quality of life in people with epilepsy) as measurements of patient-reported health-related quality of life.

For each comparison, we included the main outcome, details of scale, number of studies and participants with each outcome, and relative and absolute effect (where reported). We used the GRADE approach to assess the certainty of the evidence for each outcome included in the summary of findings tables. GRADE ratings are derived from the consideration of the overall risk of bias, consistency of effect, imprecision, indirectness, and publication bias (Schünemann 2013; Schünemann 2022). Two review authors (YH and SN) independently made judgements, with any differences resolved through discussion or involving other review authors. We justified all decisions to downgrade the certainty of the evidence using footnotes and made comments to aid the reader's understanding of the review where necessary.

RESULTS

Description of studies

Results of the search

Our search identified 4281 publications, which was reduced to 3278 after removing 1003 duplicates. We excluded 3147 records at the title and abstract screening stage. We retrieved 131 full-text articles to screen for eligibility. After reading the articles, we included 36 unique studies in the review. The study flow process is summarised in [Figure 1](#).

Included studies

We included 36 studies (described in 52 full-text articles) with a total of 5834 randomised participants in this review. The types of interventions, participant characteristics, study designs, and settings are summarised in [Table 1](#) and in the [Characteristics of included studies](#) table.

We classified the interventions in five RCTs (312 participants) as **psycho-behavioural interventions**. Three studies included participants with a diagnosis of epilepsy ([Lundgren 2006](#); [Lundgren 2008](#); [McLaughlin 2011](#)), one large study included 200 participants with a diagnosis of epilepsy and depression ([Meyer 2019](#)), and one study included participants with epilepsy who had significant psychological problems and inadequate seizure control ([Tan 1986](#)). Three studies were conducted in high-income countries (HICs) as defined by the World Bank ([McLaughlin 2011](#); [Meyer 2019](#); [Tan 1986](#)), one study in an upper-middle-income country (UMIC) ([Lundgren 2006](#)), and one study in a lower-middle-income country (LMIC) ([Lundgren 2008](#)). All studies recruited participants from outpatient clinics or epilepsy centres. Interventions included acceptance and commitment therapy (ACT) ([Lundgren 2006](#); [Lundgren 2008](#)), and cognitive behavioural therapy (CBT) ([McLaughlin 2011](#); [Meyer 2019](#); [Tan 1986](#)). Controls were yoga, relaxation techniques, usual care (participants may engage with any epilepsy treatment), supportive therapy, and no treatment.

We classified the interventions in nine studies (427 participants) as **mind-body interventions**. Three studies included participants with a diagnosis of epilepsy ([Dahl 1987](#); [Mehrabi 2019](#); [Puskarich 1992](#)), one study included participants with a diagnosis of epilepsy and mild depression ([Thompson 2020](#)), and five studies included participants with drug-resistant, refractory, or severe epilepsy ([Deepak 1994](#); [Haut 2018](#); [Sathyaprabha 2008](#); [Sidorenko 2000](#); [Tang 2015](#)). Six studies were conducted in HICs ([Dahl 1987](#); [Haut 2018](#); [Puskarich 1992](#); [Sidorenko 2000](#); [Tang 2015](#); [Thompson 2020](#)), one study in a UMIC ([Mehrabi 2019](#)), and two studies in LMICs ([Deepak 1994](#); [Sathyaprabha 2008](#)). All participants were recruited from a specialist setting, including neurology clinics, epilepsy centres, universities, and epilepsy-associated organisations. Interventions include relaxation techniques ([Dahl 1987](#); [Haut 2018](#); [Puskarich 1992](#)), mindfulness ([Mehrabi 2019](#); [Tang 2015](#); [Thompson 2020](#)), meditation ([Deepak 1994](#)), yoga ([Sathyaprabha 2008](#)), and music therapy ([Sidorenko 2000](#)). Controls were attention controls, simple exercise, usual care (waiting list), and quiet sitting. Six studies were parallel-group RCTs, two studies were cross-over RCTs ([Dahl 1987](#); [Thompson 2020](#)), and one study was a quasi-RCT ([Mehrabi 2019](#)). The control interventions were not defined in two studies ([Mehrabi 2019](#); [Sidorenko 2000](#)).

We classified the interventions in eight studies (1501 participants) as **self-management interventions**. Six studies included participants with a diagnosis of epilepsy ([Fontaine 2023](#); [Hu 2020](#); [May 2002](#); [Ridsdale 2018](#); [Sajatovic 2018](#); [Si 2020](#)), one study included participants with a diagnosis of epilepsy and learning disability ([Mengoni 2016](#)), one study included participants with a diagnosis of epilepsy plus their caregivers ([Sepat 2021](#)). Five studies were conducted in HICs ([Fontaine 2023](#); [May 2002](#); [Mengoni 2016](#); [Ridsdale 2018](#); [Sajatovic 2018](#)), two studies in UMICs ([Hu 2020](#); [Si 2020](#)), and one study in an LMIC ([Sepat 2021](#)). Six studies recruited participants from specialist epilepsy centres or settings, one study recruited from a single UK National Health Service (NHS) trust, and one study from an urban setting. Interventions include face-to-face education programmes ([Fontaine 2023](#); [Hu 2020](#); [May 2002](#); [Ridsdale 2018](#)), digital applications ([Sepat 2021](#); [Si 2020](#)), educational booklets ([Mengoni 2016](#)), and a combined programme ([Sajatovic 2018](#)). Control groups were usual care (usual medical care or treatment as usual), telephone follow-up calls without educational content, or digital education materials only. Six studies were RCTs; one study was a feasibility RCT ([Mengoni 2016](#)); and one study was an RCT with a cross-over phase where the usual care control group crossed over to receive the intervention after 24 weeks ([Sajatovic 2018](#)).

We classified the interventions in four studies (194 participants) as **physical exercise-based interventions**. Three studies included participants with a diagnosis of epilepsy ([Hafele 2021](#); [Kumar 2022](#); [McAuley 2001](#)), and one study included participants with focal drug-resistant epilepsy ([Akerlund 2021](#)). Two studies were conducted in HICs ([Akerlund 2021](#); [McAuley 2001](#)), one study in a UMIC ([Hafele 2021](#)), and one study in an LMIC ([Kumar 2022](#)). Two studies recruited participants from neurology departments, one from an outpatient setting, another study recruited via social media, local press, and public health system facilities. Controls were relaxation exercise and normal level of activity. Three studies were RCTs, and one study was a quasi-RCT ([Hafele 2021](#)).

We classified the interventions in four RCTs (669 participants) as **nurse-led service-based interventions**. All four studies included participants with a diagnosis of epilepsy or on anti-seizure medications who had had an attack in the previous two years. One study excluded participants with significant learning disabilities ([Helde 2005](#)). All four studies were conducted in HICs, and recruited from a range of settings, including neurology clinics or specialist epilepsy clinics, general practice, or hospitals. Interventions included an education and counselling programme ([Helde 2005](#)), counselling ([Pfafflin 2016](#)), and specialist epilepsy clinics ([Ridsdale 1997](#); [Ridsdale 2000](#)). Control groups received usual care, including conventional treatment, appointments with treating neurologists, and routine telephone follow-up with nurses; standard outpatient service; and care from a general practitioner or usual specialist.

We classified the interventions in six studies (2731 participants) as **other service-based interventions**. All studies included participants with a diagnosis of epilepsy. One study excluded participants with serious comorbidities ([Bahrani 2017](#)), and two studies excluded participants who had severe learning disabilities or major cognitive impairment ([Thapar 2002](#); [Zheng 2019](#)). One study was conducted in a HIC ([Thapar 2002](#)), two studies were in UMICs ([Li 2013](#); [Zheng 2019](#)), and three studies were in LMICs ([Eshiet 2023](#); [Bahrani 2017](#); [Singh 2022](#)). Three studies recruited participants from a specialist or academic centre ([Bahrani 2017](#);

Eshiet 2023; Zheng 2019), two studies recruited participants from primary care (Li 2013; Thapar 2002), and one study from poor urban and peri-urban rural communities (Singh 2022). Interventions included a multidisciplinary team-based programme (Zheng 2019), telephone review (Bahrani 2017), pharmaceutical care service (Eshiet 2023), home-based primary health care (Singh 2022), medication compliance intervention (Li 2013), and prompt and reminder cards (Thapar 2002). Thapar 2002 was a multi-armed study with two intervention groups (doctor-held card and patient-held card groups). Control groups received usual care, including conventional (in-person) clinic management, usual conventional care provided by hospitals, usual clinic care and standard management (not otherwise defined). Thapar 2002 did not define a control group. Five studies were RCTs and one study was a cluster-RCT (Singh 2022).

We attempted to contact the authors of two studies for additional information about the study population or outcomes (Ridsdale 1997; Sidorenko 2000), but received no response. We contacted the author of one study about a supplementary table detailing outcome measures (Sepat 2021), and received this information.

Excluded studies

We excluded 79 full-text articles, reporting on 53 unique studies. Of these, we excluded 43 studies as they did not report seizure control outcomes (Ahorsu 2020; Albert 2019; Aliasgharpour 2013; Allendorfer 2019; Beretta 2014; Chen 2021; Cote 2021; Dilorio 2009; Dilorio 2011; Engelberts 2002; Eshiet 2019; Eshiet 2021; Feng 2022; Feter 2020; Gandy 2014; Helgeson 1990; HOBSCOTCH 2016; Hosseini 2016; Hum 2019; Khachian 2018; Lai 2021; Lin 2019; Lua

2013; Mamanpush 2014; Martiniuk 2007; Martinovic 2006; Mehrabi 2022; Mohamadpour 2017; Olley 2001; Paardekoooper 2020; PACES 2015; PEARLS 2010; Pramuka 2007; Rabiei 2022; Sajatovic 2019; Schroder 2014; Shirvan 2021; Talo 2023; UPLIFT 2015; Vooturi 2020; Xie 2023; Yadegary 2015; ZMILE 2018); two studies had an ineligible study design (Lua 2012; Rafiee 2020); two studies had mixed diagnoses and did not report participants with epilepsy separately (Gandy 2023; Rawlings 2018); two studies were not randomised designs, as the participants were allocated to either the intervention or control group depending on their availability to attend the intervention (Edward 2019; Orjuela-Rojas 2015); two studies were published in Persian and translation was not available (Ebrahimpour 2019, Salehzadeh 2011); one study evaluated an intervention that was not of interest (Baxendale 2012); and one study did not include a population of interest (Li 2016).

Risk of bias in included studies

Figure 2 illustrates the overall risk of bias in the included studies. We assessed 16 studies as having an overall low risk of bias (Akerlund 2021; Bahrani 2017; Deepak 1994; Fontaine 2023; Hafele 2021; Haut 2018; Helde 2005; Kumar 2022; Li 2013; Meyer 2019; Pfafflin 2016; Ridsdale 2018; Sepat 2021; Si 2020; Tang 2015; Zheng 2019), 11 studies as high risk of bias (Lundgren 2008; May 2002; McAuley 2001; McLaughlin 2011; Mehrabi 2019; Mengoni 2016; Puskarich 1992; Sathyaprabha 2008; Sidorenko 2000; Tan 1986; Thompson 2020), and nine studies as unclear risk of bias (Dahl 1987; Eshiet 2023; Hu 2020; Lundgren 2006; Ridsdale 1997; Ridsdale 2000; Sajatovic 2018; Singh 2022; Thapar 2002). Figure 3 shows individual study assessments; reasons for judgements about risk of bias are provided in the Characteristics of included studies table.

Figure 2. Risk of bias graph: review authors' judgements about each risk of bias item presented as percentages across all included studies.

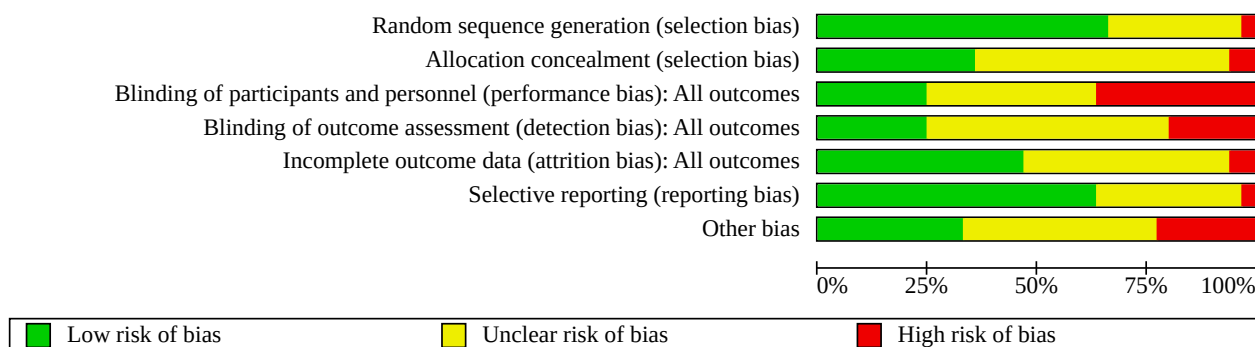


Figure 3. Risk of bias summary: review authors' judgements about each risk of bias item for each included study.

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias): All outcomes	Blinding of outcome assessment (detection bias): All outcomes	Incomplete outcome data (attrition bias): All outcomes	Selective reporting (reporting bias)	Other bias
Akerlund 2021	+	+	+	-	+	+	?
Bahrani 2017	+	+	?	?	+	+	-
Dahl 1987	?	-	+	-	+	?	?
Deepak 1994	?	?	+	+	+	?	?
Eshiet 2023	+	?	-	-	?	+	+
Fontaine 2023	+	?	-	-	+	+	+
Hafele 2021	?	-	+	-	+	+	+
Haut 2018	+	+	+	+	+	+	?
Helde 2005	+	+	+	+	?	?	+
Hu 2020	+	+	+	?	-	?	?
Kumar 2022	+	+	+	-	?	?	?
Li 2013	+	+	+	+	?	?	-
Lundgren 2006	+	?	?	?	?	+	?
Lundgren 2008	+	?	?	?	+	+	?
May 2002	?	?	?	?	?	+	?
McAuley 2001	?	?	?	?	?	+	?
McLaughlin 2011	+	?	?	?	+	+	-

Figure 3. (Continued)

McLaughlin 2011	+	?	?	?	+	+	-
Mehrabi 2019	?	?	?	?	?	?	?
Mengoni 2016	+	+	-	?	+	+	+
Meyer 2019	+	+	-	?	+	+	+
Pfafflin 2016	+	?	?	?	?	+	+
Puskarich 1992	+	?	?	?	?	+	?
Ridsdale 1997	?	?	?	?	+	?	-
Ridsdale 2000	+	?	-	?	?	?	+
Ridsdale 2018	+	+	-	+	+	+	+
Sajatovic 2018	+	?	-	?	?	+	?
Sathyaprabha 2008	-	?	?	?	?	+	-
Sepat 2021	+	?	-	-	+	+	+
Si 2020	+	+	-	+	+	+	+
Sidorenko 2000	?	?	-	?	?	?	-
Singh 2022	+	+	-	?	?	+	+
Tan 1986	?	?	?	+	+	?	-
Tang 2015	+	?	?	+	+	+	?
Thapar 2002	?	?	?	?	?	+	?
Thompson 2020	?	?	-	?	-	-	-
Zheng 2019	+	+	-	+	?	?	?

Allocation

Random sequence generation

We assessed 24 studies to be at low risk of bias as they described an appropriate method of random sequence generation (Akerlund 2021; Bahrani 2017; Eshiet 2023; Fontaine 2023; Haut 2018; Helde 2005; Hu 2020; Kumar 2022; Li 2013; Lundgren 2006; Lundgren 2008; McLaughlin 2011; Mengoni 2016; Meyer 2019; Pfafflin 2016; Puskarich 1992; Ridsdale 2000; Ridsdale 2018; Sajatovic 2018; Sepat 2021; Si 2020; Singh 2022; Tang 2015; Zheng 2019); one study at high risk of bias (Sathyaprabha 2008); and 11 studies as unclear risk, due to insufficient information (Dahl 1987; Deepak 1994; Hafele 2021; May 2002; McAuley 2001; Mehrabi 2019; Ridsdale 1997; Sidorenko 2000; Tan 1986; Thapar 2002; Thompson 2020).

Allocation concealment

We assessed 13 studies to be at low risk of bias as they described an appropriate method of allocation concealment (Akerlund 2021; Bahrani 2017; Haut 2018; Helde 2005; Hu 2020; Kumar 2022; Li 2013; Mengoni 2016; Meyer 2019; Ridsdale 2018; Si 2020; Singh 2022; Zheng 2019); two studies at high risk of bias (Dahl 1987; Hafele 2021); and 21 as unclear risk, due to insufficient information (Deepak 1994; Eshiet 2023; Fontaine 2023; Lundgren 2006; Lundgren 2008; May 2002; McAuley 2001; McLaughlin 2011; Mehrabi 2019; Pfafflin 2016; Puskarich 1992; Ridsdale 1997;

Ridsdale 2000; Sajatovic 2018; Sathyaprabha 2008; Sepat 2021; Sidorenko 2000; Tan 1986; Tang 2015; Thapar 2002; Thompson 2020).

Blinding

Blinding of participants and personnel

We judged nine studies to be at low risk of bias in this domain as they described appropriate methods of blinding (Akerlund 2021; Dahl 1987; Deepak 1994; Hafele 2021; Haut 2018; Helde 2005; Hu 2020; Kumar 2022; Li 2013); 13 studies to be at high risk of bias, as they did not blind participants and personnel (Eshiet 2023; Fontaine 2023; Mengoni 2016; Meyer 2019; Ridsdale 2000; Ridsdale 2018; Sajatovic 2018; Sepat 2021; Si 2020; Sidorenko 2000; Singh 2022; Thompson 2020; Zheng 2019); and 14 studies to be at unclear risk, due to insufficient information (Bahrani 2017; Lundgren 2006; Lundgren 2008; May 2002; McAuley 2001; McLaughlin 2011; Mehrabi 2019; Pfafflin 2016; Puskarich 1992; Ridsdale 1997; Sathyaprabha 2008; Tan 1986; Tang 2015; Thapar 2002).

Blinding of outcome measure assessment

We judged nine studies to be at low risk of detection bias as they described appropriate methods of blinding outcome assessors (Deepak 1994; Haut 2018; Helde 2005; Li 2013; Ridsdale 2018; Si 2020; Tan 1986; Tang 2015; Zheng 2019); seven studies to be at high risk in this domain, as they did not blind outcome assessors

(Akerlund 2021; Dahl 1987; Eshiet 2023; Fontaine 2023; Hafele 2021; Kumar 2022; Sepat 2021); and 20 studies to be at unclear risk, due to insufficient information (Bahrani 2017; Hu 2020; Lundgren 2006; Lundgren 2008; May 2002; McAuley 2001; McLaughlin 2011; Mehrabi 2019; Mengoni 2016; Meyer 2019; Pfafflin 2016; Puskarich 1992; Ridsdale 1997; Ridsdale 2000; Sajatovic 2018; Sathyaprabha 2008; Sidorenko 2000; Singh 2022; Thapar 2002; Thompson 2020).

Incomplete outcome data

We assessed 17 studies to be at low risk of attrition bias as they accounted for all participants during follow-up (Akerlund 2021; Bahrani 2017; Dahl 1987; Deepak 1994; Fontaine 2023; Hafele 2021; Haut 2018; Lundgren 2008; McLaughlin 2011; Mengoni 2016; Meyer 2019; Ridsdale 1997; Ridsdale 2018; Sepat 2021; Si 2020; Tan 1986; Tang 2015); two studies to be at high risk of bias (Hu 2020; Thompson 2020); and 17 studies to be at unclear risk of bias (Eshiet 2023; Helde 2005; Kumar 2022; Li 2013; Lundgren 2006; May 2002; McAuley 2001; Mehrabi 2019; Pfafflin 2016; Puskarich 1992; Ridsdale 2000; Sajatovic 2018; Sathyaprabha 2008; Sidorenko 2000; Singh 2022; Thapar 2002; Zheng 2019).

Selective reporting

We assessed 23 studies to be at low risk of selective reporting bias as they reported all protocol-specified outcomes (Akerlund 2021; Bahrani 2017; Eshiet 2023; Fontaine 2023; Hafele 2021; Haut 2018; Lundgren 2006; Lundgren 2008; May 2002; McAuley 2001; McLaughlin 2011; Mengoni 2016; Meyer 2019; Pfafflin 2016; Puskarich 1992; Ridsdale 2018; Sajatovic 2018; Sathyaprabha 2008; Sepat 2021; Si 2020; Singh 2022; Tang 2015; Thapar 2002); one study to be at high risk of bias (Thompson 2020); and 12 studies as unclear risk of bias (Dahl 1987; Deepak 1994; Helde 2005; Hu 2020; Kumar 2022; Li 2013; Mehrabi 2019; Ridsdale 1997; Ridsdale 2000; Sidorenko 2000; Tan 1986; Zheng 2019).

Other potential sources of bias

We assessed 12 studies to be at low risk of other bias (Eshiet 2023; Fontaine 2023; Hafele 2021; Helde 2005; Mengoni 2016; Meyer 2019; Pfafflin 2016; Ridsdale 2000; Ridsdale 2018; Sepat 2021; Si 2020; Singh 2022); 10 at high risk of bias (Bahrani 2017; Li 2013; McAuley 2001; McLaughlin 2011; Puskarich 1992; Ridsdale 1997; Sathyaprabha 2008; Sidorenko 2000; Tan 1986; Thompson 2020); and 14 studies as unclear risk of bias (Akerlund 2021; Dahl 1987; Deepak 1994; Haut 2018; Hu 2020; Kumar 2022; Lundgren 2006; Lundgren 2008; May 2002; Mehrabi 2019; Sajatovic 2018; Tang 2015; Thapar 2002; Zheng 2019).

Reasons for these judgements are provided in the [Characteristics of included studies](#) tables.

Effects of interventions

See: [Summary of findings 1](#) Psycho-behavioural interventions versus control interventions; [Summary of findings 2](#) Mind-body interventions versus control interventions; [Summary of findings 3](#) Self-management interventions versus control interventions

We summarised all outcome data, whether included in meta-analysis (see [Data and analyses](#)), presented in forest plots for single studies (see [Data and analyses](#)), or reported narratively, in additional tables ([Table 2](#); [Table 3](#); [Table 4](#); [Table 5](#); [Table 6](#); [Table 7](#); [Table 8](#); [Table 9](#); [Table 10](#)) and supplementary tables ([Table 11](#); [Table 12](#); [Table 13](#); [Table 14](#); [Table 15](#); [Table 16](#); [Table 17](#)).

Due to the large number of results reported, we report seizure frequency and overall HRQoL in detail for each intervention below, and we report all the results of meta-analyses for all outcomes. We provide a brief summary of results for other secondary outcomes reported within a single study, and refer the reader to numerical estimates within the forest plots, additional tables, or both.

Comparison 1. Psycho-behavioural interventions

Primary outcome

Seizure frequency: post-intervention and short term (up to six months)

Five studies assessed seizure frequency reduction immediately post-intervention.

Two studies – one comparing acceptance and commitment therapy (ACT) with supportive therapy (Lundgren 2006) and another comparing cognitive behavioural therapy (CBT) with relaxation techniques (McLaughlin 2011) – provided data allowing a meta-analysis. This showed no difference in mean seizure frequency post-intervention (mean seizure frequency reduction 3.57 per month, 95% confidence interval (CI) 7.43 per month lower to 0.29 per month higher; $I^2 = 71\%$; 64 participants; low-certainty evidence due to risk of bias and inconsistency; [Analysis 1.1](#); [Table 2](#); [Table 11](#)).

Two studies assessed seizure frequency reduction at three to six months post-intervention and provided data allowing a meta-analysis (Lundgren 2006; McLaughlin 2011). This showed a reduction in mean seizure frequency (mean seizure frequency reduction 4.42 per month, 95% CI 6.41 per month lower to 2.43 per month lower; $I^2 = 23\%$; 64 participants; moderate-certainty evidence due to risk of bias; [Summary of findings 1](#); [Analysis 1.1](#); [Table 2](#); [Table 11](#)).

An additional three studies compared ACT to yoga (Lundgren 2008), electronic CBT to usual care (Meyer 2019), and CBT to supportive counselling or waiting-list group (Tan 1986). The measures of seizure frequency reported varied amongst these studies, but all reported no difference between intervention and control post-intervention ([Table 2](#)).

Seizure frequency: long term (beyond six months)

Lundgren 2006 reported a reduction in mean monthly seizure frequency at 12 months post-intervention (mean seizure frequency reduction 5.18 per month, 95% CI 7.14 per month lower to 3.22 per month lower; 27 participants; low-certainty evidence due to risk of bias and imprecision; [Analysis 1.1](#); [Table 2](#); [Table 11](#)).

Secondary outcomes

Seizure severity

Not reported.

Health-related quality of life (HRQoL)

Overall HRQoL

Three studies found no difference between intervention and control in overall HRQoL outcomes according to validated scales.

Meyer 2019 reported on the Quality of Life in Epilepsy Inventory-10 (QOLIE-10) total score, where a higher score suggests improvement in HRQoL. There was no difference between intervention and control at three months (mean total score was 1.51 higher, 95%

CI 0.26 lower to 3.28 higher; 148 participants; moderate-certainty evidence due to risk of bias; [Analysis 1.2](#); [Table 4](#); [Table 11](#)); six months (mean total score was 0.89 higher, 95% CI 1.06 lower to 2.84 higher; 120 participants; moderate-certainty evidence due to risk of bias; [Summary of findings 1](#); [Analysis 1.2](#); [Table 4](#); [Table 11](#)); or nine months (mean score was 1.53 higher, 95% CI 0.40 lower to 3.46 higher; 112 participants; moderate-certainty evidence due to risk of bias; [Analysis 1.2](#); [Table 4](#); [Table 11](#)).

Two studies provided data allowing a meta-analysis, using the World Health Organization Quality of Life instrument, short version (WHOQOL-BREF) scale, where a higher score suggests improvement in HRQoL ([Lundgren 2006](#); [Lundgren 2008](#)). There was no difference between interventions and controls immediately post-intervention (mean score 0.39 higher, 95% CI 5.49 lower to 6.28 higher; $I^2 = 33\%$; 45 participants; moderate-certainty evidence due to risk of bias; [Analysis 1.3](#); [Table 4](#); [Table 11](#)); at six months (mean score 1.72 higher, 95% CI 4.88 lower to 8.31 higher; $I^2 = 56\%$; 45 participants; low-certainty evidence due to risk of bias and inconsistency; [Analysis 1.3](#); [Table 4](#); [Table 11](#)); or at 12 months (mean score was 5.46 higher, 95% CI 11.51 lower to 22.43 higher; $I^2 = 95\%$; 45 participants; very low-certainty evidence due to risk of bias and serious inconsistency; [Analysis 1.3](#); [Table 4](#); [Table 11](#)). For the latter meta-analysis, at 12 months, the two included studies showed results in opposite directions and statistical heterogeneity was very high ($I^2 = 95\%$). We are therefore very uncertain about the long-term effect of psycho-behavioural interventions on HRQoL.

Other aspects relating to HRQoL

All five studies included in this comparison reported outcomes relating to specific aspects of HRQoL.

Two studies provided data allowing a meta-analysis of the Satisfaction With Life Scale (SWLS), where a higher score indicates greater satisfaction ([Lundgren 2006](#); [Lundgren 2008](#)). There were no differences immediately post-intervention (mean difference (MD) 5.46, 95% CI -2.97 to 13.89; $I^2 = 81\%$), at six months (MD 5.46, 95% CI -9.04 to 19.9; $I^2 = 92\%$), or at 12 months (MD 5.90, 95% CI -5.06 to 16.87; $I^2 = 91\%$) ([Analysis 1.4](#); [Table 5](#)). At all time points, little to no effect was shown in [Lundgren 2008](#) and a large effect in favour of ACT was shown in [Lundgren 2006](#). Therefore, statistical heterogeneity is very high for all reported time points, and we are very uncertain about the effect of psycho-behavioural interventions on satisfaction with life.

[McLaughlin 2011](#) showed no difference between groups in terms of the Geriatric Depression Scale (GDS) ([Analysis 1.5](#)), depression ([Analysis 1.6](#)), dysthymia ([Analysis 1.7](#)), and Washington Psychosocial Seizure Inventory (WPSI) ([Analysis 1.8](#)) at three months ([Table 5](#)). [Tan 1986](#) showed no difference between groups in the Beck Depression Inventory (BDI) or WPSI post-intervention and at four months ([Table 5](#)).

[Meyer 2019](#) showed a difference in depression scores in favour of the intervention, as measured by the Patient Health Questionnaire (PHQ-9) at three and six months but not at nine months ([Analysis 1.9](#)). The Neurological Disorders Depression Inventory for Epilepsy (NDDIE) favoured the intervention at three and nine months but not at six months ([Analysis 1.10](#)). The Generalised Anxiety Disorder (GAD-7) favoured the intervention at three months, but not at six or nine months ([Analysis 1.11](#)). The Depression Anxiety Stress Scales

(DASS-21) favoured the intervention at three months, but not at six or nine months ([Analysis 1.12](#); [Table 5](#)).

Appropriateness and volume of medications

[Tan 1986](#) reported no difference in medication compliance or anti-seizure medication levels post-intervention or at 4-month follow-up compared with the control group ([Table 6](#)).

Participant-reported knowledge of information and advice received from professionals

Not reported.

Measure of general health status

[Meyer 2019](#) reported improvements in social-occupational impairment (using the Work and Social Adjustment Scale (WSAS)) amongst participants in the intervention group at three and six months post-intervention compared to the control group, but no difference at nine months ([Analysis 1.13](#); [Table 8](#)).

Measure of social or psychological function

[Meyer 2019](#) reported fewer illness-related days off work and fewer days hospitalised for participants in the intervention group compared to control group participants at three months ($P = 0.30$) ([Table 9](#)). [Tan 1986](#) showed no difference between the two groups in a range of psychological assessments after the intervention and at four months ([Table 9](#)).

Adverse events

None of the studies reported worse outcomes in the intervention group compared to the control group. Only one study reported adverse events by evaluating negative effects through a questionnaire. However, it is not possible to assess whether these effects are specifically related to the intervention ([Table 10](#)) ([Meyer 2019](#)).

Comparison 2. Mind-body interventions

Primary outcome

Seizure frequency: short term (up to six months)

Seven studies assessed seizure frequency in the short term, between six weeks and six months.

Three studies compared: progressive muscle relaxation (PMR) with diaphragmatic breathing with a focused attention control (FAC) group ([Haut 2018](#)); progressive muscle relaxation technique with quiet sitting ([Puskarich 1992](#)); and mindfulness with an attention placebo group ([Tang 2015](#)), respectively. The data from these studies allowed a meta-analysis, which showed a reduction in seizure frequency per month for participants in the intervention groups between six and eight weeks post-intervention (mean reduction in seizure frequency was 3.28 per month, 95% CI 6.36 per month lower to 0.20 per month lower; $I^2 = 0\%$; 148 participants; low-certainty evidence due to risk of bias and indirectness; [Summary of findings 2](#); [Analysis 2.1](#); [Table 2](#); [Table 12](#)).

Two studies compared progressive muscle relaxation techniques with quiet sitting ([Puskarich 1992](#)), and mindfulness with an attention placebo control group which received the same contact hours and group format as the intervention group ([Tang 2015](#)). These studies provided data allowing a meta-analysis, which showed no difference between the groups in mean seizure

frequency between six and eight weeks post-intervention (mean seizure frequency reduction was 0.62 per month, 95% CI 4.75 per month lower to 3.51 per month higher; $I^2 = 0\%$; 84 participants; low-certainty evidence due to risk of bias and indirectness; [Analysis 2.2](#); [Table 2](#); [Table 12](#)).

[Haut 2018](#) reported no difference between groups in percentage improvement in seizure counts at eight weeks ([Table 2](#)). One cross-over study comparing a contingent relaxation treatment programme with an attention or waiting-list control group ([Dahl 1987](#)), reported in the experimental phase (pre-cross-over) of the trial at 10 weeks, a 66% reduction in seizure frequency for the intervention group, a 68% increase for the attention group, and a 2% reduction for the waiting-list group ($P < 0.01$) ([Table 2](#)). One study comparing a psycho-educational programme using Mindfulness-Based Cognitive Therapy (MBCT) to waiting-list controls reported a reduction in seizure frequency compared to the control group at 10 weeks ($P = 0.025$) ([Thompson 2020](#); [Table 2](#)). One study comparing yoga to simple exercise reported a reduction in mean seizure frequency score compared to the control group at 10 weeks ($P < 0.001$) ([Sathyaprabha 2008](#); [Table 2](#)). [Deepak 1994](#), which compared meditation to a control group that received the same professional attention but no meditation, reported no difference in median seizure frequency at six months ([Table 2](#)).

Seizure frequency: long term (beyond six months)

Four studies assessed seizure frequency in the long term, between 6 months and 12 months.

[Deepak 1994](#) reported no difference in median seizure frequency at 12 months between groups ([Table 2](#)). One cross-over study comparing a contingent relaxation treatment programme with an attention or waiting-list control group reported there was a difference in seizure frequency before and after treatment in the non-experimental phase post-cross-over (10 weeks and 30 weeks) for all three groups ($P < 0.001$) ([Dahl 1987](#); [Table 2](#)).

[Sidorenko 2000](#), which compared Medical Resonance Therapy - Music (MRT-Music) to an unspecified control group, reported changes in the frequency and severity of epileptic paroxysms, but did not specify the follow-up time point. It reported positive changes in 80% of cases and 20% of the control group ([Table 2](#)).

We were not able to extract seizure frequency outcomes from one study comparing mindfulness to an unspecified control group ([Mehrabi 2019](#)).

Secondary outcomes

Seizure severity

[Thompson 2020](#), which compared MBCT to waiting-list control, measured a mean change in the Liverpool Seizure Severity Scale at baseline and 10 weeks; there was no difference between the intervention and control groups ([Analysis 2.3](#); [Table 3](#)).

Health-related quality of life (HRQoL)

Overall HRQoL

[Tang 2015](#) found no difference in overall HRQoL outcomes according to a validated scale. This study compared mindfulness to an attention placebo control group, assessed using mean QOLIE-31-P (31-item questionnaire, patient-weighted version) total score at six weeks' follow-up, where a higher score suggests

improvement in HRQoL (mean total score was 0.75 higher, 95% CI 5.49 lower to 6.99 higher; 60 participants; low-certainty evidence due to risk of bias and indirectness; [Summary of findings 2](#); [Analysis 2.4](#); [Table 4](#); [Table 12](#)).

Other aspects relating to HRQoL

Four studies reported outcomes relating to specific aspects of HRQoL.

[Tang 2015](#) reported no difference between groups using the BDI (second edition) ([Analysis 2.5](#)) or Beck Anxiety Inventory (BAI) ([Analysis 2.6](#)) at six weeks. [Tang 2015](#) found that verbal memory improved in the mindfulness group compared to the control group, but no differences in other cognitive tests measured at six weeks ([Table 5](#)). [Haut 2018](#) did not show differences in mean stress scores between groups during 12 weeks of treatment ([Table 5](#)). [Thompson 2020](#) showed a change in depression-mediated seizure severity for the intervention group, but no change for seizure frequency. We were not able to extract data from [Mehrabi 2019](#).

Appropriateness and volume of medications

Not reported.

Participant-reported knowledge of information and advice received from professionals

Not reported.

Measure of general health status

[Sathyaprabha 2008](#), which measured the effect of adjuvant yoga therapy, reported improvements in two of the parasympathetic parameters but no overall differences in autonomic function between the groups ([Table 8](#)). [Sidorenko 2000](#) reported that the intervention group had higher levels of a positive subjective state compared to the control group; no P values were reported ([Table 8](#)).

Measure of social or psychological function

[Sidorenko 2000](#) reported a higher percentage of positive change in psychological scores in the intervention compared to the control group; no P values were reported ([Table 9](#)).

Adverse events

None of the studies reported worse outcomes in the intervention groups compared to the control groups. Two studies reported there were no adverse events related to the interventions ([Table 10](#)) ([Haut 2018](#); [Tang 2015](#)).

Comparison 3. Self-management interventions

Primary outcome

Seizure frequency: short term (up to six months)

Six studies assessed seizure frequency in the short term, between one and six months.

We included three studies in a meta-analysis: [Fontaine 2023](#) compared a programme of educational actions designed to improve quality of care to usual care; [Mengoni 2016](#) compared supplying an education booklet versus routine information to participants; and [Sajatovic 2018](#) compared a group format self-management intervention to assist vulnerable subgroups with epilepsy (SMART programme) to waiting-list controls. This meta-analysis showed no difference in seizure frequency between

intervention and control from 20 weeks to six months (mean seizure frequency was 1.61 per month higher, 95% CI 6.08 per month lower to 9.29 per month higher; $I^2 = 0\%$; 222 participants; low-certainty evidence due to risk of bias and imprecision; [Summary of findings 3](#); [Analysis 3.1](#); [Table 2](#); [Table 14](#)).

[Sepat 2021](#) compared an additional virtual interactive epilepsy session to digital education material only, and found no difference between groups in seizure freedom at one month post-intervention (risk ratio (RR) 0.99, 95% CI 0.73 to 1.34; 65 participants; low-certainty evidence due to risk of bias and imprecision; [Analysis 3.2](#); [Table 2](#); [Table 14](#)). Three studies – comparing an educational booklet to routine information ([Mengoni 2016](#)), a programme of educational actions to usual care ([Fontaine 2023](#)), and an epilepsy management app to routine clinic consultation ([Si 2020](#)) – provided data for a meta-analysis, which showed an increase in rates of seizure freedom for participants receiving interventions compared to controls between 20 weeks and six months (RR 1.94, 95% CI 1.39 to 2.72; $I^2 = 12\%$; 500 participants; moderate-certainty evidence due to risk of bias; [Analysis 3.2](#); [Table 2](#); [Table 14](#)).

[Si 2020](#), which compared an epilepsy management app to routine clinic consultation, found no difference between groups in the proportion of people with a 50% reduction in seizure frequency, assessed at six months (RR 1.08, 95% CI 0.88 to 1.32; 380 participants; moderate-certainty evidence due to risk of bias; [Analysis 3.3](#); [Table 2](#); [Table 14](#)).

[Sajatovic 2018](#), a cross-over study comparing an education programme (SMART) to waiting-list controls, showed no difference between groups in: seizure frequency per month at 24 weeks (pre-cross-over) (mean seizure frequency was 1.33 per months higher, 95% CI 0.71 per months lower to 3.37 per months higher; 102 participants; moderate-certainty evidence due to risk of bias; [Analysis 3.4](#); [Table 2](#); [Table 14](#)); change in seizure frequency per month from baseline at six months (mean reduction in seizure frequency was 0.10 per month, 95% CI 2.47 per month lower to 2.27 per month higher; 103 participants; moderate-certainty evidence due to risk of bias; [Analysis 3.5](#); [Table 2](#); [Table 14](#)); or change in seizure frequency from baseline at six months (mean reduction in seizure frequency was 6.95 per month, 95% CI 19.20 per month lower to 5.30 per month higher; 96 participants; low-certainty evidence due to risk of bias and imprecision; [Analysis 3.6](#); [Table 2](#); [Table 14](#)).

[May 2002](#) compared an educational programme (MOSES) to waiting-list group controls, and reported an improvement in the mean seizure frequency scale at six months in the intervention compared to the control group over time ($P = 0.041$) ([Table 2](#)).

Seizure frequency: long term (beyond six months)

Three studies assessed seizure frequency in the long term, from six months to 72 weeks.

[Hu 2020](#) compared an educational session followed by telephone calls with educational content versus telephone calls without educational content. [Sajatovic 2018](#) compared the SMART education programme to original waiting-list controls who had crossed over to the SMART programme. The pooled results from these two studies showed no difference in seizure frequency per month between 12 months and 72 weeks (mean seizure frequency reduction of 0.41 per month, 95% CI 2.75 per month lower to 1.92

per month higher; $I^2 = 75\%$; 181 participants; very low-certainty evidence due to risk of bias and serious inconsistency; [Analysis 3.4](#); [Table 2](#); [Table 14](#)).

[Hu 2020](#) showed an improvement in seizure freedom (RR 2.61, 95% CI 1.11 to 6.13; 92 participants; low-certainty evidence due to risk of bias and imprecision; [Analysis 3.2](#); [Table 2](#); [Table 14](#)); a higher number of participants with a 50% reduction in seizure frequency from baseline (RR 1.32, 95% CI 1.03 to 1.70; 92 participants; moderate-certainty evidence due to risk of bias; [Analysis 3.3](#); [Table 2](#); [Table 14](#)); and a greater reduction in seizure frequency per month from baseline at 12 months (mean reduction in seizure frequency 1.84 per month, 95% CI 3.27 per month lower to 0.41 per month lower; 92 participants; moderate-certainty evidence due to risk of bias; [Analysis 3.5](#); [Table 2](#); [Table 14](#)) for the intervention group compared to the control group at 12 months post-intervention.

[Ridsdale 2018](#), which compared an education course (SMILE) to usual treatment, showed no difference between groups in the number of participants with fewer than one seizure per month at 12 months post-intervention (RR 0.93, 95% CI 0.72 to 1.20; 331 participants; moderate-certainty evidence due to risk of bias; [Analysis 3.7](#); [Table 2](#); [Table 14](#)). This study also reported no difference between groups in seizure frequency or seizure recency (percentage of time seizure free) at 12 months ([Table 2](#)).

[Sajatovic 2018](#), a cross-over study, reported no difference between groups in seizure frequency at 72 weeks, which was post-cross-over (mean seizure frequency was 4.30 per month higher, 95% CI 3.82 per month lower to 12.42 per month higher; 89 participants; very low-certainty evidence due to risk of bias and imprecision; [Analysis 3.1](#); [Table 2](#); [Table 14](#)).

Secondary outcomes

Seizure severity

One cross-over study comparing the SMART programme to waiting-list controls showed no difference in the Liverpool Seizure Severity Scale at multiple time points measured ([Sajatovic 2018](#); [Analysis 3.8](#); [Table 3](#)).

One study comparing educational content delivered in a booklet to routine information reported no difference in the seizure severity subscale of the Epilepsy and Learning Disabilities Quality of Life scale (ELDQOL) scale at 24 weeks ([Mengoni 2016](#); [Analysis 3.8](#); [Table 3](#)).

Health-related quality of life (HRQoL)

Overall HRQoL

Seven studies measured overall HRQoL outcomes between one month and 72 weeks.

Three studies showed no difference between groups in QOLIE-31 or QOLIE-31-P total score, where a higher score reflects better HRQoL. [Sepat 2021](#) measured the outcome at one month (mean scores 2.48 higher, 95% CI 3.59 lower to 8.55 higher; 65 participants; low-certainty evidence due to risk of bias and imprecision; [Analysis 3.9](#); [Table 4](#); [Table 15](#)). Two studies – [Fontaine 2023](#) and [Ridsdale 2018](#) – provided 6-month data for a meta-analysis (mean scores 2.42 higher, 95% CI 2.58 lower to 7.42 higher; $I^2 = 47\%$; 393 participants; moderate-certainty evidence due to risk of bias; [Summary of findings 3](#); [Analysis 3.9](#); [Table 4](#); [Table 15](#)). Two studies – [Hu 2020](#)

and [Ridsdale 2018](#) – provided 12-month data for a meta-analysis (mean scores 3.86 higher, 95% CI 8.40 lower to 16.11 higher; $I^2 = 94\%$; 423 participants; very low-certainty evidence due to risk of bias and serious inconsistency; [Analysis 3.9](#); [Table 4](#); [Table 15](#)). For the latter meta-analysis at 12 months, the two included studies showed results in opposite directions and statistical heterogeneity was very high ($I^2 = 94\%$). We are therefore very uncertain about the long-term effect of self-management interventions on HRQoL.

[Sajatovic 2018](#) measured mean QOLIE-10 total scores, where a lower score means better HRQoL, and found an advantage to intervention over usual care at six months (mean score 0.51 lower, 95% CI 0.88 lower to 0.14 lower; 103 participants; moderate-certainty evidence due to risk of bias; [Analysis 3.10](#); [Table 4](#); [Table 15](#)), and no difference between groups at 72 weeks (mean score 0.22 lower, 95% CI 0.62 lower to 0.18 higher; 74 participants; low-certainty evidence due to risk of bias and indirectness; [Analysis 3.10](#); [Table 4](#); [Table 15](#)).

In addition, [Hu 2020](#) reported that compared to control participants, intervention-group participants had statistically significant improvements in QOLIE-31 subscales measured at 12 months for all domains except for seizure worry.

[May 2002](#) and [Sajatovic 2018](#) measured mean SF-36 physical health component summary (PCS) score and mental health component summary (MCS) score, where higher scores indicate better HRQoL. Both studies provided data for a meta-analysis, which showed no difference between intervention and control at six months (mean PCS score 0.60 lower, 95% CI 3.77 lower to 2.57 higher; $I^2 = 35\%$; 316 participants; [Analysis 3.11](#) and mean MCS score 2.73 higher, 95% CI 1.28 lower to 6.74 higher; $I^2 = 46\%$; 316 participants; moderate-certainty evidence due to risk of bias; [Analysis 3.12](#); [Table 4](#); [Table 15](#)).

[Sajatovic 2018](#) found no difference between the SMART programme group and the waiting-list control group who crossed over to the intervention at six months in PCS score or MCS at 72 weeks (mean PCS score 0.30 lower, 95% CI 5.45 lower to 4.85 lower; 74 participants; [Analysis 3.11](#) and mean MCS score 3.57 higher, 95% CI 2.38 lower to 9.52 higher; 74 participants; [Analysis 3.12](#)). The certainty of the evidence was low due to risk of bias and indirectness; [Table 4](#); [Table 15](#)).

[Mengoni 2016](#) measured overall HRQoL using the ED-5D-5L instrument and the Epilepsy and Learning Disabilities QoL scale (ELDQOL) at 20 weeks. There was no difference between groups in ELDQOL-behaviour, ELDQOL-mood, or ELDQOL-side effects scores (mean score 1.36 lower, 95% CI 3.31 lower to 0.59 higher; 32 participants; [Analysis 3.13](#); mean score 1.03 lower, 95% CI 3.96 lower to 1.90 higher; 33 participants; [Analysis 3.13](#); and mean score 0.33 higher, 95% CI 7.39 lower to 8.05 higher; 25 participants; [Analysis 3.14](#), respectively), ED-5D-5L index score (mean score 0.04 higher, 95% CI 0.20 lower to 0.28 higher; 30 participants; [Analysis 3.15](#)), or ED-5D-5L visual analogue scale (VAS) score (mean score 1.51 lower, 95% CI 18.10 lower to 16.08 higher; 31 participants; [Analysis 3.16](#)). All evidence was of low certainty due to risk of bias and indirectness ([Table 4](#); [Table 15](#)).

Other aspects relating to HRQoL

Four studies reported outcomes related to specific aspects of HRQoL between four and 72 weeks.

[Sajatovic 2018](#) and [Si 2020](#) measured HRQoL using the Epilepsy Self-Management Scale (ESMS), where higher scores indicate better self-management. [Sajatovic 2018](#) reported increased self-management in the intervention compared to the control group between four and 10 weeks ([Analysis 3.17](#); [Table 5](#)). Both studies reported 6-month data allowing a meta-analysis, which showed an advantage to the intervention over control (MD 16.76, 95% CI 11.02 to 22.50; $I^2 = 67\%$). [Sajatovic 2018](#) reported no difference between groups at 72 weeks ([Analysis 3.17](#); [Table 5](#)).

[May 2002](#) and [Sajatovic 2018](#) measured stigma. [Sajatovic 2018](#) reported no difference between groups at 10 weeks ([Analysis 3.18](#)). Both studies reported data at six months, allowing a meta-analysis, which showed an advantage to the intervention over control (MD 6.12, 95% CI 1.63 to 11.93; $I^2 = 0\%$). [Sajatovic 2018](#) reported no difference at 72 weeks ([Analysis 3.18](#)).

[May 2002](#) reported a difference in favour of the intervention for the Coping with Epilepsy score ([Analysis 3.24](#)), but no differences between groups in the Depressive Mood Scale ([Analysis 3.19](#)), Rosenberg Self-esteem Scale ([Analysis 3.20](#)), restrictions on daily living ([Analysis 3.21](#)), mobility and leisure behaviour ([Analysis 3.22](#)), and epilepsy-related fear ([Analysis 3.23](#)) at six months.

[Ridsdale 2018](#) reported no difference between groups in: the Hospital Anxiety and Depression Scale-depression subscale (HADS-D) ([Analysis 3.25](#)), HADS-anxiety subscale (HADS-A) ([Analysis 3.26](#)), or self-mastery and control score ([Analysis 3.27](#)) at six months; the Impact of Epilepsy Score at six or 12 months ([Analysis 3.28](#), [Table 5](#)); or stigma ([Table 5](#)).

[Sajatovic 2018](#) reported advantages of the intervention, assessed with the Patient Health Questionnaire (PHQ-9) at 10 and 24 weeks, but not at 72 weeks once the waiting-list control group had crossed over to the SMART programme ([Analysis 3.29](#)). An advantage was also reported for the intervention in terms of the Montgomery-Åsberg Depression Rating Scale (MADRS) at all three time points ([Analysis 3.30](#); [Table 5](#)), and for the Epilepsy Self-Efficacy Scale at 24 weeks but not at 10 or 72 weeks ([Analysis 3.31](#); [Table 5](#)).

Appropriateness and volume of medications

Five studies reported results related to medication adherence, management, and tolerance between six and 12 months, as follows.

[Hu 2020](#) reported drug adherence was higher in the intervention group compared to the control group at 12 months using the Morisky Medication Adherence Scale (MMAS) ([Analysis 3.32](#); [Table 6](#)). [May 2002](#) reported no difference between the groups in anti-epileptic drug (AED) tolerability scores at six months ([Analysis 3.33](#); [Table 6](#)). [Li 2013](#) reported an improvement in AED adherence scores between intervention and control groups at six and 12 months. [Ridsdale 2018](#) reported no difference between the groups in medication adherence at six and 12 months ([Table 6](#)). [Si 2020](#) reported increased scores for medication management in the intervention compared to the control group at six months ([Table 6](#)).

Participant-reported knowledge of information and advice received from professionals

Three studies reported knowledge-based outcomes between one week and six months.

[Sepat 2021](#) reported improvements in knowledge in the intervention compared to the control group after one week using an

assessment tool designed for the study (Analysis 3.34; Table 7). May 2002 reported an improvement in the Epilepsy Knowledge Scale for the intervention compared to the control group at six months (Analysis 3.35; Table 7). Fontaine 2023 reported an improvement in knowledge in the intervention compared to the control group at six months using a self-designed assessment tool (Analysis 3.34; Table 7).

Measure of general health status

Sajatovic 2018, a cross-over study, did not report any differences in negative health events between groups originally randomised to intervention versus control (Table 8).

Measure of social or psychological function

Sajatovic 2018 also reported no overall difference between the intervention and the control groups in mean changes in the Multidimensional Scale of Perceived Social Support (MSPSS) (Analysis 3.36; Table 9).

Adverse events

None of the studies reported worse outcomes in the intervention compared to the control groups. Four studies reported there were no adverse events related to the interventions (Table 10).

Comparison 4. Physical exercise-based interventions

Primary outcome

Seizure frequency: short term (up to six months)

Four studies assessed seizure frequency in the short term between 12 weeks and six months post-intervention.

Two studies that compared physical exercise to normal daily activities provided data allowing a meta-analysis (Hafele 2021; McAuley 2001). The meta-analysis showed no difference in seizure freedom at 12 weeks (RR 1.44, 95% CI 0.92 to 2.25; $I^2 = 0\%$; 44 participants; low-certainty evidence due to risk of bias and indirectness; Analysis 4.1; Table 2; Table 13).

Akerlund 2021 compared moderate cardiovascular exercise to relaxation exercise, while Hafele 2021 compared physical exercise to normal daily activities. These studies provided data allowing a meta-analysis, which showed a reduction in the percentage change in seizure frequency from baseline to follow-up at three to six months (mean percentage reduction was 73.32%, 95% CI 143.23% lower to 3.42% lower; $I^2 = 0\%$; 41 participants; very low-certainty evidence due to risk of bias, indirectness, and imprecision; Analysis 4.2; Table 2; Table 13). Hafele 2021 reported no difference between groups in seizure frequency from baseline at 12 weeks (mean change reduction was 1.10 per month, 95% CI 4.15 per month lower to 1.95 per month higher; 20 participants; very low-certainty evidence due to risk of bias, indirectness, and imprecision; Analysis 4.3; Table 2; Table 13).

One additional study comparing physical exercise to standard medical care reported no difference between groups in seizure frequency at 12 weeks (Kumar 2022; Table 2).

Seizure frequency: long term (beyond six months)

Not reported.

Secondary outcomes

Seizure severity

Not reported.

Health-related quality of life (HRQoL)

Overall HRQoL

Three studies reported overall HRQoL outcomes according to validated scales.

Three studies provided 12-week data, allowing a meta-analysis of QOLIE-31 or QOLIE-89 total scores, where a higher score indicates improvement in HRQoL (Hafele 2021; Kumar 2022; McAuley 2001). The meta-analysis showed no difference between intervention and control (mean total score 3.80 higher, 95% CI 1.17 lower to 8.77 higher; $I^2 = 3\%$; 160 participants; low-certainty evidence due to risk of bias and indirectness; Analysis 4.4; Table 4; Table 13).

Hafele 2021 reported improvements for the intervention participants in the QOLIE-31 subscale domains of seizure worry, general quality of life, energy/fatigue, and cognitive function compared to the control group at 12 weeks. However, Kumar 2022 did not show any differences in QOLIE-31 subscale domains at 12 weeks (Table 4). McAuley 2001 reported an improvement in physical function in QOLIE-89 subscale in the intervention group at 12 weeks compared to baseline; no intergroup comparisons were made (Table 4).

Other aspects relating to HRQoL

Three studies found no difference between intervention- and control-reported outcomes relating to specific aspects of HRQoL.

Akerlund 2021 showed no difference in HADS-A (Analysis 4.5), HADS-D (Analysis 4.6), and the RAND 36-item health survey (RAND-36) scores at six months (Table 5). Hafele 2021 showed no difference between groups in the Neurological Disorders Depression Inventory for Epilepsy (NDDIE) (Analysis 4.7), State-Trait Anxiety Inventory (STAI) state (Analysis 4.8), STAI trait (Analysis 4.9), Perceived Stress Scale (PSS-10) (Analysis 4.10), and Pittsburgh Sleep Quality Index (PSQI) (Analysis 4.11) at 12 weeks (Table 5). McAuley 2001 showed no difference in Profile of Moods States (POMS) at 12 weeks (Analysis 4.12) or Rosenberg Self-esteem Scale at 12 or 16 weeks (Analysis 4.13).

Appropriateness and volume of medications

Hafele 2021 showed no difference in the adverse effects profile of anti-seizure medications between intervention and control at three months (Analysis 4.14; Table 6).

Participant-reported knowledge of information and advice received from professionals

Not reported.

Measure of general health status

Not reported.

Measure of social or psychological function

Not reported.

Adverse events

None of the studies reported worse outcomes in the intervention compared to the control group. All four studies reported that no participants experienced exercise-related seizures during the intervention (Table 10). One study reported that one participant stopped the exercise due to an increase in seizure frequency (Akerlund 2021).

Comparison 5. Nurse-led service delivery interventions

Primary outcome

Seizure frequency: short term (up to six months)

Ridsdale 2000 compared nurse-led specialist care to usual care, and reported no difference between the groups in median months since the last seizure at six months (102 participants; low-certainty evidence due to risk of bias and imprecision; Table 2; Table 16).

The other three studies included in this comparison did not report a seizure frequency outcome (Helde 2005; Pfafflin 2016; Ridsdale 1997).

Seizure frequency: long term (beyond six months)

Not reported.

Secondary outcomes

Seizure severity

Not reported.

Health-related quality of life (HRQoL)

Overall HRQoL

Two studies found no difference between intervention and control in overall HRQoL outcomes using validated scales between six months and two years.

Pfafflin 2016 compared epilepsy nurse counselling to standard outpatient service, and reported QOLIE-31 total scores at six months (mean score was 2.00 lower, 95% CI 8.84 lower to 4.84 higher; 138 participants; moderate-certainty evidence due to risk of bias; Analysis 5.1; Table 4; Table 16).

Helde 2005 compared a nurse-led education programme plus nurse telephone consultations to conventional treatment, and reported QOLIE-89 total scores at two years (mean total score was 0.60 higher, 95% CI 2.74 lower to 3.94 higher; 111 participants; moderate-certainty evidence due to risk of bias; Analysis 5.1; Table 4; Table 16).

Other aspects relating to HRQoL

Three studies – comparing epilepsy nurse counselling to standard outpatient service (Pfafflin 2016), nurse-run epilepsy clinics in primary care to usual care (Ridsdale 1997), and nurse-led specialist care to usual care (Ridsdale 2000), respectively – found no difference between the intervention and control groups for all reported outcomes related to specific aspects of HRQoL, apart from one related to coping with epilepsy.

Three studies – Pfafflin 2016, Ridsdale 1997, and Ridsdale 2000 – provided 6-month data allowing a meta-analysis of HADS-D score above 8 points (RR 0.93, 95% CI 0.62 to 1.39; $I^2 = 0\%$; Analysis 5.2;

Table 5). Pfafflin 2016 reported a 6-month HADS-D score above 11 points (Analysis 5.2; Table 5).

Pfafflin 2016 and Ridsdale 2000 provided 6-month data allowing a meta-analysis of HADS-A score above 8 points (RR 0.92, 95% CI 0.62 to 1.35; $I^2 = 0\%$; Analysis 5.3; Table 5). Pfafflin 2016 reported a 6-month HADS-A score above 11 points (Analysis 5.3; Table 5).

Pfafflin 2016 reported no difference in restrictions in daily life (Analysis 5.4) or satisfaction with information and advice, patient-doctor relationships, and organisation of care (Analysis 5.5). This study reported an improvement in coping with epilepsy, using the Performance, Socio-Demographic Aspects, and Subjective Evaluation (PESOS) questionnaire, in the intervention compared to the control group at six months (Table 5).

Appropriateness and volume of medications

Not reported.

Participant-reported knowledge of information and advice received from professionals

Three studies reported knowledge-based outcomes at six months. Pfafflin 2016 reported an improvement in the Epilepsy Knowledge Scale in the intervention compared to the control group (Analysis 5.6; Table 7). Ridsdale 1997 reported that more information was given by the clinicians in the intervention compared to the control group (Table 7). Ridsdale 1997 also reported no difference in knowledge of epilepsy between groups (Table 7). Ridsdale 2000 reported an improvement in the knowledge of epilepsy in the intervention group over time; however, there were no intergroup differences (Table 7). This study also reported that participants in the intervention group were more likely to have received enough advice on eight out of nine epilepsy-related topics (Table 7).

Measure of general health status

Not reported.

Measure of social or psychological function

Not reported.

Adverse events

None of the studies reported worse outcomes in the intervention compared to the control group. None of the studies reported adverse events.

Comparison 6. Other service delivery interventions

Primary outcome

Seizure frequency: short term (up to six months)

No studies reported short-term seizure frequency outcomes.

Seizure frequency: long term (beyond six months)

Five studies reported long-term seizure frequency outcomes, from nine months up to 24 months.

Bahrani 2017 compared telephone review to conventional clinic management. Thapar 2002 compared doctor-held and patient-held prompt and reminder cards to an unspecified control group. Li 2013 compared an intervention programme to standard management. These studies provided data allowing a meta-analysis of seizure freedom between nine and 12 months, and showed no difference

between intervention and control (RR 1.10, 95% CI 0.96 to 1.27; $I^2 = 54\%$; 1745 participants; low-certainty evidence due to risk of bias and inconsistency; [Analysis 6.1](#); [Table 2](#); [Table 17](#)).

[Zheng 2019](#) compared a multidisciplinary team programme with regular anti-seizure treatment and routine education, and showed no difference between the groups in the number of participants experiencing fewer than one seizure per month at 12 months (RR 0.95, 95% CI 0.81 to 1.10; 184 participants; moderate-certainty evidence due to risk of bias; [Analysis 6.2](#); [Table 2](#); [Table 17](#)).

[Li 2013](#) reported that a greater proportion of participants receiving the intervention programme achieved a reduction of 50% or more in seizure frequency over the 12-month study period, compared to those in the control group (RR 1.31, 95% CI 1.14 to 1.50; 360 participants; moderate-certainty evidence due to risk of bias; [Analysis 6.3](#); [Table 2](#); [Table 17](#)).

[Bahrani 2017](#) reported no difference between the two groups in the total number of breakthrough seizures at nine months ([Table 2](#)). [Singh 2022](#), which compared home-based primary health care to usual clinic-based care, reported that individuals and clusters in home care had statistically significantly more seizures than those in clinic care in the early months of the trial, but overall had fewer seizures across the entire trial span of 24 months ([Table 2](#)).

Secondary outcomes

Seizure severity

Not reported.

Health-related quality of life (HRQoL)

Overall HRQoL

[Zheng 2019](#) reported an improvement in QOLIE-31 total score at 12 months for participants in the multidisciplinary team programme compared to those receiving regular anti-seizure treatment and routine education (mean score was 8.30 higher, 95% CI 3.50 to 13.10; 184 participants; moderate-certainty evidence due to risk of bias; [Analysis 6.4](#); [Table 4](#); [Table 17](#)). Improvements were also reported in five out of seven QOLIE-31 subscales in the intervention group compared to three out of seven in the control group, with no intergroup differences reported.

[Singh 2022](#), which compared home-based primary health care to usual clinic-based care, reported no difference in Personal Impact of Epilepsy score (PIES), ED-5D-5L index score, and ED-5D-5L visual analogue scale between the groups up to 24 months ([Table 4](#)).

Other aspects relating to HRQoL

[Zheng 2019](#) reported no difference between the groups for severe depression (BDI score 16) ([Analysis 6.5](#)) or severe anxiety (BAI score 37) ([Analysis 6.6](#)) at 12 months ([Table 5](#)).

Appropriateness and volume of medications

Four studies reported outcomes related to medication adherence, tolerability, and side effects between three and 24 months.

[Eshiet 2023](#), which compared pharmaceutical care services to usual care, reported better AED tolerability scores in the intervention group compared to the usual care group at three and six months ([Analysis 6.7](#); [Table 6](#)).

[Bahrani 2017](#) reported seven self-reported episodes of non-adherence to AEDs in participants reviewed by telephone (intervention) and clinic (control) at nine months ([Table 6](#)); no P values were reported.

[Thapar 2002](#) reported no difference in the proportion of participants using anticonvulsants between the three study groups at 12 months. However, participants in the control group reported fewer side effects than those in the intervention groups ([Table 6](#)).

[Singh 2022](#) reported that home care recipients were more likely to be adherent to AEDs than those in clinic-based care for up to 24 months ([Table 6](#)).

Participant-reported knowledge of information and advice received from professionals

[Thapar 2002](#) reported that participants in the doctor-held card group were less satisfied with information provided about epilepsy compared to the control group. No differences between the patient-held card and the control group were identified ([Table 7](#)).

Measure of general health status

Not reported.

Measure of social or psychological function

Not reported.

Adverse events

[Singh 2022](#) assessed the number of spontaneous adverse effects, which were similar between the intervention and control arms ([Table 10](#)). However, the study did not specify whether any of these adverse effects were related to the intervention.

DISCUSSION

Summary of main results

This review included 36 studies with a broad range of service delivery, behavioural, and self-management interventions for adults with epilepsy. We further classified these into six intervention categories, based on their likely mechanisms of action. Overall, we identified no high-certainty evidence; evidence ranged from moderate to very low certainty due to the risk of bias, imprecision, indirectness, or inconsistency arising from statistical heterogeneity.

Psycho-behavioural interventions

A meta-analysis of two studies of psycho-behavioural interventions suggests a reduction in seizure frequency at three to six months ([Lundgren 2006](#); [McLaughlin 2011](#); [Summary of findings 1](#)). However, this type of intervention may result in no differences in seizure frequency immediately post-intervention ([Lundgren 2006](#); [McLaughlin 2011](#); [Table 11](#)). Three other studies narratively reported no difference between intervention and control ([Lundgren 2008](#); [Meyer 2019](#); [Tan 1986](#)). ACT interventions may result in a large reduction in seizure frequency in the long term (12 months) ([Lundgren 2006](#); [Table 11](#)).

One study showed psycho-behavioural interventions likely resulted in no difference to QOLIE-10 total scores ([Meyer 2019](#); [Summary of findings 1](#)). Overall, this intervention may have no effect on HRQoL, based on meta-analysis from two studies, ranging in certainty

from moderate to very low (downgraded for risk of bias and inconsistency) (Lundgren 2006; Lundgren 2008; Table 11).

Meyer 2019 showed improvements in subscale measurements of depression and anxiety at three months for eCBT versus control, but these improvements were not consistently maintained at six and nine months. Meyer 2019 also reported an improvement in social-occupational impairment at three and six months, but not nine months. Evidence was very limited and uncertain for medication usage, and social and psychological function.

Mind-body interventions

In the short term, mind-body interventions may result in a slight reduction in seizure frequency, based on a meta-analysis of data from three studies (Haut 2018; Puskarich 1992; Tang 2015; Summary of findings 2). Three other studies also narratively reported a reduction in seizure frequency in mind-body interventions compared to control groups (Dahl 1987; Thompson 2020; Sathyaprabha 2008). However, in another meta-analysis of two studies (Puskarich 1992; Tang 2015; Table 12), the evidence suggests that mind-body interventions do not reduce seizure frequency. Evidence of the effect of mind-body interventions on seizure frequency in the long term is lacking.

Mind-body interventions may result in no difference in QOLIE-31-P total scores in the short term (Tang 2015; Summary of findings 2). Tang 2015 narratively reported improvements in verbal memory at six weeks for participants in the intervention group compared to controls, but not in any other subscale measured. Thompson 2020 reported changes in depression-mediated seizure severity. Long-term data are lacking.

There is very limited evidence that mind-body interventions improve general health status or social or psychological function outcomes compared to control interventions (Sathyaprabha 2008; Sidorenko 2000).

Self-management interventions

Evidence from a meta-analysis of three studies suggests self-management interventions do not reduce seizure frequency in the short term (Fontaine 2023; Mengoni 2016; Sajatovic 2018; Summary of findings 3). However, these interventions are likely to increase seizure freedom (Table 14), based on a meta-analysis of three studies (Fontaine 2023; Mengoni 2016; Si 2020). May 2002 reported an improvement in the mean seizure frequency scale from the MOSES educational programme. However, evidence from three other studies suggests no difference in other seizure control outcomes between the intervention and control groups (Sajatovic 2018; Sepat 2021; Si 2020).

One study showed the intervention may improve seizure freedom and likely results in a slight reduction in seizure frequency in the long term (Hu 2020; Table 14). However, evidence from a meta-analysis of two studies is very uncertain about the effect of the intervention on seizure frequency in the long term (Hu 2020; Sajatovic 2018). One study showed the intervention probably does not improve seizure frequency (Ridsdale 2018).

For overall HRQoL outcome measures in the short term, a meta-analysis of two studies showed the intervention probably does not improve QOLIE-31 scores (Fontaine 2023; Ridsdale 2018; Summary of findings 3). However, one study showed the intervention likely

results in a slight improvement in QOLIE-10 scores (Sajatovic 2018; Table 15). Sepat 2021 showed the intervention may not improve QOLIE-31 scores. Two studies showed interventions probably do not improve SF-36 MCS or PCS scores (May 2002; Sajatovic 2018). Evidence from Mengoni 2016 suggests the intervention does not improve ED-5D-5L and ELDQOL behaviour scores.

Hu 2020 reported long-term improvement in participants using self-management interventions compared to the control group in QOLIE-31 subscales for all domains except seizure worry. However, Sajatovic 2018 reported that the intervention may not improve QOLIE-10, SF-36 MCS or PSC scores (Table 15). Evidence from a meta-analysis of two studies is very uncertain about the effect of the intervention on QOLIE-31 scores, due to very high statistical heterogeneity (Hu 2020; Ridsdale 2018).

Evidence for other secondary outcomes is limited and uncertain. A meta-analysis of two studies showed improvements in the short term in the intervention compared to the control group on the epilepsy self-management scale (Sajatovic 2018; Si 2020) and stigma (May 2002; Sajatovic 2018). Compared with controls, Sajatovic 2018 showed improvements in depression and epilepsy self-efficacy, while May 2002 showed improvements in coping with epilepsy scores. However, there was no difference between participants in the intervention and control groups for a range of other outcomes relating to HRQoL reported in May 2002 and Ridsdale 2018. There was no difference between self-management interventions and control interventions in long-term outcomes in epilepsy self-management, stigma, or PHQ-9.

Three studies reported some improvements in outcome measures related to medication adherence and management for participants in self-management intervention groups compared to control groups (Hu 2020; Li 2013; Si 2020), while two other studies reported no differences between the groups (May 2002; Ridsdale 2018). Sepat 2021 showed improvements in knowledge one week post-intervention, and two other studies showed improvements in knowledge at six months (Fontaine 2023; May 2002).

Physical exercise interventions

In the short term, physical exercise interventions may result in a percentage reduction in seizures, based on a meta-analysis of two small studies (Akerlund 2021; Hafele 2021; Table 13), but the evidence is very uncertain. However, another meta-analysis of two small studies suggests that physical exercise interventions do not improve seizure freedom (Hafele 2021; McAuley 2001; Table 13). Two studies narratively reported no differences in seizure frequency from baseline between physical exercise interventions and controls (Hafele 2021; Kumar 2022). Overall, we are very uncertain regarding the short-term effect of physical exercise on changes in seizure frequency. Long-term data are lacking.

Physical exercise interventions may result in no difference in overall HRQoL in the short term, based on a meta-analysis of three studies (Hafele 2021; Kumar 2022; McAuley 2001; Table 13). Although Hafele 2021 reported improvements in a subset of QOLIE-31 domains for physical exercise versus control, Kumar 2022 reported no differences. There is a lack of data for the long term.

Nurse-led service-based interventions

Evidence from one study suggests that a nurse-led service does not improve seizure frequency outcomes (Ridsdale 2000; Table 16). Long-term outcomes were not reported.

Evidence from Pfafflin 2016 and Helde 2005 (Table 16) showed the intervention probably does not improve QOLIE-31 scores at six months and QOLIE-89 scores at two years.

Evidence for other secondary outcomes is limited and uncertain. Compared to control interventions, Pfafflin 2016 reported an improvement in coping with epilepsy. There was no difference between the intervention and control groups in HADS-D score above 8 points (Pfafflin 2016; Ridsdale 1997; Ridsdale 2000), HADS-D score above 11 points (Pfafflin 2016), HADS-A score above 8 points (Pfafflin 2016; Ridsdale 2000), and HADS-A score above 11 points (Pfafflin 2016). Two studies reported improvements in some of the knowledge-based outcomes (Pfafflin 2016; Ridsdale 1997). However, Ridsdale 1997 reported no improvements in knowledge of epilepsy between groups.

Other service-based interventions

No studies included in this comparison reported short-term seizure frequency outcomes.

One study showed the intervention probably increased the proportion of participants achieving at least a 50% reduction in seizure frequency in the long term (Li 2013; Table 17). Singh 2022 also reported an improvement in monthly seizures over 24 months for home-based primary health care versus usual clinic care. However, evidence from a meta-analysis of three studies suggests the intervention does not improve seizure freedom (Bahrani 2017; Li 2013; Thapar 2002). Zheng 2019 showed the intervention probably results in no difference between the two groups in the number of participants experiencing fewer than one seizure per month at 12 months.

There are no data for short-term outcomes relating to overall HRQoL. Zheng 2019 showed the intervention likely results in an improvement in QOLIE-31 total scores in the long term (Table 17). However, Singh 2022 did not show any differences between interventions in PIES, ED-5D-5L index score, or ED-5D-5L VAS score. Zheng 2019 reported no difference between interventions in severe depression or severe anxiety at 12 months.

Two studies reported improvements in medication-related outcomes for other service-based interventions compared to usual care (Eshiet 2023; Singh 2022). Thapar 2002 reported either no difference or differences in favour of the control group. Thapar 2002 also reported that one of the intervention groups was less satisfied with information provided about epilepsy than the control group.

Adverse events and harm

The evidence suggests that none of the interventions resulted in a worsening of seizure frequency or quality of life compared to control groups. Twelve of 36 studies reported that there were no adverse events related to the interventions.

Overall completeness and applicability of evidence

Due to the broad objectives of this review, we applied strict criteria for study inclusion, outcome data extraction, and the synthesis

of outcomes by intervention type and time point. An experienced information specialist conducted the searches, and experienced review authors double-screened the search results. Therefore, we are confident we have identified all relevant studies. However, to maintain focus and to ensure the review was informative and relevant, we restricted the inclusion of behavioural and self-management interventions to those reporting seizure control as an outcome. We excluded 43 studies as a result of this criterion.

There is a substantial degree of clinical heterogeneity between the populations included in these studies, ranging from people with newly diagnosed epilepsy to those with severe or drug-resistant epilepsy. Some studies also included people with other comorbidities such as depression or other psychological problems. Studies seldom reported the diversity of participants (including ethnicity, socioeconomic status, and proportion from rural regions). This made it difficult to assess the representativeness of the study populations and to identify any issues of equity in access and recruitment to the studies.

In addition, although we sub-categorised the interventions into six groups based on similar mechanisms of action, there was substantial heterogeneity within each category in terms of delivery method, provider, and the type of control group used. Furthermore, the study settings varied widely: from rural clinics in low-income countries to tertiary epilepsy referral centres in high-income countries. There were significant variations in the methods and time points used to measure outcomes.

These factors limit the general applicability of these intervention groupings and may limit the general applicability of the results reported across many of the studies.

Certainty of the evidence

Overall, we identified no high-certainty evidence. Most of the evidence identified related to short-term outcome assessment (up to six months) and was of moderate to low certainty, due to issues with inconsistency (heterogeneity in meta-analysis), imprecision (where only small studies contributed outcome data, leading to wide confidence intervals around treatment effect estimates), or indirectness (no long-term data available). For some longer-term outcomes (beyond six months), less evidence was available, and the certainty of this evidence was very low due to risk of bias and inconsistent treatment effects across studies. As a result, we are very uncertain about the effect of the interventions.

We included studies reporting on diverse interventions with complex pathways between delivery and outcome. In addition to the diversity of the interventions, there was also considerable heterogeneity in how the outcome data were reported. For example, seizure outcomes were reported as frequency over a defined time period, changes in frequency, seizure freedom, proportion of participants with a reduction in frequency, and breakthrough seizures. The studies used a number of different validated scores to assess HRQoL. Some are general while others are specific to epilepsy, and they emphasise different aspects of quality of life. As a result, we could combine only a very limited number of studies in a meta-analysis for each intervention and for each outcome, and we performed no subgroup analyses. We were able to extract and present additional quantitative data from single studies, as well as some limited narrative data. However, our interpretation of the evidence – based on both quantitative and

narrative syntheses – is limited and reflects substantial underlying uncertainties throughout the review.

We also identified some biases inherent in the types of interventions included in this review. Blinding of participants and personnel and blinding of outcome assessments were particularly difficult to achieve; we judged only around one-quarter (24.3%) of studies to be at low risk of bias in these domains. Furthermore, while allocation concealment should be achievable for all randomised controlled trials, we rated only 35% of studies to be at low risk of bias for this domain, with around one-third (32%) of studies not reporting how allocation was concealed within the study.

Potential biases in the review process

This was a challenging review due to the broad definitions of the types of interventions and outcomes of interest. While we conducted systematic and thorough searches through a wide range of databases, we cannot exclude potential bias due to unpublished evidence.

We conducted an initial search and updated search for this review, without any restrictions on the language or date of publication. Due to the large number of studies identified in the searches, and included in the review, different review authors were involved in the selection of studies, data extraction, and risk of bias assessments for the initial and updated searches. This may have introduced biases. However, we followed the same criteria as outlined in the protocol and experienced review authors were involved throughout the review process. Furthermore, a third independent review author was involved in both the initial and updated searches, resolved any discrepancies, and checked the analyses.

We adopted a pragmatic approach to classifying interventions into six groups for outcome analyses and defined seven secondary outcomes. Some overlap between intervention categories and secondary outcomes was possible, which may have introduced a degree of subjectivity in assigning classifications and affected the selection of studies for meta-analysis. However, this is unlikely to have influenced our overall conclusions, as very few studies were included in meta-analyses, and most results were based on narrative summaries of individual studies.

Finally, we made some changes to our protocol when conducting the review which could be considered a source of bias in the review process (see [Differences between protocol and review](#)). We made some changes to improve clarity, such as clarifying short-term and long-term outcome definitions and our approach to clinical and statistical heterogeneity. Other changes were for practical purposes, to maintain the relevance of the review by including only studies of behavioural and self-management interventions which reported a seizure control outcome. This decision may have excluded studies with other relevant outcomes.

A significant difference between the protocol and the review concerned prioritising data for presentation in the summary of findings tables. We planned to present the seizure control and HRQoL outcomes using validated scales for all comparisons. However, we considered that the large amount of heterogenous data presented made it difficult to read and use the summary of findings tables. Therefore, we decided post-analysis to prioritise interventions most relevant to clinical decision-making, focus on a

single time point closest to six months, where possible, and select outcome measurements most frequently used in studies of people with epilepsy. We made these changes to improve clarity and focus on the most useful comparisons. However, we acknowledge they could be considered as a potential source of bias in the selective reporting of results.

Agreements and disagreements with other studies or reviews

Few systematic reviews have assessed the effects of the broad range of interventions included in this review for adults with epilepsy. [Bradley 2016](#) examined care delivery and self-management strategies. This review included RCTs and other observational studies with control groups, and found limited evidence overall to support a particular model. [Michaelis 2020](#) found moderate-certainty evidence that psychological treatment may enhance overall HRQoL for adults with epilepsy; this was based on 36 RCTs with a total of 3526 participants. In contrast, we had five studies classified as psycho-behavioural interventions and did not find evidence of improvements in overall HRQoL compared to control interventions; this is likely due to the difference in the type of interventions assessed. A systematic review of group self-management interventions found some evidence of improvement in quality of life and seizure frequency ([Smith 2017](#)). [Wood 2017](#) found limited evidence of the effectiveness of mindfulness-based interventions in people with epilepsy based on three RCTs.

Three of these reviews provided a narrative summary of reports without meta-analysis ([Bradley 2016](#); [Smith 2017](#); [Wood 2017](#)). Like our review, these reviews found significant heterogeneity in study populations, interventions, timescales, and outcomes, along with a lack of long-term follow-up.

AUTHORS' CONCLUSIONS

Implications for practice

This review aimed to evaluate the benefits and harms of different behavioural, self-management, and service delivery-based interventions in promoting seizure control and improving health-related quality of life (HRQoL) outcomes for adults with epilepsy.

There is some evidence that psycho-behavioural, mind-body, and self-management interventions may improve seizure control in the short term (i.e. at up to six months). However, the certainty of this evidence is moderate at best, and based on meta-analyses of a few studies. There is also very limited, low- to very low-certainty evidence of benefit in the long term for psycho-behavioural, mind-body, self-management, and other service-based interventions, based on reports from individual studies.

Self-management and other service delivery interventions demonstrated moderate- to low-certainty evidence of improvements in overall HRQoL measures. Psycho-behavioural, mind-body, physical exercise, self-management, and other service-based interventions showed some evidence of improvements in other aspects of HRQoL, such as anxiety, depression, stigma, self-management, and self-efficacy. Again, however, this evidence is limited and derived from individual studies.

The data reported for other secondary outcomes were very limited, mostly based on narrative summaries, and precluded drawing any firm conclusions.

Overall, there was significant heterogeneity in the included studies' populations, types of intervention delivered, study settings, study designs, and outcome measurements. The evidence for a specific type of intervention in promoting better seizure control or improving the quality of life in adults with epilepsy is limited. It is not possible to draw reliable conclusions about any intervention for adults with epilepsy based on the current evidence available.

Implications for research

The number of studies included, along with the diversity of interventions assessed, reflects a strong interest in developing psychological, behavioural, and service-based interventions to improve the quality of life for people with epilepsy. However, there is a clear need for high-quality research and a shared understanding of which interventions should be prioritised for evaluation, as well as how future studies should be designed and implemented.

This review highlights a lack of consistency and consensus in the design and conduct of studies assessing these interventions. As a result, the current evidence base is difficult to interpret and does not easily support reliable conclusions. Considerable variability in outcome measures further limited our ability to combine data in meta-analyses. In addition, there were limited long-term data (beyond six months) reported for the key outcomes of seizure control and health-related quality of life. This gap underscores the need for future studies to incorporate longer follow-up periods. Thus, in general, to ensure that future research can effectively inform clinical practice and policy, it is essential for the research community to agree on key methodological standards and priorities. We need consensus on the following:

- how to classify interventions and how they might be grouped;
- which interventions should be prioritised for assessment;
- the time horizon over which those interventions should be assessed;
- what type(s) of participants should be included in future studies;
- which outcomes should be used, including consensus as to which measures of seizure control and quality of life should be prioritised.

Establishing a consensus on how key outcomes should be measured in people with epilepsy would promote greater consistency across studies and facilitate more effective evidence synthesis. The increasing number of core outcome sets in epilepsy represents a positive step towards standardising outcome measurement and achieving agreement on the most appropriate measures to use in future research (Carroll 2023; Chiang 2023).

Finally, all studies focusing on behavioural interventions were designed for a short, defined period of time with subsequent follow-up of the effects of intervention for up to 72 weeks. However, evidence suggests health-related behaviour changes require a sustained programme with consistent engagement over long periods of time to achieve lasting changes. Future studies should focus on addressing how to achieve sustained behavioural change over time.

Overall, there should be a focus on stronger designs and rigorous methodology for epilepsy interventions to allow for stronger evidence of intervention effectiveness.

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Data, code and other materials

No new data were generated or analysed during this study. Data sharing is not applicable.

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* Indicates the major publication for the study

CHARACTERISTICS OF STUDIES

Characteristics of included studies [ordered by study ID]

Akerlund 2021

Study characteristics

Akerlund 2021 (Continued)

Methods	Randomised controlled trial (8 months follow-up)
Participants	28 adults aged between 16 years and 65 years, with focal drug-resistant epilepsy, were randomised from the Neurology Outpatient Clinic of the Sahlgrenska University Hospital, Sweden Inclusion criteria: "An established diagnosis of focal epilepsy according to the International League Against Epilepsy (ILAE) seizure classification criteria, a frequency of at least 3 focal seizures (including focal to bilateral tonic-clonic) during a 4-week-prospective baseline period despite ongoing treatment with one to 4 ASMs, stable ASM treatment for at least 4 weeks, no expected need to modify current ASM treatment over the subsequent 6 months, capability to follow instructions (or has a caretaker willing to help) and keep a seizure calendar, ability to understand the purpose, procedures and potential risks and benefits associated with participation in the study and signing a written informed consent." Median age of intervention group: 48 years, control group: 41 years Intervention group: 58.3% female, control group: 70% female
Interventions	Intervention: moderate cardiovascular exercise Control: relaxation exercises
Outcomes	All outcomes were assessed at 6 months - Percentage change in seizure frequency - Anxiety and depression were assessed with the Hospital Anxiety and Depression Scale (HADS) - Health status was assessed by RAND-36 score
Notes	The study was funded by the Health and Medical Care Executive Board of the Västra Götaland Region (VGFOUREG-853751), the Swedish state under the agreement between the Swedish government and the county councils, the ALF-agreement (ALFGBG-721491) and elinor.ben-menachem@neuro.gu.se (E. Ben-Menachem).

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Used a computer-generated randomiser called Research Randomizer. "The randomization was done by JK, who was not involved in the inclusion or treatment of the patients, through a computer generated randomizer called Research Randomizer".
Allocation concealment (selection bias)	Low risk	"The randomization was done by JK, who was not involved in the inclusion or treatment of the patients." The randomisation was conducted by a researcher who was not involved in the inclusion or treatment, and a computer random generation led to allocation, meaning that allocations were concealed adequately prior to assignment.
Blinding of participants and personnel (performance bias) All outcomes	Low risk	Single blind. Participants were aware of which group they were in, but this was unlikely to influence performance or primary outcomes. For personnel, blinding was ensured: "The study physicians JZ and EBM did not know what treatment the patients were given until the end of the last visit."
Blinding of outcome assessment (detection bias) All outcomes	High risk	"After the treatment period of six months, the patients were followed up by the study physician and the physiotherapist. As mentioned above, the physi-

Akerlund 2021 (Continued)

		cians in the study were not aware of the treatment intervention after this last visit." However, self-report seizure diaries could raise issues in reporting of outcomes.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Reasons for missing outcome data provided, due to dropouts, and even across control and intervention groups. Reasons were: back pain, increased seizures, loss to follow-up (3; intervention), and did not like relaxation exercise (3; control). These reasons are unlikely to be related to the true outcomes.
Selective reporting (reporting bias)	Low risk	Protocol provided; all outcome measures addressed. "The protocol was pre-registered on clinicaltrials.gov, number: NCT03570489".
Other bias	Unclear risk	Recruitment was halted prematurely due to time pressures and an interim analysis was instead performed, falling short of intended sample size. Possible source of bias.

Bahrani 2017
Study characteristics

Methods	Randomised controlled trial (36 weeks of follow-up)
Participants	465 participants aged over 10 years were recruited from an academic quaternary care teaching hospital in India. Inclusion criteria: "Stable patients with epilepsy who have been in the clinic for at least 6 months and had a finalised treatment plan" Mean age in the intervention group 24.78 years (SD 11.36); control group 24.22 (SD 10.89) Intervention group: 31.2% female; control group: 38.1% female
Interventions	Intervention group: telephone review Control group: conventional clinic management
Outcomes	Outcomes were assessed at 9 months - Seizure freedom during study - Total number of breakthrough seizures during study period - Self- and/or caregiver-reported episodes of non-adherence to AEDs
Notes	This research did not receive any funding.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Randomisation was conducted using a combination of computer-generated random numbers and sealed envelopes: "computer generated random numbers that were placed in opaque, sealed envelopes labeled NCR or non-NCR followed by a serial number."
Allocation concealment (selection bias)	Low risk	There was allocation concealment but it was by the lead author using opaque sealed envelopes: "Review in person in the clinic (FC). VS drew out computer

Bahrani 2017 (Continued)

		generated random numbers that were placed in opaque, sealed envelopes labeled NCR or non-NCR followed by a serial number. KB serially opened these envelopes as new patients were recruited."
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	It is unclear whether personnel and participants were blinded.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	It is unclear whether personnel and participants were blinded to outcome assessment.
Incomplete outcome data (attrition bias) All outcomes	Low risk	A per-protocol analysis was conducted and statistical tests were performed to meet assumptions: "For both primary and secondary outcomes, no further adjustment for dropouts was required as primary analysis was on per-protocol basis and included only those patients who had at least one review in their respective arm during the study period. Comparison of the two arms was completed using a 't' test for continuous variables and a Chi-square test for categorical variables. On parameters where a concern was felt about meeting assumptions for a 't' test, the Wilcoxon rank sum test was used to compare the two groups."
Selective reporting (reporting bias)	Low risk	The outcomes listed in the paper were analysed.
Other bias	High risk	There was a referral bias due to the setting being an epilepsy referral centre.

Dahl 1987

Study characteristics

Methods	Cross-over randomised controlled trial (72 weeks of follow-up)
Participants	18 adults aged between 19 and 58 were randomised from a neurology outpatient unit at a university hospital in Sweden; 28% were female. Inclusion criteria: "clinical and EEG [electroencephalography] evidence of epilepsy with cerebral origin, (b) no progressive brain disease, (c) illness of at least 2-year duration, (d) a minimum of one seizure a month, (e) ability to understand and follow instructions, (f) unchanged anticonvulsant ordination for at least 1 month prior to participation and no ongoing psychopharmacological treatment."
Interventions	Intervention: contingent relaxation treatment programme Control: 1. Attention control group 2. Waiting-list control group
Outcomes	Seizure frequency at 10 weeks (experimental phase - pre-cross-over), 10 weeks and 30 weeks (non-experimental phase - post cross-over).
Notes	"All groups have first follow-up at 10 weeks post intervention. After first follow-up, the attention control and waiting list control group undergo the 6-week relaxation intervention (original intervention group has nothing), and then all groups have a second follow-up after 10 weeks post intervention, and third follow-up at 40 weeks post intervention."

Dahl 1987 (Continued)

A funding source was not reported in this study.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Paper only states participants were randomised, but no detail as to how: "the patients were randomized into groups 1, 2, and 3."
Allocation concealment (selection bias)	High risk	Concern from: "After the three mentally retarded patients were placed evenly in each group", which suggests that allocation to groups was known for these three participants.
Blinding of participants and personnel (performance bias) All outcomes	Low risk	No information given regarding blinding, but participants unable to be blinded to intervention received. However, the outcome was unlikely to be influenced by blinding.
Blinding of outcome assessment (detection bias) All outcomes	High risk	Participants, parents or spouses recorded outcomes; hence were not blinded. Could impact on seizure frequency count.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Two participants were excluded: one from the intervention and one from the control group, and excluded for the same reason, therefore unlikely to impact true outcome.
Selective reporting (reporting bias)	Unclear risk	Insufficient information given, and no protocol provided.
Other bias	Unclear risk	No information on funding

Deepak 1994

Study characteristics

Methods	Randomised controlled trials (18 months of follow-up)
Participants	20 adults with drug-resistant epilepsy were randomised from neurology clinics of All India Institute of Medical Sciences, New Delhi, India. Inclusion criteria: "no evidence of organic brain lesion, (b) no systemic disorder, (c) no previous exposure to meditation or meditation like practices, (d) evidence for regularity in recording seizure details, (e) agreement for regular appearance in the laboratory to practice meditation and follow up." Mean age of intervention group: 31.6 years, control group: 23.5 years Intervention group: 9% female, control group: 33% female
Interventions	Intervention: meditation Control: group received the same professional attention but no meditation
Outcomes	Median seizure frequency at 6 and 12 months
Notes	A funding source was not reported in this study.

Risk of bias

Deepak 1994 (Continued)

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	States that participants were randomly allocated but doesn't say how they were randomised. "Patients were randomly grouped".
Allocation concealment (selection bias)	Unclear risk	No details given regarding allocation concealment
Blinding of participants and personnel (performance bias) All outcomes	Low risk	No details given on blinding. Participants not blinded as they would know they had the meditation intervention. However, lack of blinding unlikely to impact performance and therefore outcomes of seizure frequency and duration.
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Whilst a self-report method was used (seizure diaries/cards), the authors state that the information was confirmed by the next of kin, suggesting that the outcome assessment would not be influenced by lack of blinding.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Reasons for missing outcome data unlikely to be related to true outcome
Selective reporting (reporting bias)	Unclear risk	Insufficient detail given, no protocol.
Other bias	Unclear risk	No information on funding.

Eshiet 2023
Study characteristics

Methods	Randomised controlled trial (6 months of follow-up)
Participants	157 people with epilepsy were randomised from 2 major referral centres for epilepsy management in South Nigeria. Inclusion criteria: 1. Patients receiving therapeutic care for epilepsy in the selected hospitals 2. Patients who provided written informed consent to participate in the study 3. Patients who were willing to abide by the study protocols Intervention group: 39.2% female, control group: 42.3% female
Interventions	Intervention: pharmaceutical care service, provided through patient education and counselling service Control: usual care
Outcomes	Anti-epileptic drug tolerability score at 3 and 6 months
Notes	No funding was received for this study.

Risk of bias

Bias	Authors' judgement	Support for judgement
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Eshiet 2023 (Continued)

Random sequence generation (selection bias)	Low risk	Participants were assigned numbers and randomly allocated to two study group using an online randomisation software. No statistically significant difference in socio-demographic and clinical parameters of participants in both groups.
Allocation concealment (selection bias)	Unclear risk	No mention of whether the allocation was concealed
Blinding of participants and personnel (performance bias) All outcomes	High risk	The study did not specifically mention blinding. However, due to the nature of the intervention, blinding of participants and personnel is unlikely to be possible.
Blinding of outcome assessment (detection bias) All outcomes	High risk	The outcome was assessed using a patient-judged survey, therefore blinding of the outcome assessment is unlikely to be possible.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Study reported 16 participants dropped out in intervention group and 20 dropped out in control group, which represents 81.35% study completion rate. However, no reasons were reported for dropouts. Insufficient detail to know whether dropout was related to true outcome.
Selective reporting (reporting bias)	Low risk	The outcome variable for each of the time points described in the methods was reported in the results.
Other bias	Low risk	No other bias detected

Fontaine 2023
Study characteristics

Methods	Randomised controlled trial (6 months of follow-up)
Participants	86 participants over 18 years old with epilepsy (diagnosed for at least 6 months) were randomised from University Hospital of Caen Normandy, France. People with a mental disability or a disabling chronic pathology different from epilepsy or consulting for the first time were not included. Mean age of intervention group: 38.2±14.9 years, control group: 42.6±17.1 years. Intervention group: 69.2% female, control group: 63.4% female
Interventions	Intervention: a programme of educational actions with the main objective of improving quality of life, provided by epilepsy specialist nurses Control: usual care
Outcomes	All outcomes assessed at 6 months: • Seizure freedom • Seizure frequency during study • Quality of Life in Epilepsy Inventory-31 (QOLIE-31) total score • Knowledge score (assessment tool designed for the study)

Fontaine 2023 (Continued)

Notes The study received funding from the University Hospital of Caen.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"The randomisation list was constituted according to a stratum corresponding to the two groups with or without training with a balancing every 5x2=10 patients. This list has been established by the Biostatistics Unit of the Caen University Hospital's Clinical Research Department." No significant difference in baseline characteristics between experimental and control group.
Allocation concealment (selection bias)	Unclear risk	No mention of whether the allocation was concealed in the study
Blinding of participants and personnel (performance bias) All outcomes	High risk	"The 'blind' method was not applicable. It was not possible to hide the intervention from the patients, and the nurses themselves provided the education sessions."
Blinding of outcome assessment (detection bias) All outcomes	High risk	The outcomes assessed included QOLIE-31 score, knowledge surveys, number of seizures, number of use of care completed or reported by people with epilepsy; therefore, the outcome assessment was not blinded.
Incomplete outcome data (attrition bias) All outcomes	Low risk	"Six patients withdrew from the study: three in the experimental group and three in the control group". List of withdrawals was clearly documented.
Selective reporting (reporting bias)	Low risk	All variables described in the methods section were discussed in the results section.
Other bias	Low risk	No other bias detected

Hafele 2021

Study characteristics

Methods	Quasi-randomised controlled trial (13 weeks of follow-up)
Participants	21 participants aged between 18 and 60 years old were randomised in the city of Pelotas, Brazil. Eligible participants should have had a diagnosis of epilepsy, and no exercising in the previous three months. Mean age of intervention group: 37.1 years, control group: 39.7 years Intervention group: 63.6% female, control group: 60% female
Interventions	Intervention: physical exercise programme Control: normal daily activities
Outcomes	All outcomes assessed at 12 weeks • Seizure freedom

Hafele 2021 (Continued)

- Percentage change in seizure frequency
- Change in seizure frequency
- Quality of life. The Quality of Life in Epilepsy Inventory (QOLIE-31) total score and subscale were used.
- Depression. The Neurological Disorders Depression Inventory for Epilepsy (NDDI-E) was used.
- Anxiety. The short version of the State-Trait Anxiety Inventory (STAI) was used.
- Stress. The Perceived Stress Scale (PSS-10) was used.
- Quality of sleep. The Pittsburgh Sleep Quality Index (PSQI) was used.
- The Adverse Effects Profile (AEP) was used to evaluate the adverse effects of antiepileptic drugs.

Notes

This study was financed in part by the Federal Institute of Education, Science, and Technology of South Rio Grande and supported by a partnership between Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – Brasil (CAPES) – Finance Code 001 and Federal University of Pelotas.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"Participants were randomized to either 12 weeks of an exercise intervention (EG) or no exercise (CG). A block randomization technique with a 1:1 allocation rate was used. In each block, the first patient drawn was allocated to the intervention group, the second for the control group, etc." Alternating allocation is quasi-random. The process of block randomisation is not clearly described.
Allocation concealment (selection bias)	High risk	Quasi-random allocation using alternate sequential, unconcealed allocation.
Blinding of participants and personnel (performance bias) All outcomes	Low risk	Insufficient detail given, but it is unlikely that knowledge of intervention would change behaviour and create performance bias that would impact true outcomes.
Blinding of outcome assessment (detection bias) All outcomes	High risk	Participants self-reported outcome measures. Potential that judgements of health and quality of life measures could be biased by knowledge of being in intervention group, as subjective scales used.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Only one person missing from analysis and they withdrew for personal reasons. Unlikely to bias outcomes.
Selective reporting (reporting bias)	Low risk	Protocol provided and all outcome measures addressed. "The randomized clinical trial (RCT) is registered at www.ensaioclinicos.gov.br (registration number RBR 8h4dty)".
Other bias	Low risk	"Recall bias in remembering the seizures in the three months prior to the research – but that bias would not be differential." Whilst baseline seizure measurement relied on recall of the past three months - this would have recall bias - this would have impacted both the control group and the intervention group. Other than this, this study appears to be free of bias.

Haut 2018
Study characteristics

Haut 2018 (Continued)

Methods	Randomised control trial (20 weeks of follow-up)
Participants	67 participants were randomised from epilepsy centres in USA Inclusion criteria: "Eligible participants were 18 years and older, English-speaking, had medication-resistant focal epilepsy, reportedly aware of all seizures including clustered seizures, on a stable AED regimen for the prior ≥ 30 days, able to maintain an E-diary independently, and reported awareness of seizure precipitants, premonitory features, and/or an ability to self-predict seizures." Mean age of intervention group: 34.4 years, control group: 40.6 years Intervention group: 65.6% female, control group: 59.4% female
Interventions	Intervention: progressive muscle relaxation with diaphragmatic breathing (PMR) Control: focused attention control (FAC)
Outcomes	• Mean seizure frequency at 8 weeks • Change in mean seizure frequency per month at 8 weeks • Percentage improvement in seizure counts at 8 weeks • Stress score at 12 weeks
Notes	This study was funded by the Shor Foundation for Epilepsy Research and the Epilepsy Foundation. Some authors report receiving funding from the NIH, various foundations, and various pharmaceutical companies; receiving personal compensation from various pharmaceutical and publishing companies; holding stock in various pharmaceutical companies; and serving on various journal editorial boards.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Paper states that: "Participants who experienced ≥ 4 seizures during a 56-day baseline were randomized 1:1 to the 2 interventions" and "Randomization in blocks of 2 was performed using a site-specific randomization table" - the use of the random number table suggests sufficient randomisation.
Allocation concealment (selection bias)	Low risk	Participants who "experienced ≥ 4 seizures during a 56-day baseline were randomized 1:1 to the 2 interventions" and "Randomization in blocks of 2 was performed using a site-specific randomization table" - the use of the random number table suggests sufficient randomisation.
Blinding of participants and personnel (performance bias) All outcomes	Low risk	Double-blind study: "Although participants were not blinded to treatment group, as the 2 treatments were not identical, they were blinded to which intervention was hypothesized to be the active intervention. The site principal investigators, project coordinators, and participants remained blinded throughout the study and were trained on processes needed to maintain the blind including communication."
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Participants recorded outcomes themselves on an electronic diary. All participants received an intervention, hence differential impacts of treatment group on recordings of seizure frequency or stress levels are unlikely.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Reasons for missing data are unlikely to be related to the true outcome and were almost evenly spread across groups: one person dropped out for personal reasons in the intervention, and two in the control group. Intention-to-treat analysis was used for primary outcomes as well as per-protocol analysis.

Haut 2018 (Continued)

Selective reporting (reporting bias)	Low risk	All outcomes specified in protocol are reported.
Other bias	Unclear risk	Possible conflicts of interest: "This study was funded by the Shor Foundation for Epilepsy Research and the Epilepsy Foundation. Some authors report receiving funding from the NIH, various foundations, and various pharmaceutical companies; receiving personal compensation from various pharmaceutical and publishing companies; holding stock in various pharmaceutical companies; and serving on various journal editorial board"

Helde 2005
Study characteristics

Methods	A randomised controlled trial (2-year follow-up)
Participants	114 participants aged 16-70 were randomised from a neurological outpatient clinic in Trondheim, Norway. Inclusion criteria: Diagnosis of epilepsy and antiepileptic medication for more than 1 year with one or more seizures during the previous year, age 16-70, attending the neurology clinic in Trondheim, Norway, ability to cooperate and understand written and oral information, written, informed consent. Intervention group: mean age 35.3 years, control group: mean age 39.5 years Intervention group: 56% female; control group: 59% female
Interventions	The intervention group was offered an interactive, 1-day group education program followed by extended nurse follow-up and counselling. Participants received the structured group education session within the first 3 months of inclusion. The nurse attended as many outpatient consultations as possible and performed repeated consultations by telephone. The nurse had more than 15 years of clinical experience with epilepsy. The control group was offered conventional treatment consisting of appointments with treating neurologists and telephone contact with nurses running the general outpatient clinic, but not the nurse from the intervention group.
Outcomes	The primary outcome was health-related quality of life after 2 years, assessed using the Quality of Life Epilepsy Inventory - 89 (QOLIE-89) total score.
Notes	The study was supported by a grant from GlaxoSmithKline, Norway.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"Patients were randomly assigned to either an intervention or a control group by the method of computer-generated block randomization."
Allocation concealment (selection bias)	Low risk	Sequence generation appears to have been conducted by independent party. "Patients were randomly assigned to either an intervention or a control group by the method of computer-generated block randomization carried out by the Unit for Applied Clinical

Helde 2005 (Continued)

Research, Faculty of Medicine."

Blinding of participants and personnel (performance bias) All outcomes	Low risk	Participants were not blinded to receiving intervention but unlikely to create performance bias. However, personnel were blinded: "After 2 years of follow up, each patient was subjected to a new interview, identical to that at baseline, but performed by research assistants who were blinded as to the randomization result."
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Paper states that: "After 2 years of follow up, each patient was subjected to a new interview, identical to that at baseline, but performed by research assistants who were blinded as to the randomization result", suggesting that blinding of the outcome assessment was ensured and unlikely to have been broken.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	One participant withdrew consent and 2 had insufficient data for analysis (one from each group). Four participants included in the analysis from intervention group did not receive intervention, and intention-to-treat (ITT) analysis is stated in the paper: "The data were analyzed according to the principle of intention to treat." However, the number analysed is actually less than the number randomised, despite stating ITT.
Selective reporting (reporting bias)	Unclear risk	No protocol provided.
Other bias	Low risk	No other obvious sources of bias

Hu 2020

Study characteristics

Methods	A randomised controlled trial (12 months of follow-up)
Participants	99 participants aged over 18 years were randomised from an epilepsy centre in Sichuan Provincial People's Hospital, China. Inclusion criteria: "Patients over 18 years of age with at least 1 year history of epilepsy, and reported prodromes or precipitating factors during the pre-seizure state. The types and doses of anti-epileptic drugs remained unchanged for 6 months and did not change during follow up" Intervention group mean age (years and SD) - 28.69 +/- 7.29; Control group 31.87 +/- 9.79 Intervention group: 60% female, control group: 57% female
Interventions	Intervention group: educational content delivered in one 40-minute session focussed on self-management strategies for the prodromal or pre-seizure state, including behavioural, cognitive and emotional therapy and monthly follow-up calls with educational content Control group: monthly follow-up calls without educational content
Outcomes	All outcomes assessed at 12 months: - Seizure freedom - Mean seizure frequency per month ≥ 50% reduction in seizure frequency - Change in seizure frequency per month - Quality of Life assessed using Quality of Life in Epilepsy Inventory-31 (QOLIE-31) total score and sub-scale - Drug adherence assessed using the Morisky Medication Adherence Scale (MMAS)

Hu 2020 (Continued)

Notes This research did not receive any specific grants from funding agencies in the public, commercial, or not-for-profit sectors.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Random number table used: "All enrolled patients who met the eligibility criteria were randomly assigned using concealed random allocation to either the IEG or the REG by random number table methods."
Allocation concealment (selection bias)	Low risk	Randomisation was concealed, although method of concealment not detailed: "All enrolled patients who met the eligibility criteria were randomly assigned using concealed random allocation to either the IEG or the REG by random number table methods."
Blinding of participants and personnel (performance bias) All outcomes	Low risk	Participants' knowledge of which education condition they were in is unclear. However, knowledge should not create differential performance or behaviours that would impact true outcome.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	"All data collectors were blind to group status." Participant self-reports on outcome scales are subjective and could be influenced by knowledge of having the education intervention. However, all participants (intervention and control) had some education, so it is unclear if there would be a differential impact on outcomes.
Incomplete outcome data (attrition bias) All outcomes	High risk	There were 7 dropouts and reasons for dropout are not given. No detail has been provided about these participants and why they dropped out of the study.
Selective reporting (reporting bias)	Unclear risk	Insufficient information to make a judgement
Other bias	Unclear risk	There is a lack of a full control group in this study, which may mean that clear improvements from the intervention cannot be measured effectively; i.e. the inclusion of a control group may have changed the overall outcomes and significance of any changes in seizure frequency.

Kumar 2022

Study characteristics

Methods	A randomised controlled trial (12 weeks of follow-up)
Participants	117 adults randomised from Neurology Department of All India Institute of Medical Sciences, New Delhi, India. Inclusion criteria: 1. people with generalised or focal epilepsy 2. age between 18 and 65 years 3. able to exercise at least three times a week, or would do so, if not hindered by a seizure 4. owning a smartphone compatible with the Pedometer app (either iOS or Android version)

Kumar 2022 (Continued)

5. with seizure frequency, up to four seizures a month, in the last one year, and

6. deemed capable of responding to the questionnaires to be administered.

Mean age of intervention group: 27.1 years, control group: 26.2 years

Intervention group: 32.8% female, control group: 27.1% female

Interventions	Intervention: physical exercise Control: standard medical care
Outcomes	All outcomes were assessed at 12 weeks: - Seizure frequency - QOL was assessed with the QOLIE-31 total score and subscale
Notes	A funding source was not reported.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated randomisation which was done by an independent statistician not otherwise involved in the study. "The subjects enrolled in the study were randomized to either the intervention or the control group in a 1:1 ratio using a computer-generated randomization which was done by an independent statistician, not otherwise involved in the study."
Allocation concealment (selection bias)	Low risk	"The group allocations were handed over in sealed, opaque envelopes, for effective concealment."
Blinding of participants and personnel (performance bias) All outcomes	Low risk	Participants were assessed by a blinded assessor and data from the app, seizure diary, and questionnaire-based assessment done under supervision by the principal investigator (MT) at baseline and at the end of the twelve-week period. Standard medical treatment was provided by a clinical team (who were not part of the research team).
Blinding of outcome assessment (detection bias) All outcomes	High risk	Self-report methods were used for the data collection of all data, including the seizure diaries and QoL surveys. This means that blinding was not possible for the participants and some could be subjectively influenced by lack of blinding.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	All participants randomised were included in analysis. Although the paper states that some participants were lost to follow-up, it does not detail how data missing at follow-up were imputed.
Selective reporting (reporting bias)	Unclear risk	Complete outcome data on seizure frequency and stigma is not reported, although it is stated that there were no significant differences for these outcomes between intervention and control groups. Potential lack of complete reporting of outcomes.
Other bias	Unclear risk	No funding information reported

Li 2013

Study characteristics

Li 2013 (Continued)

Methods	A randomised controlled trial (12 months of follow-up) Investigated in three phases: phase 1 - a six-month follow-up for patients with epilepsy in 4 rural areas in China on phenobarbital monotherapy; phase 2 - 400 patients were chosen from 2 of the areas and factors affecting medical adherence were studied; and the intervention formulated; phase 3 - randomisation to intervention or control and testing of the intervention
Participants	Phase 1- Inclusion criteria: "Patients with 'convulsive' epilepsy older than 2 years of age with at least 2 consecutive seizures in the previous 12 months." Phase 2 & 3, 400 participants (200 in the intervention group and 200 in the control group) Inclusion criteria: "Between 13-65 years of age, retention in the project and in constant receipt of phenobarbital monotherapy, agreement to participate" Mean age of intervention group 36.6 years, 42.6% female; control group 39.4 years, 44.1% female
Interventions	The intervention group received: 1) Intensive education program 2) Consultation services available at any time with well-trained rural community healthcare workers or primary care physicians hired to fill this role 3) A reminder card 4) Greater than 3 reminders about medication adherence every time the participant collected their antiepileptic medication in a rural community clinic The control group received routine management, a phenobarbital supply, public education and free medical community consultations
Outcomes	• Seizure freedom during study at 12 months • 50% reduction in seizure frequency during study at 12 months • Anti-epileptic drug adherence at 6 and 12 months
Notes	A funding source was not reported.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Simple randomisation was conducted using random selection software: "we selected two areas out of four by a simple randomization (by random selection software). Then we determined the intervention known as IG, also by a simple randomization."
Allocation concealment (selection bias)	Low risk	It's not clear whether researchers had randomisation concealed, although allocation was concealed for professionals and participants: "For each group, different management protocols were formulated (intervention for IG and routine measures for CG). Local physicians were responsible for the implementation of the protocols. The whole study schedule was not revealed to local physicians and patients during the entire process. We only required those physicians to be involved into an epilepsy project named as 'management of active convulsive epilepsy in rural area.' Furthermore we took measures to avoid any possible direct communication between the primary physicians from each area in order to reduce some possible exposure of intervention for the CG."

Li 2013 (Continued)

Blinding of participants and personnel (performance bias) All outcomes	Low risk	Participants and personnel were blinded to the intervention: "the study designers, local physicians, patients, and data analyst were blinded to the intervention."
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Outcome assessors were blinded: "This project ensured that those running the study, including outcome assessors and those administering the intervention, were blinded to allocation."
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	A per-protocol analysis was carried out on the data, and it is not clear how imputation of data was dealt with. The number of dropouts was similar between the two groups, so this may have had little impact on the results.
Selective reporting (reporting bias)	Unclear risk	Reasons why 17 participants in the intervention group and 23 in the control group did not complete were not reported. No study protocol available.
Other bias	High risk	There was also no information on funders. Study relied on self-reported data.

Lundgren 2006

Study characteristics

Methods	Randomised controlled trial (12 months of follow-up)
Participants	27 adults aged between 21 and 55 years old randomised from a centre for epilepsy in South Africa. Inclusion criteria: being able and willing to participate in the treatment programme, having a minimum of four seizures in the past 3 months, a verified diagnosis of epilepsy using EEG. Mean age of intervention group: 38.85 years, control group: 42.5 years Intervention group: 50% female, control group: 54% female
Interventions	Intervention: a psychological treatment programme consisting of acceptance and commitment therapy (ACT) Control: supportive therapy
Outcomes	- Mean seizure frequency per month post treatment, 6 months, 12 months - Quality of life assessed by World Health Organization Quality of Life Instrument, short version scale (WHOQOL-BREF) post treatment, 6 months and 12 months. Satisfaction with Life assessed by Satisfaction With Life Scale (SWLS) post intervention, 6 months and 12 months
Notes	A funding source was not reported.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Participants were randomised using a random sequence generator: "Using a computerized randomization table participants were assigned into one of the two conditions; ACT or supportive therapy (ST)."
Allocation concealment (selection bias)	Unclear risk	Is it unclear whether allocation was concealed

Lundgren 2006 (Continued)

Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	There is no detail of blinding
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	There is no detail of whether anyone was blinded to outcome assessment.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	It was not possible to get access to the protocol and there is no evidence of calculating a sample size and whether they achieved the sample size they required or if there were any dropouts. Therefore, we do not know whether it is an intention-to-treat or per-protocol analysis.
Selective reporting (reporting bias)	Low risk	A protocol was registered, but it was not possible to access it. The outcomes listed in the paper were analysed.
Other bias	Unclear risk	There is no information on funding.

Lundgren 2008

Study characteristics

Methods	Randomised controlled trial (12 months of follow-up)
Participants	18 adults aged between 18 and 55 years old randomised from an outpatient clinic in Southwest India. Inclusion criteria: ability and willingness to participate in the treatment program, minimum of 3 seizures during the past 3 months, and EEG-verified diagnosis of epilepsy. Mean age of intervention group: 21.9 years, control group: 25.8 years Intervention group: 30% female, control group: 37.5% female
Interventions	Intervention: a psychological treatment programme consisting of acceptance and commitment therapy (ACT) Control: yoga
Outcomes	- Mean seizure frequency pre- and post- treatment - Quality of Life assessed by World Health Organization Quality of Life Instrument, short version scale (WHOQOL-BREF) post treatment, 6 months and 12 months. Satisfaction with Life assessed by Satisfaction With Life Scale (SWLS) post treatment, 6 months and 12 months.
Notes	A funding source was not reported.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Participants were randomised using a random sequence generator, using a computerised randomization table: "In this randomized, controlled, two-group study with repeated measures, participants were assigned to either ACT or yoga treatment using a computerized randomization table."

Lundgren 2008 (Continued)

Allocation concealment (selection bias)	Unclear risk	It is unclear whether allocation was concealed.
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	There is no detail of blinding.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	There is no detail of whether anyone was blinded to outcome assessment.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No missing outcome data
Selective reporting (reporting bias)	Low risk	Study protocol available and outcomes of interest reported in the pre-specified way.
Other bias	Unclear risk	There is no information on funding.

May 2002
Study characteristics

Methods	A cross-over randomised controlled trial (6 months of follow-up)
Participants	242 participants were randomised from 22 epilepsy centres in Germany Inclusion criteria: people with epilepsy older than 16 years of age, regardless of syndrome duration and severity of epilepsy Mean age in the intervention group: 38.4 years, 57.5% female; control group: 37.5 years, 56.6% female
Interventions	Intervention group: "The intervention group received an education program, Modular Service Package Epilepsy (MOSES), an interactive 2-day course for people with epilepsy consisting of 9 units: living with epilepsy, epidemiology, basic knowledge, diagnostics, therapy, self control, prognosis, psychosocial aspects and network. (14 lessons of 60 minute duration)" Control group: waiting list control
Outcomes	All outcomes assessed at 6 months • Mean seizure frequency scale (1-6) • Quality of life Short Form-36 (SF-36) • Coping with epilepsy scale • Restrictions in daily living due to epilepsy • Mobility and leisure • Epilepsy-related fear • Stigma • Rosenberg Self-esteem scale • Depressive mood scale • Contentedness with tolerability of AED therapy and efficacy of AED • Epilepsy Knowledge Scale

May 2002 (Continued)

Notes The control group crossed over to the intervention after 6 months.

 A funding source was not reported.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Participants were randomised but no details of randomisation methods supplied.
Allocation concealment (selection bias)	Unclear risk	There are no details about allocation concealment.
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	There are no details about blinding.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	There are no details about whether anyone was blinded to outcome assessment.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	There is no evidence that a protocol for this study was registered. A per-protocol analysis was conducted, but it is unclear how trialists dealt with incomplete outcome data.
Selective reporting (reporting bias)	Low risk	Protocol is unavailable, but the study reports on all expected outcomes.
Other bias	Unclear risk	There is no funding information.

McAuley 2001

Study characteristics

Methods	Randomised controlled trial (12 weeks of follow-up)
Participants	28 adults with documented epilepsy aged between 16 and 60 were randomised from outpatient setting, USA Mean age of intervention group: 40 years, control group: 37.2 years Intervention group: 71.4% female, control group: 77% female
Interventions	Intervention: exercise programme Control: continue current level of activity with no planned intervention
Outcomes	- Seizure freedom at 12 weeks - Seizure frequency in those with active seizures at 12 weeks - Quality of life assessed by Quality of Life in Epilepsy Inventory-89 (QOLIE-89) total score and subscale at 12 weeks - Profile of Mood States (POMS) at 12 and 16 weeks - Self-esteem assessed by the Rosenberg Self-Esteem Scale at 12 and 16 weeks

McAuley 2001 (Continued)

Notes A funding source was not reported.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Participants were randomised, but no details about randomisation method are supplied.
Allocation concealment (selection bias)	Unclear risk	There are no details about allocation concealment.
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	There are no details about blinding.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	There are no details about whether anyone was blinded to outcome assessment.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	There is no evidence that a protocol for this study was registered. A per-protocol analysis was conducted, but it is unclear how trialists dealt with incomplete outcome data.
Selective reporting (reporting bias)	Low risk	Protocol was unavailable, but the study reports on all expected outcomes.
Other bias	Unclear risk	There was no information on funding.

McLaughlin 2011

Study characteristics

Methods	Randomised controlled trial (3 months of follow-up)
Participants	37 adults aged 60 years or older were randomised from a range of settings in Australia. Inclusion criteria: "A confirmed diagnosis of epilepsy from a general medical practitioner, neurologist, neurosurgeon or geriatrician, with a Mini Mental State Examination score of ≥ 24, English speaking and able to provide information on their physical and medical status and attend weekly sessions" Mean age of intervention group: 67.56 years, control group: 67.37 years Intervention group: 55.5% female, control group: 47.3% female
Interventions	Intervention: cognitive behavioural therapy Control: relaxation techniques and provided relaxation exercises on audiotape
Outcomes	- Mean seizure frequency per month post treatment and 3 months - Depression assessed using the Composite International Diagnostic Interview (CIDI), Auto diagnostic interview tool and the Geriatric Depression Scale (GDS) at 3 months - Psychosocial functioning assessed by Washington Psychosocial Seizure Inventory (WPSI) at 3 months
Notes	A funding source was not reported.

McLaughlin 2011 (Continued)

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Participants were randomised using random sequence generation software: "Using SPSS 12 for Windows Random Sampling (SPSS Inc 2003), the pool of 37 participants was randomly allocated to either a program group or a control group."
Allocation concealment (selection bias)	Unclear risk	No details about allocation concealment
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	No details about blinding
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	No details about whether anyone was blinded to outcome assessment
Incomplete outcome data (attrition bias) All outcomes	Low risk	Although there is no evidence that a protocol for this study was registered, there doesn't appear to be any withdrawals and an intention-to-treat analysis was conducted.
Selective reporting (reporting bias)	Low risk	Protocol was unavailable, but the study reports on all expected outcomes.
Other bias	High risk	Recruitment was self-selected and could have resulted in selection bias. There is no funding information.

Mehrabi 2019
Study characteristics

Methods	Quasi-randomised controlled trial (75 days of follow-up)
Participants	24 adults with epilepsy aged between 15 and 50 years old were randomised from the Epilepsy Charity Association of Isfahan City, Iran Sample was 100% female. Mean age of intervention group: 31.6 years, control group: 29 years
Interventions	Intervention: mindfulness Control: not defined in the study
Outcomes	- Seizure frequency - Quality of life (scale not reported)
Notes	This was a translated paper, unable to extract outcome data. A funding source was not reported.

Risk of bias

Mehrabi 2019 (Continued)

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Participants were randomly assigned to each group, but it is unclear how they were randomised.
Allocation concealment (selection bias)	Unclear risk	No details about allocation concealment
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	No details about blinding
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	No details about whether anyone was blinded to outcome assessment
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Difficult to understand tables and table 3 appears to have errors
Selective reporting (reporting bias)	Unclear risk	Some of the detail in the abstract is not present in the actual article. This may be a translation issue. There was no available protocol.
Other bias	Unclear risk	There is no funding information

Mengoni 2016

Study characteristics	
Methods	Randomised control trial (feasibility study, 20-week follow-up)
Participants	40 participants aged over 18 years old were randomised Inclusion criteria: confirmed clinical diagnosis of a learning disability and epilepsy. At least one seizure over the previous 12 months. Meaningful verbal or non-verbal communication Intervention group mean age 39.0, 57.7% female Control group mean age 44.68, 53.6% female
Interventions	Intervention group received educational content in the form of a picture booklet, and verbal guidance on using the booklet. Participants were asked to look at the booklet at least twice or more at home over the 20-week period. The control group received routine information and services
Outcomes	- Seizure freedom at 20 weeks - Seizure frequency during study at 20 weeks - Changes in Epilepsy and Learning Disabilities Quality of Life Scale (ELDQOL), seizure severity section at baseline and 24 weeks - ELDQOL behaviour, mood and side effects at 20 weeks - EuroQoL 5 dimension (ED-5D-5L) index score and VAS at 20 weeks
Notes	Independent research funded by the National Institute for Health Research (NIHR) under its Research for Patient Benefit (RfPB) Programme (grant reference number PB-PG-0213-30042).

Mengoni 2016 (Continued)

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Participants were block randomised using an online database: "Participants were randomly allocated individually online by a researcher using a database on a secure website. The randomisation (1:1 allocation ratio) was 'blocked' into groups of six."
Allocation concealment (selection bias)	Low risk	Participants were block randomised using an online database: "Participants were randomly allocated individually online by a researcher using a database on a secure website."
Blinding of participants and personnel (performance bias) All outcomes	High risk	Participants and personnel were not blinded to group allocation: "Owing to the nature of the intervention, it was not possible for the participants or research team to be blind to group allocation."
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	There is no detail of whether anyone was blinded to outcome assessment.
Incomplete outcome data (attrition bias) All outcomes	Low risk	An intention-to-treat analysis was conducted on the data.
Selective reporting (reporting bias)	Low risk	All outcomes listed in the protocol and paper were reported.
Other bias	Low risk	A protocol was available and funding information was provided.

Meyer 2019

Study characteristics

Methods	Randomised controlled trial (9 months of follow-up)
Participants	200 adults aged 18 years or older were randomised from a range of settings in Germany. Inclusion criteria: diagnosis of epilepsy, diagnosis of current depressive disorder, at least moderate depression severity (PHQ-9), ability to read and speak German, internet access Mean age of intervention group: 40.53 years, control group: 40.07 years Intervention group: 65% female, control group: 62% female
Interventions	Intervention: an electronic cognitive behavioural therapy (eCBT), termed <i>Emyna</i> Control: care as usual
Outcomes	- Seizure frequency per month at baseline and 3 months - Quality of Life in Epilepsy inventory-10 (QOLIE-10) total score at 3, 6 and 9 months. The following outcomes were measured at 3,6 and 9 months: - Depression: PHQ-9 and the Neurological Disorders Depression Inventory for Epilepsy (NDDIE). - Anxiety severity measured with the Generalized Anxiety Disorder-7 item.

Meyer 2019 (Continued)

- General distress (depression, stress, anxiety) assessed by the Depression Anxiety Stress Scales-21 item total score.
- Depression-related social-occupational impairment measured by the Work and Social Adjustment Scale (WSAS).

The following outcomes were measured at baseline and 3 months:

- Number of illness-related sick days off work and number of days hospitalised

Notes

This research was funded by Gaia, Germany, a research-focused small-to-medium enterprise that specialises in e-health interventions and regularly participates in publicly funded research.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Randomisation was conducted using a computer-generated sequence generator: "Randomization was performed by the principal investigator (PI; Y.N.) using a computer-generated sequence to generate the allocation sequence."
Allocation concealment (selection bias)	Low risk	The person conducting randomisation was concealed: "The PI did not have knowledge of participant characteristics prior to performing the randomization, because participants were enrolled by trained research associates. Thus, concealed allocation was ensured."
Blinding of participants and personnel (performance bias) All outcomes	High risk	"Participants were not blinded with regard to whether they were receiving the intervention."
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	There is no detail of whether anyone was blinded to outcome assessment.
Incomplete outcome data (attrition bias) All outcomes	Low risk	An intention-to-treat analysis was conducted on the data.
Selective reporting (reporting bias)	Low risk	The outcomes listed in the paper and protocol are reported.
Other bias	Low risk	There is a protocol available as well as funding information.

Pfafflin 2016
Study characteristics

Methods	Randomised controlled trial (6 months)
Participants	202 participants aged over 16 years old were randomised from two specialist epilepsy clinics in Germany Inclusion criteria: patients with epileptic seizure who were referred to an epilepsy outpatient clinic and who agreed in writing to participate in the study. Intervention group - mean age 42.6 +/- 14.8, control group 44.9 years +/- 15.0

Pfafflin 2016 (Continued)

Intervention group: female 50.7%, control group: female 59.2%

Interventions	Intervention group: additional time for counselling and advice during routine visits with an epilepsy nurse according to participants' needs, assessed with a questionnaire. Control group: standard service of outpatient clinics.
Outcomes	Outcomes were measured at baseline and 6 months: - Quality of life, assessed using one item from the German language version of Quality of Life in Epilepsy Inventory-31 item (QOLIE-31) total score - Performance, socio-demographic aspects, subjective evaluation) (PESOS) Questionnaire - Hospital Anxiety and Depression Scale (HADS)-A score > 8, HADS-D score > 8 - Epilepsy Knowledge Scale
Notes	Authors were thankful to the German Chapter of the International League Against Epilepsy for supporting the educational program for nurses, and UCB Pharma for an unrestricted grant to perform the evaluation.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Randomisation was conducted using a computerized random sequence generator: "Adult patients (≥16 years) referred to the outpatient clinic were consecutively enrolled and randomly allocated (by a computer generated block randomization list) to the epilepsy nurse (EN) group or to standard procedure (control group)."
Allocation concealment (selection bias)	Unclear risk	There is no detail of allocation concealment
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	There is no detail of blinding, although it appears that participants in the control group were blinded: "Patients allocated to the control group got the chance to contact the epilepsy nurse immediately after posttest if they were interested."
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	There is no detail of whether anyone was blinded to outcome assessment.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	There is no evidence that a protocol for this study was registered. A per-protocol analysis was conducted; it is unclear how incomplete outcome data were dealt with.
Selective reporting (reporting bias)	Low risk	The outcomes listed in the paper were analysed.
Other bias	Low risk	Study received funding for the nurse intervention.

Puskarich 1992
Study characteristics

Methods	Randomised controlled trial (8 weeks of follow-up)
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Puskarich 1992 (Continued)

Participants	24 adults were randomised from Epilepsy clinics in Chicago, USA Inclusion criteria: medical diagnosis of epilepsy (clinical seizures and EEG); six seizures during the 8-week baseline period; normal intellectual function; awareness of every seizure occurrence (or advised of each occurrence by family member or other acquaintance); ability to speak English; informed consent. Mean age of intervention group: 39.1 years, control group: 39.7 years Intervention group: 61.5% female, control group: 72.7% female
Interventions	Intervention: progressive muscle relaxation technique Control: quiet sitting
Outcomes	Change in mean seizure frequency per month at 8 weeks
Notes	A funding source was not reported.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	There was little information regarding how the randomisation was conducted, but it appears that block randomisation was used: "The 24 patients who participated were assigned to either the progressive relaxation training group (PRT, n = 13) or to the quiet sitting control group (QS, n = 11) in alternating blocks of five."
Allocation concealment (selection bias)	Unclear risk	There is no detail of allocation concealment.
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	There is no detail of blinding.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	There is no detail of whether anyone was blinded to outcome assessment.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	There is no evidence that a protocol for this study was registered. A per-protocol analysis was conducted; it is unclear how incomplete outcome data were dealt with.
Selective reporting (reporting bias)	Low risk	Protocol was unavailable, but the study reports on all expected outcomes.
Other bias	Unclear risk	There is no funding information.

Ridsdale 1997
Study characteristics

Methods	Randomised controlled trial (6 months of follow-up)
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Ridsdale 1997 (Continued)

Participants	251 participants aged over 15 years old were randomised from six general practices in the South Thames region, UK. Inclusion criteria: either on anti-epileptic medication or had a diagnosis of epilepsy and an attack in the previous two years (determined using medical records), and had responded to a questionnaire. The mean age was 51 years (range 17 to 90 years). There was no significant difference in the mean age for the two groups. 46% were female; no significant differences in the sex ratio between the two groups.
Interventions	Intervention group: offered two nurse-led clinic appointments Control group: usual care with general practitioner or specialist
Outcomes	Percentage of participants receiving clinical advice (driving, drug compliance, adverse drug effects, alcohol and self-help groups) extracted from medical records at 6 months Outcomes were assessed at 6 months following the last nurse clinic: • Knowledge of epilepsy questionnaire • Depression measured by the Hospital Anxiety and Depression Rating Scale (HADS)
Notes	This study was funded by the Nuffield Provincial Hospitals Trust and the National Society for Epilepsy. The author was contacted about the ages of the participants but no responses were received.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	No details of randomisation provided
Allocation concealment (selection bias)	Unclear risk	Details of allocation concealment were not reported
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	None of the participants or clinicians appeared to have been blinded. For some outcomes (from questionnaires), this may have introduced bias.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	None of the assessors appeared to have been blinded. For some outcomes (from questionnaires), this may have introduced bias.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Clinical data were extracted from the notes of 92% of participants.
Selective reporting (reporting bias)	Unclear risk	Outcomes were defined broadly as "Questionnaire responses and recording of key variables extracted from the clinical records before and after the intervention". It is unclear if findings were selectively reported.
Other bias	High risk	Power calculations and the required sample size were not reported. There was no obvious possibility of contamination. Trialists told participants in the intervention group that they would attend a 'neurology clinic', which may have been interpreted as specialist care. Potentially this belief may have improved patient outcomes over and above the effects of the intervention from the epilepsy nurse specialist.

Ridsdale 2000

Study characteristics

Methods	Randomised controlled trial (6 months)
Participants	102 participants older than 17 years were randomised from five hospitals in South East England, UK Inclusion criteria: newly diagnosed epilepsy involving two or more attacks at initial treatment with antiepileptic drugs Intervention group mean age 42.2 years (53% female) Control group 39.8 years (46% female)
Interventions	Intervention group: offered two attendances at a specialist nurse clinic Control group: routine care
Outcomes	Outcomes were assessed at baseline and at 6 months: • Median months since last seizure • Knowledge of Epilepsy Questionnaire • Depression and anxiety measured using the Hospital Anxiety and Depression Rating Scale (HADS) • Checklist of questions on whether enough advice had been provided on important aspects of epilepsy
Notes	This study was funded by NHS R&D London (formerly South Thames) Region and East Surrey Health Authority.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Participants were randomised in blocks so that participants referred from each hospital were equally likely to receive the offer of active treatment or usual care.
Allocation concealment (selection bias)	Unclear risk	Details of allocation concealment were not reported.
Blinding of participants and personnel (performance bias) All outcomes	High risk	None of the participants or clinicians appeared to have been blinded. The subjective nature of the outcomes measured (all by self-reported questionnaire) means this may have introduced bias.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	None of the assessors appeared to have been blinded. The subjective nature of the outcomes measured (all by self-reported questionnaire) means this may have introduced bias.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	88% of those randomised completed the programme, and reasons for loss to follow-up are provided. Participants who were lost to follow-up are reported to be significantly younger (mean age, 31 vs 43 years; $P = 0.03$), and at baseline reported not having had a recent epileptic attack (mean number of months, 5.8 vs 3.5; $P = 0.02$)
Selective reporting (reporting bias)	Unclear risk	A 55-item questionnaire was used to measure advice. It is unclear if findings were selectively reported.

Ridsdale 2000 (Continued)

Other bias	Low risk	Power calculations and required sample size were reported. There were slightly more males in the control group but no other noticeable differences in participant characteristics at baseline, although baseline data are only available for participants who completed questionnaires before and after the intervention. There was no obvious possibility of contamination.
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Ridsdale 2018
Study characteristics

Methods	Parallel-arm, multicentre, randomised controlled trial (12 months of follow-up)	
Participants	404 participants aged ≥ 16 years were randomised from specialist epilepsy clinics at 8 hospitals in London and South East England, UK Inclusion criteria: a diagnosis of epilepsy made by a specialist for ≥ 1 year, prescribed antiepileptic drugs (AEDs), reporting at least 2 seizures (of any type) in the previous year, able to give informed consent, answer questionnaires in English and attend a 2-day course Intervention group: mean age (SD) 42.5 (14.3), control group: 40.8 (14.0) Intervention group: 56.1% female, control group: 52.3% female	
Interventions	Intervention group: a 2-day group education course on self-management, based on MOSES, for people with poorly controlled epilepsy and their carers and treatment as usual Control group: treatment as usual	
Outcomes	Outcomes were assessed at baseline and 12 months - Seizure frequency < 1 seizure per month - Seizure frequency in last 12 months - Seizure recency (% time seizure free) Outcomes assessed at 6 and 12 months - Quality of life (QoL) measured using Quality of Life in Epilepsy Inventory -31 (QOLIE-31)-P total score - Hospital Anxiety and Depression Scale (HADS) 19 for psychological distress (anxiety and depression) - Self-Mastery and Control - Impact of Epilepsy Scale (also completed at 6 months' follow-up) - Stigma of Epilepsy - Medication Adherence	
Notes	This study was funded by NIHR (HTA, 09/165/01—Self-Management education for adults with poorly controlled epilepsy [SMILE] A Randomized Controlled Trial). SJCT was (in part) supported by the National Institute for Health Research (NIHR) Collaboration for Leadership in Applied Health Research and Care (CLAHRC) North Thames at Bart's Health NHS Trust	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Randomisation was provided by an online system managed by the King's Clinical Trials Unit, maintaining full allocation concealment. Randomisation occurred in blocks of 2 (1:1 intervention: control) and was stratified by treatment centre.

Ridsdale 2018 (Continued)

Allocation concealment (selection bias)	Low risk	Healthcare providers were blinded to treatment allocation
Blinding of participants and personnel (performance bias) All outcomes	High risk	None of the participants or clinicians appeared to have been blinded. The subjective nature of the outcomes measured (all by self-reported questionnaire) means this may have introduced bias.
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Research staff who completed follow-up assessments were blinded to treatment allocation. Participants were asked not to reveal their treatment allocation to assessors.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Although dropouts are recorded, analysis of outcomes followed the intention-to-treat principle using mixed-effects regression models
Selective reporting (reporting bias)	Low risk	All outcomes detailed in the methods/protocol were reported in the results.
Other bias	Low risk	Power calculations and required sample size were reported. Numbers and characteristics of the 2 trial arms were well-balanced. There was no obvious possibility of contamination.

Sajatovic 2018
Study characteristics

Methods	Cross-over randomised controlled trial (72 weeks of follow-up)
Participants	120 participants aged over 18 years old were randomised from an urban setting in northeastern Ohio, USA. Inclusion criteria: self-reported diagnosis of epilepsy, having at least one negative health event (NHE) within the past 6 months and being able to provide written informed consent and participate in study procedures. (NHEs were defined as seizures, accidents, traumatic injury, self-harm attempts, emergency department visits and hospitalisations) Intervention group: mean age (SD) 41.5 (12.3); control group 41.0 (11.4) Intervention group: 65.0% female, control group: 71.2% female
Interventions	Intervention group: the Self-management for people with epilepsy and a history of negative health event (SMART) intervention was completed over 8 weeks and involved one in-person group session delivered by a nurse educator and peer educator. Following the in-person session, there were seven group format sessions delivered via the Internet with telephone call-in available for those with limited internet access. Control group: waiting-list control, routine treatment with their regular medical providers
Outcomes	Outcomes were assessed at baseline, 10 weeks and 24 weeks After cross-over of the control group to intervention, outcomes were assessed at 32 weeks (control group), 48 weeks and 72 weeks. Seizure frequency during study at 24 weeks and 72 weeks

Sajatovic 2018 (Continued)

- Mean seizure frequency per month at 24 weeks, 72 weeks
- Change in seizure frequency per month at 6 months
- Change in seizure frequency during study at 6 months
- Epilepsy Severity assessed using the Liverpool Epilepsy Severity Scale
- Quality of life using the Quality of Life in Epilepsy Inventory-10 (QOLIE-10) total score
- Functional status assessed using Short Form 36 Health Survey (SF-36)
- Epilepsy Self Management Scale (ESMS)
- Epilepsy Stigma Scale (ESS)
- Depressive symptom severity, measured using the PHQ-9 and Montgomery-Asberg Depression rating scale (MADRS)
- Self-efficacy measured using the Self-Efficacy Scale (ESES)
- Frequency of self-reported negative health events measured in the 6-month period before intervention, and during the 6 months of the intervention.
- Social support measured using the Scale of Perceived Social Support (MSPSS)

Notes

Control group received intervention at 24 weeks

This study was funded by a grant from the Centers for Disease Control and Prevention SIP 14-0071U48DP005030

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated 1:1 randomisation was based on a randomised block design with random block sizes.
Allocation concealment (selection bias)	Unclear risk	Details of allocation concealment were not reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	None of the participants or clinicians appeared to have been blinded. The subjective nature of the outcomes measured (all by self-reported questionnaire) means this may have introduced bias.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	None of the assessors appeared to have been blinded. The subjective nature of the outcomes measured (all by self-reported questionnaire) means this may have introduced bias.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	The six-month study attrition was 14.2% overall (n = 17) and similar between arms. No information is provided on reasons for dropout.
Selective reporting (reporting bias)	Low risk	Protocol unavailable but study reports on all expected outcomes
Other bias	Unclear risk	Power calculations and required sample size were not reported. Characteristics were similar between SMART and waiting-list group with the exception of more individuals in SMART who were married/cohabiting and more individuals in waiting-list group who were students, employed, or full-time homemakers.

Sathyaprabha 2008

Study characteristics

Sathyaprabha 2008 (Continued)

Methods	Randomised control trials (10 weeks of follow-up)
Participants	40 participants with refractory epilepsy were randomised from a Refractory Epilepsy Clinic of a university teaching hospital in southern India. Inclusion criteria: age between 15 and 55 years, either gender, normal intellectual function, and uncontrolled epilepsy. Refractory epilepsy was defined as seizure frequency greater than two seizures per month for at least 2 years, despite the use of two or more first-line AEDs at their maximum tolerated doses. Mean age of intervention group: 33.1 years, control group: 31.4 years Intervention group: 44% female, control group: 38% female
Interventions	Intervention: yoga Control: simple exercise group
Outcomes	- Mean seizure frequency score at 10 weeks - Autonomic dysfunction – graded as per modified Bannister criteria at 10 weeks
Notes	This study was conducted with financial assistance from the Central Council of Research in Yoga & Naturopathy (CCRYN), Government of India.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	Inappropriate method of randomisation. Participants were distributed alternately into either the yoga therapy group or the simple exercise group.
Allocation concealment (selection bias)	Unclear risk	Details of allocation concealment were not reported.
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	None of the participants or clinicians appeared to have been blinded. For some outcomes (from questionnaires), this may have introduced bias
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	None of the assessors appeared to have been blinded. The subjective nature of some of the outcomes measured (by self-reported questionnaire) means this may have introduced bias.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	No information is provided on reasons for dropout.
Selective reporting (reporting bias)	Low risk	All outcomes detailed in the methods/protocol were reported in the results.
Other bias	High risk	Power calculations and required sample size were not reported. Small sample size. Short observation period (10 weeks)

Sepat 2021

Study characteristics

Sepat 2021 (Continued)

Methods	Randomised controlled trial (1 month of follow-up)
Participants	130 participants (persons with epilepsy and caregivers) were randomised in a tertiary care teaching hospital in India. People 18 years or older and who had been in follow-up for at least 6 months were included. Caregivers who lived with the persons with epilepsy and were directly involved in caring for them were also included.
Interventions	Intervention: an additional virtual interactive epilepsy session along with digital education material Control: digital education material
Outcomes	- Frequency of breakthrough seizures at 1 month - Quality of life assessed using Quality of Life in Epilepsy Inventory-31 (QOLIE-31) total score at 1 month - Epilepsy knowledge assessment tool at 1 week
Notes	This study was not funded by any agency. The author was contacted about Annex IV tables 6 and 7; this information was provided.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"The participants were randomized to the control or intervention arm using a computer-generated randomization list when they visited Neurology OPD in person."
Allocation concealment (selection bias)	Unclear risk	The study did not mention whether the allocation was concealed.
Blinding of participants and personnel (performance bias) All outcomes	High risk	The study did not specifically mention blinding. However, as the intervention involves receiving an additional virtual interactive epilepsy education, it is unlikely the participants or the personnel involved could be blinded.
Blinding of outcome assessment (detection bias) All outcomes	High risk	There was no specific mention of blinding. However, the outcomes assessed were reported by participants, therefore unlikely to be blinded.
Incomplete outcome data (attrition bias) All outcomes	Low risk	There was no reported dropout in the study.
Selective reporting (reporting bias)	Low risk	All outcomes described in the methods section were reported in the results section study.
Other bias	Low risk	No other bias detected

Si 2020

Study characteristics

Methods	Randomised controlled trial (6 months of follow-up)
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Si 2020 (Continued)

Participants	380 participants aged 18 to 60 were randomised from the Epilepsy Centre in Sichuan Provincial People's Hospital, Chengdu, China. Inclusion criteria: adults with epilepsy of more than one year's duration who had more than three seizures during the six months preceding recruitment; participants had to reside in the study area; be proficient in using smartphones and be able to have provided written consent Intervention group: mean age (SD) 32.3 years (11.0), control group: 32.3 (11.6) Intervention group: 46% female, control group: 46% female
Interventions	Epilepsy management app with medication calendar, online educational forums and blogs, a facility for prompt online reporting of seizures and online consultations and online questionnaires. Control group: routine clinic consultation
Outcomes	Outcomes were assessed at 6 months • Seizure freedom • $\geq 50\%$ reduction in seizure frequency • Epilepsy self-management scale • Medication management score
Notes	This study was supported by the National Natural Science Foundation of China (NSFC, 81701269).

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Permuted blocked randomisation. One investigator generated block randomisation sequences (block size of four); one of the block sequences was then selected by the randomisation program, and consecutive participants allocated to the app and control groups according to the randomisation sequence. Each participant of a particular age and sex was randomised to the app or control group and the next enrollee with the same characteristics was automatically assigned to the other group.
Allocation concealment (selection bias)	Low risk	The randomisation sequence was concealed from all investigators until all participants had been assigned. Participants were asked to not reveal their allocation to the interviewer who undertook their follow-up assessments.
Blinding of participants and personnel (performance bias) All outcomes	High risk	None of the participants or clinicians appeared to have been blinded. The subjective nature of the outcomes measured (all by self-reported questionnaire) means this may have introduced bias.
Blinding of outcome assessment (detection bias) All outcomes	Low risk	The study schedule (intervention allocation) was not revealed to the research staff who collected and analysed the data; participants were asked not to reveal their allocation to the interviewer who undertook their follow-up assessments.
Incomplete outcome data (attrition bias) All outcomes	Low risk	High rate of dropout in control group $> 20\%$ and small sample size, but appropriate intention-to-treat analysis conducted.
Selective reporting (reporting bias)	Low risk	All outcomes detailed in the methods/protocol were reported in the results.

Si 2020 (Continued)

Other bias	Low risk	Power calculation and required sample size reported. Baseline demographic and clinical characteristics of the two groups were similar. Protocol available and all expected outcomes were reported.
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Sidorenko 2000

Study characteristics		
Methods	Randomised controlled trial (duration of follow-up not reported)	
Participants	56 people with severe epilepsy were randomised from a specialised hospital for epilepsy in Minsk, Belarus. Mean age of intervention group: 32.3 years, control group: 32.2 years	
Interventions	Intervention: Medical Resonance Therapy Music (MRT-Music) Control: not specifically stated, but all participants received traditional anti-epileptic therapy	
Outcomes	- Changes in frequency and severity of epileptic paroxysms - Patient's self-report of general state of health - Psychological studies using the Minnesota Multiphasic Personality Inventory(MMPI)	
Notes	The funding source for this study was not reported. The author was contacted about the population characteristics of this study; no responses were received.	

Risk of bias		
Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	The selection of the participants was "randomised" - unclear how
Allocation concealment (selection bias)	Unclear risk	Details of allocation concealment were not reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	None of the participants or clinicians appeared to have been blinded. The subjective nature of the outcomes measured (all by self-reported questionnaire) means this may have introduced bias.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	None of the assessors appeared to have been blinded. The subjective nature of the outcomes measured (all by self-reported questionnaire) means this may have introduced bias.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Unclear details about the numbers randomised makes assumptions about whether all data were collected and analysed difficult.
Selective reporting (reporting bias)	Unclear risk	No protocol available.
Other bias	High risk	Power calculations and required sample size were not reported. Small sample size. Unclear what tools were used to measure some outcomes. No inclusion/exclusion criteria reported. No P values reported.

Sidorenko 2000 (Continued)

No funding or acknowledgements. Does not show that study was approved.

Singh 2022
Study characteristics

Methods	Cluster-randomised trial (24 months of follow-up)
Participants	240 people with epilepsy were randomised from poor urban and peri-urban rural communities in Ludhiana District in Punjab, Northwest India Mean age of intervention group: 27±15 years, control group: 26±15 years. Intervention group: 33% female, control group: 33% female
Interventions	Intervention: home-based primary health care Control: usual clinic care
Outcomes	- Number of monthly seizures up to 24 months - Quality of life scale using European Quality of Life Five-Dimension Three-Level (EQ-5D-3L) and Personal Impact of Epilepsy scale (PIES) at baseline and 24 months follow-up - Anti-seizure medication adherence up to 24 months
Notes	This study was funded by an ad hoc grant no. No:5/4-5/127/Neuro/2013-NCD-I of the Indian Council of Medical Research.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	This study used cluster-randomisation: "Clusters were assigned to either home-based care or routine clinic-based care in a 1:1 ratio using a simple computer-based randomization scheme". Baseline characteristics were similar between both intervention groups.
Allocation concealment (selection bias)	Low risk	Disclosure of allocation only on completion of cluster assembly; randomisation made by officer not involved in recruitment or evaluations
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding was not specifically mentioned in the study. However, the nature of the intervention makes blinding to participants and personnel unlikely to be possible.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	"Distinct from care providers, a study nurse independently assessed adherence by counting residual pills from the previous month's dispensing, kept records of seizures and medication adverse effects and applied various questionnaire in both trial arms". However, some outcomes such as questionnaires are still reported by patients. Therefore the risk of bias for outcome assessment may be different depending on which outcome is measured.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	There was a high dropout rate, which was uneven between the control and intervention group. 37% of control group and 19% of intervention group exited trial during study.

Singh 2022 (Continued)

In addition, pill count-based adherence outcomes were missing in 18.2%, seizure counts in 13.3%, SRMS scores in 19.7%, and PIES scores in 10.6%. Quote: "All variables were found to be missing at random". It is unclear how this impacts on results.

Selective reporting (reporting bias)	Low risk	All outcomes described in protocol were reported in study
Other bias	Low risk	No other bias detected

Tan 1986

Study characteristics

Methods	Randomised controlled trial (4 months of follow-up)
Participants	30 adults were randomised from epileptic outpatients at the Wellesley Hospital, Toronto, Ontario, Canada Inclusion criteria: adult epileptic outpatients with significant psychosocial problems (especially with anxiety and/or depression) and inadequate seizure control, according to the clinical judgement of the director of the Convulsive Disorders Clinic, who served as the referring neurologist Mean age of participants was 33.4 years old. Intervention group: 19% female, attention placebo control group: 22% female, no treatment control group: 22% female.
Interventions	Intervention: cognitive behavioural therapy Control: - Supportive counselling (attention-placebo control) - No treatment: waiting list group
Outcomes	All outcomes assessed post intervention and at 4 months - Daily seizure frequency - Depression assessed using the Beck Depression Inventory (BDI) - Psychosocial difficulties amongst epileptic patients measured using Washington Psychosocial Seizure Inventory (WPSI) - Patients' self-ratings and neurologist-assessed compliance with taking anticonvulsant medication - Compliance in taking the prescribed drugs for seizure control measured using plasma levels of anti-convulsant medication - Patient, Neurologist & Therapist assessed global rating of psychological adjustment using the same 10-point scale (1 extreme maladjustment to 10, optimal adjustment) [GRPA(N)]. - Psychopathology measured using the Minnesota Multiphasic Personality Inventory (MMPI)
Notes	This study was funded by Health Care Systems research grants No. DM 655 and 00636 from the Ministry of Health, Ontario, Canada.

Risk of bias

Bias	Authors' judgement	Support for judgement
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Tan 1986 (Continued)

Random sequence generation (selection bias)	Unclear risk	No details of randomisation provided
Allocation concealment (selection bias)	Unclear risk	No information on method of allocation concealment
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	None of the participants or clinicians appeared to have been blinded. The subjective nature of some of the outcomes measured (by self-reported questionnaire) means this may have introduced bias
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Neurologist was blinded which would have prevented rating on outcome measures from having a bias. However, participants could have revealed allocation in the interview, therefore possibly increasing risk.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low dropout with reasons not likely to be related to the true outcome.
Selective reporting (reporting bias)	Unclear risk	Protocol unavailable. Unclear how some items were assessed (hysterical seizure, daily seizure frequency diary)
Other bias	High risk	No power calculation or required sample size reported. Small sample. No significant differences between the three groups of patients. Six patients in each of the three groups did not receive any concomitant or other professional counselling or psychiatric treatment during the present study. The remaining patients received treatment from other therapists while participating in the present study, but such ongoing treatment could not be terminated for obvious ethical reasons. The SC group did receive some spontaneous, albeit brief and unsystematic, exposure to some patients' coping strategies, some of which were similar to those covered more systematically in the CBT group sessions (e.g. distraction and relaxation strategies, and coping self-talk). The authors did undertake post-hoc analysis on "only patients who were not receiving other concomitant or ongoing treatment from mental health professionals" (n = 6 for each of the three groups). In the main, results similar to those found with the bigger sample (n = 27) were obtained.

Tang 2015
Study characteristics

Methods	Randomised controlled trial (18 weeks of follow-up)
Participants	61 adults aged 18 years or older with a diagnosis of epilepsy resistant to antiepileptic drug (AED) treatment were randomised from the neurology clinics of the Prince of Wales Hospital, a teaching hospital of the Chinese University of Hong Kong. Mean age of intervention group: 34.8 years, control group: 35.5 years Intervention group: 53% female, control group: 53% female
Interventions	Intervention: mindfulness Control: attention placebo control social support
Outcomes	All outcomes assessed at 6 weeks

Tang 2015 (Continued)

- Mean seizure frequency
- Change in mean seizure frequency per month
- Quality of Life in Epilepsy Inventory (QOLIE-31-P) total score
- Beck Depression Inventory-II (BDI-II)
- Beck Anxiety Inventory (BAI)
- Cognitive functions by the Chinese Auditory Verbal Learning Test, Rey Complex Figure Test and Recognition Trial, Category Fluency Test, Digit Span Test, and Stroop Colour and Word Test-Victoria version

Notes	A funding source was not reported.
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Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Randomization performed by an independent research assistant. Patients stratified by sex and age (by median split) into 4 blocks (young-female, young-male, old-female, old-male). Simple randomisation by drawing was performed within each block.
Allocation concealment (selection bias)	Unclear risk	No information on method of allocation concealment
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	None of the participants or clinicians appeared to have been blinded. The subjective nature of some of the outcomes measured (by self-reported questionnaire) means this may have introduced bias.
Blinding of outcome assessment (detection bias) All outcomes	Low risk	A team of trained research assistants with a bachelor's degree in psychology who were blinded to participants' intervention group performed all assessments. They were separated into 2 teams, one for baseline assessment and the other for postintervention assessment.
Incomplete outcome data (attrition bias) All outcomes	Low risk	One participant in the control group failed to show up for evaluation.
Selective reporting (reporting bias)	Low risk	The trial was registered with clinicaltrials.gov (NCT02060422).
Other bias	Unclear risk	Power calculation and required sample size reported. Similar demographics and clinical characteristics across groups. No funding information available.

Thapar 2002

Study characteristics

Methods	Randomised controlled trial (12 months of follow-up)
Participants	1275 participants were randomised from 82 general practices in four areas of Greater Manchester, UK. Inclusion criteria: adults with 'active' epilepsy - a seizure recorded within the medical records in the previous 2 years or being on anticonvulsant medication for epilepsy, from the GP practices in four areas of Greater Manchester

Thapar 2002 (Continued)

Mean age: 50 years, 52% female (for both groups)

Interventions	Intervention group: evidence-based prompt and reminder card for GPs to complete. Control group: not stated
Outcomes	Outcomes were assessed at baseline and 12 months: • Seizure frequency during study • Proportion of patients on monotherapy with anticonvulsants • Proportion of patients reporting medication side effects • Checking of phenytoin levels • Satisfaction with information provided by professionals
Notes	This study was funded by Department of Health Implementation of research methods programme (IMP 15/12). Sanofi Pharmaceuticals donated the design costs of the prompt and reminder cards.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Randomisation was generated by a random number table; there were a greater number of participants in the doctor-held arm than the other two arms, which may suggest randomisation did not work or that this arm included larger general practices (in terms of numbers of patients, not general practitioners)
Allocation concealment (selection bias)	Unclear risk	Details of allocation concealment were not reported
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	It is not reported if any of the participants or clinicians were blinded. For some outcomes (from questionnaires), this may have introduced bias.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	It is not reported if any of the participants or clinicians were blinded. For some outcomes (from questionnaires), this may have introduced bias.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Data from medical records were available for 92% (1210) of the 1313 enrolled participants; questionnaires for 976 (74%)
Selective reporting (reporting bias)	Low risk	All outcomes detailed in the methods were reported in the results
Other bias	Unclear risk	Power calculations appropriate for a cluster randomised design and the required sample size were reported. It was calculated that 600 participants in each arm were required. However, this number was not achieved in any arm. There was no obvious possibility of contamination. Unclear how satisfaction with information provision was measured.

Thompson 2020
Study characteristics

Thompson 2020 (Continued)

Methods	Cross-over randomised controlled trial (20 weeks of follow-up)
Participants	117 adults aged 21 or over were randomised across universities in USA, mean age 41.2 years. Inclusion criteria: "1) diagnosis of epilepsy; 2) at least three months post initial diagnosis of epilepsy and either on medication or physician-approved to participate; 3) symptoms of depression, but absence of moderate-to-severe depression on the Center for Epidemiologic Studies-Depression (CES-D) scale [29] (i.e., 8 < CES-D score <27) or Major Depressive Disorder according to the Patient Health Questionnaire-9 (PHQ-9) [30]; 4) no active suicidal ideation; 5) 21 years of age and older; 6) English speaking; 7) access to a telephone; and 8) mentally stable, as determined by a score of > 23 on the telephone version of the Mini-Mental Status Examination (T-MMSE)"
Interventions	Intervention: psycho-educational programme based upon Mindfulness-Based Cognitive Therapy (MBCT) – Project UPLIST, designed to teach mental health skills Control: treatment-as usual waiting list (TAU)
Outcomes	- Seizure frequency at 10 weeks - Mean change in Liverpool Seizure Severity Scale at 10 weeks - Depressive Symptoms were assessed using a modified form of Beck Depression Inventory (BDI) at 9-10 weeks and 18-20 weeks
Notes	Several errors are noted in the paper around numbers randomised, numbers of withdrawal / exclusions and numbers analysed. All groups were assessed at baseline, interim (after the intervention groups completed the programme; at about 9-10 weeks), and follow-up (after the TAU groups completed the programme; at about 18-20 weeks). This study was supported by the National Center for Minority Health and Health Disparities NIH Grant #5RC1 MD004563]

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Participants were stratified by whether or not they were on antidepressants and randomly assigned to the Project UPLIFT condition or the TAU waitlist condition. No details of randomisation sequence generation.
Allocation concealment (selection bias)	Unclear risk	Details of allocation concealment were not reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	None of the participants or clinicians appeared to have been blinded. The subjective nature of the outcomes measured (all by self-reported questionnaire) means this may have introduced bias.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Assessment of participants from all sites was conducted by telephone by Master of Public Health students in Georgia. Unclear if blinded.
Incomplete outcome data (attrition bias) All outcomes	High risk	Dropouts not balanced, no intention-to-treat analysis

Thompson 2020 (Continued)

Selective reporting (reporting bias)	High risk	Results reported for interim analysis only, before cross-over conducted. "This analysis is based upon data from the first two assessments, at baseline and interim, before the cross-over occurred". Insufficient power to detect the main effect of Project UPLIFT upon perceived seizure severity.
Other bias	High risk	Several errors noted in the paper around numbers randomised, numbers of withdrawals/exclusions and numbers analysed. Data on participant characteristics reported only for those analysed (n = 107), not for those randomised. Interim analysis at 10 weeks only before cross-over.

Zheng 2019
Study characteristics

Methods	Randomised controlled trial (12 months of follow-up)
Participants	194 participants aged 18 years or over were randomised from a tertiary referral hospital in Zhejiang, China. Inclusion criteria: a diagnosis of epilepsy according to the 2001 International League Against Epilepsy (ILAE) diagnostic scheme, on anti-epileptic treatment for at least 3 months, the ability to read and write and absence of major cognitive impairment Intervention group median age in years (interquartile range (IQR))- 28 ((23.3, 28.8), control group 26.0 (IQR)- 22.3, 33.0 Intervention group: 43.5% female, control group: 47.8% female
Interventions	The intervention group received standard antiepileptic drugs (AEDs) and a 12-month multidisciplinary program developed by a group consisting of the epileptologist, pharmacist, psychiatrist, and epilepsy specialist nurse. The program included face-to-face interviews, online consultations and group education. The control group received regular AED treatment and routine education.
Outcomes	Outcomes were compared at baseline to those assessed at 12 months - Seizure frequency < 1 seizure per month - Quality of life assessed by the Quality of Life in Epilepsy Inventory -31 (QOLIE-31) total score and sub-scale - Proportion of patients with moderate to severe depression measured by Beck Depression Inventory - Proportion of patients with moderate to severe anxiety measured by Beck Anxiety Inventory
Notes	This study was funded by the National Natural Science Foundation of China [grant numbers: 81871010 and 81471316], the Zhejiang Provincial Administration of Traditional Chinese Medicine [grant number: 2010ZA069], and the Major Program of Science and Technology Department of Zhejiang Province, China [grant number: 2012C13018-4].

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Randomisation was done using a computer-generated table of random numbers (www.randomization.com).

Zheng 2019 (Continued)

Allocation concealment (selection bias)	Low risk	Randomly assigned using concealed random allocation to intervention or control group.
Blinding of participants and personnel (performance bias) All outcomes	High risk	None of the participants or clinicians appeared to have been blinded. The subjective nature of the outcomes measured (all by self-reported questionnaire) means this may have introduced bias.
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Assessors were blinded to the group of participants
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Dropout rate of 5.15% in both groups. Insufficient reporting of reasons for attrition - 'discontinued intervention' - reason for discontinuation not reported.
Selective reporting (reporting bias)	Unclear risk	Protocol unavailable. When patients visited the epilepsy clinic, they would meet with an epileptologist; questions regarding epilepsy knowledge but no knowledge outcomes reported.
Other bias	Unclear risk	Power calculations and required sample size were not reported. No difference between the 2 groups at baseline. Groups appear similarly balanced.

AEDs: antiepileptic drugs; **ASM:** anti-seizure medication; **EEG:** electroencephalography; **HADS:** Hospital Anxiety and Depression Scale; **PHQ-9:** Patient Health Questionnaire-9; **QOLIE:** Quality of Life in Epilepsy Inventory; **SD:** standard deviation; **VAS:** visual analogue scale

Characteristics of excluded studies [ordered by study ID]

Study	Reason for exclusion
Ahorsu 2020	No seizure control outcome
Albert 2019	No seizure control outcome
Aliasgharpour 2013	No seizure control outcome
Allendorfer 2019	No seizure control outcome
Baxendale 2012	Ineligible intervention
Beretta 2014	No seizure control outcome
Chen 2021	No seizure control outcome
Cote 2021	No seizure control outcome
Dilorio 2009	No seizure control outcome
Dilorio 2011	No seizure control outcome
Ebrahimpour 2019	No full text available, paper in Persian
Edward 2019	Study not randomised
Engelberts 2002	No seizure control outcome

Study	Reason for exclusion
Eshiet 2019	No seizure control outcome
Eshiet 2021	No seizure control outcome
Feng 2022	No seizure control outcome
Feter 2020	No seizure control outcome
Gandy 2014	No seizure control outcome
Gandy 2023	Population includes a range of neurological conditions; epilepsy is not reported separately in the outcomes.
Helgeson 1990	No seizure control outcome
HOBSCOTCH 2016	No seizure control outcome
Hosseini 2016	No seizure control outcome
Hum 2019	No seizure control outcome
Khachian 2018	No seizure control outcome (no full text available)
Lai 2021	No seizure control outcome
Li 2016	Ineligible population: adolescents
Lin 2019	No seizure control outcome
Lua 2012	Ineligible study design
Lua 2013	No seizure control outcome
Mamanpush 2014	No seizure control outcome
Martiniuk 2007	No seizure control outcome
Martinovic 2006	No seizure control outcome
Mehrabi 2022	No seizure control outcome
Mohamadpour 2017	No seizure control outcome
Olley 2001	No seizure control outcome
Orjuela-Rojas 2015	Not a randomised study
Paardekooper 2020	No seizure control outcome
PACES 2015	No seizure control outcome
PEARLS 2010	No seizure control outcome
Pramuka 2007	No seizure control outcome

Study	Reason for exclusion
Rabiei 2022	No seizure control outcome
Rafiee 2020	Ineligible study design
Rawlings 2018	No separate data for participants with epilepsy and non-epilepsy participants
Sajatovic 2019	No seizure control outcome
Salehzadeh 2011	No full-text article available, paper in Persian
Schroder 2014	No seizure control outcome
Shirvan 2021	No seizure control outcome
Talo 2023	No seizure control outcome
UPLIFT 2015	No seizure control outcome
Vooturi 2020	No seizure control outcome
Xie 2023	No seizure control outcome
Yadegary 2015	No seizure control outcome
ZMILE 2018	No seizure control outcome

DATA AND ANALYSES

Comparison 1. Psycho-behavioural interventions versus control interventions

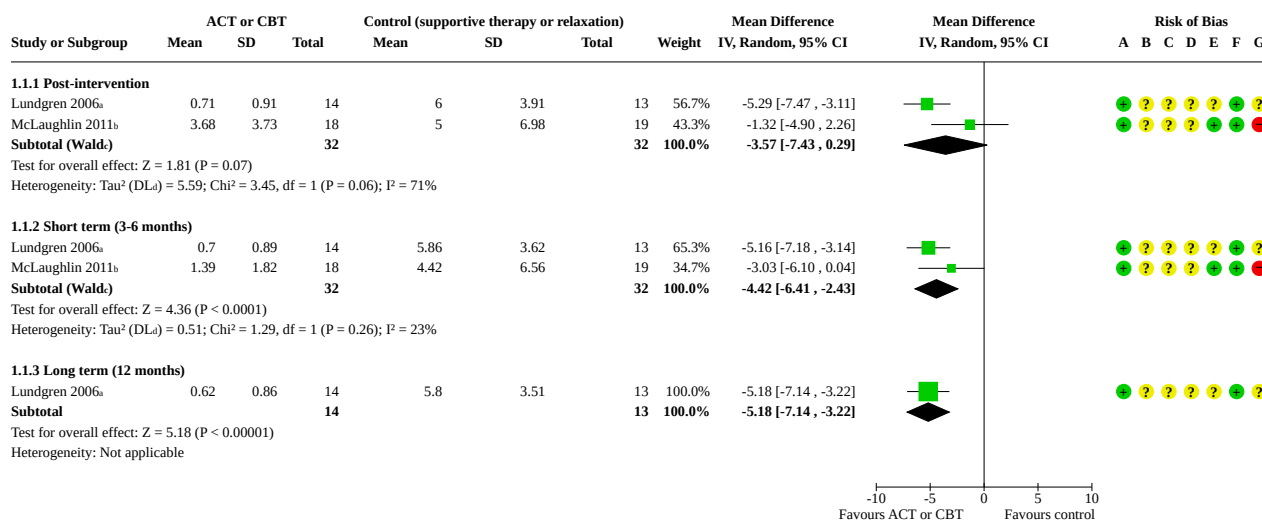
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1.1 Seizure frequency per month	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.1.1 Post-intervention	2	64	Mean Difference (IV, Random, 95% CI)	-3.57 [-7.43, 0.29]
1.1.2 Short term (3-6 months)	2	64	Mean Difference (IV, Random, 95% CI)	-4.42 [-6.41, -2.43]
1.1.3 Long term (12 months)	1	27	Mean Difference (IV, Random, 95% CI)	-5.18 [-7.14, -3.22]
1.2 Quality of Life in Epilepsy Inventory Total score (QOLIE-10)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
1.2.1 Short term (3 months)	1	148	Mean Difference (IV, Fixed, 95% CI)	1.51 [-0.26, 3.28]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1.2.2 Short term (6 months)	1	120	Mean Difference (IV, Fixed, 95% CI)	0.89 [-1.06, 2.84]
1.2.3 Long term (9 months)	1	116	Mean Difference (IV, Fixed, 95% CI)	1.53 [-0.40, 3.46]
1.3 World Health Organization Quality of Life instrument, short version (WHOQOL- BREF) scale	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.3.1 Post-intervention	2	45	Mean Difference (IV, Random, 95% CI)	0.39 [-5.49, 6.28]
1.3.2 Short term (6 months)	2	45	Mean Difference (IV, Random, 95% CI)	1.72 [-4.88, 8.31]
1.3.3 Long term (12 months)	2	45	Mean Difference (IV, Random, 95% CI)	5.46 [-11.51, 22.43]
1.4 Satisfaction With Life Scale (SWLS) scale	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.4.1 Post-intervention	2	45	Mean Difference (IV, Random, 95% CI)	5.46 [-2.97, 13.89]
1.4.2 Short term (6 months)	2	45	Mean Difference (IV, Random, 95% CI)	5.46 [-9.04, 19.97]
1.4.3 Long term (1 year)	2	45	Mean Difference (IV, Random, 95% CI)	5.90 [-5.06, 16.87]
1.5 Geriatric Depression Scale (GDS)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
1.5.1 Short term (12 weeks)	1	37	Mean Difference (IV, Fixed, 95% CI)	0.59 [-3.44, 4.62]
1.6 Composite International Diagnostic Interview (CIDI): Depression	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
1.6.1 Short term (12 weeks)	1	37	Mean Difference (IV, Fixed, 95% CI)	0.20 [-0.75, 1.15]
1.7 Composite International Diagnostic Interview (CIDI): Dysthymia	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
1.7.1 Short term (12 weeks)	1	37	Mean Difference (IV, Fixed, 95% CI)	-0.67 [-1.85, 0.51]
1.8 Washington Psychosocial Seizure Inventory (WPSI): Total score	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
1.8.1 Short term (12 weeks)	1	37	Mean Difference (IV, Fixed, 95% CI)	1.41 [-4.68, 7.50]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1.9 Patient Health Questionnaire – 9 items (PHQ-9): Depression	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
1.9.1 Short term (3 months)	1	152	Mean Difference (IV, Fixed, 95% CI)	-2.22 [-3.75, -0.69]
1.9.2 Short term (6 months)	1	123	Mean Difference (IV, Fixed, 95% CI)	-2.03 [-3.90, -0.16]
1.9.3 Long term (9 months)	1	116	Mean Difference (IV, Fixed, 95% CI)	-1.56 [-3.30, 0.18]
1.10 Neurological Disorders Depression Inventory for Epilepsy (NDDIE)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
1.10.1 Short term (3 months)	1	151	Mean Difference (IV, Fixed, 95% CI)	-1.57 [-2.73, -0.41]
1.10.2 Short term (6 months)	1	123	Mean Difference (IV, Fixed, 95% CI)	-1.38 [-2.79, 0.03]
1.10.3 Long term (9 months)	1	115	Mean Difference (IV, Fixed, 95% CI)	-1.50 [-2.93, -0.07]
1.11 Generalized Anxiety Disorder–7 items (GAD-7)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
1.11.1 Short term (3 months)	1	150	Mean Difference (IV, Fixed, 95% CI)	-2.13 [-3.59, -0.67]
1.11.2 Short term (6 months)	1	120	Mean Difference (IV, Fixed, 95% CI)	-1.82 [-4.33, 0.69]
1.11.3 Long term (9 months)	1	114	Mean Difference (IV, Fixed, 95% CI)	-1.26 [-2.95, 0.43]
1.12 Depression Anxiety Stress Scales–21 items: DASS-21 total score	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
1.12.1 Short term (3 months)	1	151	Mean Difference (IV, Fixed, 95% CI)	-4.58 [-7.88, -1.28]
1.12.2 Short term (6 months)	1	121	Mean Difference (IV, Fixed, 95% CI)	-2.63 [-6.97, 1.71]
1.12.3 Long term (9 months)	1	115	Mean Difference (IV, Fixed, 95% CI)	-2.85 [-7.13, 1.43]
1.13 Work and Social Adjustment Scale (WSAS)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
1.13.1 Short term (3 months)	1	151	Mean Difference (IV, Fixed, 95% CI)	-3.61 [-6.19, -1.03]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1.13.2 Short term (6 months)	1	122	Mean Difference (IV, Fixed, 95% CI)	-3.12 [-6.12, -0.12]
1.13.3 Long term (9 months)	1	116	Mean Difference (IV, Fixed, 95% CI)	-1.87 [-5.22, 1.48]

Analysis 1.1. Comparison 1: Psycho-behavioural interventions versus control interventions, Outcome 1: Seizure frequency per month



Footnotes

^aAcceptance and commitment therapy (ACT) versus supportive therapy

^bCognitive Behavioural Therapy (CBT) versus relaxation

^cCI calculated by Wald-type method.

^dTau² calculated by DerSimonian and Laird method.

Risk of bias legend

(A) Random sequence generation (selection bias)

(B) Allocation concealment (selection bias)

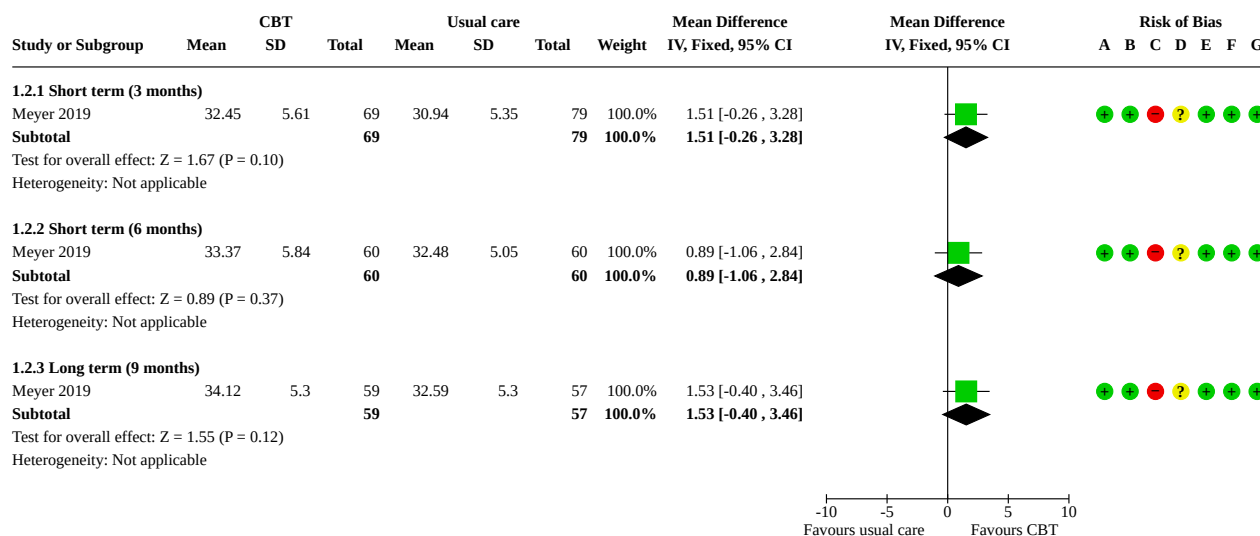
(C) Blinding of participants and personnel (performance bias)

(D) Blinding of outcome assessment (detection bias)

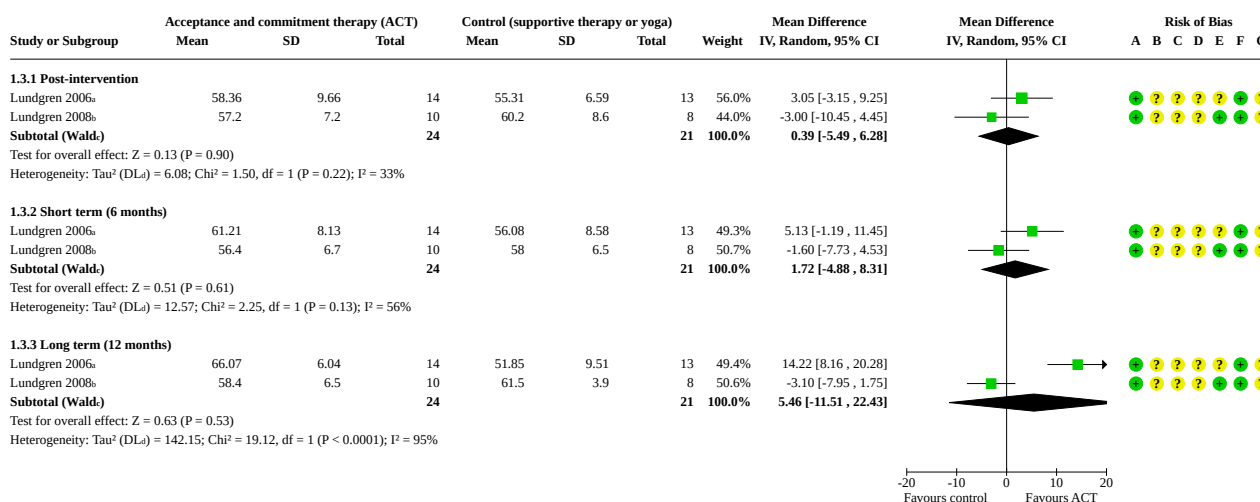
(E) Incomplete outcome data (attrition bias)

(F) Selective reporting (reporting bias)

(G) Other bias

Analysis 1.2. Comparison 1: Psycho-behavioural interventions versus control interventions, Outcome 2: Quality of Life in Epilepsy Inventory Total score (QOLIE-10)**Risk of bias legend**

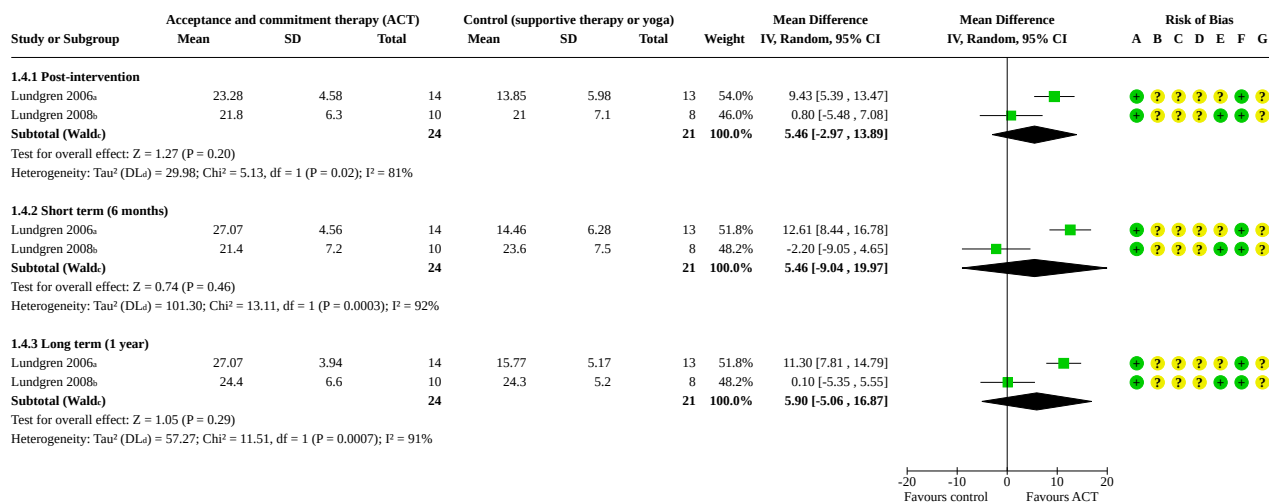
- (A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

Analysis 1.3. Comparison 1: Psycho-behavioural interventions versus control interventions, Outcome 3: World Health Organization Quality of Life instrument, short version (WHOQOL- BREF) scale**Footnotes**

- ^aAcceptance and commitment therapy (ACT) versus supportive therapy
^bAcceptance and commitment therapy (ACT) versus yoga
^cCI calculated by Wald-type method.
^dTau² calculated by DerSimonian and Laird method.

Risk of bias legend

- (A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

Analysis 1.4. Comparison 1: Psycho-behavioural interventions versus control interventions, Outcome 4: Satisfaction With Life Scale (SWLS) scale**Footnotes**^aAcceptance and commitment therapy (ACT) versus supportive therapy^bAcceptance and commitment therapy (ACT) versus yoga^cCI calculated by Wald-type method.^d Tau^2 calculated by DerSimonian and Laird method.**Risk of bias legend**

(A) Random sequence generation (selection bias)

(B) Allocation concealment (selection bias)

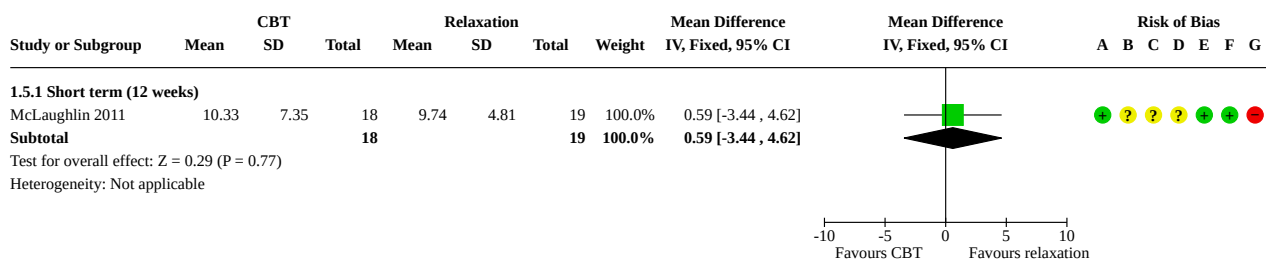
(C) Blinding of participants and personnel (performance bias)

(D) Blinding of outcome assessment (detection bias)

(E) Incomplete outcome data (attrition bias)

(F) Selective reporting (reporting bias)

(G) Other bias

Analysis 1.5. Comparison 1: Psycho-behavioural interventions versus control interventions, Outcome 5: Geriatric Depression Scale (GDS)**Risk of bias legend**

(A) Random sequence generation (selection bias)

(B) Allocation concealment (selection bias)

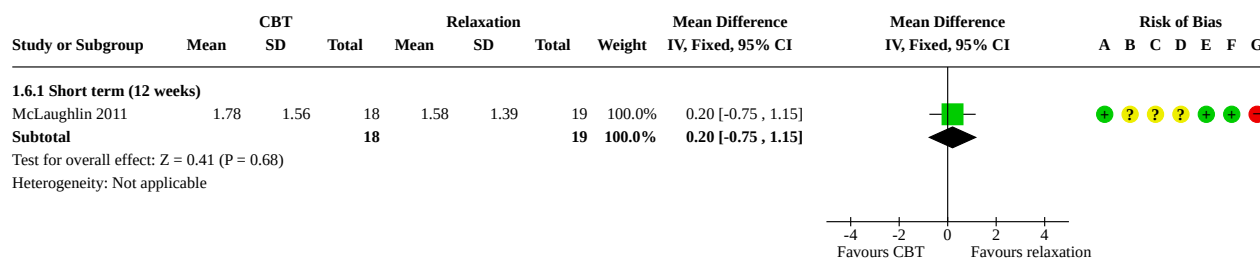
(C) Blinding of participants and personnel (performance bias)

(D) Blinding of outcome assessment (detection bias)

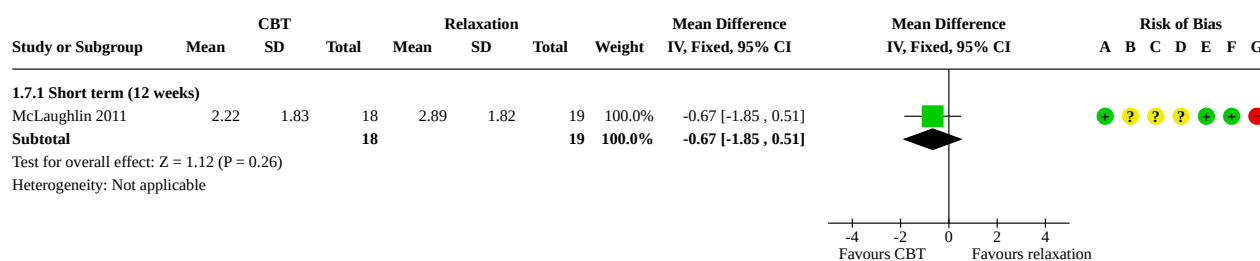
(E) Incomplete outcome data (attrition bias)

(F) Selective reporting (reporting bias)

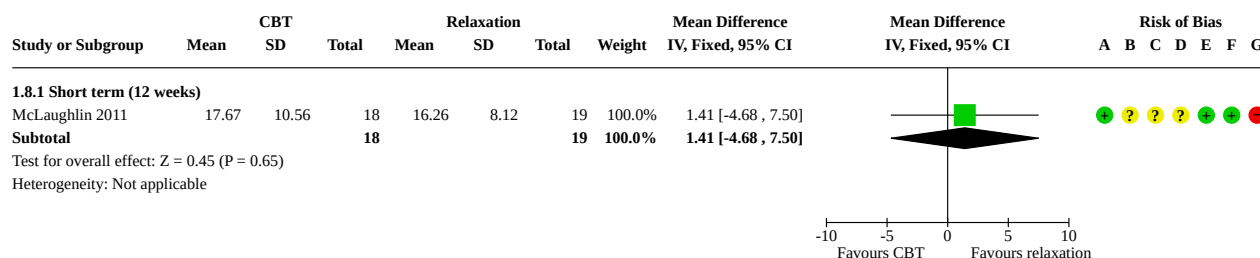
(G) Other bias

Analysis 1.6. Comparison 1: Psycho-behavioural interventions versus control interventions, Outcome 6: Composite International Diagnostic Interview (CIDI): Depression**Risk of bias legend**

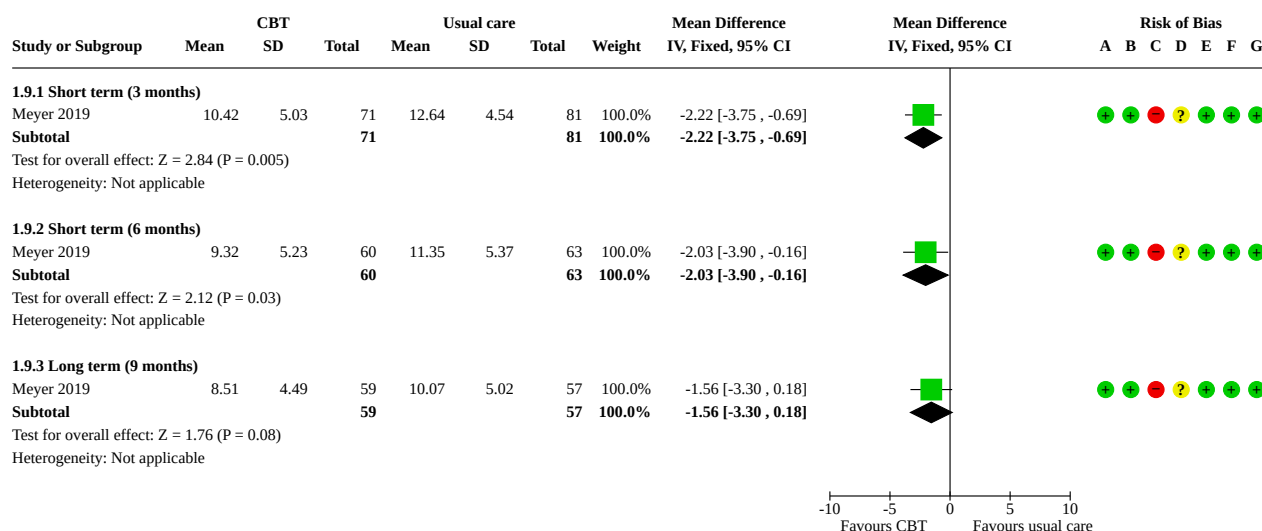
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 1.7. Comparison 1: Psycho-behavioural interventions versus control interventions, Outcome 7: Composite International Diagnostic Interview (CIDI): Dysthymia**Risk of bias legend**

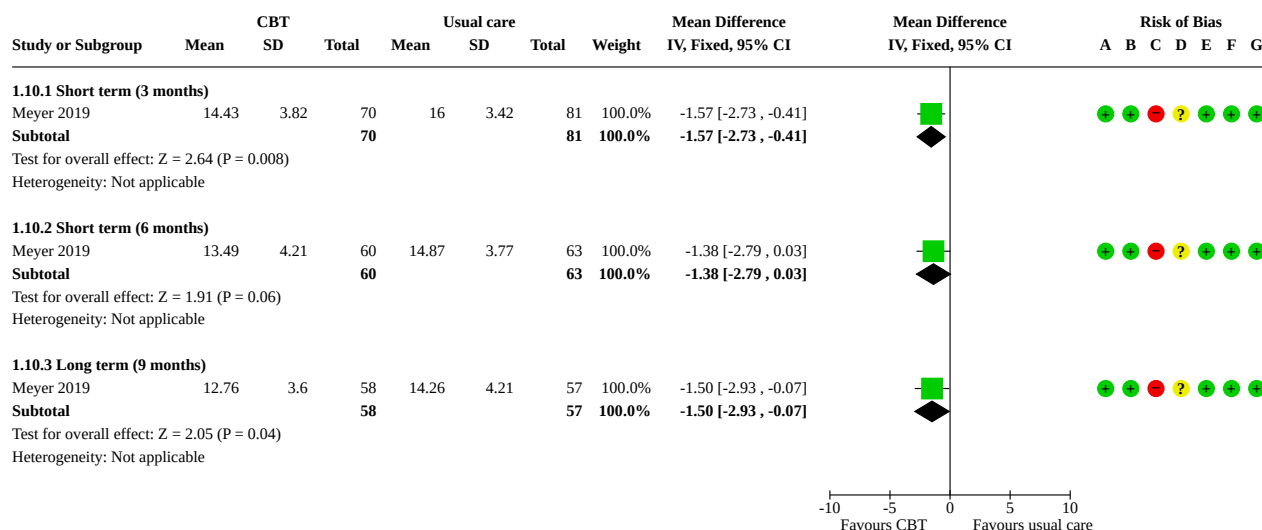
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 1.8. Comparison 1: Psycho-behavioural interventions versus control interventions, Outcome 8: Washington Psychosocial Seizure Inventory (WPSI): Total score**Risk of bias legend**

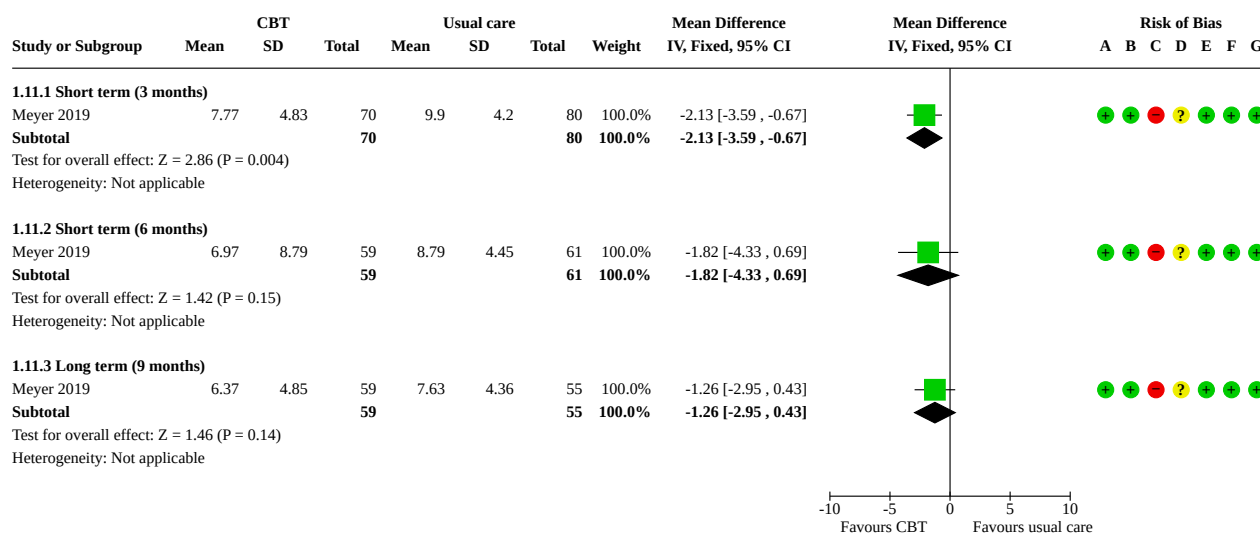
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 1.9. Comparison 1: Psycho-behavioural interventions versus control interventions, Outcome 9: Patient Health Questionnaire – 9 items (PHQ-9): Depression**Risk of bias legend**

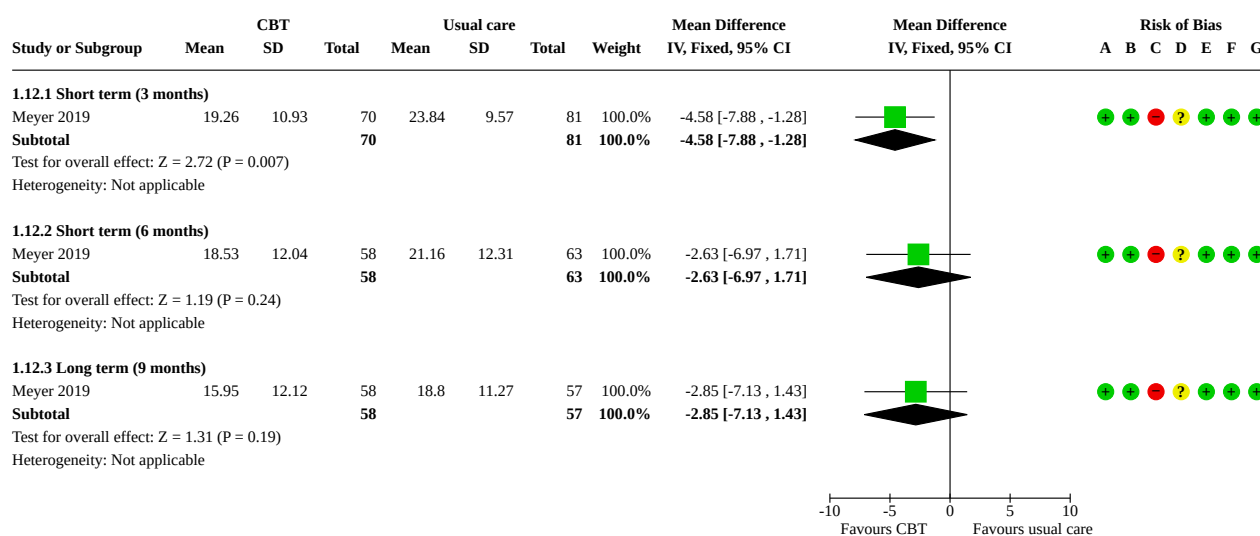
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 1.10. Comparison 1: Psycho-behavioural interventions versus control interventions, Outcome 10: Neurological Disorders Depression Inventory for Epilepsy (NDDIE)**Risk of bias legend**

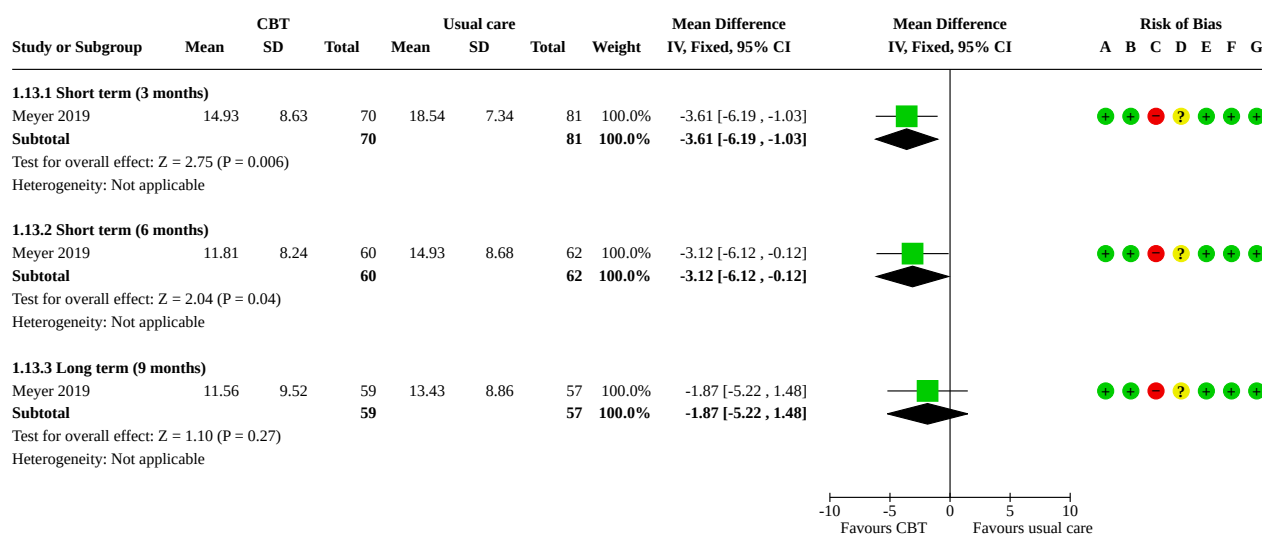
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 1.11. Comparison 1: Psycho-behavioural interventions versus control interventions, Outcome 11: Generalized Anxiety Disorder–7 items (GAD-7)**Risk of bias legend**

- (A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

Analysis 1.12. Comparison 1: Psycho-behavioural interventions versus control interventions, Outcome 12: Depression Anxiety Stress Scales–21 items: DASS-21 total score**Risk of bias legend**

- (A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

Analysis 1.13. Comparison 1: Psycho-behavioural interventions versus control interventions, Outcome 13: Work and Social Adjustment Scale (WSAS)**Risk of bias legend**

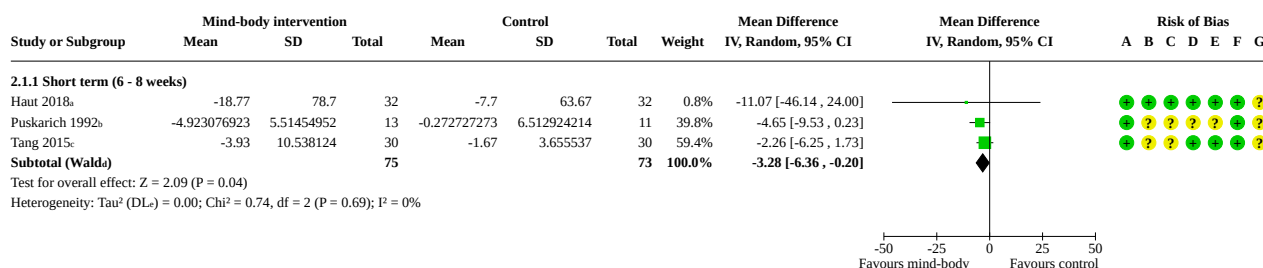
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Comparison 2. Mind-body interventions versus control interventions

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
2.1 Change in seizure frequency per month from baseline	3		Mean Difference (IV, Random, 95% CI)	Subtotals only
2.1.1 Short term (6 - 8 weeks)	3	148	Mean Difference (IV, Random, 95% CI)	-3.28 [-6.36, -0.20]
2.2 Seizure frequency per month	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
2.2.1 Short term (6 - 8 weeks)	2	84	Mean Difference (IV, Random, 95% CI)	-0.62 [-4.75, 3.51]
2.3 Change in Liverpool Seizure Severity Scale	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
2.3.1 Short term (10 weeks)	1		Mean Difference (IV, Random, 95% CI)	-4.90 [-10.98, 1.18]
2.4 Quality of Life in Epilepsy Inventory Total score (QOLIE-31-P)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
2.4.1 Short term (6 weeks)	1	60	Mean Difference (IV, Fixed, 95% CI)	0.75 [-5.49, 6.99]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
2.5 Beck Depression Inventory - II (BDI-II)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
2.5.1 Short term (6 weeks)	1	60	Mean Difference (IV, Fixed, 95% CI)	-2.57 [-6.41, 1.27]
2.6 Beck Anxiety Inventory (BAI)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
2.6.1 Short term (6 weeks)	1	60	Mean Difference (IV, Fixed, 95% CI)	-1.04 [-5.75, 3.67]

Analysis 2.1. Comparison 2: Mind-body interventions versus control interventions, Outcome 1: Change in seizure frequency per month from baseline

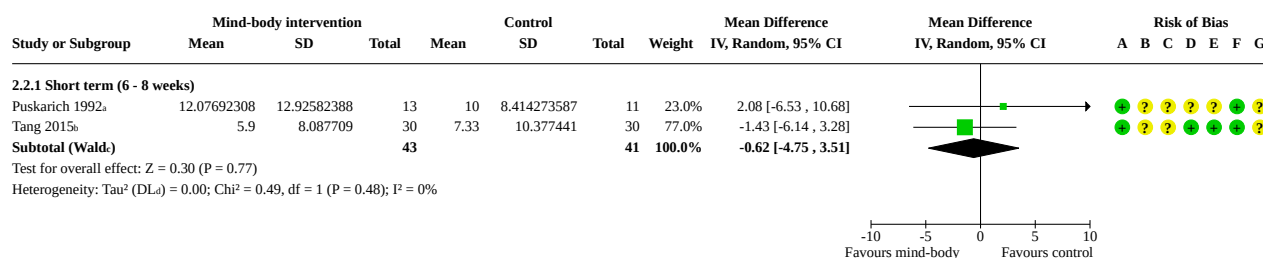


Footnotes

- ^aProgressive muscle relaxation versus focussed attention
^bProgressive muscle relaxation versus quiet sitting
^cMindfulness versus social support
^dCI calculated by Wald-type method.
^eTau² calculated by DerSimonian and Laird method.

Risk of bias legend

- (A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

Analysis 2.2. Comparison 2: Mind-body interventions versus control interventions, Outcome 2: Seizure frequency per month**Footnotes**^aProgressive muscle relaxation versus quiet sitting^bMindfulness versus social support^cCI calculated by Wald-type method.^d Tau^2 calculated by DerSimonian and Laird method.**Risk of bias legend**

(A) Random sequence generation (selection bias)

(B) Allocation concealment (selection bias)

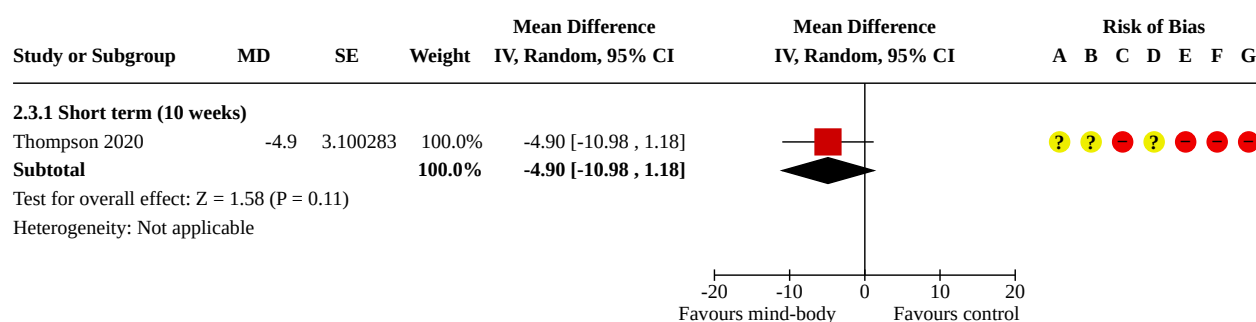
(C) Blinding of participants and personnel (performance bias)

(D) Blinding of outcome assessment (detection bias)

(E) Incomplete outcome data (attrition bias)

(F) Selective reporting (reporting bias)

(G) Other bias

Analysis 2.3. Comparison 2: Mind-body interventions versus control interventions, Outcome 3: Change in Liverpool Seizure Severity Scale**Risk of bias legend**

(A) Random sequence generation (selection bias)

(B) Allocation concealment (selection bias)

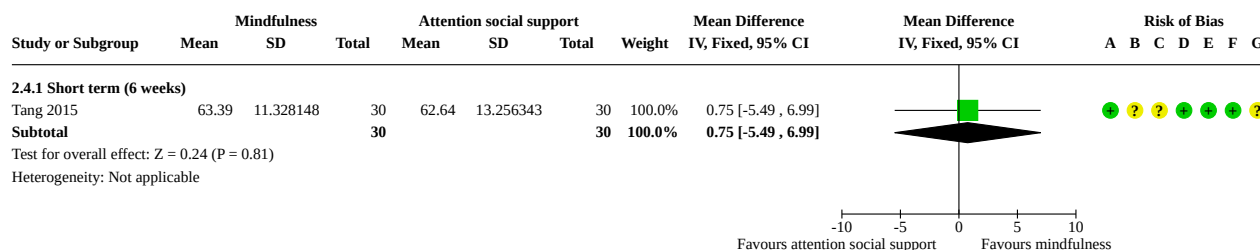
(C) Blinding of participants and personnel (performance bias)

(D) Blinding of outcome assessment (detection bias)

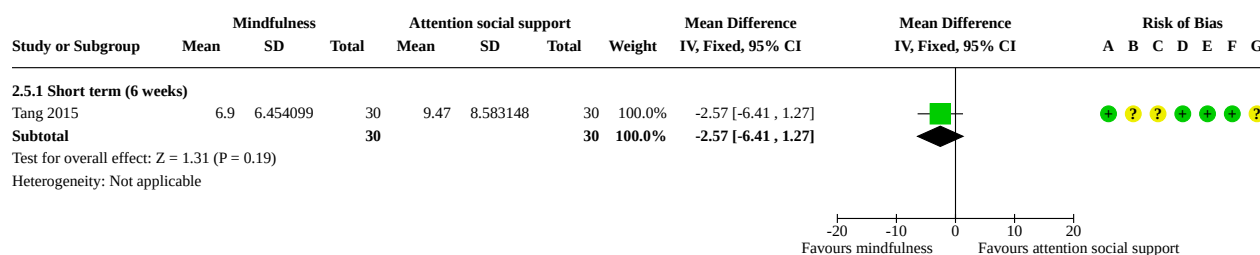
(E) Incomplete outcome data (attrition bias)

(F) Selective reporting (reporting bias)

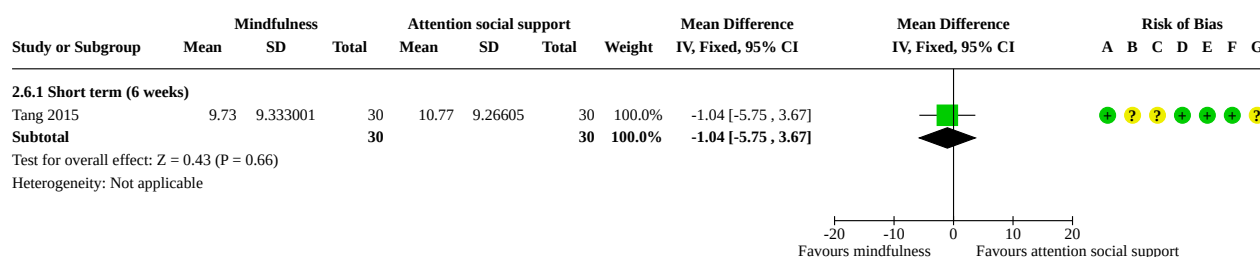
(G) Other bias

**Analysis 2.4. Comparison 2: Mind-body interventions versus control interventions,
Outcome 4: Quality of Life in Epilepsy Inventory Total score (QOLIE-31-P)****Risk of bias legend**

- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 2.5. Comparison 2: Mind-body interventions versus control interventions, Outcome 5: Beck Depression Inventory - II (BDI-II)**Risk of bias legend**

- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 2.6. Comparison 2: Mind-body interventions versus control interventions, Outcome 6: Beck Anxiety Inventory (BAI)**Risk of bias legend**

- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Comparison 3. Self-management interventions versus control interventions

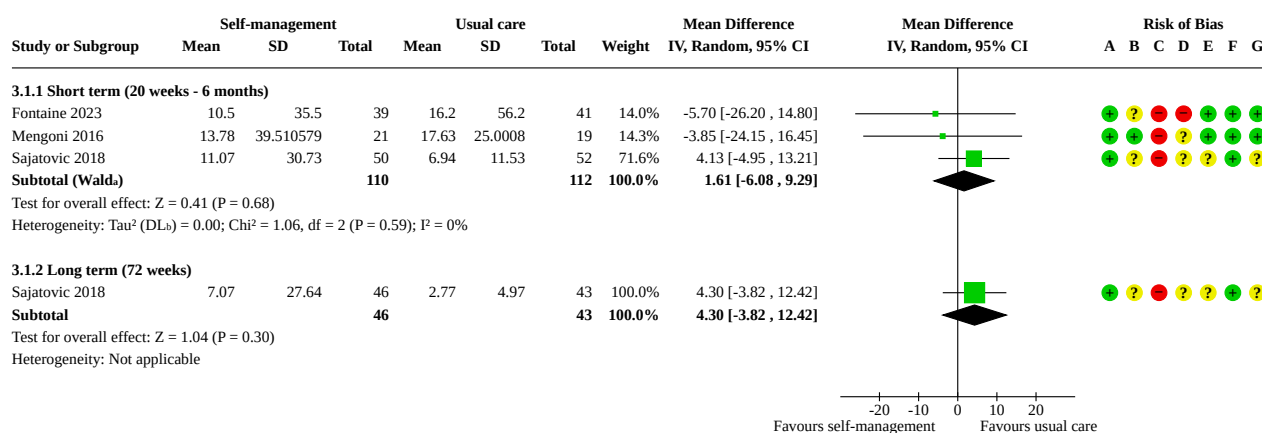
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
3.1 Seizure frequency	3		Mean Difference (IV, Random, 95% CI)	Subtotals only
3.1.1 Short term (20 weeks - 6 months)	3	222	Mean Difference (IV, Random, 95% CI)	1.61 [-6.08, 9.29]
3.1.2 Long term (72 weeks)	1	89	Mean Difference (IV, Random, 95% CI)	4.30 [-3.82, 12.42]
3.2 Seizure freedom	5		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
3.2.1 Short term (1 month)	1	65	Risk Ratio (M-H, Random, 95% CI)	0.99 [0.73, 1.34]
3.2.2 Short term (20 weeks - 6 months)	3	500	Risk Ratio (M-H, Random, 95% CI)	1.94 [1.39, 2.72]
3.2.3 Long term (12 months)	1	92	Risk Ratio (M-H, Random, 95% CI)	2.61 [1.11, 6.13]
3.3 $\geq 50\%$ reduction in seizure frequency	2		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
3.3.1 Short term (6 months)	1	380	Risk Ratio (M-H, Fixed, 95% CI)	1.08 [0.88, 1.32]
3.3.2 Long term (12 months)	1	92	Risk Ratio (M-H, Fixed, 95% CI)	1.32 [1.03, 1.70]
3.4 Seizure frequency per month	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
3.4.1 Short term (24 weeks)	1	102	Mean Difference (IV, Random, 95% CI)	1.33 [-0.71, 3.37]
3.4.2 Long term (12 months to 72 weeks)	2	181	Mean Difference (IV, Random, 95% CI)	-0.41 [-2.75, 1.92]
3.5 Change in seizure frequency per month from baseline	2		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
3.5.1 Short term (6 months)	1	103	Mean Difference (IV, Fixed, 95% CI)	-0.10 [-2.47, 2.27]
3.5.2 Long term (12 months)	1	92	Mean Difference (IV, Fixed, 95% CI)	-1.84 [-3.27, -0.41]
3.6 Change in seizure frequency from baseline	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
3.6.1 Short term (6 months)	1	96	Mean Difference (IV, Fixed, 95% CI)	-6.95 [-19.20, 5.30]
3.7 Seizure frequency: < 1 seizure per month	1		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
3.7.1 Long term (12 months)	1	331	Risk Ratio (M-H, Fixed, 95% CI)	0.93 [0.72, 1.20]
3.8 Seizure severity	2		Mean Difference (IV, Random, 95% CI)	Subtotals only

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
3.8.1 Short term (10 weeks)	1	111	Mean Difference (IV, Random, 95% CI)	1.55 [-1.45, 4.55]
3.8.2 Short term (24 weeks)	2	124	Mean Difference (IV, Random, 95% CI)	-1.88 [-7.74, 3.98]
3.8.3 Long term (72 weeks)	1	74	Mean Difference (IV, Random, 95% CI)	3.04 [-9.65, 15.73]
3.9 Quality of Life in Epilepsy Inventory total score (QOLIE-31 or QOLIE-31-P)	4		Mean Difference (IV, Random, 95% CI)	Subtotals only
3.9.1 Short term (1 month)	1	65	Mean Difference (IV, Random, 95% CI)	2.48 [-3.59, 8.55]
3.9.2 Short term (6 months)	2	393	Mean Difference (IV, Random, 95% CI)	2.42 [-2.58, 7.42]
3.9.3 Long term (12 months)	2	423	Mean Difference (IV, Random, 95% CI)	3.86 [-8.40, 16.11]
3.10 Quality of Life in Epilepsy Inventory total score (QOLIE-10)	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
3.10.1 Short term (6 months)	1	103	Mean Difference (IV, Random, 95% CI)	-0.51 [-0.88, -0.14]
3.10.2 Long term (72 weeks)	1	74	Mean Difference (IV, Random, 95% CI)	-0.22 [-0.62, 0.18]
3.11 SF-36 Health Survey physical health score	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
3.11.1 Short term (6 months)	2	316	Mean Difference (IV, Random, 95% CI)	-0.60 [-3.77, 2.57]
3.11.2 Long term (72 weeks)	1	74	Mean Difference (IV, Random, 95% CI)	-0.30 [-5.45, 4.85]
3.12 SF-36 Health Survey mental health score	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
3.12.1 Short term (6 months)	2	316	Mean Difference (IV, Random, 95% CI)	2.73 [-1.28, 6.74]
3.12.2 Long term (72 weeks)	1	74	Mean Difference (IV, Random, 95% CI)	3.57 [-2.38, 9.52]
3.13 Epilepsy and Learning Disabilities Quality of Life Scale (ELDQOL)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only

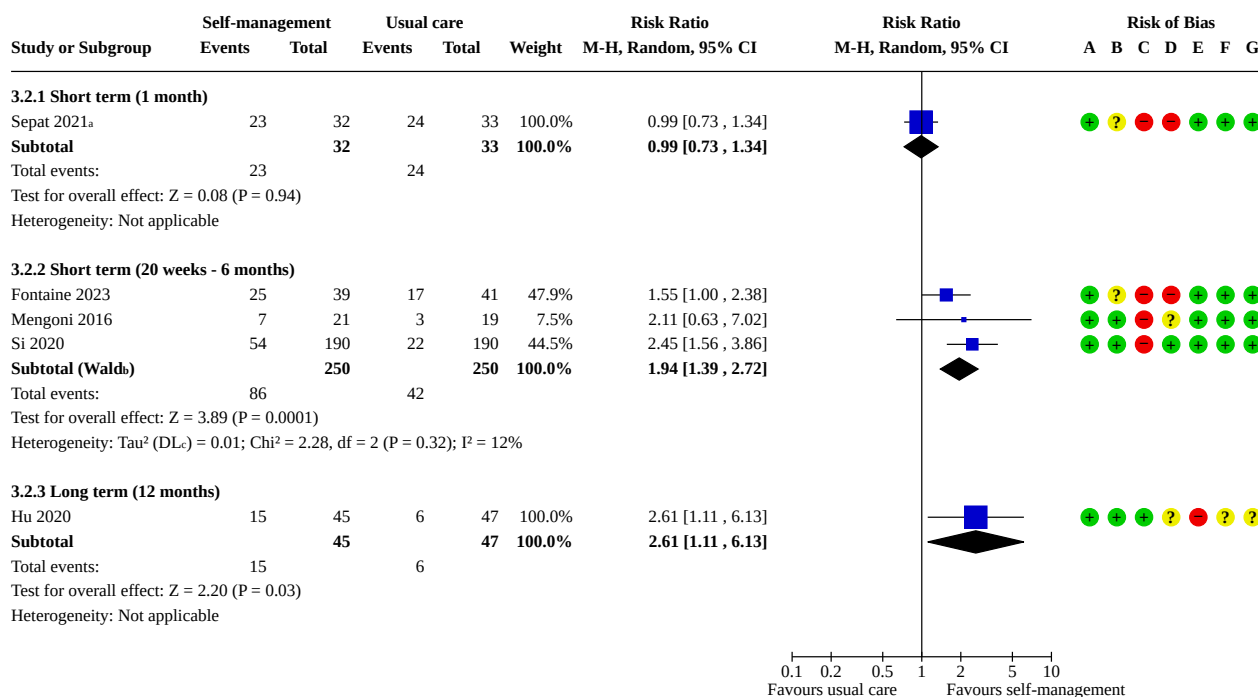
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
3.13.1 Behaviour: Short term (20 weeks)	1	32	Mean Difference (IV, Fixed, 95% CI)	-1.36 [-3.31, 0.59]
3.13.2 Mood: Short term (20 weeks)	1	33	Mean Difference (IV, Fixed, 95% CI)	-1.03 [-3.96, 1.90]
3.14 Epilepsy and Learning Disabilities Quality of Life Scale: side effects	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
3.14.1 Short term (20 weeks)	1	25	Mean Difference (IV, Fixed, 95% CI)	0.33 [-7.39, 8.05]
3.15 EQ-5D-5L index score	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
3.15.1 Short term (20 weeks)	1	30	Mean Difference (IV, Fixed, 95% CI)	0.04 [-0.20, 0.28]
3.16 EQ-5D-5L visual analogue scale (VAS)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
3.16.1 Short term (20 weeks)	1	31	Mean Difference (IV, Fixed, 95% CI)	-1.51 [-18.10, 15.08]
3.17 Epilepsy Self-Management Scale	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
3.17.1 Short term (4 - 10 weeks)	1	111	Mean Difference (IV, Random, 95% CI)	9.00 [2.41, 15.59]
3.17.2 Short term (6 months)	2	483	Mean Difference (IV, Random, 95% CI)	16.76 [11.02, 22.50]
3.17.3 Long term (72 weeks)	1	74	Mean Difference (IV, Random, 95% CI)	5.43 [-2.91, 13.77]
3.18 Stigma	2		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
3.18.1 Short term (10 weeks)	1	111	Mean Difference (IV, Fixed, 95% CI)	-4.97 [-11.63, 1.69]
3.18.2 Short term (6 months)	2	345	Mean Difference (IV, Fixed, 95% CI)	-6.78 [-11.93, -1.63]
3.18.3 Long term (72 weeks)	1	71	Mean Difference (IV, Fixed, 95% CI)	0.99 [-7.27, 9.25]
3.19 Depressive Mood Scale	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
3.19.1 Short term (6 months)	1	242	Mean Difference (IV, Fixed, 95% CI)	-1.41 [-3.66, 0.84]
3.20 Rosenberg Self-Esteem Scale	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
3.20.1 Short term (6 months)	1	242	Mean Difference (IV, Fixed, 95% CI)	0.03 [-0.14, 0.20]
3.21 Restrictions in daily living	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
3.21.1 Short term (6 months)	1	242	Mean Difference (IV, Fixed, 95% CI)	1.21 [-4.10, 6.52]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
3.22 Mobility and leisure behaviour	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
3.22.1 Short term (6 months)	1	242	Mean Difference (IV, Fixed, 95% CI)	-1.55 [-5.29, 2.19]
3.23 Epilepsy-related fear	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
3.23.1 Short term (6 months)	1	242	Mean Difference (IV, Fixed, 95% CI)	-2.92 [-8.53, 2.69]
3.24 Coping with Epilepsy total score	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
3.24.1 Short term (6 months)	1	242	Mean Difference (IV, Fixed, 95% CI)	5.68 [1.71, 9.65]
3.25 Hospital Anxiety and Depression Scale: Depression (HADS-D)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
3.25.1 Long term (12 months)	1	329	Mean Difference (IV, Fixed, 95% CI)	0.00 [-0.91, 0.91]
3.26 Hospital Anxiety and Depression Scale: Anxiety (HADS-A)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
3.26.1 Long term (12 months)	1	329	Mean Difference (IV, Fixed, 95% CI)	0.50 [-0.46, 1.46]
3.27 Self-mastery and control score	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
3.27.1 Long term (12 months)	1	329	Mean Difference (IV, Random, 95% CI)	-0.10 [-0.85, 0.65]
3.28 Impact of epilepsy score	1		Mean Difference (IV, Random, 95% CI)	Subtotals only
3.28.1 Short term (6 months)	1	308	Mean Difference (IV, Random, 95% CI)	0.30 [-1.43, 2.03]
3.28.2 Long term (12 months)	1	328	Mean Difference (IV, Random, 95% CI)	-0.60 [-2.40, 1.20]
3.29 Patient Health Questionnaire – 9 items (PHQ-9): Depression	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
3.29.1 Short term (10 weeks)	1	111	Mean Difference (IV, Fixed, 95% CI)	-4.08 [-6.61, -1.55]
3.29.2 Short term (24 weeks)	1	103	Mean Difference (IV, Fixed, 95% CI)	-3.55 [-6.18, -0.92]
3.29.3 Long term (72 weeks)	1	74	Mean Difference (IV, Fixed, 95% CI)	0.00 [-1.92, 1.92]
3.30 Montgomery-Åsberg Depression Rating Scale (MADRS)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only

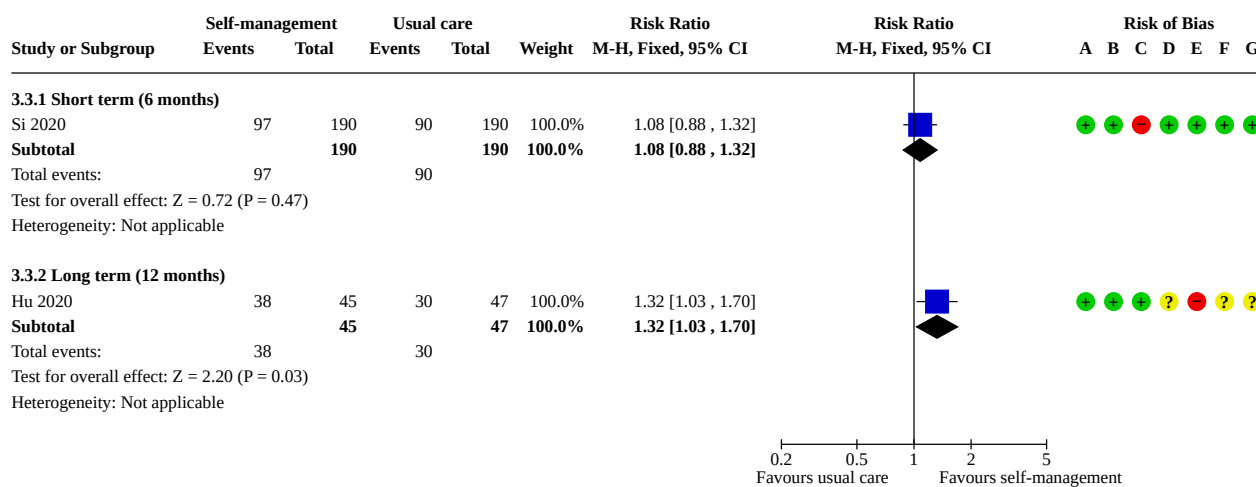
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
3.30.1 Short term (10 weeks)	1	111	Mean Difference (IV, Fixed, 95% CI)	-8.72 [-12.83, -4.61]
3.30.2 Short term (24 weeks)	1	103	Mean Difference (IV, Fixed, 95% CI)	-7.46 [-11.90, -3.02]
3.30.3 Long term (72 weeks)	1	80	Mean Difference (IV, Fixed, 95% CI)	-4.71 [-9.21, -0.21]
3.31 Epilepsy Self-Efficacy Scale	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
3.31.1 Short term (10 weeks)	1	111	Mean Difference (IV, Fixed, 95% CI)	18.65 [-3.05, 40.35]
3.31.2 Short term (24 weeks)	1	103	Mean Difference (IV, Fixed, 95% CI)	31.94 [8.47, 55.41]
3.31.3 Long term (72 weeks)	1	72	Mean Difference (IV, Fixed, 95% CI)	6.01 [-16.03, 28.05]
3.32 Morisky Medication Adherence Scale	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
3.32.1 Long term (12 months)	1	92	Mean Difference (IV, Fixed, 95% CI)	0.70 [0.26, 1.14]
3.33 AED tolerability score	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
3.33.1 Short term (6 months)	1	242	Mean Difference (IV, Fixed, 95% CI)	-0.05 [-0.27, 0.17]
3.34 Knowledge Score	2		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
3.34.1 Short term (1 week)	1	65	Mean Difference (IV, Fixed, 95% CI)	1.97 [0.69, 3.25]
3.34.2 Short term (6 months)	1	63	Mean Difference (IV, Fixed, 95% CI)	1.60 [0.68, 2.52]
3.35 Epilepsy Knowledge Scale	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
3.35.1 Short term (6 months)	1	242	Mean Difference (IV, Fixed, 95% CI)	6.12 [1.53, 10.71]
3.36 Multidimensional Scale of Perceived Social Support	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
3.36.1 Short term (10 weeks)	1	111	Mean Difference (IV, Fixed, 95% CI)	5.54 [-0.45, 11.53]
3.36.2 Short term (24 weeks)	1	103	Mean Difference (IV, Fixed, 95% CI)	8.12 [1.63, 14.61]
3.36.3 Long term (72 weeks)	1	72	Mean Difference (IV, Fixed, 95% CI)	0.16 [-0.40, 0.72]

**Analysis 3.1. Comparison 3: Self-management interventions
versus control interventions, Outcome 1: Seizure frequency****Footnotes**^aCI calculated by Wald-type method.^b τ^2 calculated by DerSimonian and Laird method.**Risk of bias legend**

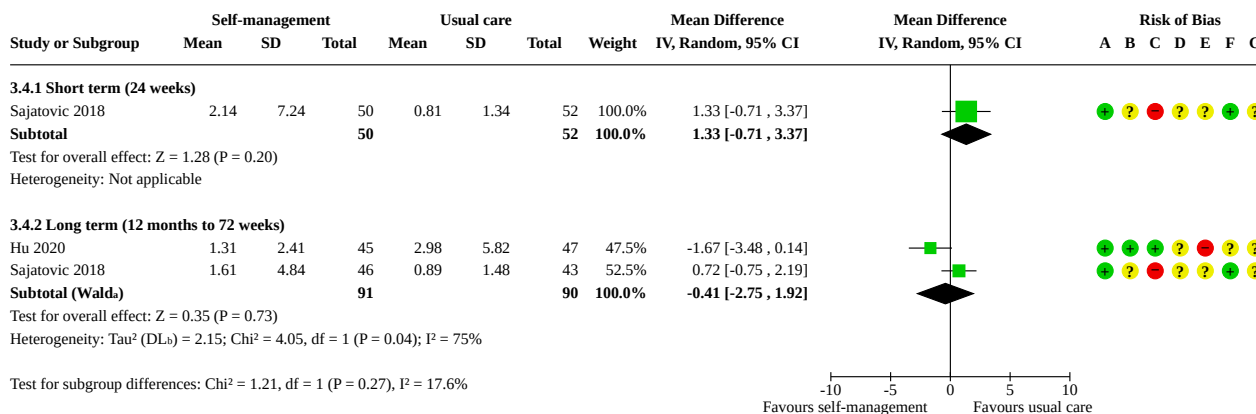
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

**Analysis 3.2. Comparison 3: Self-management interventions
versus control interventions, Outcome 2: Seizure freedom****Footnotes**^aVirtual interactive epilepsy session + digital education material vs digital education material alone. No breakthrough seizures during the study^bCI calculated by Wald-type method.^cTau² calculated by DerSimonian and Laird method.**Risk of bias legend**

- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 3.3. Comparison 3: Self-management interventions versus control interventions, Outcome 3: $\geq 50\%$ reduction in seizure frequency**Risk of bias legend**

- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

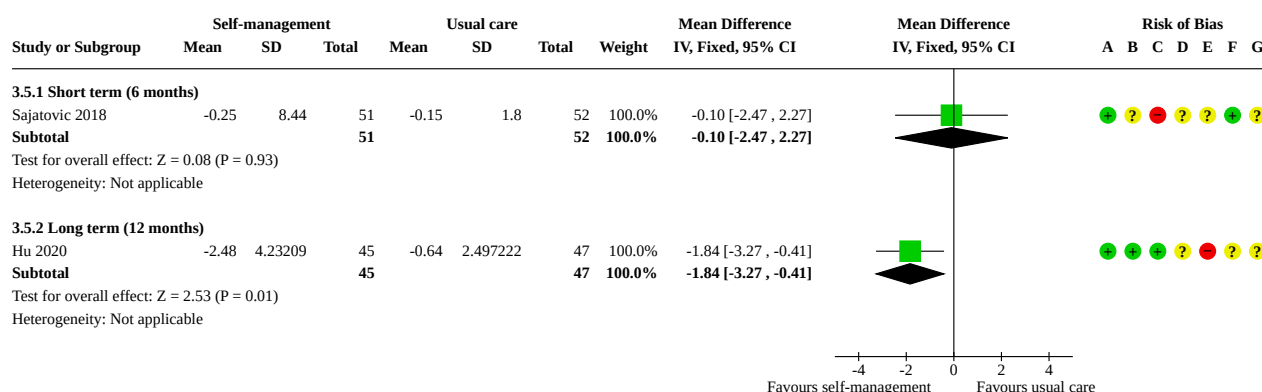
Analysis 3.4. Comparison 3: Self-management interventions versus control interventions, Outcome 4: Seizure frequency per month**Footnotes**

^aCI calculated by Wald-type method.

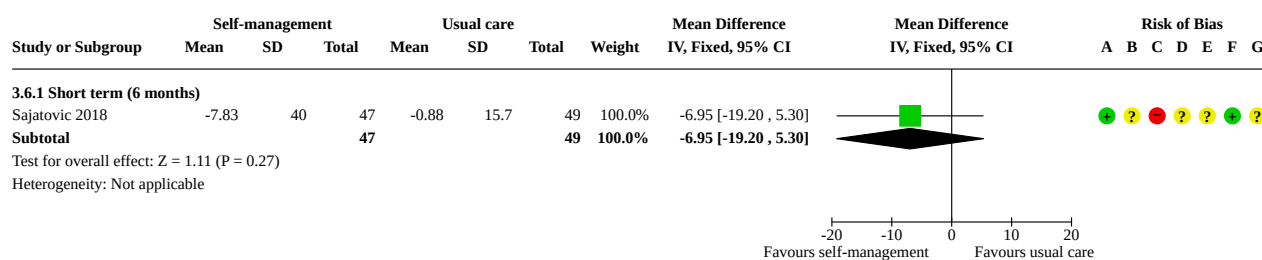
^b τ^2 calculated by DerSimonian and Laird method.

Risk of bias legend

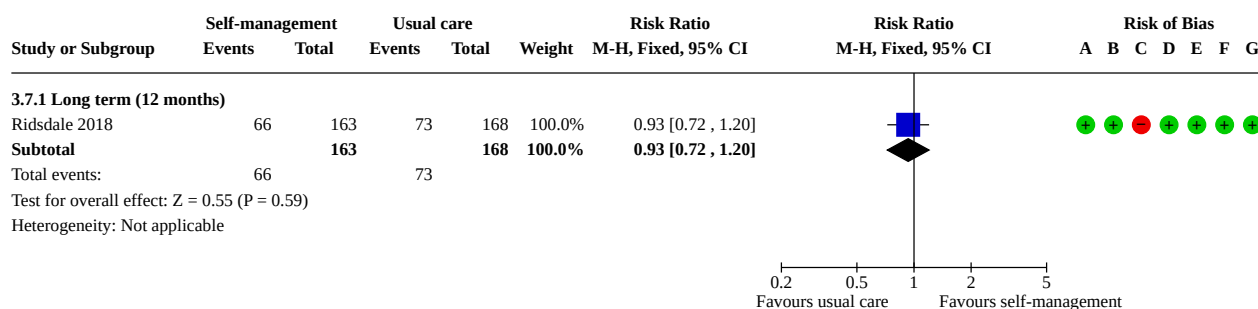
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 3.5. Comparison 3: Self-management interventions versus control interventions, Outcome 5: Change in seizure frequency per month from baseline**Risk of bias legend**

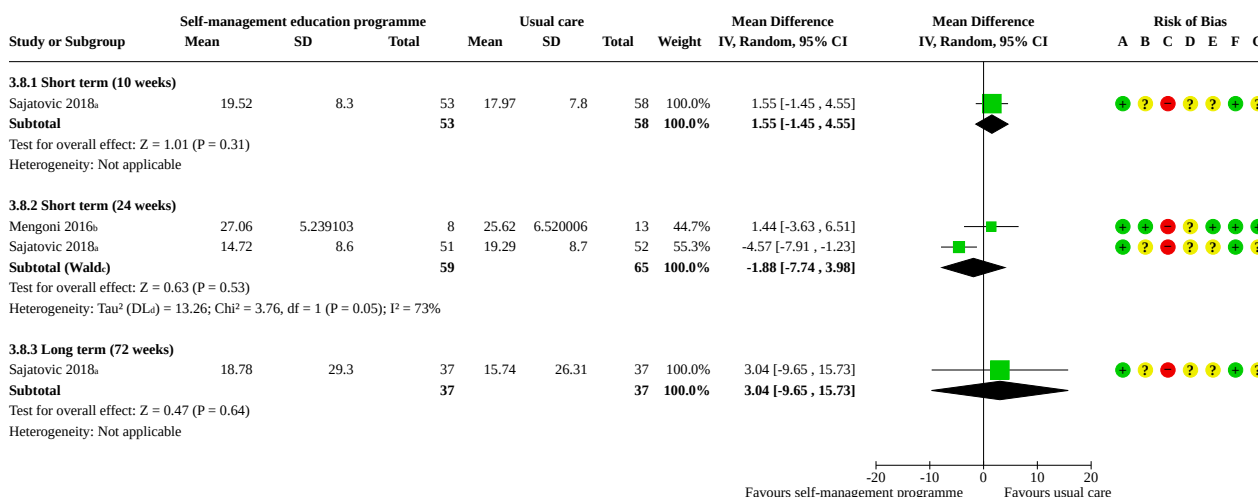
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 3.6. Comparison 3: Self-management interventions versus control interventions, Outcome 6: Change in seizure frequency from baseline**Risk of bias legend**

- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 3.7. Comparison 3: Self-management interventions versus control interventions, Outcome 7: Seizure frequency: < 1 seizure per month**Risk of bias legend**

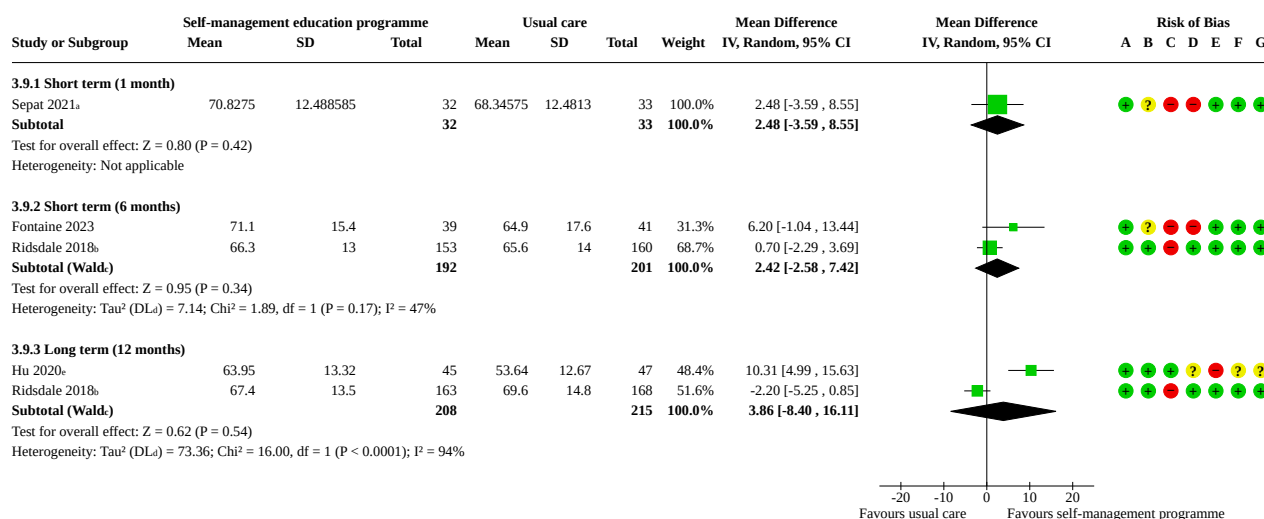
- (A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

Analysis 3.8. Comparison 3: Self-management interventions versus control interventions, Outcome 8: Seizure severity**Footnotes**

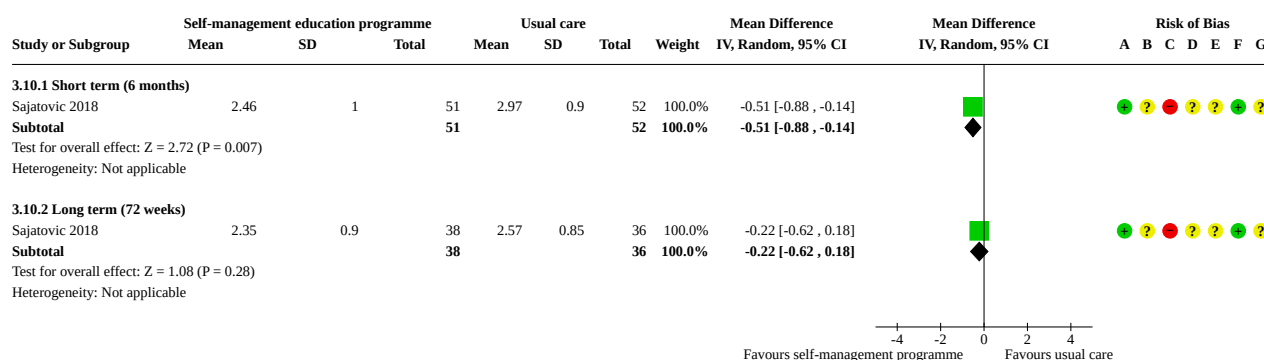
- aLiverpool seizure severity scale
bSelf management picture booklet versus usual care. Epilepsy and Learning Disabilities Quality of Life Scale: seizure severity
cCI calculated by Wald-type method.
dTau² calculated by DerSimonian and Laird method.

Risk of bias legend

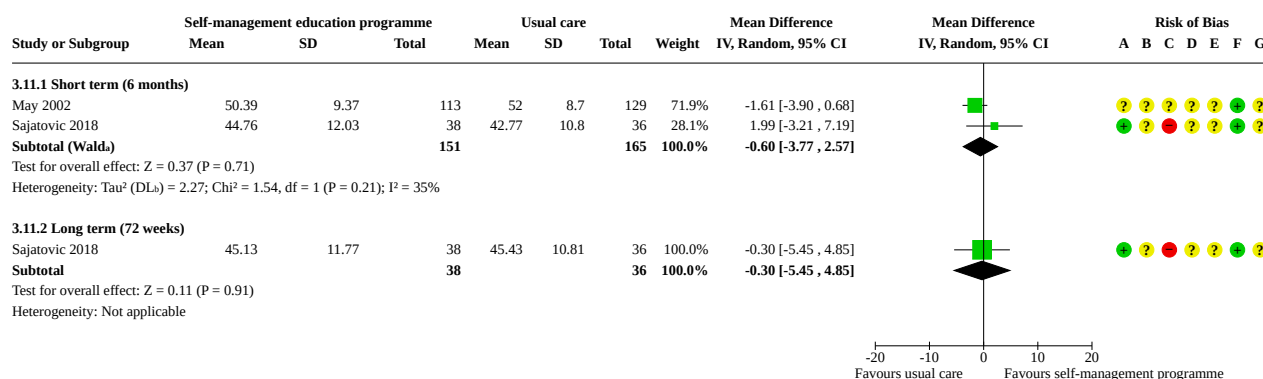
- (A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

**Analysis 3.9. Comparison 3: Self-management interventions versus control interventions,
Outcome 9: Quality of Life in Epilepsy Inventory total score (QOLIE-31 or QOLIE-31-P)****Footnotes**^aVirtual interactive epilepsy session + digital education material vs digital education material alone.^bQOLIE-31-P^cCI calculated by Wald-type method.^d τ^2 calculated by DerSimonian and Laird method.^eIntensive self management versus regular education, QOLIE-31**Risk of bias legend**

- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 3.10. Comparison 3: Self-management interventions versus control interventions, Outcome 10: Quality of Life in Epilepsy Inventory total score (QOLIE-10)**Risk of bias legend**

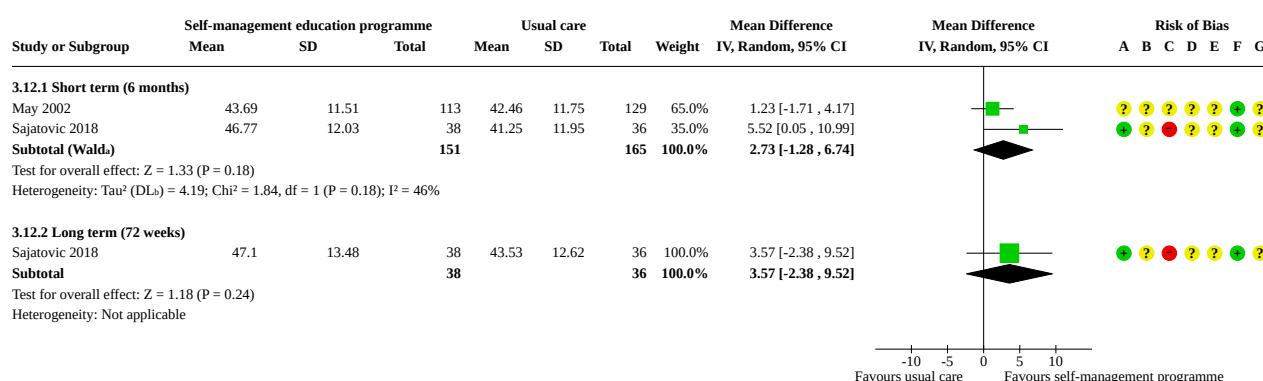
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 3.11. Comparison 3: Self-management interventions versus control interventions, Outcome 11: SF-36 Health Survey physical health score**Footnotes**

aCI calculated by Wald-type method.

bTau² calculated by DerSimonian and Laird method.**Risk of bias legend**

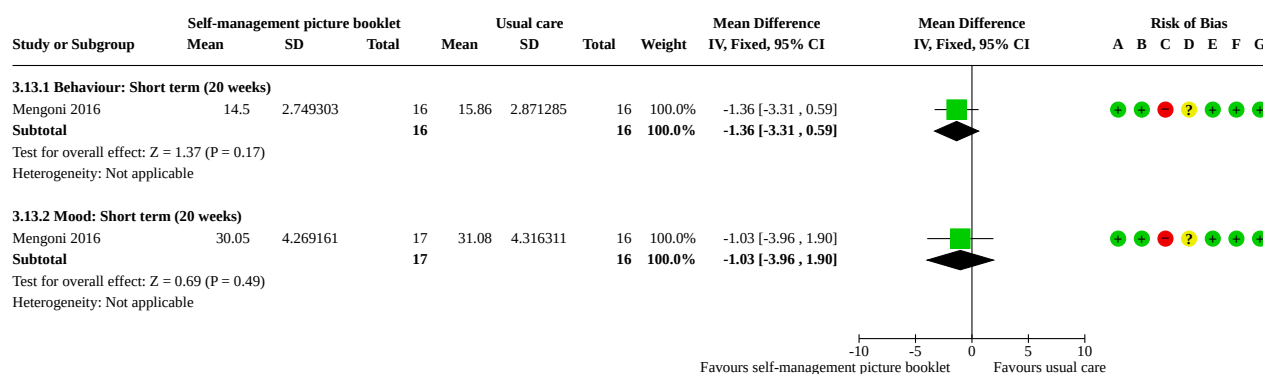
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 3.12. Comparison 3: Self-management interventions versus control interventions, Outcome 12: SF-36 Health Survey mental health score**Footnotes**

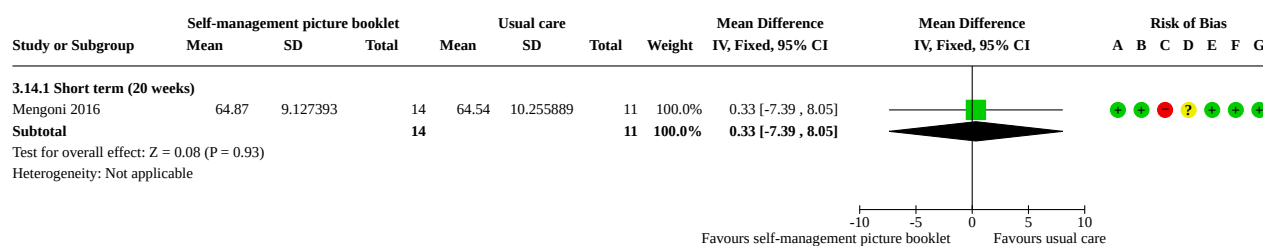
aCI calculated by Wald-type method.

bTau² calculated by DerSimonian and Laird method.**Risk of bias legend**

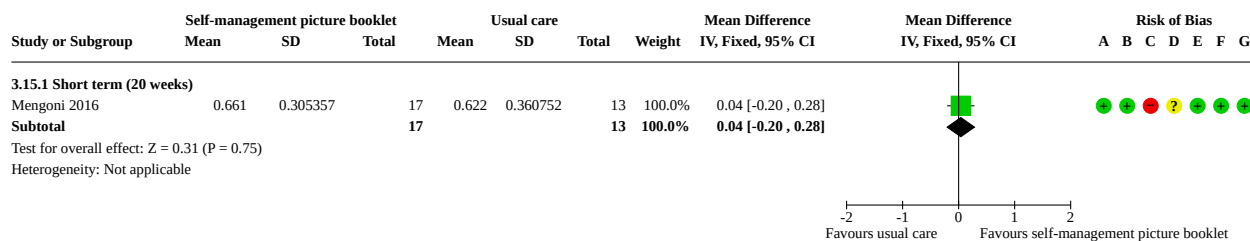
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

**Analysis 3.13. Comparison 3: Self-management interventions versus control interventions,
Outcome 13: Epilepsy and Learning Disabilities Quality of Life Scale (ELDQOL)****Risk of bias legend**

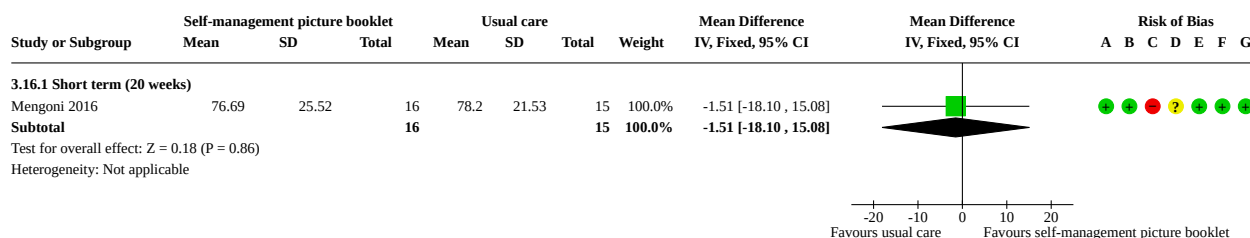
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

**Analysis 3.14. Comparison 3: Self-management interventions versus control interventions,
Outcome 14: Epilepsy and Learning Disabilities Quality of Life Scale: side effects****Risk of bias legend**

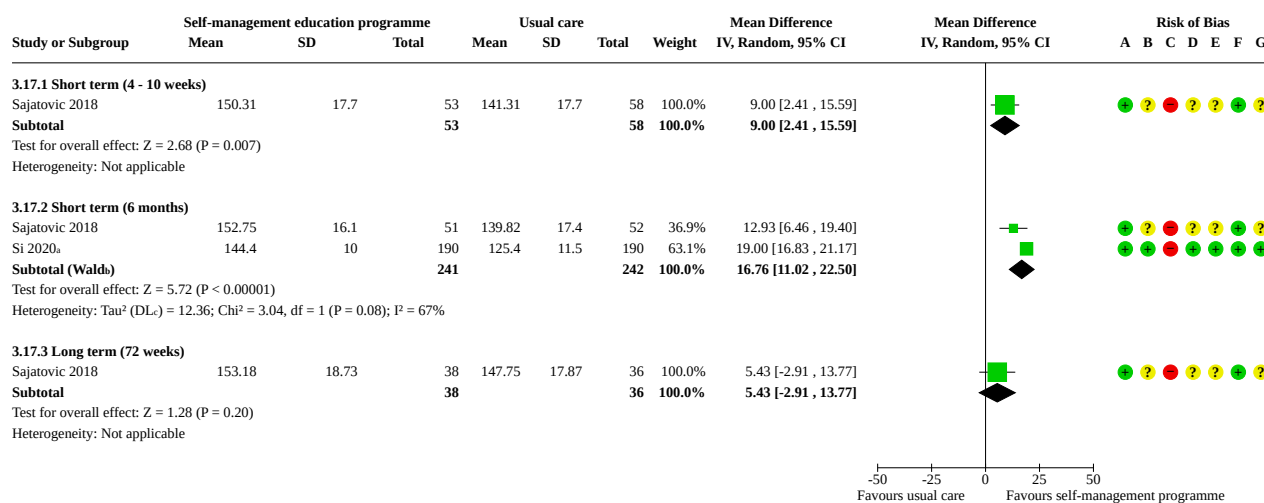
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

**Analysis 3.15. Comparison 3: Self-management interventions
versus control interventions, Outcome 15: EQ-5D-5L index score****Risk of bias legend**

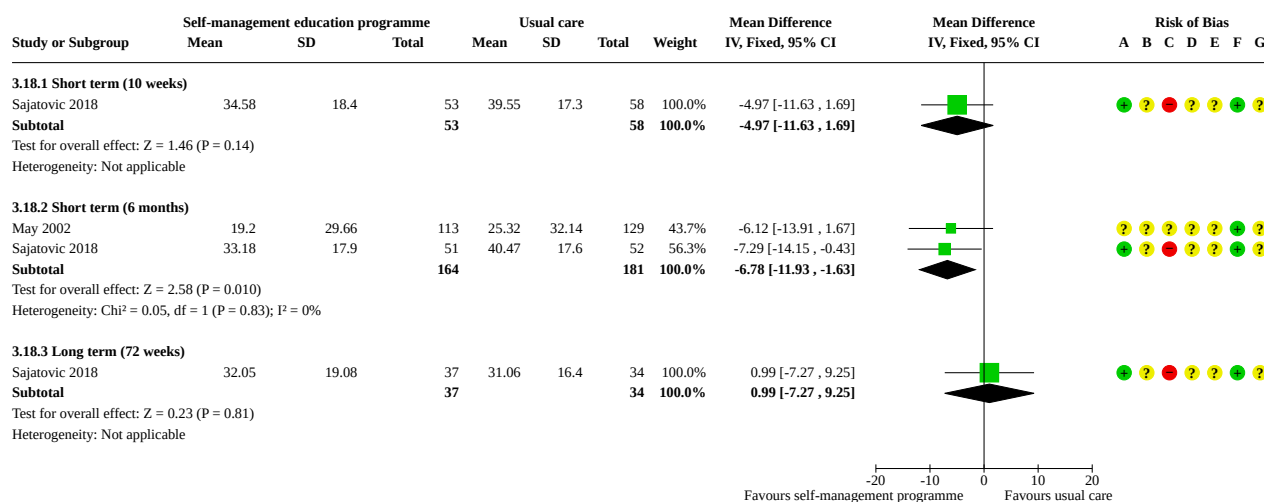
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

**Analysis 3.16. Comparison 3: Self-management interventions versus
control interventions, Outcome 16: EQ-5D-5L visual analogue scale (VAS)****Risk of bias legend**

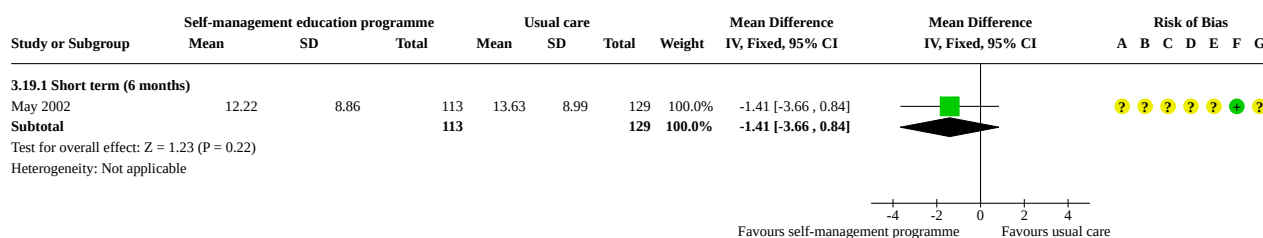
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 3.17. Comparison 3: Self-management interventions versus control interventions, Outcome 17: Epilepsy Self-Management Scale**Footnotes**^aSelf management smartphone app versus usual care: Chinese Epilepsy Self-Management Scale^bCI calculated by Wald-type method.^cTau² calculated by DerSimonian and Laird method.**Risk of bias legend**

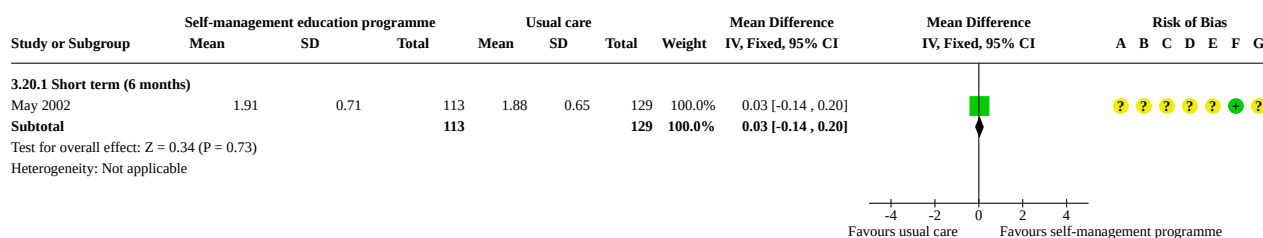
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 3.18. Comparison 3: Self-management interventions versus control interventions, Outcome 18: Stigma**Risk of bias legend**

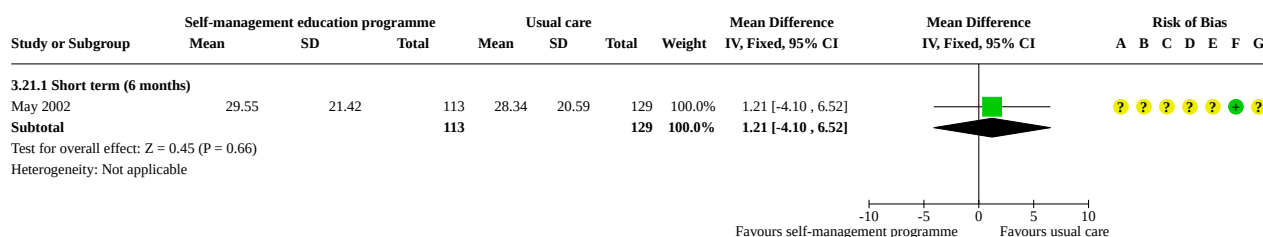
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

**Analysis 3.19. Comparison 3: Self-management interventions
versus control interventions, Outcome 19: Depressive Mood Scale****Risk of bias legend**

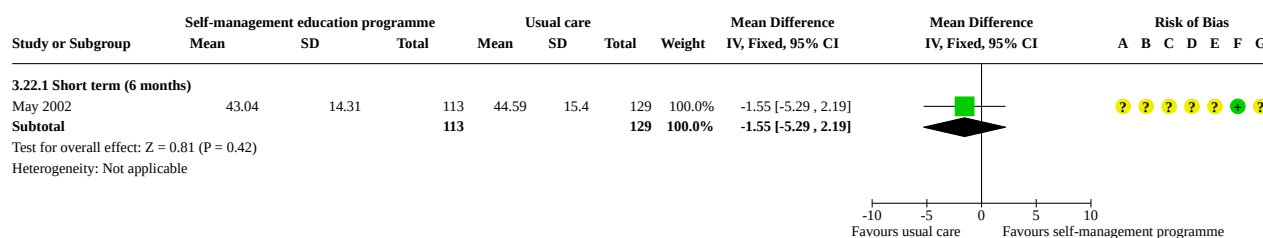
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

**Analysis 3.20. Comparison 3: Self-management interventions versus
control interventions, Outcome 20: Rosenberg Self-Esteem Scale****Risk of bias legend**

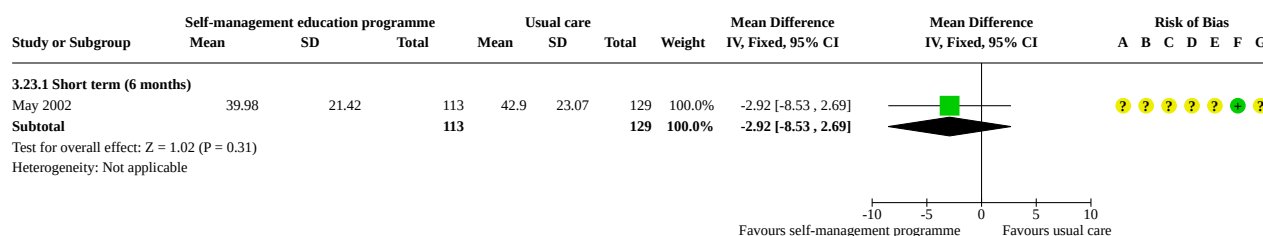
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

**Analysis 3.21. Comparison 3: Self-management interventions
versus control interventions, Outcome 21: Restrictions in daily living****Risk of bias legend**

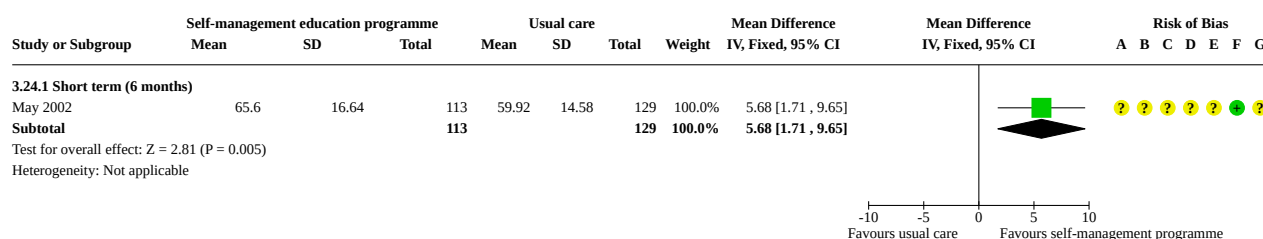
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 3.22. Comparison 3: Self-management interventions versus control interventions, Outcome 22: Mobility and leisure behaviour**Risk of bias legend**

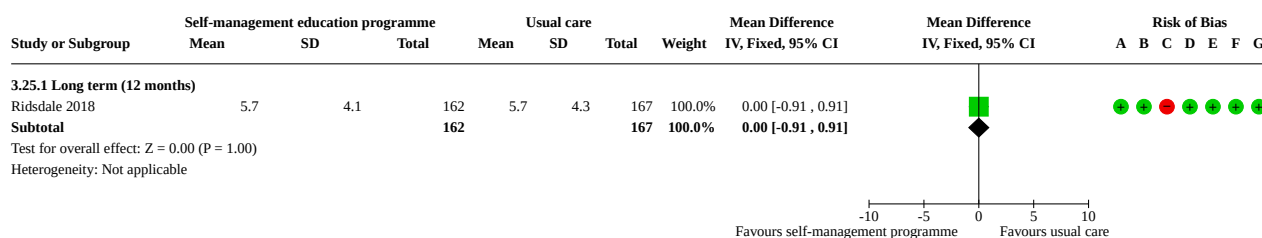
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 3.23. Comparison 3: Self-management interventions versus control interventions, Outcome 23: Epilepsy-related fear**Risk of bias legend**

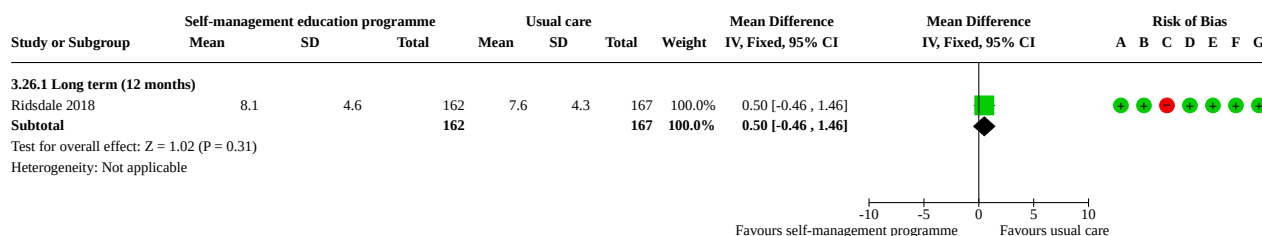
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 3.24. Comparison 3: Self-management interventions versus control interventions, Outcome 24: Coping with Epilepsy total score**Risk of bias legend**

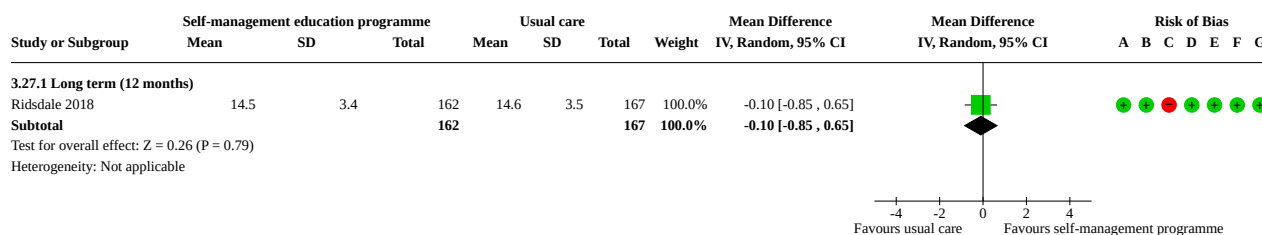
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 3.25. Comparison 3: Self-management interventions versus control interventions, Outcome 25: Hospital Anxiety and Depression Scale: Depression (HADS-D)**Risk of bias legend**

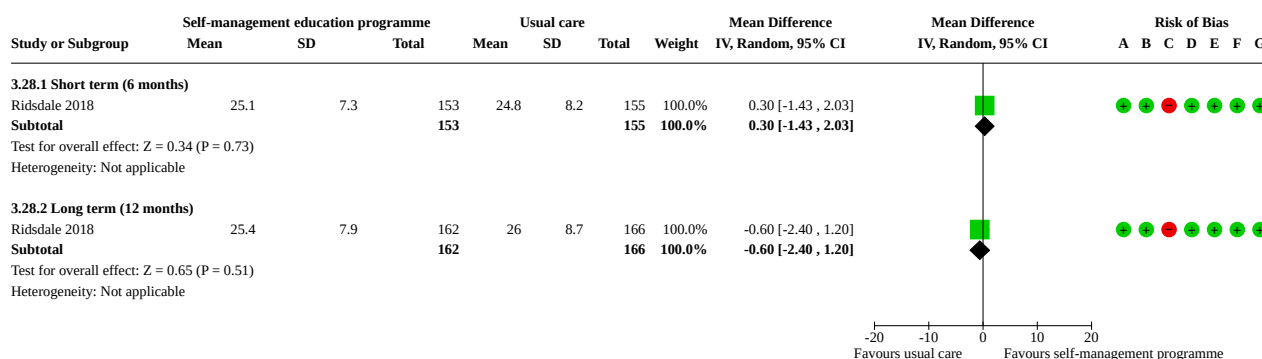
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 3.26. Comparison 3: Self-management interventions versus control interventions, Outcome 26: Hospital Anxiety and Depression Scale: Anxiety (HADS-A)**Risk of bias legend**

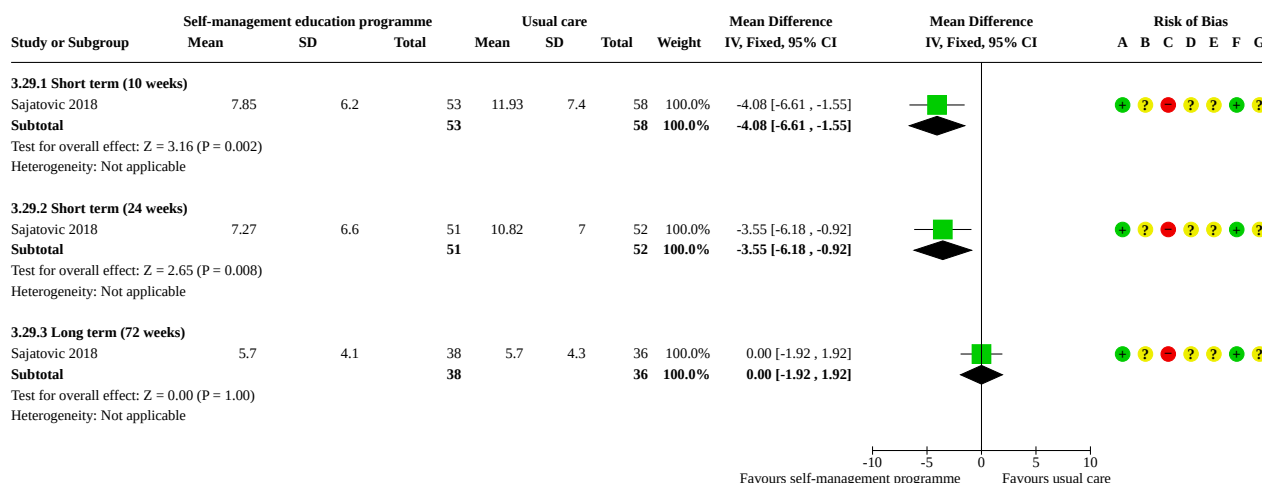
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 3.27. Comparison 3: Self-management interventions versus control interventions, Outcome 27: Self-mastery and control score**Risk of bias legend**

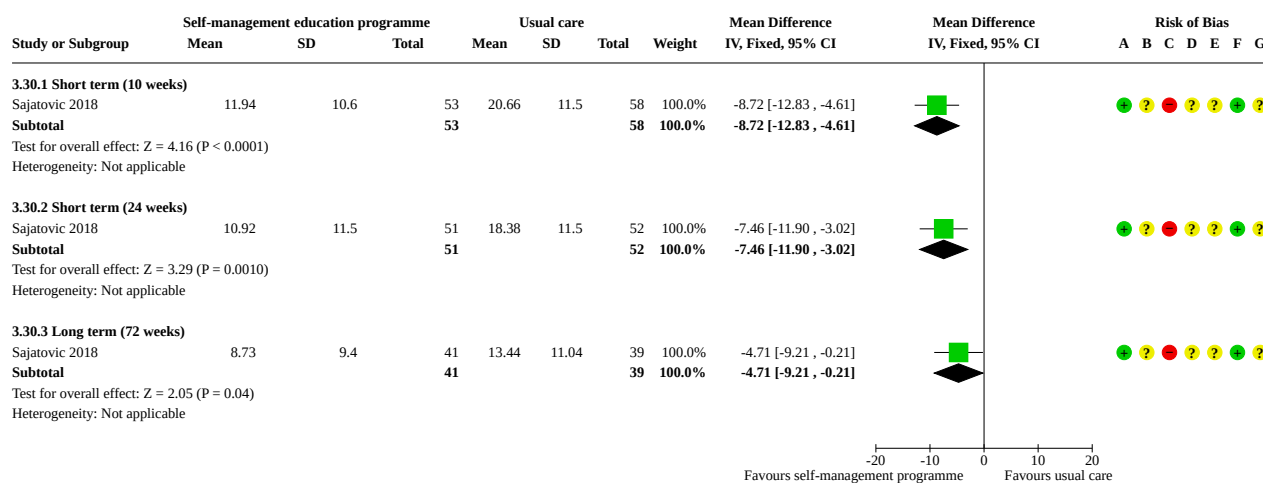
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

**Analysis 3.28. Comparison 3: Self-management interventions
versus control interventions, Outcome 28: Impact of epilepsy score****Risk of bias legend**

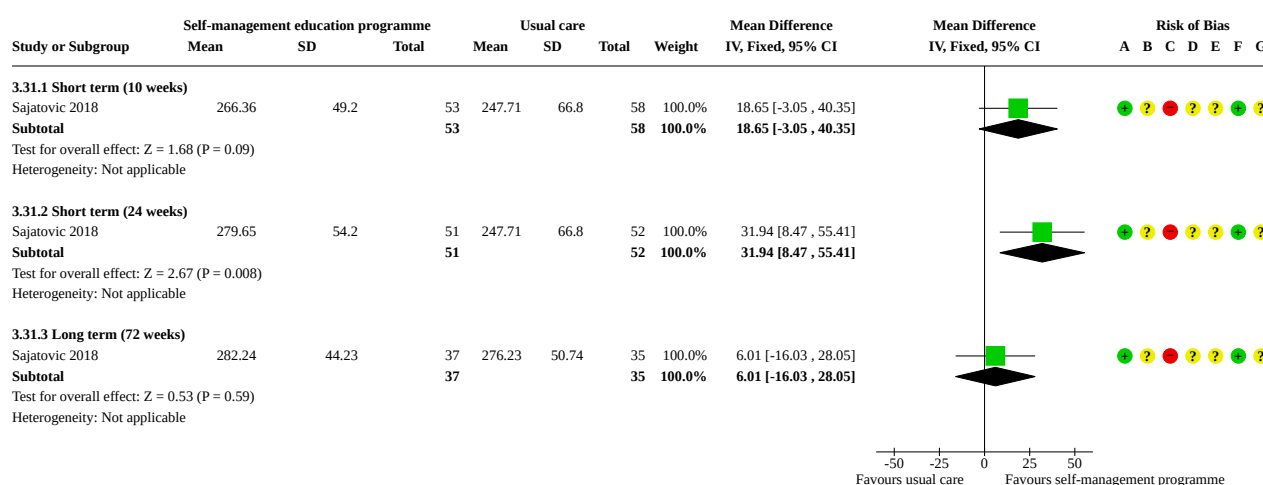
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

**Analysis 3.29. Comparison 3: Self-management interventions versus control
interventions, Outcome 29: Patient Health Questionnaire – 9 items (PHQ-9): Depression****Risk of bias legend**

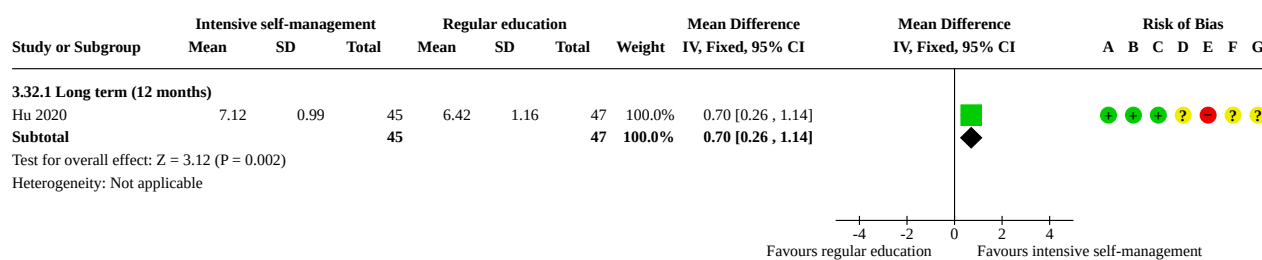
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 3.30. Comparison 3: Self-management interventions versus control interventions, Outcome 30: Montgomery-Åsberg Depression Rating Scale (MADRS)**Risk of bias legend**

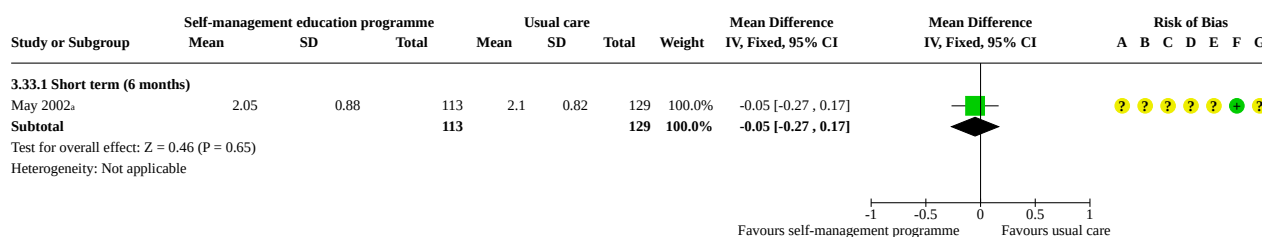
- (A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

Analysis 3.31. Comparison 3: Self-management interventions versus control interventions, Outcome 31: Epilepsy Self-Efficacy Scale**Risk of bias legend**

- (A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

Analysis 3.32. Comparison 3: Self-management interventions versus control interventions, Outcome 32: Morisky Medication Adherence Scale**Risk of bias legend**

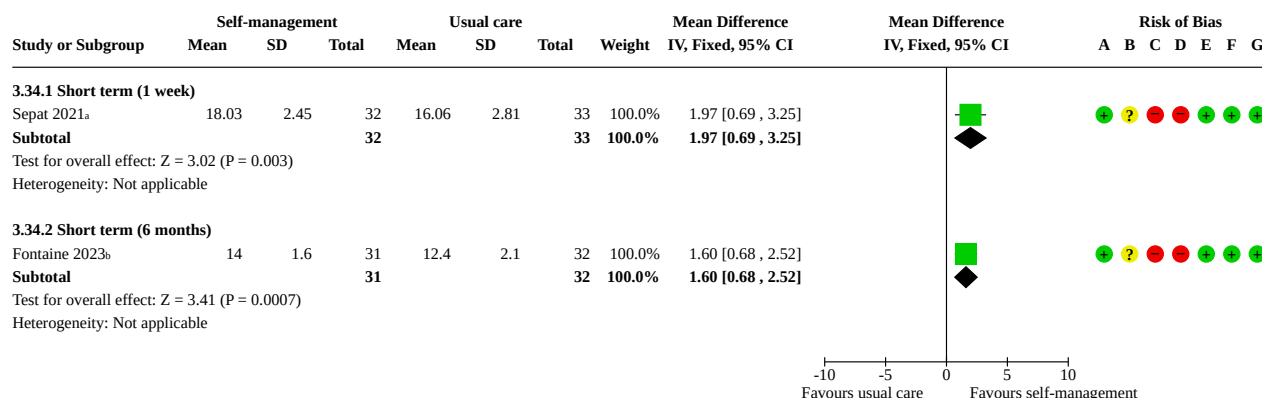
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 3.33. Comparison 3: Self-management interventions versus control interventions, Outcome 33: AED tolerability score**Footnotes**

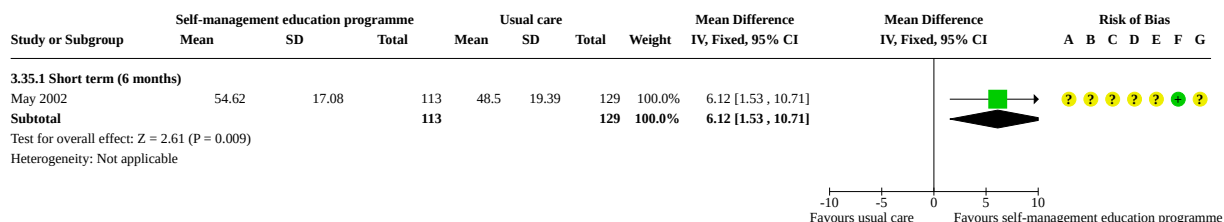
^aFour point scale: 1 - no side effects, 2 - only slight side effects; 3 - moderate side effects, but tolerable; 4 - severe side effects, not tolerable

Risk of bias legend

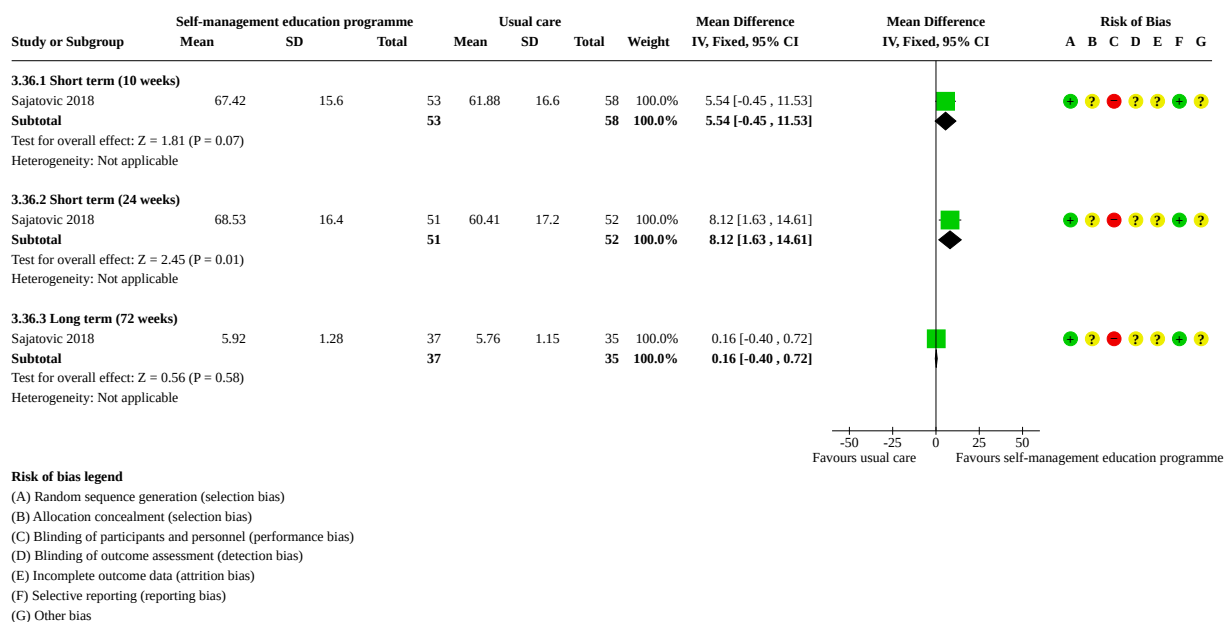
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

**Analysis 3.34. Comparison 3: Self-management interventions
versus control interventions, Outcome 34: Knowledge Score****Footnotes**^aVirtual interactive epilepsy session + digital education material vs digital education material alone. Knowledge assessment tool was designed for the study^bKnowledge assessment tool was designed for the study**Risk of bias legend**

- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

**Analysis 3.35. Comparison 3: Self-management interventions
versus control interventions, Outcome 35: Epilepsy Knowledge Scale****Risk of bias legend**

- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

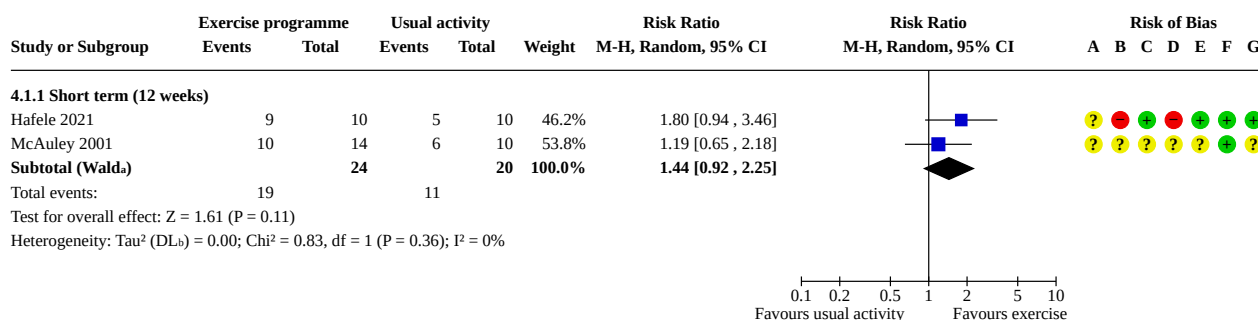
Analysis 3.36. Comparison 3: Self-management interventions versus control interventions, Outcome 36: Multidimensional Scale of Perceived Social Support**Comparison 4. Physical exercise interventions versus control interventions**

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
4.1 Seizure freedom	2		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
4.1.1 Short term (12 weeks)	2	44	Risk Ratio (M-H, Random, 95% CI)	1.44 [0.92, 2.25]
4.2 Percentage change in seizure frequency from baseline	2		Mean Difference (IV, Random, 95% CI)	Subtotals only
4.2.1 Short term (3-6 months)	2	41	Mean Difference (IV, Random, 95% CI)	-73.32 [-143.23, -3.42]
4.3 Change in seizure frequency from baseline	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
4.3.1 Short term (12 weeks)	1	20	Mean Difference (IV, Fixed, 95% CI)	-1.10 [-4.15, 1.95]
4.4 Quality of Life in Epilepsy Inventory Total score (QOLIE-31 or QOLIE-89)	3		Mean Difference (IV, Random, 95% CI)	Subtotals only
4.4.1 Short term (12 weeks)	3	160	Mean Difference (IV, Random, 95% CI)	3.80 [-1.17, 8.77]
4.5 Hospital Anxiety and Depression Scale: Anxiety (HADS-A)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
4.5.1 Short term (6 months)	1	22	Mean Difference (IV, Fixed, 95% CI)	-0.20 [-4.18, 3.78]
4.6 Hospital Anxiety and Depression Scale: Depression (HADS-D)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
4.6.1 Short term (6 months)	1	22	Mean Difference (IV, Fixed, 95% CI)	-1.70 [-3.95, 0.55]
4.7 Neurological Disorders Depression Inventory for Epilepsy (NDDIE)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
4.7.1 Short term (12 weeks)	1	20	Mean Difference (IV, Fixed, 95% CI)	-0.50 [-4.84, 3.84]
4.8 State-Trait Anxiety Inventory (STAI): State	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
4.8.1 Short term (12 weeks)	1	20	Mean Difference (IV, Fixed, 95% CI)	-1.30 [-3.41, 0.81]
4.9 State-Trait Anxiety Inventory (STAI): Trait	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
4.9.1 Short term (12 weeks)	1	20	Mean Difference (IV, Fixed, 95% CI)	0.50 [-2.92, 3.92]
4.10 Perceived Stress Scale (PSS-10)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
4.10.1 Short term (12 weeks)	1	20	Mean Difference (IV, Fixed, 95% CI)	-2.60 [-8.47, 3.27]
4.11 Pittsburgh Sleep Quality Index (PSQI)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
4.11.1 Short term (12 weeks)	1	20	Mean Difference (IV, Fixed, 95% CI)	-0.60 [-3.95, 2.75]
4.12 Profile of Mood States (POMS) scale	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
4.12.1 Short term (12 weeks)	1	17	Mean Difference (IV, Fixed, 95% CI)	-14.80 [-40.48, 10.88]
4.13 Rosenberg Self-Esteem Scale	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
4.13.1 Short term (12 weeks)	1	20	Mean Difference (IV, Fixed, 95% CI)	0.39 [-0.14, 0.92]
4.13.2 Short term (16 weeks)	1	20	Mean Difference (IV, Fixed, 95% CI)	0.11 [-0.33, 0.55]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
4.14 Adverse Effects Profile (AEP) scale	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
4.14.1 Short term (3 months)	1	20	Mean Difference (IV, Fixed, 95% CI)	-4.30 [-13.57, 4.97]

Analysis 4.1. Comparison 4: Physical exercise interventions versus control interventions, Outcome 1: Seizure freedom



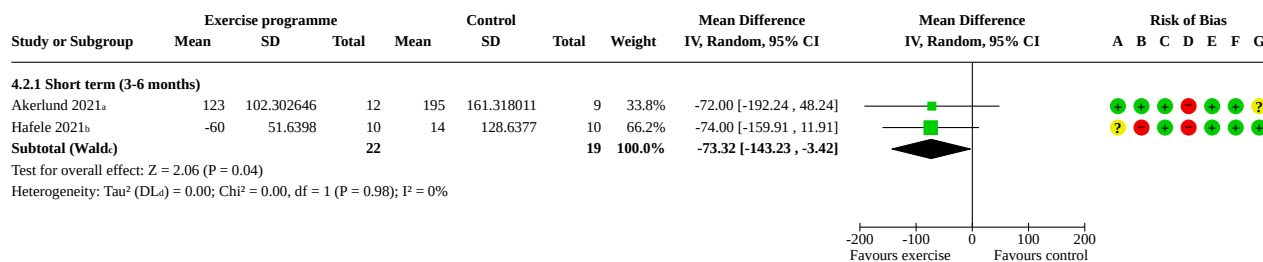
Footnotes

^aCI calculated by Wald-type method.

^bTau² calculated by DerSimonian and Laird method.

Risk of bias legend

- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 4.2. Comparison 4: Physical exercise interventions versus control interventions, Outcome 2: Percentage change in seizure frequency from baseline**Footnotes**^aCardiovascular exercise (bicycle) versus audiomuscular relaxation exercise^bExercise programme versus no exercise^cCI calculated by Wald-type method.^dTau² calculated by DerSimonian and Laird method.**Risk of bias legend**

(A) Random sequence generation (selection bias)

(B) Allocation concealment (selection bias)

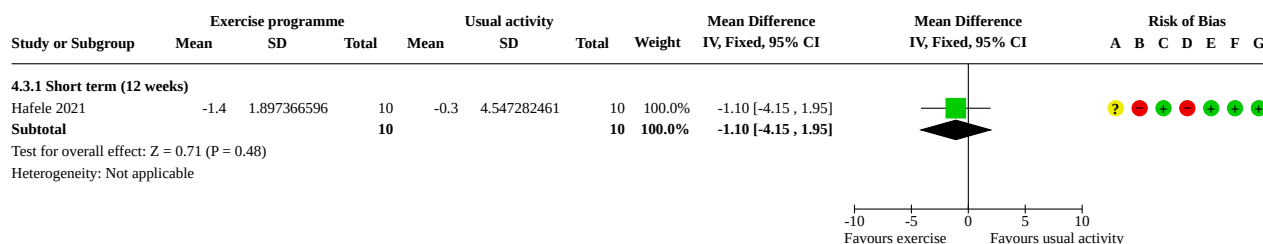
(C) Blinding of participants and personnel (performance bias)

(D) Blinding of outcome assessment (detection bias)

(E) Incomplete outcome data (attrition bias)

(F) Selective reporting (reporting bias)

(G) Other bias

Analysis 4.3. Comparison 4: Physical exercise interventions versus control interventions, Outcome 3: Change in seizure frequency from baseline**Risk of bias legend**

(A) Random sequence generation (selection bias)

(B) Allocation concealment (selection bias)

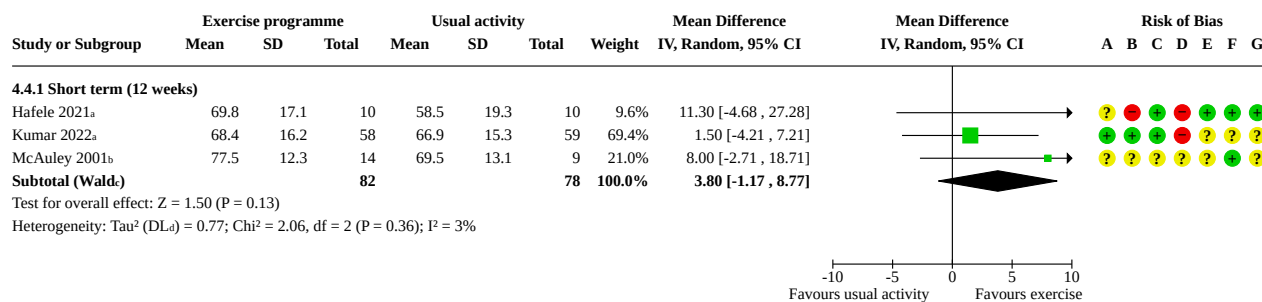
(C) Blinding of participants and personnel (performance bias)

(D) Blinding of outcome assessment (detection bias)

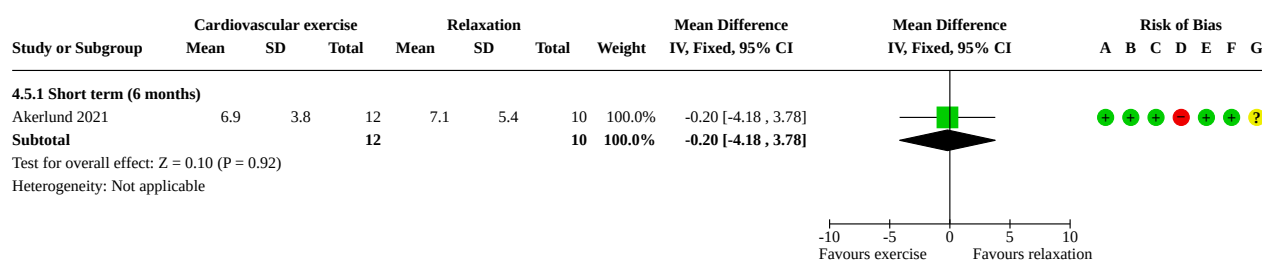
(E) Incomplete outcome data (attrition bias)

(F) Selective reporting (reporting bias)

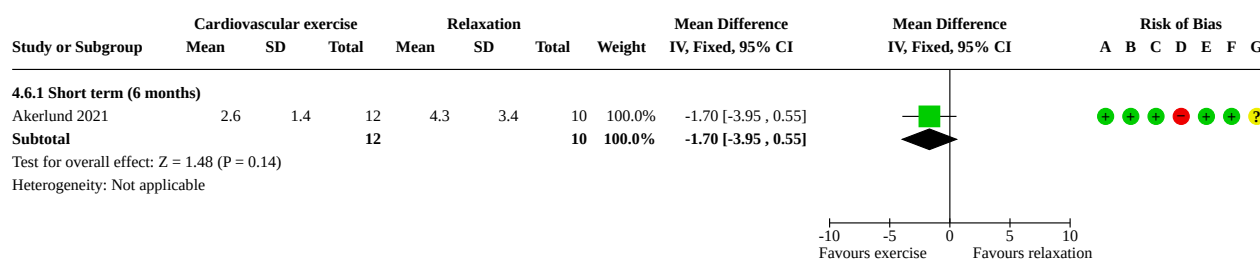
(G) Other bias

**Analysis 4.4. Comparison 4: Physical exercise interventions versus control interventions,
Outcome 4: Quality of Life in Epilepsy Inventory Total score (QOLIE-31 or QOLIE-89)****Footnotes**^aQOLIE-31^bQOLIE-89^cCI calculated by Wald-type method.^d τ^2 calculated by DerSimonian and Laird method.**Risk of bias legend**

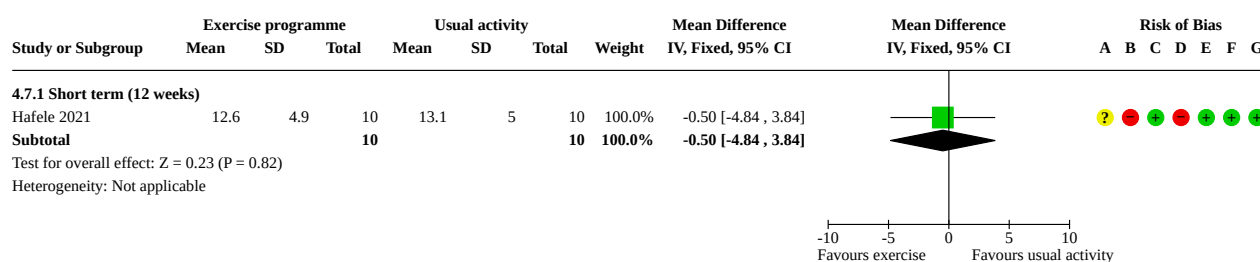
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

**Analysis 4.5. Comparison 4: Physical exercise interventions versus control
interventions, Outcome 5: Hospital Anxiety and Depression Scale: Anxiety (HADS-A)****Risk of bias legend**

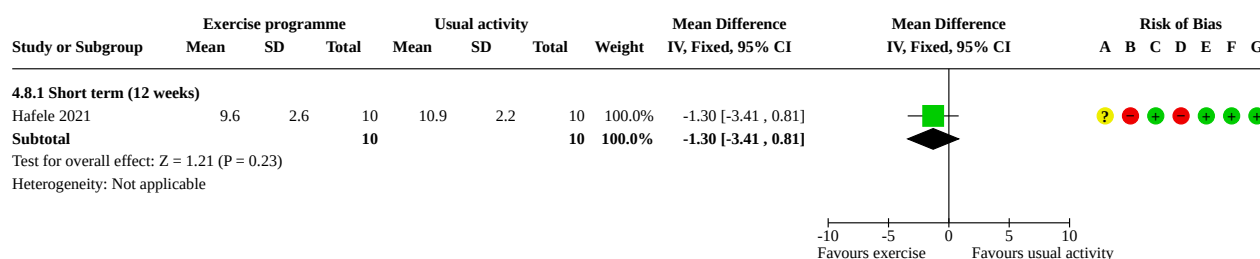
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 4.6. Comparison 4: Physical exercise interventions versus control interventions, Outcome 6: Hospital Anxiety and Depression Scale: Depression (HADS-D)**Risk of bias legend**

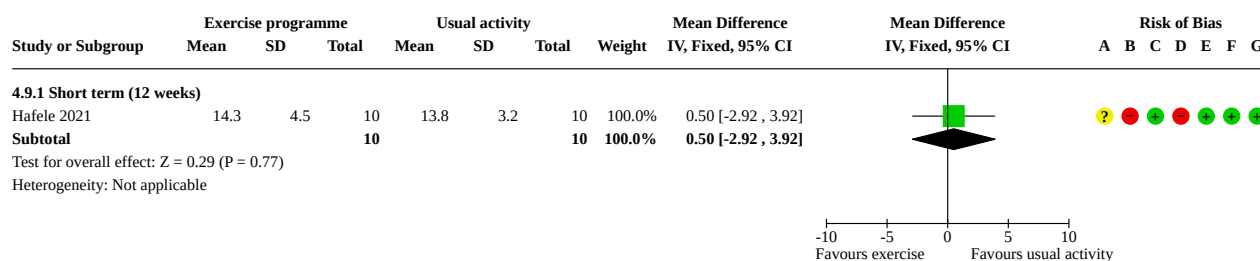
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 4.7. Comparison 4: Physical exercise interventions versus control interventions, Outcome 7: Neurological Disorders Depression Inventory for Epilepsy (NDDIE)**Risk of bias legend**

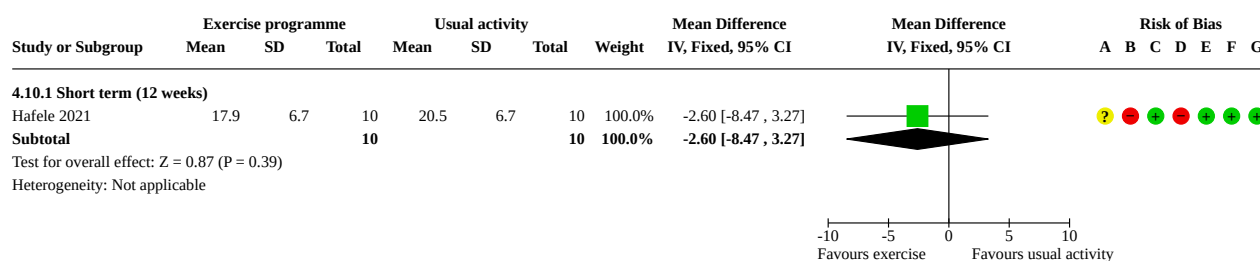
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 4.8. Comparison 4: Physical exercise interventions versus control interventions, Outcome 8: State-Trait Anxiety Inventory (STAI): State**Risk of bias legend**

- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

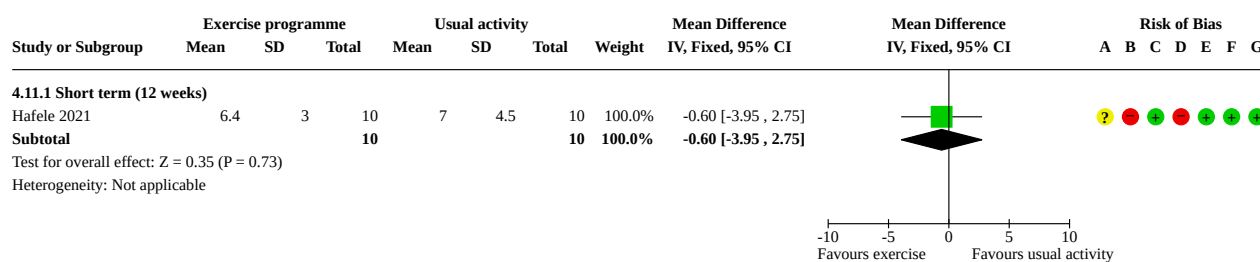
Analysis 4.9. Comparison 4: Physical exercise interventions versus control interventions, Outcome 9: State-Trait Anxiety Inventory (STAI): Trait**Risk of bias legend**

- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 4.10. Comparison 4: Physical exercise interventions versus control interventions, Outcome 10: Perceived Stress Scale (PSS-10)**Risk of bias legend**

- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

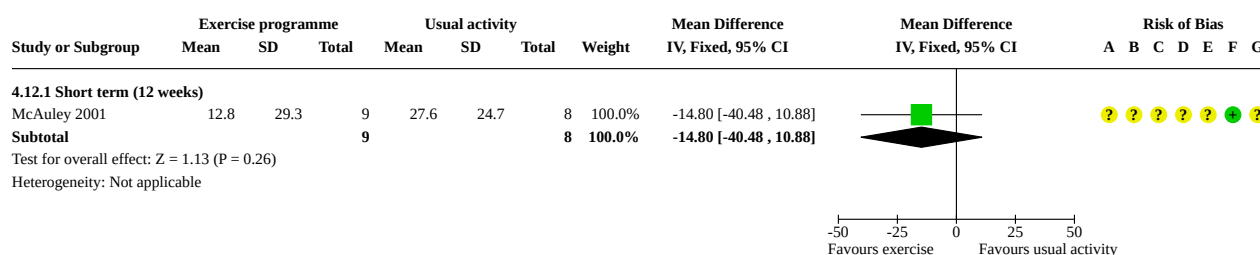
Analysis 4.11. Comparison 4: Physical exercise interventions versus control interventions, Outcome 11: Pittsburgh Sleep Quality Index (PSQI)



Risk of bias legend

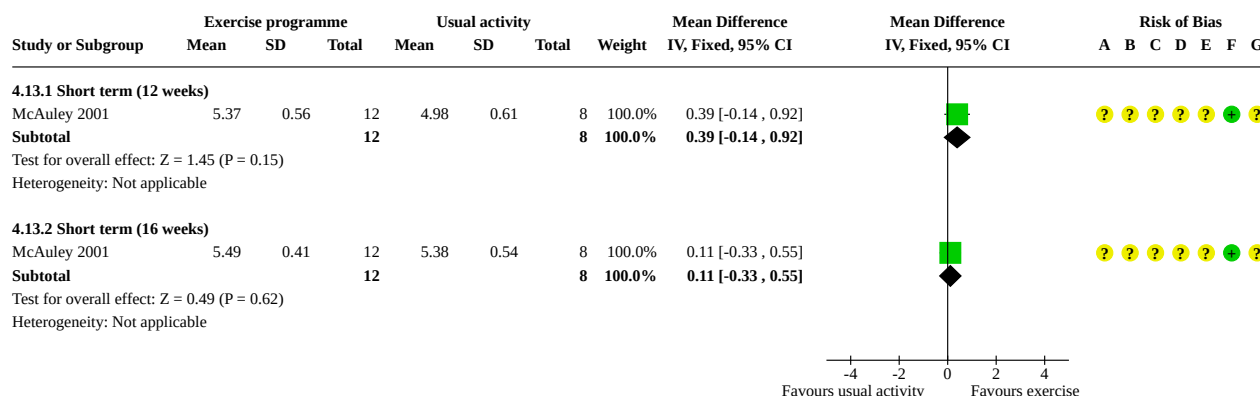
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 4.12. Comparison 4: Physical exercise interventions versus control interventions, Outcome 12: Profile of Mood States (POMS) scale

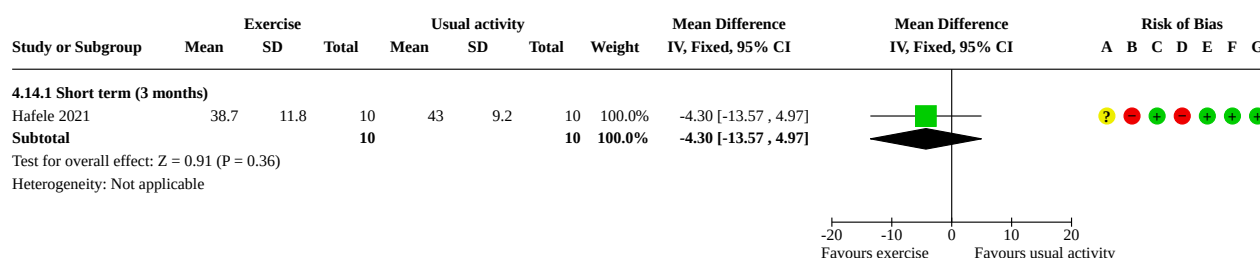


Risk of bias legend

- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 4.13. Comparison 4: Physical exercise interventions versus control interventions, Outcome 13: Rosenberg Self-Esteem Scale**Risk of bias legend**

- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

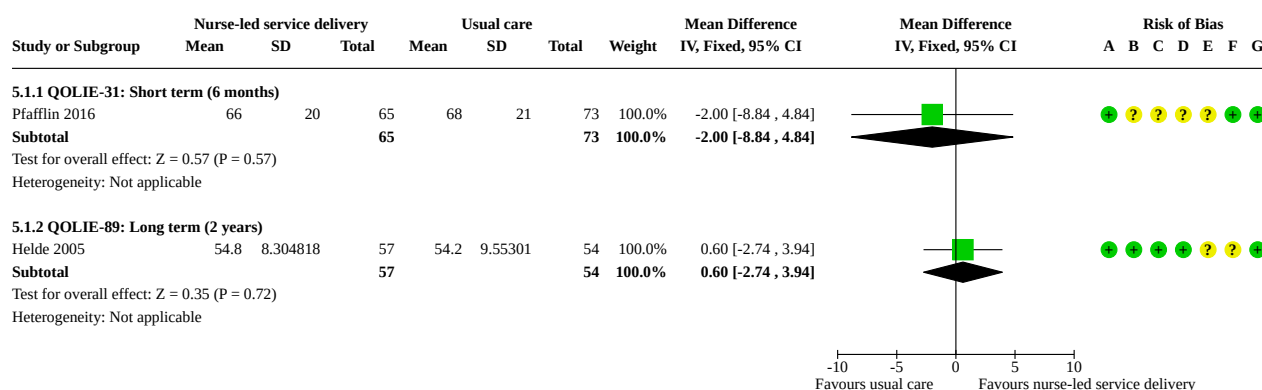
Analysis 4.14. Comparison 4: Physical exercise interventions versus control interventions, Outcome 14: Adverse Effects Profile (AEP) scale**Risk of bias legend**

- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

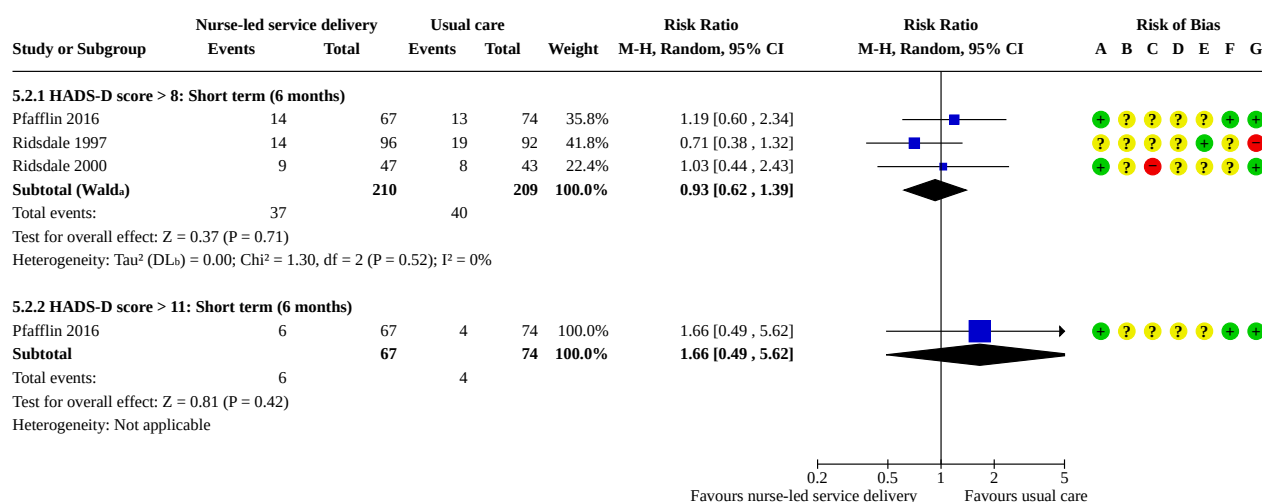
Comparison 5. Nurse-led service delivery interventions versus control interventions

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
5.1 Quality of Life in Epilepsy Inventory total score (QOLIE-31 or QOLIE-89)	2		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
5.1.1 QOLIE-31: Short term (6 months)	1	138	Mean Difference (IV, Fixed, 95% CI)	-2.00 [-8.84, 4.84]
5.1.2 QOLIE-89: Long term (2 years)	1	111	Mean Difference (IV, Fixed, 95% CI)	0.60 [-2.74, 3.94]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
5.2 Hospital Anxiety and Depression Scale: Depression (HADS-D)	3		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
5.2.1 HADS-D score > 8: Short term (6 months)	3	419	Risk Ratio (M-H, Random, 95% CI)	0.93 [0.62, 1.39]
5.2.2 HADS-D score > 11: Short term (6 months)	1	141	Risk Ratio (M-H, Random, 95% CI)	1.66 [0.49, 5.62]
5.3 Hospital Anxiety and Depression Scale: Anxiety (HADS-A)	2		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
5.3.1 HADS-A score > 8: Short term (6 months)	2	231	Risk Ratio (M-H, Random, 95% CI)	0.92 [0.62, 1.35]
5.3.2 HADS-A score > 11: Short term (6 months)	1	141	Risk Ratio (M-H, Random, 95% CI)	0.70 [0.29, 1.71]
5.4 Restrictions in daily life due to epilepsy	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
5.4.1 Short term (6 months)	1	125	Mean Difference (IV, Fixed, 95% CI)	4.30 [-3.98, 12.58]
5.5 Satisfaction scores	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
5.5.1 Satisfaction with information and advice: Short term (6 months)	1	143	Mean Difference (IV, Fixed, 95% CI)	5.50 [-0.17, 11.17]
5.5.2 Satisfaction with patient-doctor relationship: Short term (6 months)	1	143	Mean Difference (IV, Fixed, 95% CI)	3.00 [-2.81, 8.81]
5.5.3 Satisfaction with organization of care: Short term (6 months)	1	152	Mean Difference (IV, Fixed, 95% CI)	3.90 [-1.13, 8.93]
5.6 Epilepsy Knowledge Scale	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
5.6.1 Short term (6 months)	1	143	Mean Difference (IV, Fixed, 95% CI)	1.17 [0.05, 2.29]

Analysis 5.1. Comparison 5: Nurse-led service delivery interventions versus control interventions, Outcome 1: Quality of Life in Epilepsy Inventory total score (QOLIE-31 or QOLIE-89)**Risk of bias legend**

- (A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

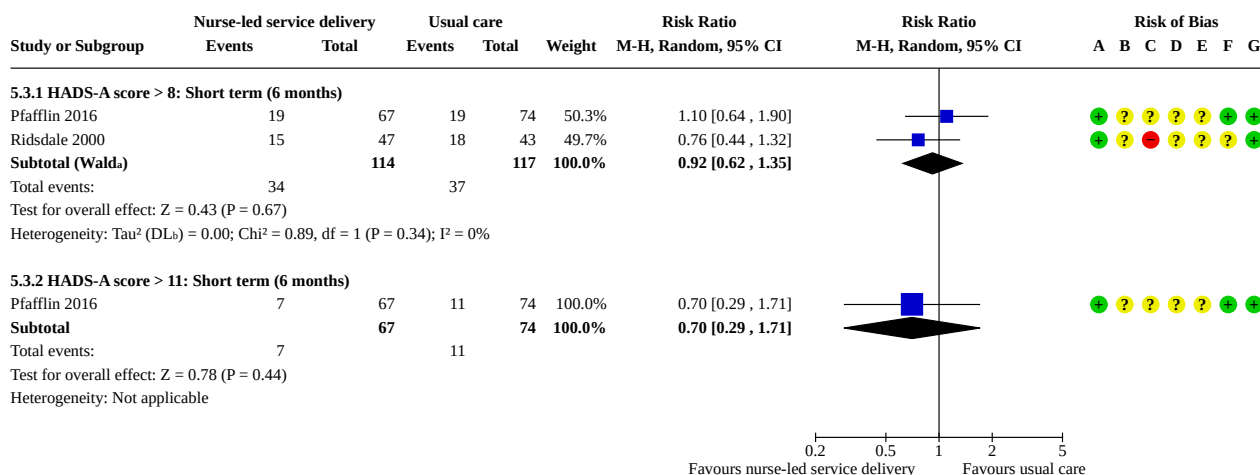
Analysis 5.2. Comparison 5: Nurse-led service delivery interventions versus control interventions, Outcome 2: Hospital Anxiety and Depression Scale: Depression (HADS-D)**Footnotes**

CI calculated by Wald-type method.

Tau² calculated by DerSimonian and Laird method.

Risk of bias legend

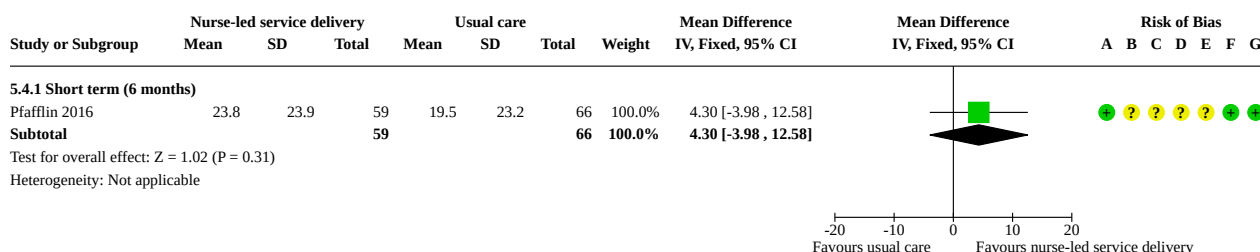
- (A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

Analysis 5.3. Comparison 5: Nurse-led service delivery interventions versus control interventions, Outcome 3: Hospital Anxiety and Depression Scale: Anxiety (HADS-A)**Footnotes**

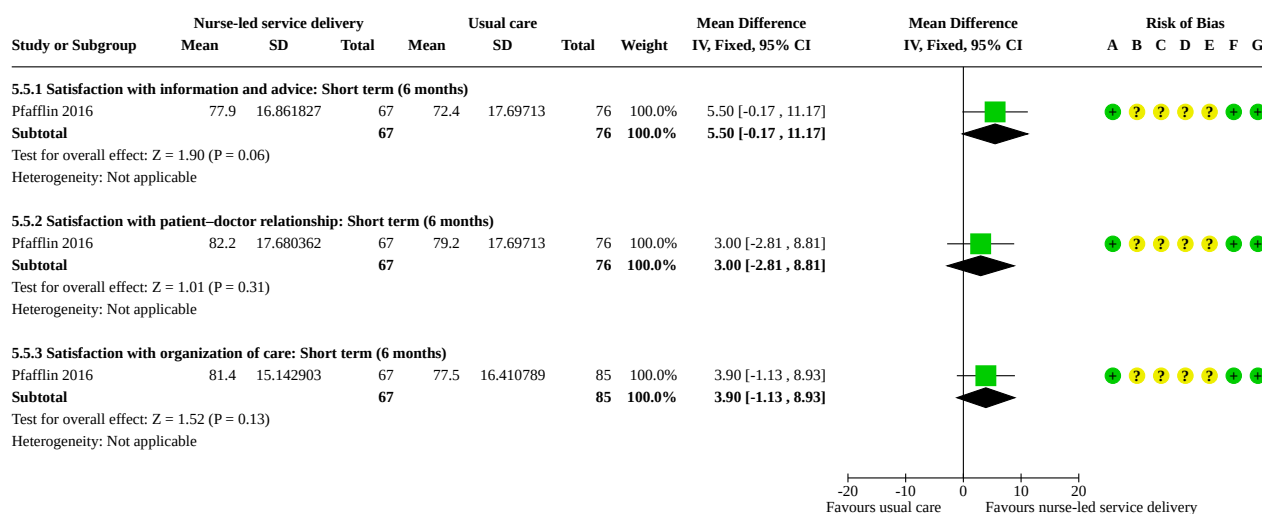
aCI calculated by Wald-type method.

bTau² calculated by DerSimonian and Laird method.**Risk of bias legend**

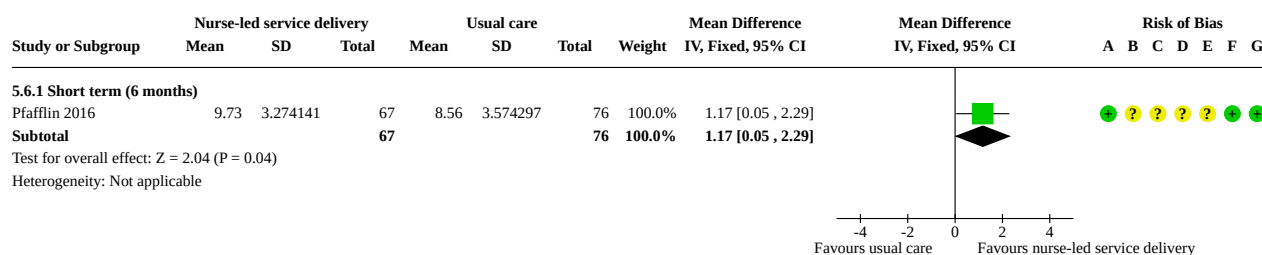
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 5.4. Comparison 5: Nurse-led service delivery interventions versus control interventions, Outcome 4: Restrictions in daily life due to epilepsy**Risk of bias legend**

- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

**Analysis 5.5. Comparison 5: Nurse-led service delivery interventions
versus control interventions, Outcome 5: Satisfaction scores****Risk of bias legend**

- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

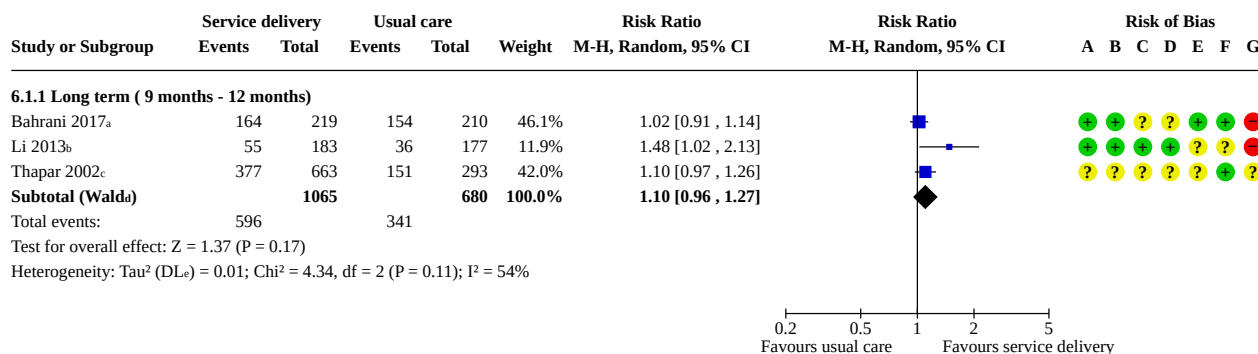
**Analysis 5.6. Comparison 5: Nurse-led service delivery interventions
versus control interventions, Outcome 6: Epilepsy Knowledge Scale****Risk of bias legend**

- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Comparison 6. Other service delivery interventions versus control interventions

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
6.1 Seizure freedom	3		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
6.1.1 Long term (9 months - 12 months)	3	1745	Risk Ratio (M-H, Random, 95% CI)	1.10 [0.96, 1.27]

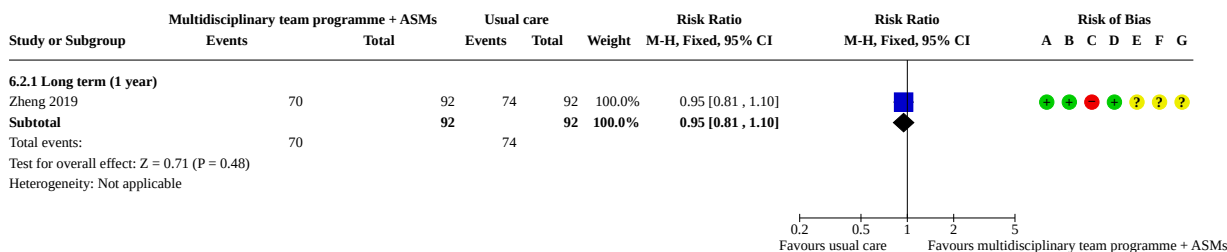
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
6.2 Seizure frequency: < 1 seizure per month	1		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
6.2.1 Long term (1 year)	1	184	Risk Ratio (M-H, Fixed, 95% CI)	0.95 [0.81, 1.10]
6.3 ≥ 50% reduction in seizure frequency	1		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
6.3.1 Long term (12 months)	1	360	Risk Ratio (M-H, Fixed, 95% CI)	1.31 [1.14, 1.50]
6.4 Quality of Life in Epilepsy Inventory Total score (QOLIE-31)	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
6.4.1 Long term (1 year)	1	184	Mean Difference (IV, Fixed, 95% CI)	8.30 [3.50, 13.10]
6.5 Severe depression (Beck Depression Inventory score > 16)	1		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
6.5.1 Long term (12 months)	1	184	Risk Ratio (M-H, Fixed, 95% CI)	0.83 [0.38, 1.83]
6.6 Severe anxiety (Beck Anxiety Inventory score ≥ 37)	1		Risk Ratio (M-H, Fixed, 95% CI)	Subtotals only
6.6.1 Long term (12 months)	1	184	Risk Ratio (M-H, Fixed, 95% CI)	0.63 [0.33, 1.22]
6.7 AED tolerability score	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
6.7.1 Short term (3 months)	1	157	Mean Difference (IV, Fixed, 95% CI)	-0.42 [-0.69, -0.15]
6.7.2 Short term (6 months)	1	157	Mean Difference (IV, Fixed, 95% CI)	-0.41 [-0.67, -0.15]

**Analysis 6.1. Comparison 6: Other service delivery interventions
versus control interventions, Outcome 1: Seizure freedom****Footnotes**

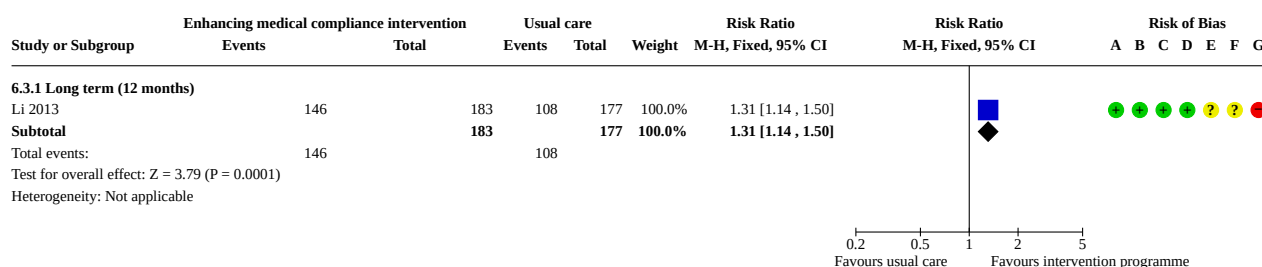
- ^aTelephone Review versus usual care: number of participants without "breakthrough" seizures during the study
^bEnhancing medical compliance intervention versus usual care: number seizure free during the study
^cDoctor-held or patient held prompt and reminder cards versus usual care: number seizure free during intervention year
^dCI calculated by Wald-type method.
^e Tau^2 calculated by DerSimonian and Laird method.

Risk of bias legend

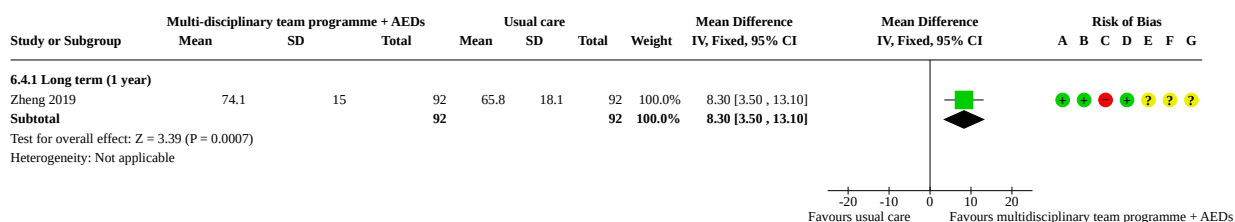
- (A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

**Analysis 6.2. Comparison 6: Other service delivery interventions versus
control interventions, Outcome 2: Seizure frequency: < 1 seizure per month****Risk of bias legend**

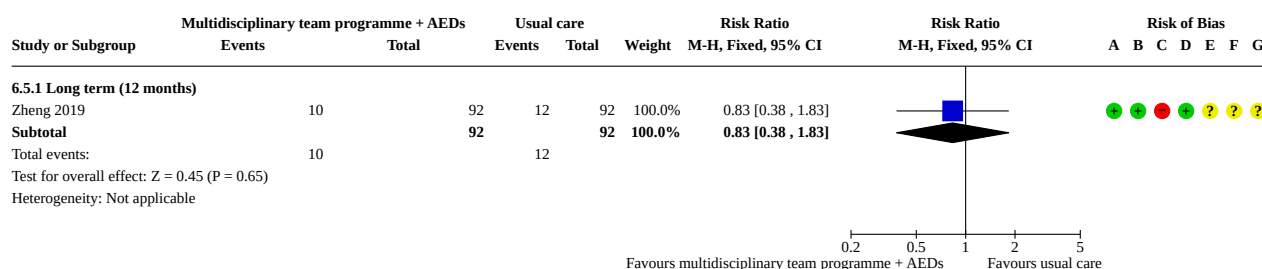
- (A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

Analysis 6.3. Comparison 6: Other service delivery interventions versus control interventions, Outcome 3: $\geq 50\%$ reduction in seizure frequency**Risk of bias legend**

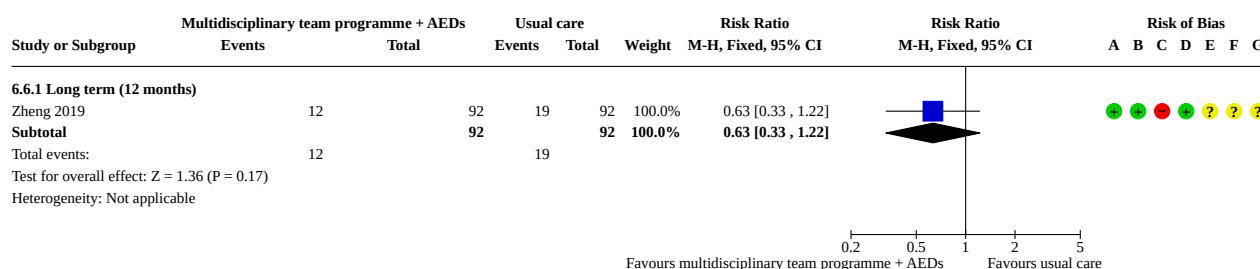
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 6.4. Comparison 6: Other service delivery interventions versus control interventions, Outcome 4: Quality of Life in Epilepsy Inventory Total score (QOLIE-31)**Risk of bias legend**

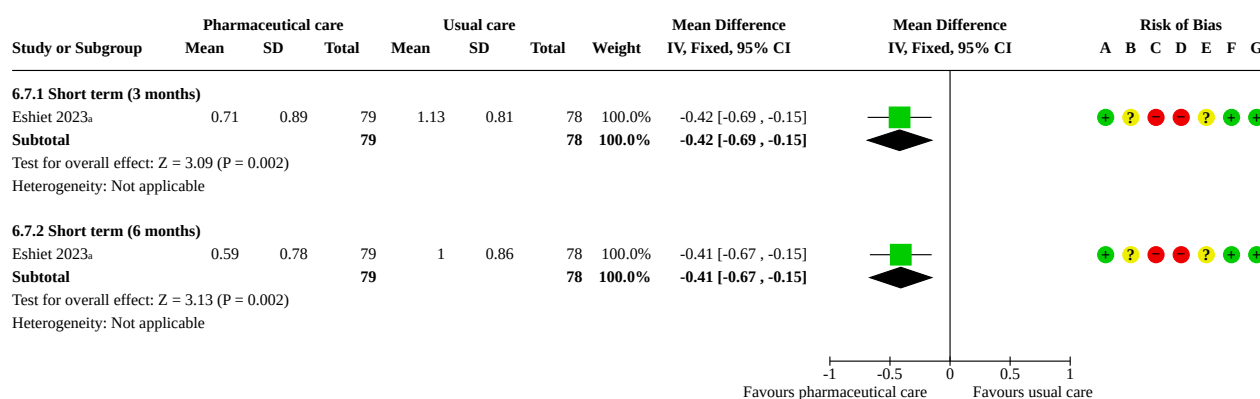
- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 6.5. Comparison 6: Other service delivery interventions versus control interventions, Outcome 5: Severe depression (Beck Depression Inventory score > 16)**Risk of bias legend**

- (A) Random sequence generation (selection bias)
- (B) Allocation concealment (selection bias)
- (C) Blinding of participants and personnel (performance bias)
- (D) Blinding of outcome assessment (detection bias)
- (E) Incomplete outcome data (attrition bias)
- (F) Selective reporting (reporting bias)
- (G) Other bias

Analysis 6.6. Comparison 6: Other service delivery interventions versus control interventions, Outcome 6: Severe anxiety (Beck Anxiety Inventory score ≥ 37)**Risk of bias legend**

- (A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

Analysis 6.7. Comparison 6: Other service delivery interventions versus control interventions, Outcome 7: AED tolerability score**Footnotes**

^aFour point scale: 1 - no side effects; 2 - only slight side effects; 3 - moderate side effects, but tolerable; 4 - severe side effects, not tolerable

Risk of bias legend

- (A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

ADDITIONAL TABLES**Table 1. Summary of included studies**

Study ID	Participants	Intervention	Control	Design	Setting
Psycho-behavioural					
Lundgren 2006	27 adults aged between 21–55 years old, having minimum of four seizures during last 3 months.	A psychological treatment programme – accep-	Supportive therapy	Randomised controlled trial	A day centre for epilepsy in South Africa.

Table 1. Summary of included studies (Continued)

		tance and commitment therapy (ACT)			All participants are living under the minimum existence poverty level.
Lundgren 2008	18 adults aged between 18–55 years old, having minimum of four seizures during last 3 months.	A psychological treatment programme – acceptance and commitment therapy (ACT)	Yoga	Randomised controlled trial	Outpatient clinic in Southwest India
McLaughlin 2011	37 adults aged 60 years or older with a confirmed diagnosis of epilepsy	Cognitive behavioural therapy (CBT)	Relaxation techniques	Randomised controlled trial	Members of state and national epilepsy support organisations and public hospitals with epilepsy clinics in Australia
Meyer 2019	200 adults aged 18 years old or over, with a diagnosis of epilepsy and depression	Electronic cognitive behavioural therapy (eCBT)	Care as usual (participants may engage with any epilepsy treatment)	Randomised controlled trial	Outpatient clinic in epilepsy centres and other hospitals, Germany
Tan 1986	30 adults with epilepsy, with significant psychosocial problems and inadequate seizure control	Cognitive behavioural therapy (CBT)	Supportive counselling (attention-placebo control) No treatment: Waiting list group	Randomised controlled trial	Outpatients at the Wellesley Hospital, Toronto, Ontario, Canada
Mind-body					
Dahl 1987	18 adults aged between 19–58 with epilepsy	Contingent relaxation treatment programme	Attention control group Waiting list control group	Cross-over randomised controlled trial	A neurology outpatient unit at a university hospital in Sweden
Deepak 1994	20 adults with drug-resistant epilepsy	Meditation	Same professional attention but no meditation	Randomised controlled trial	Neurology clinics of All India Institute of Medical Sciences, New Delhi, India
Haut 2018	67 adults aged 18 or over with medication-resistant focal epilepsy	Progressive muscle relaxation with diaphragmatic breathing (PMR)	Focused attention control (FAC)	Randomised controlled trial	Recruited from epilepsy centres in the USA
Mehrabi 2019	24 adults with epilepsy aged between 15 and 50 years old	Mindfulness	Not defined in study	Quasi-randomised controlled trial	The Epilepsy Charity Association of Isfahan City, Iran

Table 1. Summary of included studies (Continued)

Puskarich 1992	24 adults with epilepsy	Progressive muscle relaxation technique	Quiet sitting	Randomised controlled trial	Recruited from epilepsy clinics in Chicago, USA
Sathyaprabha 2008	40 patients with refractory epilepsy	Yoga	Simple exercise	Randomised controlled trial	Refractory Epilepsy Clinic of a university teaching hospital in southern India
Sidorenko 2000	56 patients with severe epilepsy	Medical Resonance Therapy Music (MRT-Music)	Not explicitly specified	Randomised controlled trial	A specialised hospital for epilepsy in Minsk, Belarus
Tang 2015	61 adults aged 18 or over with drug-resistant epilepsy	Mindfulness plus social support	Social support alone as attention placebo control	Randomised controlled trial	Neurology clinics from a teaching hospital in Hong Kong
Thompson 2020	117 adults aged 21 or over with diagnosis of epilepsy and mild depression	A psycho-educational programme based upon Mindfulness-Based Cognitive Therapy (MBCT)	Treatment as usual waiting list	Cross-over randomised controlled trial	Across universities in USA
Self-management					
Fontaine 2023	86 adults with epilepsy	A programme of educational actions	Usual medical care	Randomised controlled trial	University hospital, France
Hu 2020	99 participants over 18 years of age with at least 1-year history of epilepsy with reported prodromes or precipitating factors pre-seizure	Educational content delivered as one 40-minute session and educational content during monthly telephone follow-up for one year	Monthly follow-up telephone calls without educational content	Randomised controlled trial	The Epilepsy Centre of the Sichuan Provincial People's Hospital, China
May 2002	242 people with epilepsy over 16 years of age	Educational programme (MOSES)	Waiting list control group	Randomised controlled trial	22 epilepsy centres in Germany, Austria and Switzerland (mainly specialised outpatient clinics)
Mengoni 2016	40 participants aged 18 years of age or over with a confirmed diagnosis of a learning disability and epilepsy	Educational content delivered by a booklet and verbal guidance on using the booklet	Routine information and services	Randomised controlled feasibility trial	Single NHS Trust, England (Hertfordshire Partnership University NHS Foundation Trust)
Ridsdale 2018	404 participants 16 years of age or over with a diagnosis of epilepsy for at least one year and reporting at least 2 seizures in the previous year	Group self-management education course (SMILE)	Treatment as usual	Randomised controlled trial	Specialist epilepsy clinics at 8 hospitals in London and South East England

Table 1. Summary of included studies (Continued)

Sajatovic 2018	120 participants with a self-reported diagnosis of epilepsy aged over 18 years and at least one negative health event in the past 6 months	Educational programme (SMART) delivered in-person and online	Waiting list control, with cross-over to intervention at 24 weeks	Cross-over randomised controlled trial	Urban setting in north-eastern Ohio, USA
Sepat 2021	130 adults, including 65 people with epilepsy and 65 caregivers	An additional virtual interactive epilepsy session	Digital education material only	Randomised controlled trial	Tertiary care teaching hospital, India
Si 2020	380 participants with epilepsy aged between 18–60 years	Epilepsy management app	Routine clinic consultation	Randomised controlled trial	The Epilepsy Centre of the Sichuan Provincial People's Hospital, China
Physical exercise					
Akerlund 2021	28 adults with focal drug-resistant epilepsy	Moderate cardiovascular exercise	Relaxation exercise	Randomised controlled trial	Neurology Outpatient Clinic of the Sahlgrenska University Hospital, Sweden
Hafele 2021	21 patients diagnosed with epilepsy	Physical exercise programme	Normal daily activities	Quasi-randomised controlled trial	City of Pelotas, Brazil
Kumar 2022	117 adults with epilepsy	Physical exercise	Standard medical care	Randomised controlled trial	Neurology Department of All India Institute of Medical Sciences, New Delhi, India.
McAuley 2001	28 adults with epilepsy	Exercise programme	Continue current level of activity with no planned intervention	Randomised controlled trial	Outpatient setting, USA
Nurse-led service delivery					
Helde 2005	114 participants aged 16–70 years with epilepsy without significant learning disability.	Nurse-led educational program starting with a group session, an open line to nurse and 3 monthly nurse telephone consultation	Conventional treatment, appointments with treating neurologists and routine telephone follow-up with nurses	Randomised controlled trial	Neurology Outpatient clinic, Trondheim, Norway
Pfafflin 2016	202 participants aged over 16 years with epilepsy	Epilepsy nurse counselling according to their needs	Standard outpatient service	Randomised controlled trial	Two specialist epilepsy clinics, Germany
Ridsdale 1997	251 participants aged over 15 years with a diagnosis of epilepsy or on anti-seizure	Nurse-run epilepsy clinics in primary care	Care from general practitioner or usual specialist	Randomised controlled trial	Six General Practices in the South Thames Region, UK

Table 1. Summary of included studies (Continued)

medication and an attack in the previous two years

Ridsdale 2000	102 participants over 17 years of age with newly diagnosed epilepsy with two or more attacks at initial treatment with anti-seizure medication (128 recruited)	Nurse-led specialist care	Usual care (not defined)	Randomised controlled trial	Five hospitals in South East England
Other service delivery					
Bahrani 2017	465 stable epilepsy patients older than 10 years of age with telephone access, under care for at least 6 months, with a finalised treatment plan and without serious co-morbidity	Telephone review	Conventional (in-person) clinic management	Randomised controlled trial	Single academic quaternary care hospital, India
Eshiet 2023	157 patients with epilepsy	Pharmaceutic care service	Usual care (usual conventional care that hospital offered)	Randomised controlled trial	Referral centres for epilepsy management in South Nigeria
Li 2013	400 patients with a diagnosis of epilepsy with at least 2 convulsive seizures in the past 12 months aged between 13-65 on phenobarbital monotherapy	Intervention program consisting of intensive education, availability of consultation services from clinical providers and telephone support at all times, a reminder record card and repeated reminders about medical adherence every month	Standard management (not otherwise defined)	Randomised controlled trial	Primary care in rural communities in Western China
Singh 2022	240 patients with epilepsy	Home-based primary health care	Usual clinic care	Cluster-randomised trial	Poor urban and peri-urban rural communities in Northwest India
Thapar 2002	1275 patients over the age of 16 years with 'active epilepsy' (a seizure recorded in the past two years or on anticonvulsant medication for epilepsy). Individuals with severe learning disabilities were excluded.	Doctor-held and patient-held epilepsy prompt and reminder card	Not stated	Randomised controlled trial (GP Practices randomised not patients)	Eighty-two General Practices in four areas of Greater Manchester, UK (Stockport, South Manchester, Salford and Trafford and Bury and Rochdale)
Zheng 2019	194 patients with epilepsy over the age of 18 years on anti-seizure treatment for at least 3 months, who were literate and without major cognitive impairment	12-month multidisciplinary team (MDT) program with epileptologist, pharmacist, psychiatrist and epilepsy specialist nurse	Regular anti-seizure treatment and routine education	Randomised controlled trial	The Second Affiliated Hospital of Zhejiang University, a tertiary referral hospital in Zhejiang, China

Table 1. Summary of included studies (Continued)

with face-to-face interviews, online consultations with epilepsy specialist nurse and group education with the MDT twice a year.

Table 2. Seizure frequency outcome table

Study ID	Outcome(s) measured	Outcome time	Analysis ^c	Findings
Psycho-behavioural^a				
Lundgren 2006 McLaughlin 2011	Mean seizure frequency per month	Post-treatment	Meta-analysis	Analysis 1.1, no statistically significant difference between groups (mean difference: -3.57, 95% CI [-7.43, 0.29]), although there was a high level of heterogeneity ($I^2 = 71\%$).
Lundgren 2006	Mean seizure frequency per month	6 months	Meta-analysis	Analysis 1.1, statistically significant reduction (mean difference: -4.42, 95% CI [-6.41, -2.43]).
McLaughlin 2011	Mean seizure frequency per month	3 months		
Lundgren 2006	Mean seizure frequency per month	12 months	Forest plot	Analysis 1.1, statistically significant reduction in favour of intervention (mean difference: -5.18, 95% CI [-7.14, -3.22]).
Lundgren 2008	Median seizure frequency	Pre- and post-treatment	Narrative	Intervention group medians: baseline = 2.5, post-treatment = 0.15, reduction = 1.7. Control group medians: baseline = 1.0, post-treatment = 0.1, reduction = 0.9. No statistically significant difference between groups at baseline ($P = 0.13$), post-treatment ($P = 0.60$) or reduction of seizure frequency ($P = 0.18$) ^b
Meyer 2019	Seizure frequency per month	Baseline, 3 months	Narrative	No statistically significant difference between groups at baseline or 3 months.
Tan 1986	Daily seizure frequency	Post-intervention and 4 months	Narrative	No statistically significant changes between groups.
Mind-body^a				
Haut 2018	Change in mean seizure frequency per month from baseline	8 weeks	Meta-analysis	Analysis 2.1, statistically significant reduction favouring intervention (mean difference: -3.28, 95% CI [-6.36, -0.20]).
Puskarich 1992	Change in mean seizure frequency	8 weeks		

Table 2. Seizure frequency outcome table (Continued)

	cy per month from baseline			
Tang 2015	Change in mean seizure frequency per month from baseline	6 weeks		
Puskarich 1992	Mean seizure frequency per month	8 weeks	Meta-analysis	Analysis 2.2, no statistically significant difference between groups (mean difference: -0.62, 95% CI [-4.75, 3.51]).
Tang 2015	Mean seizure frequency per month	6 weeks		
Haut 2018	Percentage improvement in seizure counts	8 weeks	Narrative	No statistically significant difference between groups.
Dahl 1987	Seizure frequency	10 weeks (experimental phase - pre-cross-over), 10 weeks and 30 weeks (Non-experimental phase - post cross-over)	Narrative	In experimental phase, there was 66% reduction in seizure frequency for intervention group, 68% increase for attention control group and 2% reduction for waiting list group ($P < 0.01$). In phase 2, there was a statistically significant difference before and after treatment at both follow-up for all three groups ($P < 0.001$)
Deepak 1994	Median seizure frequency	6 months and 12 months	Narrative	Intervention group medians: 6 months= 3.8 and 12 months= 1.1. Control group medians: 6 months= 9 and 12 months= 10.6. No statistically significant difference between groups at 6 months ($p=0.30$) or 12 months ($p=0.08$)
Mehrabi 2019	Seizure frequency	Not reported	Narrative	Unable to extract data from translated paper
Thompson 2020	Seizure frequency	10 weeks	Narrative	A statistically significant reduction in seizure frequency in intervention compared to control group ($p=0.025$)
Sathyaprabha 2008	Mean seizure frequency score	10 weeks	Narrative	A statistically significant reduction in seizure frequency in intervention over control group ($p<0.001$).
Sidorenko 2000	Changes in frequency and severity of epileptic paroxysms	Not reported	Narrative	Frequency and severity of the paroxysms changed positively in 80% of the cases, 16.7% were non-specific, and changed negatively in 3.3% of the cases. The changes in the control group were: positive 20%, non-specifically 50%, negative 30%. No p-values reported.
Self-management^a				
Mengoni 2016	Seizure frequency during the study	20 weeks	Meta-analysis	Analysis 3.1, no statistically significant difference between groups (mean difference: 1.61, 95% CI [-6.08, 9.29]).

Table 2. Seizure frequency outcome table (Continued)

Sajatovic 2018		24 weeks		
Fontaine 2023		6 months		
Sajatovic 2018	Seizure frequency during the study	72 weeks	Forest plot	Analysis 3.1 , no statistically significant difference between groups (mean difference: 4.30, 95% CI [-3.82, 12.42]).
Mengoni 2016	Seizure freedom during the study	20 weeks	Meta-analysis	Analysis 3.2 , statistically significant seizure freedom favouring self-management, (risk ratio: 1.94, 95% CI [1.39, 2.72]).
Fontaine 2023		6 months		
Si 2020		6 months		
Sepat 2021	Seizure freedom during the study	1 month	Forest plot	Analysis 3.2 , no statistically significant difference between groups (risk ratio: 0.99, 95% CI [0.73, 1.34]).
Hu 2020	Seizure freedom during the study	12 months	Forest plot	Analysis 3.2 , statistically significant seizure freedom favouring self-management, (risk ratio: 2.61, 95% CI [1.11, 6.13]).
Sajatovic 2018	Mean seizure frequency per month	72 weeks	Meta-analysis	Analysis 3.4 , no statistically significant difference between groups (mean difference: -0.41, 95% CI [-2.75, 1.92]).
Hu 2020		12 months		
Sajatovic 2018	Mean seizure frequency per month	24 weeks	Forest plot	Analysis 3.4 , no statistically significant difference between groups (mean difference: 1.33, 95% CI [-0.71, 3.37]).
Si 2020	≥ 50% reduction in seizure frequency during the study	6 months	Forest plot	Analysis 3.3 , no statistically significant difference between groups, (risk ratio: 1.08, 95% CI [0.88, 1.32]).
Hu 2020	≥ 50% reduction in seizure frequency during the study	12 months	Forest plot	Analysis 3.3 , statistically significant reduction in favour of self-management, (risk ratio: 1.32, 95% CI [1.03, 1.70]).
Ridsdale 2018	< 1 seizure per month	12 months	Forest plot	Analysis 3.7 , no statistically significant difference between groups, (risk ratio: 0.93, 95% CI [0.72, 1.20]).
Hu 2020	Change in seizure frequency per month from baseline	12 months	Forest plot	Analysis 3.5 , a statistically significant reduction in favour of self-management (mean difference: -1.84, 95% CI [-3.27, -0.41]).
Sajatovic 2018	Change in seizure frequency per month from baseline	6 months	Forest plot	Analysis 3.5 , no statistically significant difference between groups (mean difference: -0.10, 95% CI [-2.47, 2.27]).
Sajatovic 2018	Change in seizure frequency during study from baseline	6 months	Forest plot	Analysis 3.6 , no statistically significant difference between groups (mean difference: -6.95, 95% CI [-19.20, 5.30]).
May 2002	Mean seizure frequency scale (1-6)	6 months	Narrative	Seizure frequency improvement significantly in intervention compared to control group over time ($P < 0.05$)

Table 2. Seizure frequency outcome table (Continued)

Ridsdale 2018	Seizure frequency in last 12 months	12 months	Narrative	No statistically significant difference between groups.
Ridsdale 2018	Seizure recency (% time seizure free)	12 months	Narrative	No statistically significant difference between groups.
Physical exercise ^a				
Hafele 2021	Seizure freedom during the study	12 weeks	Meta-analysis	Analysis 4.1, no statistically significant difference between groups (risk ratio: 1.44, 95% CI [0.92, 2.25]).
McAuley 2001	Seizure freedom during the study	12 weeks		
Hafele 2021	Percentage change in seizure frequency from baseline	12 weeks	Meta-analysis	Analysis 4.2, significant reduction in favour of exercise (mean difference: -73.32, 95% CI [-143.23, -3.42]).
Akerlund 2021	Percentage change in seizure frequency from baseline	6 months		
Hafele 2021	Change in seizure frequency from baseline	12 weeks	Forest plot	Analysis 4.3, no statistically significant difference between groups (mean difference: -1.10, 95% CI [-4.15, 1.95]).
McAuley 2001	Seizure frequency in those with active seizures	12 weeks	Narrative	Of the four patients in the intervention group with active seizures, two had no change, one had an increase, and one had a decrease in seizure activity. Of the three patients in the control group with active seizures, one had no change, one had an increase, and one had a decrease in seizure activity. No P value reported.
Kumar 2022	Seizure frequency	12 weeks	Narrative	There was no difference in seizure frequency; actual values and P value not reported.
Nurse-led service delivery ^a				
Ridsdale 2000	Median months since last seizure	6 months	Narrative	No statistically significant difference between groups.
Helde 2005	No outcomes reported			
Ridsdale 1997	No outcomes reported			
Pfafflin 2016	No outcomes reported			
Other service delivery ^a				
Bahrani 2017	Seizure freedom during study	9 months	Meta-analysis	Analysis 6.1, no statistically significant difference between groups (risk ratio: 1.10, 95% CI [0.96, 1.27]).
Thapar 2002	Seizure freedom during study	12 months		

Table 2. Seizure frequency outcome table (Continued)

Li 2013	Seizure freedom during study	12 months		
Li 2013	> 50% reduction in seizure frequency during study	12 months	Forest plot	Analysis 6.3 , statistically significant result in favour of intervention programme (risk ratio 1.31, 95% CI [1.14, 1.50]).
Zheng 2019	Seizure frequency: <1 seizure per month	12 months	Forest plot	Analysis 6.2 , no statistically significant difference between groups (risk ratio: 0.95, 95% CI [0.81, 1.10]).
Bahrani 2017	Total number of breakthrough seizures during study period	9 months	Narrative	No statistically significant difference between groups
Singh 2022	Number of monthly seizures (for individuals and by cluster)	Up to 24 months	Narrative	Individuals and clusters in home-care had more seizures than those in clinic care in the early months of the trial, but overall had fewer seizures across the entire trial span (negative binomial regression coefficient: -2.06; 95% CI, -3.335 to -0.785; P = 0.002)

^aFor details of the types of intervention and control for each study, please see [Table 1](#).

^bSeizure frequency data skewed; median values and Mann Whitney U test P values calculated by review authors using patient level data reported in [Lundgren 2008](#) article.

^cAll meta-analyses conducted using random-effects model.

Table 3. Seizure severity outcomes table

Study ID	Outcome(s) measured	Outcome time	Findings
Mind-body^a			
Thompson 2020	Mean change in Liverpool Seizure Severity Scale (range from 0 (no seizure) to 100 (most severe possible))	Baseline, 10 weeks	Analysis 2.3 , no statistically significant difference (mean difference: -4.90, 95% CI [-10.98, 1.18]).
Self-management^a			
Mengoni 2016	Change in Epilepsy and Learning Disabilities Quality of Life scale (ELDQOL), seizure severity subscale	Baseline, 24 weeks	Analysis 3.8 . No statistically significant difference between intervention and control group.
Sajatovic 2018	Mean change in Liverpool Seizure Severity Scale (range from 0 (no seizure) to 100 (most severe possible))	Baseline, 10, 24, 48 and 72 weeks for the group randomised to intervention 32, 48 and 72 weeks for participants randomised to control	Analysis 3.8 . The mean change in severity score within each group demonstrated no statistically significant difference within the group originally assigned to the intervention (P = 0.31) and the group originally assigned to control (P = 0.27).

^aFor details of the types of intervention and control for each study, please see [Table 1](#).

Table 4. Overall health-related quality of life (HRQoL) outcomes table

Study ID	Outcome(s) measured ^b	Outcome time	Analysis ^c	Findings
Psycho-behavioural^a				
Meyer 2019	QOLIE-10 total score	3 months	Forest plot	Analysis 1.2 . No statistically significant difference (mean difference 1.51, 95% CI [-0.26, 3.28])
Meyer 2019	QOLIE-10 total score	6 months	Forest plot	Analysis 1.2 . No statistically significant difference (mean difference 0.89, 95% CI [-1.06, 2.84])
Meyer 2019	QOLIE-10 total score	9 months	Forest plot	Analysis 1.2 . No statistically significant difference (mean difference 1.53, 95% CI [-0.40, 3.46])
Lundgren 2006 Lundgren 2008	WHOQOL-BREF	Post-treatment	Meta-analysis	Analysis 1.3 . No statistically significant difference (mean difference 0.39, 95% CI [-5.49, 6.28]).
Lundgren 2006 Lundgren 2008	WHOQOL-BREF	6 months	Meta-analysis	Analysis 1.3 . No statistically significant difference (mean difference 1.72, 95% CI [-4.88, 8.31])
Lundgren 2006 Lundgren 2008	WHOQOL-BREF	12 months	Meta-analysis	Analysis 1.3 . No statistically significant difference (mean difference 5.46, 95% CI [-11.51, 22.43]), although very high level of heterogeneity ($I^2 = 95\%$).
Mind-body^a				
Tang 2015	QOLIE-31-P total score	6 weeks	Forest plot	Analysis 2.4 . No statistically significant difference (mean difference 0.75, 95% CI [-5.49, 6.99])
Self-management^a				
Fontaine 2023	QOLIE-31 total score	6 months	Meta-analysis	Analysis 3.9 . No statistically significant difference (mean difference 2.42, 95% CI [-2.58, 7.42])
Ridsdale 2018	QOLIE-31-P total score			
Hu 2020	QOLIE-31 total score	12 months	Meta-analysis	Analysis 3.9 . No statistically significant difference (mean difference 3.86, 95% CI [-8.40, 16.11])
Ridsdale 2018	QOLIE-31-P total score			
Sepat 2021	QOLIE-31 total score	1 month	Forest plot	Analysis 3.9 . No statistically significant difference (mean difference 2.48, 95% CI [-3.59, 8.55])
Hu 2020	QOLIE-31 sub-scale	12 months	Narrative	There was a statistically significant improvement in quality of life comparing before and after education between intervention versus control group in all domains except for seizure worry.

Table 4. Overall health-related quality of life (HRQoL) outcomes table (Continued)

Sajatovic 2018	QOLIE-10 total score	6 months	Forest plot	Analysis 3.10 . Statistically significant difference in favour of self-management intervention (mean difference -0.51, 95% CI [-0.88, -0.14])
Sajatovic 2018	QOLIE-10 total score	72 weeks	Forest plot	Analysis 3.10 . No statistically significant difference (mean difference -0.22, 95% CI [-0.62, 0.18])
May 2002	SF-36 PCS	6 months	Meta-analysis	Analysis 3.11 . No statistically significant difference (mean difference -0.60, 95% CI [-3.77, 2.57])
Sajatovic 2018				
Sajatovic 2018	SF-36 PCS	72 weeks	Forest plot	Analysis 3.11 . No statistically significant difference (mean difference -0.30, 95% CI [-5.45, 4.85])
May 2002	SF-36 MCS	6 months	Meta-analysis	Analysis 3.12 . No statistically significant difference (mean difference 2.73, 95% CI [-1.28, 6.74])
Sajatovic 2018				
Sajatovic 2018	SF-36 MCS	72 weeks	Forest plot	Analysis 3.12 . No statistically significant difference (mean difference 3.57, 95% CI [-2.38, 9.52])
Mengoni 2016	ED-5D-5L index score	20 weeks	Forest plot	Analysis 3.15 . No statistically significant difference (mean difference 0.04, 95% CI [-0.20, 0.28])
Mengoni 2016	ED-5D-5L VAS	20 weeks	Forest plot	Analysis 3.16 . No statistically significant difference (mean difference -1.51, 95% CI [-18.10, 15.08])
Mengoni 2016	ELDQOL – behaviour	20 weeks	Forest plot	Analysis 3.13 . No statistically significant difference (mean difference -1.36, 95% CI [-3.31, 0.59])
Mengoni 2016	ELDQOL – Mood	20 weeks	Forest plot	Analysis 3.13 . No statistically significant difference (mean difference -1.03, 95% CI [-3.96, 1.90])
Mengoni 2016	ELDQOL - side effects	20 weeks	Forest plot	Analysis 3.14 . No statistically significant difference (mean difference 0.33, 95% CI [-7.39, 8.05])
Physical exercise^a				
Hafele 2021	QOLIE-31 total score	12 weeks	Meta-analysis	Analysis 4.4 . No statistically significant difference (mean difference 3.80, 95% CI [-1.17, 8.77])
Kumar 2022	QOLIE-31 total score	12 weeks		
McAuley 2001	QOLIE-89 total score	12 weeks		
Hafele 2021	QOLIE-31 sub-scale	12 weeks	Narrative	There was statistically significant improvement for specific quality of life domains – seizure worry (P = 0.002), general quality of life (P = 0.028), energy/ fatigue (P = 0.008), and cognitive function (P = 0.026) in the intervention compared to control group.
Kumar 2022	QOLIE-31 sub-scale	12 weeks	Narrative	No statistically significant difference in domains of QOL between groups.
McAuley 2001	QOLIE-89 sub-scale	12 weeks	Narrative	Physical function showed statistically significant improvement in the intervention group post inter-

Table 4. Overall health-related quality of life (HRQoL) outcomes table (Continued)

vention, while energy / fatigue showed statistically significant improvement in both groups. No inter-group comparison.

Nurse-led service delivery ^a				
Pfafflin 2016	QOLIE-31 total score	6 months	Forest plot	Analysis 5.1. No statistically significant difference (mean difference -2.00, 95% CI [-8.84, 4.84])
Helde 2005	QOLIE-89 total score	2 years	Forest plot	Analysis 5.1. No statistically significant difference (mean difference 0.60, 95% CI [-2.74, 3.94])
Other service delivery ^a				
Zheng 2019	QOLIE-31 total score	1 year	Forest plot	Analysis 6.4. Statistically significant difference in favour of intervention (mean difference 8.30, 95% CI [3.50, 13.10])
Zheng 2019	QOLIE-31 sub-scale	1 year	Narrative	Statistically significant improvements were observed in five of the seven subscales in intervention group, compared to three subscales in control group. No inter-group comparison made.
Singh 2022	PIES	Up to 24 months	Narrative	No statistically significant difference between groups
Singh 2022	ED-5D-5L index score	Up to 24 months	Narrative	No statistically significant difference between groups
Singh 2022	ED-5D-5L VAS	Up to 24 months	Narrative	No statistically significant difference between groups

ELDQOL: Epilepsy and Learning Disabilities Quality of Life Scale; **EQ-5D-5L:** EuroQoL 5 dimension, 5 level; **PIES:** Personal Impact of Epilepsy score; **QOLIE:** Quality of Life in Epilepsy Inventory Total score; **SF-36 MCS:** Short Form 36-item Health Survey mental health score; **SF-36 PCS:** Short Form 36-item Health Survey physical health score; **VAS:** visual analogue scale; **WHOQOL-BREF:** World Health Organization Quality of Life instrument, short version scale.

^aFor details of the types of intervention and control for each study, please see Table 1.

^bFor EQ-5D, QOLIE, SF-36 and WHO-BREF scales, higher scores indicate a better quality of life. For ELDQOL, higher scores indicate poorer quality of life.

^cAll meta-analyses were conducted using random-effects models.

Table 5. Other aspects of quality of life outcomes

Study ID	Time points	Outcomes	Results
Psycho-behavioural ^a			
Meta-analysis (random-effects): Lundgren 2006, Lundgren 2008	Post-intervention, 6 months, 12 months	SWLS	No statistically significant difference between groups at any time point (Analysis 1.4).
McLaughlin 2011	3 months	GDS, CIDI, WPSI	No statistically significant difference between groups in GDS (Analysis 1.5), CIDI Depression (Analysis 1.6), CIDI Dysthymia (Analysis 1.7), WPSI (Analysis 1.8) at 3 months.

Table 5. Other aspects of quality of life outcomes (Continued)

Meyer 2019	3 months, 6 months, 9 months	PHQ-9, NDDIE, GAD-7, DASS-21	Statistically significant difference in favour of intervention for PHQ-9 at 3 and 6 months but not at 9 months (Analysis 1.9) Statistically significant difference in favour of intervention for NDDIE at 3 and 9 months but not at 6 months (Analysis 1.10) Statistically significant difference in favour of intervention for GAD-7 at 3 months but not at 6 or 9 months (Analysis 1.11) Statistically significant difference in favour of intervention for DASS-21 at 3 months but not at 6 or 9 months (Analysis 1.12)
Tan 1986	Post-intervention, 4 months	BDI, WPSI	No statistically significant difference between groups in BDI or WPSI at either time point (Tan 1986)
Mind-body^a			
Haut 2018	12 weeks	Stress scores	Mean stress scores did not statistically significantly differ ($P > 0.05$) between groups on any day during the 12 weeks of treatment (Haut 2018 paper)
Tang 2015	6 weeks	BDI-II, BAI, Cognitive measures (Chinese Auditory Verbal Learning Test, Rey Complex Figure Test and Recognition Trial, Category Fluency Test, Digit Span Test, and Stroop Colour and Word Test–Victoria version)	No statistically significant difference between groups in BDI-II (Analysis 2.5) or BAI (Analysis 2.6) Statistically significant difference between groups in verbal memory and recognition. No statistically significant differences between groups in other cognitive measures at 6 weeks (Tang 2015)
Thompson 2020	9-10 weeks and 18-20 weeks	mBDI	Change in depression mediates seizure severity but not seizure frequency (Thompson 2020)
Mehrabi 2019	Post treatment and 75 days	Quality of life (scale not reported)	Unable to extract data from translated paper
Self-management^a			
Meta-analysis (random-effects): Sajatovic 2018 , Si 2020	6 months	Epilepsy self-management scale	Meta-analysis shows statistically significant difference in favour of interventions at 6 months (Analysis 3.17)
Meta-analysis (random-effects): May 2002 , Sajatovic 2018	6 months	Stigma	Meta-analysis shows statistically significant difference in favour of the intervention in terms of stigma at 6 months (Analysis 3.18)
May 2002	6 months	Coping with epilepsy total score, restriction in daily living, mobility and leisure behaviour, epilepsy-related fear, stigma, Rosen-	No statistically significant difference between groups in the Depressive Mood Scale (Analysis 3.19), Rosenberg Self-Esteem Scale (Analysis 3.20), restrictions of daily living (Analysis 3.21), mobility and leisure behaviour (Analysis 3.22), epilepsy-related fear (Analysis 3.23) at 6 months

Table 5. Other aspects of quality of life outcomes (Continued)

		berg Self-Esteem Scale, Depressive Mood Scale	Statistically significant difference in favour of intervention for coping with epilepsy score at 6 months (Analysis 3.24)
Ridsdale 2018	6 months, 12 months	HADS-D, HADS-A, self-mastery and control, impact of epilepsy, stigma	No statistically significant difference between groups for HADS-D (Analysis 3.25), HADS-A (Analysis 3.26), Self-mastery and control score (Analysis 3.27) at 12 months, or the Impact of Epilepsy Score at 6 or 12 months (Analysis 3.28) No statistically significant difference between groups in terms of stigma (Ridsdale 2018)
Sajatovic 2018	10 weeks, 24, 72 weeks	Epilepsy self-management scale, Epilepsy Stigma Scale, PHQ-9, MADRS, Epilepsy self-efficacy scale	Statistically significant difference in favour of intervention for Epilepsy self-management scale in the short term (4-10 weeks) but not at 72 weeks (Analysis 3.17) No difference in Epilepsy Stigma Scale at 10 or 72 weeks (Analysis 3.18) Statistically significant difference in favour of intervention for PHQ-9 at 10 and 24 but not 72 weeks (Analysis 3.29) Statistically significant difference in favour of intervention for MADRS at all three time points (Analysis 3.30) Statistically significant difference in favour of intervention on the Epilepsy Self-Efficacy Scale at 24 weeks but not at 10 or 72 weeks (Analysis 3.31)
Physical exercise^a			
Akerlund 2021	6 months	HADS-A, HADS-D Health status assessed by RAND-36	No statistically significant difference in HADS-D at 6 months (Analysis 4.6) or HADS-A (Analysis 4.5) No statistically significant differences in change from baseline of health status scores for any of the 8 domains of the RAND-36 within groups or between groups over time
Hafele 2021	12 weeks	NDDIE, STAI, PSS-10, PSQI	No statistically significant difference between groups for NDDIE (Analysis 4.7), STAI state (Analysis 4.8), STAI trait (Analysis 4.9), PSS-10 (Analysis 4.10), PSQI (Analysis 4.11) at 12 weeks
McAuley 2001	12 weeks, 16 weeks	Rosenberg Self-Esteem Scale, POMS	No statistically significant difference between groups for POMS at 12 weeks (Analysis 4.12) or Rosenberg Self-Esteem Scale at 12 or 16 weeks (Analysis 4.13)
Nurse-led service delivery^a			
Meta-analysis (random-effects): Pfafflin 2016 , Ridsdale 1997 , Ridsdale 2000	6 months	Proportion with HADS-D score > 8	No statistically significant difference between groups at 6 months (Analysis 5.2)
Meta-analysis (random-effects): Pfafflin 2016 , Ridsdale 2000	6 months	Proportion with HADS-A score > 8	No statistically significant difference between groups at 6 months (Analysis 5.3)

Table 5. Other aspects of quality of life outcomes (Continued)

Pfafflin 2016	6 months	Restrictions in daily life due to epilepsy; proportion with HADS-D score or HADS-A > 11, satisfaction scores Coping with Epilepsy (PESOS questionnaire)	No statistically significant difference between groups for HADS-D score > 11 (Analysis 5.2), HADS-A score > 11 (Analysis 5.3), restrictions in daily life (Analysis 5.4) or satisfaction with information and advice, patient-doctor relationship, or organisation of care (Analysis 5.5) Coping with epilepsy significantly improved in the intervention group compared to the control group (P = 0.029, Pfafflin 2016 paper)
Other service delivery^a			
Zheng 2019	12 months	Proportion with severe depression (BDI score >16) or severe anxiety (BAI score ≥ 37)	No statistically significant difference between groups for severe depression (Analysis 6.5) or anxiety (Analysis 6.6)

BAI: Beck Anxiety Inventory; **BDI:** Beck Depression Inventory; **CD-RISC:** Connor-Davidson Resilience scale; **CIDI:** Composite International Diagnostic Interview; **DASS-21:** Depression Anxiety Stress Scales–21 items; **ELDQOL:** Epilepsy and Learning Disabilities Quality of Life Scale; **GAD-7:** Generalized Anxiety Disorder–7 items; **GDS:** Geriatric Depression Scale; **HADS-A:** Hospital Anxiety Scale; **HADS-D:** Hospital Depression Scale; **MADRS:** Montgomery-Asberg Depression Rating Scale; **mBDI:** Modified Beck Depression Inventory; **NDDIE:** Neurological Disorders Depression Inventory for Epilepsy; **PESOS:** Performance, Socio-demographic Aspects, Subjective evaluation; **PHQ-9:** Patient Health Questionnaire – 9 items; **POMS:** Profile of Moods States; **PSQI:** Pittsburgh Sleep Quality Index; **PSS-10:** Perceived Stress Scale; **STAI:** State-Trait Anxiety Inventory; **SWLS:** Satisfaction With Life Scale; **WPSI:** Washington Psychosocial Seizure Inventory

^aFor details of the types of intervention and control for each study, please see Table 1.

^bHigher values of BAI, GAD-7, HADS-A, and STAI indicate higher levels of anxiety. Higher values of BDI, CIDI, HADS-D, MADRS, mBDI, NDDIE, and PHQ-9 scales indicate higher levels of depression. Higher values of DASS-21 indicate higher levels of anxiety / depression. Higher levels of PSS-10 and stigma scores indicate higher levels of stress / stigma. Higher values of CD-RISC and SWLS indicate higher levels of resilience / satisfaction. Higher values of POMS and PSQI indicate more mood / sleep disturbances.

Table 6. Medication outcomes table

Study ID	Outcome(s) measured	Outcome time	Findings
Psycho-behavioural^a			
Tan 1986	Patient's and neurologist's ratings of patient's compliance with taking anticonvulsant medication.	Baseline, post intervention and 4-month	No statistically significant differences found between the intervention and the other two comparison control groups (supportive counselling; waiting list)
	Plasma level ranges of anti-convulsant drugs	Baseline, post intervention and 4-month	No statistically significant differences found between the intervention and the other two comparison control groups (supportive counselling; waiting list)
Self-management^a			
Hu 2020	Morisky Medication Adherence Scale (MMAS)	12 months	Analysis 3.32. Drug adherence in the intervention group was statistically significantly higher than control group (mean difference 0.70, 95% CI [0.26, 1.14])

Table 6. Medication outcomes table (Continued)

May 2002	AED tolerability score	6 months	Analysis 3.33 . No statistically significant difference between the intervention and control group (mean difference -0.05, 95% CI [-0.27, 0.17])
Li 2013	AED adherence	6 months and 12 months	There was a statistically significant improvement in the AED adherence score between intervention and control group at 6 months ($P < 0.001$) and 12 months ($P < 0.001$)
Ridsdale 2018	Medication adherence	6 months and 12 months	No statistically significant difference between groups
Si 2020	Medication management	Baseline and 6 months	Statistically significant increase in scores for medication management in intervention compared to control group ($P < 0.001$)
Physical exercise^a			
Hafele 2021	Adverse Effects Profile (AEP) of AEDs	3 months	Analysis 4.14 . No statistically significant difference between the intervention and control group (mean difference -4.30, 95% CI [-13.57, 4.97])
Other service delivery^a			
Bahrani 2017	Self and/or caregiver-reported episodes of non-adherence to AEDs	9 months	Seven self-reported episodes of non-adherence to AEDs in patients reviewed by telephone and clinic group. No P value reported.
Eshiet 2023	AED tolerability score	3 months and 6 months	Analysis 6.7 AED tolerability score in the pharmaceutical care group was statistically significantly lower (better) than in the usual care group at 3 months (mean difference -0.42, 95% CI [-0.69, -0.15]) and at 6 months (mean difference, 95% CI -0.41 [-0.67, -0.15])
Singh 2022	AED adherence	Up to 24 months	Home care recipients were more likely to be adherent than those in clinic-based care (logistic regression coefficient: 0.585; 95% confidence intervals, 0.289 to 0.881; $P = 0.0001$)
Thapar 2002	Proportion of patients on monotherapy with anticonvulsants	12 months	No statistically significant difference between either intervention groups and control
	Proportion of patients reporting medication side-effects	12 months	Patients in the control group reported statistically significantly fewer side effects than patients in doctor-held card ($P = 0.013$) or patient-held card ($P = 0.016$) intervention groups
	Checking of phenytoin levels	12 months	No statistically significant difference between either intervention groups and control

AEDs: anti-epileptic drugs; **CI:** confidence interval

^aFor details of the types of intervention and control for each study, please see [Table 1](#).

Table 7. Knowledge outcomes table

Study ID	Outcome(s) measured	Outcome time	Findings
Self-management ^a			
May 2002	Epilepsy Knowledge scale	6 months	Analysis 3.35 . The intervention group showed statistically significantly better score compared to control group (mean difference 6.12, 95% CI [1.53, 10.71]).
Sepat 2021	Knowledge score (assessment tool designed for the study)	1 week	Analysis 3.34 . The intervention group showed statistically significantly better score compared to control group (mean difference 1.97, 95% CI [0.69, 3.25]).
Fontaine 2023	Knowledge score (assessment tool designed for the study)	6 months	Analysis 3.34 . The intervention group showed statistically significantly better score compared to control group (mean difference 1.60, 95% CI [0.68, 2.52]).
Nurse-led service delivery^a			
Pfafflin 2016	Epilepsy Knowledge scale	6 months	Analysis 5.6 . Epilepsy knowledge improved in the intervention group compared to control group (mean difference 1.17, 95% CI [0.05, 2.29])
Ridsdale 1997	Clinical advice given	6 months	More information recorded as given in intervention compared to control group ($P < 0.0001$).
	Knowledge of epilepsy	6 months	No statistically significant difference between groups
Ridsdale 2000	Knowledge of epilepsy	6 months	No statistically significant difference between groups, although improved over time in intervention group.
	Advice provided on epilepsy-related topics	6 months	Of 9 topics, participants in the intervention group were statistically significantly more likely to have received enough advice on 8 topics with primary care staff.
Other service delivery ^a			
Thapar 2002	Information provision from professionals	12 months	Participants in doctor-held card group were statistically significantly less satisfied with information provision about epilepsy compared with the control group ($P = 0.006$). There were no differences between patient-held card group and control.

^aFor details of the types of intervention and control for each study, please see [Table 1](#).

Table 8. General health outcomes table

Study ID	Outcome(s) measured	Outcome time	Findings
Psycho-behavioural^a			

Table 8. General health outcomes table (Continued)

Meyer 2019	Work and Social Adjustment Scale (WSAS)	3 months, 6 months and 9 months	Analysis 1.13 . Relative to the control group, the intervention group participants reported statistically significant improvements in social-occupational impairment at 3 months (mean difference -3.61, 95% CI [-6.19, -1.03]) and 6 months (mean difference -3.12, 95% CI [-6.12, -0.12]), but no difference at 9 months.
Mind-body^a			
Sathyaprabha 2008	Autonomic dysfunction	Baseline and 10 weeks	There was a statistically significant improvement in 2 of the parasympathetic parameters: max:min ratio (P = 0.021) and deep breathing ratio (P = 0.042) in intervention group pre- and post-intervention. However, overall, there was no statistically significant difference in autonomic parameters between intervention and control group.
Sidorenko 2000	Change of the Subjective State	Not reported	In the intervention group: 90% of the patients reported a positive subjective state, 6.7% were non-specific and 3.3% reported a negative subjective state. In the control group: positive changes were registered in 35% of the patients, non-specific changes in 35% and negative changes in 30%. No P values reported.
Self-management^a			
Sajatovic 2018	Changes in number of negative health events (NHE)	Baseline, 24 weeks, 48 weeks, 72 weeks	Individuals originally randomised to SMART group had no significant change in total past 6-months NHE counts. The group originally randomised to control, who received SMART intervention at 24 weeks showed reduction in total 6-months NHE counts at 72 weeks (P < 0.05). No between-group difference reported.

^aFor details of the types of intervention and control for each study, please see [Table 1](#).

Table 9. Social psychological function outcomes table

Study ID	Outcome(s) measured	Outcome time	Findings
Psycho-behavioural^a			
Meyer 2019	Number of illness-related sick days off work and number of days hospitalised	Baseline, 3 months	At 3 months, the intervention group participants reported fewer illness-related days off work and fewer days hospitalised compared to the control group participants (P = 0.30).
Tan 1986	Global rating of psychological adjustment (GRPA) by therapist	Pre- and post-intervention and at 4 months	There were no statistically significant differences between the intervention and control groups (supportive counselling and waiting list).
	Global rating of psychological adjustment (GRPA) by patient		There were no statistically significant differences between the intervention and control groups (supportive counselling and waiting list).

Table 9. Social psychological function outcomes table (Continued)

	Global rating of psychological adjustment (GRPA) by neurologist		There were no statistically significant differences between the intervention and control groups (supportive counselling and waiting list).
	Minnesota Multiphasic Personality Inventory (MMPI)		There were no statistically significant differences between the intervention and control groups (supportive counselling and waiting list).
	Washington Psychosocial Seizure Inventory (WPSI)		There were no statistically significant differences between the intervention and control groups (supportive counselling and waiting list).
Mind-body^a			
Sidorenko 2000	Minnesota Multiphasic Personality Inventory (MMPI)	Not reported	In the intervention group, a positive change was reported in 67.7% of the observations and negative in 8.8%. In the control group, a positive change was reported in 36.4% and a negative change in 31.8%. No P values were reported.
Self-management^a			
Sajatovic 2018	Mean change in Multi-dimensional Scale of Perceived Social Support score (MSPSS)	Baseline, 10 and 24 weeks 24, 48 and 72 weeks for the group randomised to intervention 24, 32, 48 and 72 weeks for the group randomised to control	Analysis 3.36 . There was no statistically significant difference between the intervention and control group (P = 0.72). There was no statistically significant improvement in the group randomised to intervention. There was a statistically significant improvement in participants originally randomised to control after receiving the intervention (P = 0.01 between 48 and 72 weeks).

^aFor details of the types of intervention and control for each study, please see [Table 1](#).

Table 10. Adverse events

Study ID	Adverse events related to the intervention	Findings
Psycho-behavioural		
Lundgren 2006	Not reported	Not applicable (NA)
Lundgren 2008	Not reported	NA
McLaughlin 2011	Not reported	NA
Meyer 2019	Yes	The study evaluated the negative consequences of intervention using 'Inventory for the Assessment of Negative effects on Psychotherapy, Modified for on-line interventions'. Of the 135 intervention users, which included both the intervention group and the control group who accessed the intervention after 3 months, 51 participants reported at least one mild (n=44), moderate (n=10), or severe (n=2) negative effect.

Table 10. Adverse events *(Continued)*

Tan 1986	Not reported	NA
Mind-body		
Dahl 1987	Not reported	NA
Haut 2018	Yes	No treatment-related adverse events were reported.
Puskarich 1992	Not reported	NA
Deepak 1994	Not reported	NA
Mehrabi 2019	Not reported	NA
Tang 2015	Yes	There were no adverse events during or after the interventions.
Thompson 2020	Not reported	NA
Sathyaprabha 2008	Not reported	NA
Sidorenko 2000	Not reported	NA
Self-management		
Fontaine 2023	Not reported	NA
Hu 2020	Not reported	NA
May 2002	Not reported	NA
Mengoni 2016	Yes	There were no reported harms or unintended effects in either group.
Ridsdale 2018	Yes	There were no adverse events related to the intervention.
Sajatovic 2018	Yes	No serious adverse events related to study participation.
Sepat 2021	Not reported	NA
Si 2020	Yes	No severe adverse events related to app use were observed during the study.
Physical exercise		
Akerlund 2021	Yes	Mild, no serious events during study. No participants experienced a seizure during the submaximal ergometer test or bicycling at home. One participants broke her shoulder during a seizure, but not in connection to bicycling. One participants stopped the exercise due to an increase in seizure frequency. The seizures did not occur during the actual exercise period.
Hafele 2021	Yes	No seizures were observed during physical tests or exercise sessions during the intervention.
Kumar 2022	Yes	No adverse effects related to physical exercise like musculoskeletal injury or seizures during exercise were reported by any of the participants in the study.
McAuley 2001	Yes	None of the participants experienced exercise-related seizures.

Table 10. Adverse events (Continued)

Nurse-led service delivery		
Helde 2005	Not reported	NA
Pfafflin 2016	Not reported	NA
Ridsdale 1997	Not reported	NA
Ridsdale 2000	Not reported	NA
Other service delivery		
Bahrani 2017	Not reported	NA
Eshiet 2023	Not reported	NA
Li 2013	Not reported	NA
Singh 2022	Yes	The study assessed the number of spontaneous adverse effects, which were similar between the intervention and control arms. However, it did not specify whether any of these adverse effects were related to the intervention.
Thapar 2002	Not reported	NA
Zheng 2019	Not reported	NA

Table 11. Supplementary table 1. Psycho-behavioural interventions versus control interventions

Psycho-behavioural interventions versus control interventions						
Patient or population: adults with epilepsy						
Setting: epilepsy / neurology outpatient clinics or community settings in Canada, Germany, Australia, India and South Africa						
Intervention: psycho-behavioural interventions (ACT or CBT)						
Comparison: control interventions (usual care, supportive therapy, yoga, relaxation)						
Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	Nº of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with control	Risk with psycho-behavioural interventions				
Seizure frequency: seizure frequency per month	Post-intervention: mean seizure frequency ranged from 5 to 6 per month in the control groups	Post-intervention: mean seizure frequency was 3.57 per month lower (7.43 per month lower to 0.29 per month higher) in the psycho-behavioural interventions groups	-	64 (2 RCTs)	⊕⊕⊕⊕ Low ^{a,b}	An additional 3 RCTs (248 participants) reported seizure frequency data narratively post-intervention up to 4 months. No significant differences
Follow-up: post-intervention, 3–6 months and 1 year	3–6 months: mean seizure frequency ranged from 4.42 to 5.86 per month in the control groups	3–6 months: mean seizure frequency was 4.42 per month lower (6.41 per month lower to 2.43 per month lower) in the psycho-behavioural interventions groups	-	64 (2 RCTs)	⊕⊕⊕⊕ Moderate ^a	

Table 11. Supplementary table 1. Psycho-behavioural interventions versus control interventions (Continued)

	1 year: mean seizure frequency was 5.8 per month in the control group	1 year: mean seizure frequency was 5.18 per month lower (7.14 per month lower to 3.22 per month lower) in the psycho-behavioural intervention group	-	27 (1 RCT)	⊕⊕⊕⊕ Low ^{a,c}	in seizure frequency were shown between psycho-behavioural interventions and control interventions at any time point in these studies.
Health and Quality of Life: QOLIE-10 total score	3 months: mean QOLIE-10 total score was 30.94 in the control group	3 months: mean QOLIE-10 total score was 1.51 higher (0.26 lower to 3.28 higher) in the psycho-behavioural intervention group		148 (1 RCT)	⊕⊕⊕⊕ Moderate ^e	
Range between 10-60, lower scores indicate better quality of life	6 months: mean QOLIE-10 total score was 32.48 in the control group	6 months: mean QOLIE-10 total score was 0.89 higher (1.06 lower to 2.84 higher) in the psycho-behavioural intervention group		120 (1 RCT)	⊕⊕⊕⊕ Moderate ^e	
Follow-up: 3 months, 6 months and 9 months	9 months: mean QOLIE-10 total score was 32.59 in the control group	9 months: mean QOLIE-10 total score was 1.53 higher (0.40 lower to 3.46 higher) in the psycho-behavioural intervention group		112 (1 RCT)	⊕⊕⊕⊕ Moderate ^e	
Health and Quality of Life: WHO-QOL-BREF scale	Post-intervention: mean WHO-QOL-BREF score ranged from 55.31 to 60.2 in the control groups	Post-intervention: mean WHO-QoL BREF score was 0.39 higher (5.49 lower to 6.28 higher) in the psycho-behavioural interventions groups	-	45 (2 RCTs)	⊕⊕⊕⊕ Moderate ^a	
Range from 0-100, higher scores indicating better state of health	6 months: mean WHOQOL-BREF score ranged from 56.08 to 58 in the control groups	6 months: mean WHO-QoL BREF score was 1.72 higher (4.88 lower to 8.31 higher) in the psycho-behavioural interventions groups	-	45 (2 RCTs)	⊕⊕⊕⊕ Low ^{a,b}	
Follow-up: post-intervention, 6 months and 12 months	12 months: mean WHOQOL-BREF score ranged from 51.85 to 61.5 in the control groups	12 months: mean WHO-QoL BREF score was 5.46 higher (11.51 lower to 22.43 higher) in the psycho-behavioural interventions groups	-	45 (2 RCTs)	⊕⊕⊕⊕ Very low ^{a,d}	

***The risk in the intervention group** (and its 95% CI) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

ACT: Acceptance and Commitment Therapy; **CBT:** Cognitive Behavioural Therapy; **CI:** confidence interval; **MD:** mean difference; **NA:** not applicable; **QOLIE:** Quality of Life in Epilepsy Inventory; **RCT:** randomised controlled trial; **RR:** risk ratio; **SSRI:** selective serotonin reuptake inhibitors; **WHO-QoL BREF:** World Health Organization Quality of Life instrument, short version

Table 11. Supplementary table 1. Psycho-behavioural interventions versus control interventions (Continued)

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.

Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.

Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

^aDowngraded once due to risk of bias: unclear reporting of trial designs (randomisation and blinding methods), unclear handling of missing data and lack of available protocols; study funding information not reported.

^bDowngraded once due to inconsistency: substantial heterogeneity present ($I^2 = 56\%$ to 70%) which may originate from pooling two different types of psycho-behavioural interventions (ACT and CBT) and two different control groups (supportive therapy and relaxation) or different durations of interventions (5 or 6 weeks).

^cDowngraded once due to imprecision: long-term follow-up reported in one trial with a small sample size ($n = 27$), 95% CIs around effect estimate are wide.

^dDowngraded twice due to serious inconsistency: very high levels of heterogeneity present ($I^2 = 95\%$), with the two studies pooled showing results in different directions.

^eDowngraded once due to risk of bias: no blinding and risk of attrition bias.

Table 12. Supplementary table 2. Mind-body interventions versus control interventions
Mind-body interventions versus control interventions
Patient or population: adults with epilepsy

Setting: epilepsy / neurology outpatient clinics or community settings in the USA, Sweden, Belarus, India, Hong Kong and Iran

Intervention: mind-body interventions (Contingent relaxation treatment, Word repetition meditation, Progressive muscle relaxation, Mindfulness, Yoga group exercise, Medical resonance therapy music)

Comparison: control interventions (usual care / waiting list, supportive therapy, focussed attention, social support, quiet sitting, non-yoga exercise)

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	Nº of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with control	Risk with mind-body interventions				
Seizure frequency: change in seizure frequency per month from baseline Follow-up: 6–8 weeks	Mean reduction in seizure frequency ranged from 0.27 to 7.77 seizures per month in the control groups	Mean change in seizure frequency was 3.28 per month lower (6.36 per month lower to 0.20 per month lower) in the mind-body intervention group	-	148 (3 RCTs)	⊕⊕⊕⊕ Low ^{a,b}	An additional 3 RCTs (425 participants) reported seizure frequency data narratively at 10 weeks. All three RCTs showed a significant reduction in seizure frequency in the mind-body interventions groups compared to the control interventions at 10 weeks.
Seizure frequency: seizure frequency per month Follow-up: 6–8 weeks	Mean seizure frequency ranged from 7.33 to 10 per month in the control groups	Mean seizure frequency was 0.62 per month lower (4.75 per month lower to 3.51 per month higher) in the mind-body intervention groups	-	84 (2 RCTs)	⊕⊕⊕⊕ Low ^{a,b}	One additional RCT (20 participants) reported median seizure frequency at 6 months and 12 months. No significant differences between the mind-body intervention and control intervention

Table 12. Supplementary table 2. Mind-body interventions versus control interventions (Continued)

were shown at 6 or 12 months.

Health and Quality of Life: QOLIE-P-31 total score Ranged between 0 and 100, higher scores indicate better well-being Follow-up: 6 weeks	Mean QOLIE-31-P score was 62.64 in the control group	Mean QOLIE-31-P score was 0.75 higher (5.49 lower to 6.99 higher) in the mind-body intervention group	-	60 (1 RCT)	⊕⊕⊕⊕ Low ^{a,b}
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***The risk in the intervention group** (and its 95% CI) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval; **MD:** mean difference; **NA:** not applicable; **QOLIE-31-P:** patient-weighted quality of life in epilepsy; **RCT:** randomised controlled trial; **RR:** risk ratio

GRADE Working Group grades of evidence

High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.

Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.

Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

^aDowngraded once due to risk of bias: unclear reporting of trial designs (randomisation and blinding methods), unclear handling of missing data and lack of available protocols; study funding information not reported.

^bDowngraded once due to indirectness: only short-term data (6-8 weeks) available.

Table 13. Supplementary table 5. Physical exercise interventions versus control interventions

Physical exercise interventions versus control interventions

Patient or population: adults with epilepsy

Setting: epilepsy / neurology outpatient clinics or community settings in the USA, Sweden, India and Brazil

Intervention: physical exercise interventions (12-week exercise programme, cardiovascular exercise [bicycle])

Comparison: control interventions (usual activity, relaxation)

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	Nº of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with control	Risk with physical exercise				
Seizure frequency: seizure freedom during the study Follow-up: 12 weeks	11 out of 20 people were free from seizures during the study	19 out of 24 people were free from seizures during the study	RR 1.44 (0.92 to 2.25)	44 (2 RCTs)	⊕⊕⊕⊕ Low ^{a,b}	One additional RCT (117 participants) reported seizure frequency nar-
Seizure frequency: change in seizure frequency	Mean reduction in seizure frequency was 0.3 seizures	Mean change in seizure frequency was 1.10 per month lower (4.15 per	-	20 (1 RCT)	⊕⊕⊕⊕ Very Low ^{a,b,c}	ratively at 12 weeks.

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Table 13. Supplementary table 5. Physical exercise interventions versus control interventions (Continued)

quency from base-line	per month in the control group	month lower to 1.95 per month higher) in the physical exercise group				No statistically significant differences between physical exercise and control was shown.
Follow-up: 12 weeks						
Seizure frequency: percentage change in seizure frequency from baseline	Mean increase in seizure frequency ranged from 14% to 195% in the control groups	Mean percentage change in seizure frequency was 73.32% lower (143.23% lower to 3.42% lower) in the physical exercise groups	-	41 (2 RCTs)	⊕⊕⊕⊕ Very Low ^{a,b,c}	
Follow-up: 3–6 months						
Health and Quality of Life: QOLIE-31 or QOLIE-89 total score	Mean QOLIE total score ranged from 58.5 to 69.5 in the control groups	Mean QOLIE total score was 3.80 higher (1.17 lower to 8.77 higher) in the physical exercise group	-	160 (3 RCT)	⊕⊕⊕⊕ Low ^{a,b}	
Range from 0 to 100; higher scores indicate better quality of life						
Follow-up: 12 weeks						

***The risk in the intervention group** (and its 95% CI) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval; MD: mean difference; NA: not applicable; QOLIE: Quality of Life in Epilepsy Inventory; RCT: randomised controlled trial; RR: risk ratio

GRADE Working Group grades of evidence

High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.

Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.

Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

^aDowngraded once due to risk of bias: unclear reporting of trial designs (randomisation and blinding methods) or no allocation concealment or blinding.

^bDowngraded once due to indirectness: only short-term data (12 weeks or 3–6 months) available.

^cDowngraded once due to imprecision: outcome data available from trials with small sample sizes (n = 20 or 21), 95% CIs around effect estimate are wide.

Table 14. Supplementary table 3. Self-management interventions versus control interventions (seizure frequency)

Self-management interventions versus control interventions					
Patient or population: adults with epilepsy Setting: epilepsy / neurology outpatient clinics or community settings in the USA, UK, Germany, France, Austria, Switzerland, India and China ^a Intervention: self-management interventions (self-management education programme, intensive self-management, self-management picture booklet, self-management smartphone app, virtual interactive epilepsy session + digital education material) Comparison: control interventions (usual care / waiting list, regular education)					
Outcomes	Anticipated absolute effects* (95% CI)	Relative effect (95% CI)	Nº of participants (studies)	Certainty of the evidence	Comments

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Table 14. Supplementary table 3. Self-management interventions versus control interventions (seizure frequency) (Continued)

	Risk with control	Risk with self-management interventions			(GRADE)	
Seizure frequency: Seizure frequency during the study	20 weeks - 6 months: mean seizure frequency ranged from 6.94 to 17.63 during the study in the control groups	20 weeks - 6 months: mean seizure frequency was 1.61 per month higher (6.08 per month lower to 9.29 per month higher) in the self-management intervention groups	-	222 (3 RCTs)	⊕⊕⊕⊕ Low ^{b,c}	One of the RCTs (n = 331) also reported seizure frequency data narratively. There was no significant difference between self-management intervention and control in terms of seizure frequency at 12 months or proportion of time seizure free during the study.
Follow-up: 20 weeks to 6 months and 72 weeks	72 weeks: mean seizure frequency was 2.77 during the study in the control group	72 weeks: mean seizure frequency was 4.30 per month higher (3.82 per month lower to 12.42 per month higher) in the self-management intervention group	-	89 (1 RCT)	⊕⊕⊕⊕ Very Low ^{b,c,e}	
Seizure frequency: seizure freedom during the study	1 month: 727 per 1000	1 month: 720 per 1000 (531 to 975 per 1000)	RR 0.99 (0.73 to 1.34)	65 (1 RCT)	⊕⊕⊕⊕ Low ^{a,b}	One additional RCT (n = 242) reported seizure frequency data narratively on a scale at 6 months. The self-management intervention group significantly improved compared to the control group at 6 months.
Follow-up: 1 month, 20 weeks to 6 months and 12 months	20 weeks to 6 months: 168 per 1000	20 weeks to 6 months: 326 per 1000 (234 to 457 per 1000)	RR 1.94 (1.39 to 2.72)	500 (3 RCTs)	⊕⊕⊕⊕ Moderate ^b	
	12 months: 128 per 1000	12 months: 334 per 1000 (142 to 785 per 1000)	RR 2.61 (1.11 to 6.13)	92 (1 RCT)	⊕⊕⊕⊕ Low ^{b,c}	
Seizure frequency: < 1 seizure per month	435 per 1000	405 per 1000 (313 to 522 per 1000)	RR 0.93 (0.72 to 1.20)	331 (1 RCT)	⊕⊕⊕⊕ Moderate ^b	
Follow-up: 12 months						
Seizure frequency: ≥ 50% reduction in seizure frequency during the study	6 months: 474 per 1000	6 months: 512 per 1000 (417 to 626 per 1000)	RR 1.08 (0.88 to 1.32)	380 (1 RCT)	⊕⊕⊕⊕ Moderate ^b	
Follow-up: 6 months and 12 months	12 months: 638 per 1000	12 months: 842 per 1000 (657 to 1000 per 1000)	RR 1.32 (1.03 to 1.70)	92 (1 RCT)	⊕⊕⊕⊕ Moderate ^b	
Seizure frequency: Seizure frequency per month	24 weeks: mean seizure frequency was 0.81 per month in the control group	24 weeks: mean seizure frequency was 1.33 per month higher (0.71 per month lower to 3.37 per month higher) in the self-management intervention group	-	102 (1 RCT)	⊕⊕⊕⊕ Moderate ^b	
Follow-up: 24 weeks and 12 months to 72 weeks	12 months to 72 weeks: mean seizure frequency was	12 months to 72 weeks: mean seizure frequency was 0.41 per month lower (2.75 per month	-	181 (2 RCTs)	⊕⊕⊕⊕	

Table 14. Supplementary table 3. Self-management interventions versus control interventions (seizure frequency) (Continued)

	CI ranged from 0.89 to 2.98 per month in the control groups	lower to 1.92 per month higher) in the self-management intervention groups			Very Low ^{b,d}
Seizure frequency: change in seizure frequency per month from baseline	6 months: mean reduction in seizure frequency was 0.15 seizures per month in the control group	6 months: mean change in seizure frequency was 0.10 per month lower (2.47 per month lower to 2.27 per month higher) in the self-management intervention group	-	103 (1 RCT)	⊕⊕⊕⊖ Moderate^b
Follow-up: 6 months and 12 months	12 months: mean reduction in seizure frequency was 0.64 seizures per month in the control group	12 months: mean change in seizure frequency was 1.84 per month lower (3.27 per month lower to 0.41 per month lower) in the self-management intervention group	-	92 (1 RCT)	⊕⊕⊕⊖ Moderate^b
Seizure frequency: change in seizure frequency during the study from baseline	Mean reduction in seizure frequency was 0.88 seizures during the study in the control group	Mean change in seizure frequency during the study was 6.95 lower (19.20 lower to 5.30 higher) in the self-management intervention group	-	96 (1 RCT)	⊕⊕⊕⊖ Low^{b,c}
Follow-up: 6 months					

***The risk in the intervention group** (and its 95% CI) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval; **MD:** mean difference; **NA:** not applicable; **RCT:** randomised controlled trial; **RR:** risk ratio

GRADE Working Group grades of evidence

High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.

Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.

Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

^aDowngraded once due to imprecision: one RCT with a relatively small sample size (n=65) measuring the outcome at a very short-term time point.

^bDowngraded once due to risk of bias: no blinding and/or a risk of attrition bias.

^cDowngraded once due to imprecision: 95% CIs wide around effect estimates.

^dDowngraded once due to serious inconsistency: substantial heterogeneity present ($I^2 = 75\%$) which may originate from pooling data from a study with parallel self-management and usual care groups and a study with a self-management group and a usual care group which crossed over to the self-management intervention at the time of data collection.

^eDowngraded once due to indirectness: at 6 months, the usual care group crossed over to receive the self-management intervention; at 72 weeks, both groups would have received the intervention.

Table 15. Supplementary table 4. Self-management interventions versus control interventions (health-related quality of life)

Self-management interventions versus control interventions						
Patient or population: adults with epilepsy						
Setting: epilepsy / neurology outpatient clinics or community settings in the USA, UK, France, Germany, Austria, Switzerland, India and China						
Intervention: self-management interventions (self-management education programme, intensive self-management, self-management picture booklet, self-management smartphone app, virtual interactive epilepsy session + digital education material)						
Comparison: control interventions (usual care / waiting list, regular education)						
Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	Nº of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with control	Risk with self-management interventions				
Health and Quality of Life: QOLIE-31 or QOLIE-31-P total score	1 month: mean QOLIE-31 total score was 68.35 in the control group	1 month: mean QOLIE-31 total score was 2.48 higher (3.59 lower to 8.55 higher) in the self-management intervention group	-	65 (1 RCT)	⊕⊕⊕⊕ Low ^{a,b}	
Range between 0 and 100, higher score indicates better quality of life	6 months: mean QOLIE-31 total scores range from 64.9 to 65.6 in the control group	6 months: mean QOLIE-31 total score was 2.42 higher (2.58 lower to 7.42 higher) in the self-management intervention groups	-	393 (2 RCTs)	⊕⊕⊕⊕ Moderate ^b	
Follow-up: 1 month, 6 months and 12 months	12 months: mean QOLIE-31 total scores ranged from 53.64 to 69.6 in the control groups	12 months: mean QOLIE-31 total scores were 3.86 higher (8.40 lower to 16.11 higher) in the self-management intervention groups	-	423 (2 RCTs)	⊕⊕⊕⊕ Very low ^{c,d}	
Health and Quality of Life: QOLIE-10 total score	6 months: mean QOLIE-10 total score was 2.97 in the control group	6 months: mean QOLIE-10 total score was 0.51 lower (0.88 lower to 0.14 lower) in the self-management intervention group	-	103 (1 RCT)	⊕⊕⊕⊕ Moderate ^c	
Ranged from 0.1 to 5.1, where lower scores indicate better quality of life	72 weeks: mean QOLIE-10 total score was 2.57 in the control group	72 weeks: mean QOLIE-10 total score was 0.22 lower (0.62 lower to 0.18 higher) in the self-management intervention group	-	74 (1 RCT)	⊕⊕⊕⊕ Low ^{c,e}	
Follow-up: 6 months and 72 weeks						
Health and Quality of Life: SF-36 PCS	6 months: mean SF-36 PCS score ranged from 42.77 to 52 in the control groups	6 months: mean SF-36 PCS score was 0.60 lower (3.77 lower to 2.57 higher) in the self-management intervention groups	-	316 (2 RCTs)	⊕⊕⊕⊕ Moderate ^c	
Range from 0 (worst) to 100 (best)	72 weeks: mean SF-36 PCS total score was 45.43 in the control group	72 weeks: mean SF-36 PCS score was 0.30 lower (5.45 lower to 4.85 higher) in the	-	74 (1 RCT)	⊕⊕⊕⊕ Low ^{c,e}	
Follow-up: 6 months and 72 weeks						

Table 15. Supplementary table 4. Self-management interventions versus control interventions (health-related quality of life) (Continued)

		self-management interven- tion group			
Health and Quality of Life: SF-36 MCS Range from 0 (worst) to 100 (best) Follow-up: 6 months and 72 weeks	6 months: mean SF-36 MCS score ranged from 41.25 to 42.46 in the control groups	6 months: mean SF-36 MCS score was 2.73 higher (1.28 lower to 6.74 higher) in the self-management intervention groups	-	316 (2 RCTs)	⊕⊕⊕⊕ Moderate^c
	72 weeks: mean SF-36 MCS total score was 43.53 in the control group	72 weeks: mean SF-36 MCS score was 3.57 higher (2.38 lower to 9.52 higher) in the self-management intervention group	-	74 (1 RCT)	⊕⊕⊕⊕ Low^{c,e}
Health and Quality of Life: EQ-5D-5L Index (range between 0-1, where higher is better) and VAS score (range between 0 and 100, where higher is better) Follow-up: 20 weeks	Mean EQ-5D-5L Index score was 0.622 in the control group	Mean ED-5D-5L Index score was 0.04 higher (0.20 lower to 0.28 higher) in the self-management intervention group	-	30 (1 RCT)	⊕⊕⊕⊕ Low^{c,f}
	Mean EQ-5D-5L VAS score was 78.2 in the control group	Mean ED-5D-5L VAS score was 1.51 lower (18.10 lower to 15.08 higher) in the self-management intervention group	-	31 (1 RCT)	⊕⊕⊕⊕ Low^{c,f}
Health and Quality of Life: ELDQOL behaviour (total score range from 0 to 36), mood (total score range from 0 to 64) and side effects scores (total score range from 0 to 76), where lower scores represent better function Follow-up: 20 weeks	Mean ELDQOL behaviour score was 15.86 in the control group	Mean ELDQOL behaviour score was 1.36 lower (3.31 lower to 0.59 higher) in the self-management intervention group	-	32 (1 RCT)	⊕⊕⊕⊕ Low^{c,f}
	Mean ELDQOL mood score was 31.08 in the control group	Mean ELDQOL mood score was 1.03 lower (3.96 lower to 1.90 higher) in the self-management intervention group	-	33 (1 RCT)	⊕⊕⊕⊕ Low^{c,f}
	Mean ELDQOL side-effects score was 64.54 in the control group	Mean ELDQOL behaviour score was 0.33 higher (7.39 lower to 8.05 higher) in the self-management intervention group	-	25 (1 RCT)	⊕⊕⊕⊕ Low^{c,f}

***The risk in the intervention group** (and its 95% CI) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval; **ELDQOL:** Epilepsy and Learning Disabilities Quality of Life Scale; **EQ-5D-5L:** EuroQoL 5 dimension, 5 level; **MD:** mean difference; **NA:** not applicable; **QOLIE:** Quality of Life in Epilepsy Inventory; **QOLIE-31-P:** Patient-weighted Quality of Life in Epilepsy Inventory; **RCT:** randomised controlled trial; **RR:** risk ratio; **SF-36 MCS:** Short Form-36 Health Survey mental health score; **SF-36 PCS:** Short Form-36 Health Survey physical health score; **VAS:** visual analogue scale

GRADE Working Group grades of evidence

High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.

Table 15. Supplementary table 4. Self-management interventions versus control interventions (health-related quality of life) (Continued)

Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.

Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

^aDowngraded once due to imprecision: one RCT with a relatively small sample size (n = 65) measuring the outcome at a very short-term time point.

^bDowngraded once due to risk of bias: no blinding.

^cDowngraded once due to risk of bias: unclear reporting of randomisation methods, no blinding and/or a risk of attrition bias.

^dDowngraded twice due to serious inconsistency: substantial heterogeneity present ($I^2 = 94\%$) which may originate from pooling data from a study with parallel self-management and usual care groups and a study with a self-management group and a usual care group which crossed over to the self-management intervention at the time of data collection.

^eDowngraded once due to indirectness: at 6 months, the usual care group crossed over to receive the self-management intervention; at 72 weeks, both groups would have received the intervention.

^fDowngraded once due to indirectness: only short-term data (20 weeks) available from a single trial with a small sample size (n = up to 33); no long-term data available.

Table 16. Supplementary table 6. Nurse-led service delivery interventions versus control interventions

Nurse-led service delivery interventions versus control interventions

Patient or population: adults with epilepsy

Setting: epilepsy outpatient clinics or community settings in UK, Norway and Germany^a

Intervention: nurse-led service delivery interventions (epilepsy nurse-led clinics, advice / appointment with epilepsy nurse)

Comparison: control interventions (usual care)

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	Nº of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with control	Risk with nurse-led service delivery				
Seizure frequency: median months since last seizure Follow-up: 6 months	No statistically significant difference between groups		-	102 (1 RCTs)	⊕⊕⊕⊕ Low ^{b,c}	
Health and Quality of Life: QOLIE-31 or QOLIE-89 total score Range from 0 to 100, higher score indicates better quality of life Follow-up: 6 months and 2 years	6 months: mean QOLIE-31 total score was 68 in the control group	6 months: mean QOLIE-31 total score was 2.00 lower (8.84 lower to 4.84 higher) in the nurse-led service delivery group	-	138 (1 RCT)	⊕⊕⊕⊕ Moderate ^b	
	2 years: mean QOLIE-89 total score was 54.2 in the control group	2 years: mean QOLIE-89 total score was 0.60 higher (2.74 lower to 3.94 higher) in the nurse-led service delivery group	-	111 (1 RCT)	⊕⊕⊕⊕ Moderate ^b	

*The risk in the intervention group (and its 95% CI) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval; **MD:** mean difference; **NA:** not applicable; **RCT:** randomised controlled trial; **RR:** risk ratio

Table 16. Supplementary table 6. Nurse-led service delivery interventions versus control interventions (Continued)

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.

Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.

Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

^aOne study conducted in the UK did not report seizure frequency or health-related quality of life outcomes (Ridsdale 1997).

^bDowngraded once due to risk of bias: unclear reporting of randomisation methods, no blinding, unclear handling of missing data.

^cDowngraded once due to imprecision: outcome reported in one trial and no numerical data available.

Table 17. Supplementary table 7. Other service delivery interventions versus control interventions
Other service delivery interventions versus control interventions
Patient or population: adults with epilepsy

Setting: epilepsy outpatient clinics or community settings in the UK, China, and India^a
Intervention: other service delivery interventions (telephone review, prompt and reminder cards [doctor-held or patient-held], enhancing medical compliance intervention, multidisciplinary team programme + ASMs, home-based care)

Comparison: control interventions (usual care, clinic-based care)

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	Nº of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with control	Risk with other service delivery interventions				
Seizure frequency: seizure freedom during the study Follow-up: 9 to 12 months	501 per 1000	551 per 1000 (481 to 636 per 1000)	RR 1.10 (0.96 to 1.27)	1745 (3 RCTs)	⊕⊕⊕⊖ Low ^{b,c}	One additional cluster-RCT (n = 240) reported more seizures during early months of the trial with home-based care compared to clinic-based care, but statistically significantly fewer seizures across the entire trial span.
Seizure frequency: < 1 seizure per month Follow-up: 12 months	804 per 1000	764 per 1000 (651 to 884 per 1000)	RR 0.95 (0.81 to 1.10)	184 (1 RCT)	⊕⊕⊕⊖ Moderate ^b	
Seizure frequency: ≥ 50% reduction in seizure frequency during the study Follow-up: 12 months	610 per 1000	799 per 1000 (695 to 915 per 1000)	RR 1.31 (1.14 to 1.50)	360 (1 RCT)	⊕⊕⊕⊖ Moderate ^b	
Health and Quality of Life: QOLIE-31 total score Range from 0 to 100, higher score indicates better quality of life Follow-up: 12 months	Mean QOLIE-31 total score was 65.8 in the control group	Mean QOLIE-31 total score was 8.30 higher (3.50 higher to 13.10 higher) in the other service delivery intervention group	-	184 (1 RCT)	⊕⊕⊕⊖ Moderate ^b	One additional cluster-RCT (n = 240) reported no statistically significant difference in PIES, EQ-5D-5L VAS and ED-5D-5L index score between home-based care and clinic-based care

Table 17. Supplementary table 7. Other service delivery interventions versus control interventions (Continued)

up to 24 months of follow-up

***The risk in the intervention group** (and its 95% CI) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

ASM: anti-seizure medication; **CI:** confidence interval; **EQ-5D-5L:** EuroQoL 5 dimension, 5 level; **MD:** mean difference; **NA:** not applicable; **PIES:** Personal Impact of Epilepsy score; **QOLIE:** Quality of Life in Epilepsy Inventory; **RCT:** randomised controlled trial; **RR:** risk ratio; **VAS:** visual analogue scale

GRADE Working Group grades of evidence

High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.

Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.

Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

^aOne study conducted in Nigeria comparing pharmaceutical care to usual care did not report seizure frequency or health-related quality of life outcomes (Eshiet 2023).

^bDowngraded once due to risk of bias: unclear reporting of trial designs (randomisation and blinding methods), unclear handling of missing data and lack of available protocols; funding information not reported.

^cDowngraded once due to inconsistency: moderate statistical heterogeneity is present ($I^2 = 54\%$) which may originate from pooling different types of service-delivery interventions.

APPENDICES

Appendix 1. Cochrane Register of Studies (CRS Web) search strategy

1. MESH DESCRIPTOR Epilepsy EXPLODE ALL AND CENTRAL:TARGET
2. epilep*:AB,KW,KY,MC,MH,TI AND CENTRAL:TARGET
3. #1 OR #2 AND CENTRAL:TARGET
4. MeSH DESCRIPTOR Program Evaluation Explode All AND CENTRAL:TARGET
5. MeSH DESCRIPTOR Delivery of Health Care Explode All AND CENTRAL:TARGET
6. MESH DESCRIPTOR Home Care Services EXPLODE ALL AND CENTRAL:TARGET
7. MeSH DESCRIPTOR Ambulatory Care Explode All AND CENTRAL:TARGET
8. MESH DESCRIPTOR Patient Care Team EXPLODE ALL AND CENTRAL:TARGET
9. MESH DESCRIPTOR patient outcome assessment EXPLODE ALL AND CENTRAL:TARGET
10. MESH DESCRIPTOR disease-free survival EXPLODE ALL AND CENTRAL:TARGET
11. MESH DESCRIPTOR progression-free survival EXPLODE ALL AND CENTRAL:TARGET
12. MESH DESCRIPTOR Process Assessment, Health Care EXPLODE ALL AND CENTRAL:TARGET
13. (program* NEAR2 evaluat*):AB,KW,KY,MC,MH,TI AND CENTRAL:TARGET
14. ((service* or care or healthcare or intervention or treatment) NEAR3 (deliver* or package* or program*)):AB,KW,KY,MC,MH,TI AND CENTRAL:TARGET
15. ((speciali* or dedicated or home) NEAR3 (nurs* or service* or care or center* or centre* or clinic*)):AB,KW,KY,MC,MH,TI AND CENTRAL:TARGET
16. #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 AND CENTRAL:TARGET
17. #3 AND #16 AND CENTRAL:TARGET
18. (epilep* NEAR3 specialist*):AB,KW,KY,MC,MH,TI AND CENTRAL:TARGET
19. (epilep* NEAR2 nurs*):AB,KW,KY,MC,MH,TI AND CENTRAL:TARGET
20. #17 OR #18 OR #19 AND CENTRAL:TARGET
21. MESH DESCRIPTOR Self Care EXPLODE ALL AND CENTRAL:TARGET
22. MESH DESCRIPTOR Self-Management EXPLODE ALL AND CENTRAL:TARGET

- 23.(self NEAR3 (care or manag*)):AB,KW,KY,MC,MH,TI AND CENTRAL:TARGET
- 24.MESH DESCRIPTOR Health Education EXPLODE ALL AND CENTRAL:TARGET
- 25.MESH DESCRIPTOR Counseling EXPLODE ALL AND CENTRAL:TARGET
- 26.((health* or care) and (advise or advice or counsel*)):AB,KW,KY,MC,MH,TI AND CENTRAL:TARGET
- 27.MESH DESCRIPTOR Monitoring, Ambulatory EXPLODE ALL AND CENTRAL:TARGET
- 28.((ambulator* or health* or home) NEAR3 (monitor* or track*)):AB,KW,KY,MC,MH,TI AND CENTRAL:TARGET
- 29.MESH DESCRIPTOR Social Support EXPLODE ALL AND CENTRAL:TARGET
- 30.((family or social) NEAR3 support):AB,KW,KY,MC,MH,TI AND CENTRAL:TARGET
- 31.#21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30
- 32.#3 AND #31
- 33.MESH DESCRIPTOR Behavior Therapy EXPLODE ALL AND CENTRAL:TARGET
- 34.MESH DESCRIPTOR Conditioning, Psychological EXPLODE ALL AND CENTRAL:TARGET
- 35.((conditioning NEAR2 psychol*) or "classical conditioning" or "operant conditioning"):AB,KW,KY,MC,MH,TI AND CENTRAL:TARGET
- 36.MESH DESCRIPTOR Counseling EXPLODE ALL AND CENTRAL:TARGET
- 37.(counseling or counselling or crisis intervention):AB,KW,KY,MC,MH,TI AND CENTRAL:TARGET
- 38.MESH DESCRIPTOR Early Intervention, Educational EXPLODE ALL AND CENTRAL:TARGET
- 39.((Desensitisation OR Desensitization) NEAR2 psychol*):AB,KW,KY,MC,MH,TI AND CENTRAL:TARGET
- 40.("Early Intervention" OR exercise):AB,KW,KY,MC,MH,TI AND CENTRAL:TARGET
- 41.("Eye Movement" NEAR2 (Desensitisation OR Desensitization OR Reprocessing)):AB,KW,KY,MC,MH,TI AND CENTRAL:TARGET
- 42.MESH DESCRIPTOR Exercise Therapy EXPLODE ALL AND CENTRAL:TARGET
- 43.MESH DESCRIPTOR Mind-Body Therapies EXPLODE ALL AND CENTRAL:TARGET
- 44.MESH DESCRIPTOR Psychotherapy EXPLODE ALL AND CENTRAL:TARGET
- 45.MESH DESCRIPTOR Sensory Art Therapies EXPLODE ALL AND CENTRAL:TARGET
- 46.#33 OR #34 OR #35 OR #36 OR #37 OR #38 OR #39 OR #40 OR #41 OR #42 OR #43 OR #44 OR #45
- 47.((("Acceptance commitment" OR Art OR Arts OR Assertive or autosuggestion or Aversive or Behav*) NEAR2 (therap* or intervention*)):AB,KW,KY,MC,MH,TI AND CENTRAL:TARGET
- 48.((("Client cent*" OR Cognitive or Color OR Colour OR Compassion* or couples or dance or Directive or Family) NEAR2 (therap* or intervention*)):AB,KW,KY,MC,MH,TI AND CENTRAL:TARGET
- 49.((("Human Givens" or Humanistic or implosive or Interpersonal or milieu or nondirective or "non-directive") NEAR2 (therap* or intervention*)):AB,KW,KY,MC,MH,TI AND CENTRAL:TARGET
- 50.((("patient cent*" or "person cent*" or play or socioenvironmental or "socio-environmental" or suggestion or "therapeutic community") NEAR2 (therap* or intervention*)):AB,KW,KY,MC,MH,TI AND CENTRAL:TARGET
- 51.(relax* NEAR3 (therap* or intervention* or treat*)):AB,KW,KY,MC,MH,TI AND CENTRAL:TARGET
- 52.(aromatherap* or asanas or "autogenic train*" or bibliotherap* or (biofeedback NEAR2 psychol*) or "Compassionate Mind Train*" or "Emotional freedom tapping" or Flooding or "free association"):AB,KW,KY,MC,MH,TI AND CENTRAL:TARGET
- 53.(imagery or meditation or Mindfulness or "motivational interview*" or music* or mozart* or neurofeedback or pranayama or "progressive muscle relax*" or "Psychological Adaptation" or "psychological feedback" or "residential treatment*" or "Rewind technique*" or "Stress manag*" or yoga):AB,KW,KY,MC,MH,TI AND CENTRAL:TARGET
- 54.#47 OR #48 OR #49 OR #50 OR #51 OR #52 OR #53
- 55.#46 OR #54
- 56.#3 AND #55
- 57.#20 OR #32 OR #56

Appendix 2. MEDLINE search strategy

This strategy includes a modification of the Cochrane Highly Sensitive Search Strategy for identifying randomised trials ([Lefebvre 2022](#)).

1. exp Epilepsy/ or epilep\$.mp.
2. exp Program Evaluation/
3. exp "Delivery of Health Care"/ or exp Home Care Services/
4. exp Ambulatory Care/
5. exp Patient Care Team/

6. exp patient outcome assessment/ or exp disease-free survival/ or exp progression-free survival/
7. exp Process Assessment, Health Care/
8. (program\$ adj2 evaluat\$).mp.
9. ((service\$ or care or healthcare or intervention or treatment) adj3 (deliver\$ or package\$ or program\$)).mp.
10. ((speciali\$ or dedicated or home) adj3 (nurs\$ or service? or care or center? or centre? or clinic?)).mp.
11. or/2-10
12. 1 and 11
13. (epilep\$ adj4 (nurs\$ or specialist?)).mp.
14. 12 or 13
15. exp Self Care/
16. exp Self-Management/
17. (self adj3 (care or manag\$)).mp.
18. exp Health Education/ or exp Counseling/ or ((health\$ or care) and (advise or advice or counsel\$)).mp. or "health education".mp.
19. exp Monitoring, Ambulatory/ or ((ambulator\$ or health\$ or home) adj3 (monitor\$ or track\$)).mp.
20. exp Social Support/ or ((family or social) adj3 support).mp.
21. 15 or 16 or 17 or 18 or 19 or 20
22. 1 and 21
23. exp behavior therapy/
24. exp Conditioning, Psychological/ or (conditioning adj2 psychol\$).mp. or classical conditioning.mp. or operant conditioning.mp.
25. exp Counseling/ or counsel?ing.mp. or crisis intervention.mp.
26. (Desensiti?ation adj2 psychol\$).mp. or exp Early Intervention, Educational/ or Early Intervention.mp. or exp Exercise Therapy/ or exercise.mp.
27. (Eye Movement adj2 (Desensiti?ation or Reprocessing)).mp.
28. exp Mind-Body Therapies/
29. exp Psychotherapy/
30. exp Sensory Art Therapies/
31. ((Acceptance commitment or Art? or Assertive or autosuggestion or Aversive or Behav\$) adj2 (therap\$ or intervention\$)).mp.
32. ((Client cent\$ or Cognitive or Colo?r or Compassion\$ or couples or dance or Directive or Family) adj2 (therap\$ or intervention\$)).mp.
33. ((Human Givens or Humanistic or implosive or Interpersonal or milieu or nondirective or non-directive) adj2 (therap\$ or intervention \$)).mp.
34. ((patient cent\$ or person cent\$ or play or socioenvironmental or socio-environmental or suggestion or therapeutic community) adj2 (therap\$ or intervention\$)).mp.
35. (relax\$ adj3 (therap\$ or intervention\$ or treat\$)).mp.
36. (aromatherap\$ or asanas or autogenic train\$ or bibliotherap\$ or (biofeedback adj2 psychol\$) or Compassionate Mind Train\$ or Emotional freedom tapping or Flooding or free association).mp.

37. (imagery or meditation or Mindfulness or motivational interview\$ or mozart\$ or music\$ or neurofeedback or pranayama or progressive muscle relax\$ or Psychological Adaptation or psychological feedback or residential treatment? or Rewind technique? or Stress manag\$ or yoga).mp.

38. or/23-37

39. 1 and 38

40. 14 or 22 or 39

41. exp controlled clinical trial/ or (randomi?ed or placebo or randomly).ab.

42. clinical trials as topic.sh.

43. trial.ti.

44. 41 or 42 or 43

45. exp animals/ not humans/

46. 44 not 45

47. 40 and 46

48. remove duplicates from 47

Appendix 3. CINAHL Plus search strategy

This strategy includes a modification of the Cochrane CINAHL Plus search filter ([Glanville 2019](#)).

S64	S40 AND S63
S63	S62 NOT S61
S62	S41 OR S42 OR S43 OR S44 OR S45 OR S46 OR S47 OR S48 OR S49 OR S50 OR S51 OR S52 OR S53 OR S54 OR S55
S61	S59 NOT S60
S60	MH human
S59	S56 OR S57 OR S58
S58	TI animal model*
S57	MH animal studies
S56	MH animals+
S55	AB cluster W3 RCT
S54	MH crossover design OR MH comparative studies
S53	AB control W5 group
S52	PT randomized controlled trial
S51	MH placebos
S50	MH sample size AND AB (assigned OR allocated OR control)

(Continued)

S49	TI trial
S48	AB random*
S47	TI randomised OR randomized
S46	MH cluster sample
S45	MH pretest-posttest design
S44	MH random assignment
S43	MH single-blind studies
S42	MH double-blind studies
S41	MH randomized controlled trials+
S40	S16 OR S26 OR S39
S39	S3 AND S38
S38	S27 OR S28 OR S29 OR S30 OR S31 OR S32 OR S33 OR S34 OR S35 OR S36 OR S37
S37	("acceptance commitment" or art# or assertive or autosuggestion or aversive or behav* or (client W1 cent*) or cognitive or colour or compassion* or couples or dance or directive or family or "human givens" or humanistic or implosive or interpersonal or milieu or nondirective or (patient W1 cent*) or (person W1 cent*) or play or socioenvironmental or socio-environmental or suggestion) W2 (therap* or intervention*)
S36	"psychological adaptation" OR aromatherap* OR asanas OR (autogenic W2 train*) OR autosuggest* OR bibliotherap* OR (biofeedback N2 psychol*) OR ("compassionate mind" W2 train*) OR (conditioning N2 psychol*) OR counselling OR "crisis intervention" OR (desensitization N2 psychol*) OR "early intervention" OR "emotional freedom tapping" OR exercise OR ("eye movement" W2 desensitization) OR ("eye movement" W2 reprocessing) OR "psychological feedback" OR flooding OR "free association" OR hypnosis OR imagery OR meditation OR mindfulness OR motivational interview* OR music* OR mozart* OR neurofeedback OR pranayama OR progressive muscle relax* OR (relax* W2 (therap* or intervention* or treat*)) OR "residential treatment" OR "rewind techniques" OR "stress management" OR "therapeutic community" OR yoga
S35	(MH "Psychotherapy+") OR (MH "Mind Body Techniques+")
S34	(MH "Therapeutic Exercise+")
S33	(MH "Early Intervention+")
S32	(MH "Counseling+")
S31	(MH "Color Therapy")
S30	(MH "Conditioning (Psychology)+")
S29	(MH "Behavioral (Iowa NIC)+")
S28	(MH "Aromatherapy")
S27	(MH "Adaptation, Psychological+")

(Continued)

S26	S3 AND S25
S25	S17 OR S18 OR S19 OR S20 OR S21 OR S22 OR S23 OR S24
S24	(family or social) N3 support
S23	(MH "Support, Psychosocial+")
S22	(MH "Support, Social+")
S21	(ambulator* OR health OR home) N3 (monitor* OR track*)
S20	(MH "Counseling+")
S19	(MH "Health Education+") OR "health education" OR ((health* OR care) AND (advise OR advice OR counsel*))
S18	self N3 (care OR manag*)
S17	(MH "Self Care+")
S16	S14 OR S15
S15	epilep* N3 (nurs* OR specialist*)
S14	S3 AND S13
S13	S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12
S12	(speciali* OR dedicated OR home) N3 (nurs* OR service OR care OR center OR centre OR clinic)
S11	(service* OR care OR healthcare OR intervention OR treatment) N3 (deliver* OR package* OR program*)
S10	program* N2 evaluat*
S9	(MH "Health Care Delivery+") OR (MH "Home Health Care+")
S8	(MH "Outcomes (Health Care)") OR (MH "Nursing Outcomes") OR (MH "Outcome Assessment")
S7	(MH "Disease Progression+")
S6	(MH "Patient Care+")
S5	(MM "Program Evaluation")
S4	(MM "Ambulatory Care")
S3	S1 OR S2
S2	epilep*
S1	(MH "Epilepsy+")

Appendix 4. PsycINFO search strategy

S36	S27 AND S35
S35	S33 NOT S34
S34	PO (animal NOT (human OR inpatient OR outpatient))
S33	S31 NOT S32
S32	SU "cluster analysis"
S31	S28 OR S29 OR S30
S30	TX (randomized controlled OR randomised controlled)
S29	TX ((randomiz* OR randomis* OR controlled OR placebo OR blind* OR unblind* OR "parallel group" OR crossover OR cross-over OR cluster OR "head to head") N3 (analy* OR design OR evaluat* OR investigat* OR method OR procedure OR study OR studies OR trial))
S28	DE "Randomized Controlled Trials" OR DE "Randomized Clinical Trials"
S27	S11 OR S21 OR S26
S26	S3 AND S25
S25	S22 OR S23 OR S24
S24	DE "Acceptance and Commitment Therapy" OR DE "Adaptive Behavior" OR DE "Adaptive Behavior Measures" OR DE "Adjustment" OR DE "Aromatherapy" OR DE "Art Therapy" OR DE "Assertiveness Training" OR DE "Autogenic Training" OR DE "Aversion Therapy" OR DE "Behavior Modification" OR DE "Behavior Therapy" OR DE "Bibliotherapy" OR DE "Biofeedback" OR DE "Classical Conditioning" OR DE "Client Centered Therapy" OR DE "Cognitive Behavior Therapy" OR DE "Cognitive Therapy" OR DE "Conditioning" OR DE "Conjoint Therapy" OR DE "Counseling" OR DE "Couples Therapy" OR DE "Creative Arts Therapy" OR DE "Crisis Intervention" OR DE "Dance Therapy" OR DE "Early Intervention" OR DE "Emotional Adjustment" OR DE "Exercise" OR DE "Eye Movement Desensitization Therapy" OR DE "Family Therapy" OR DE "Free Association" OR DE "Guided Imagery" OR DE "Human Potential Movement" OR DE "Hypnotherapy" OR DE "Implosive Therapy" OR DE "Interpersonal Psychotherapy" OR DE "Meditation" OR DE "Milieu Therapy" OR DE "Mind Body Therapy" OR DE "Mindfulness-Based Interventions" OR DE "Motivational Interviewing" OR DE "Movement Therapy" OR DE "Music Therapy" OR DE "Occupational Adjustment" OR DE "Operant Conditioning" OR DE "Play Therapy" OR DE "Poetry Therapy" OR DE "Progressive Relaxation Therapy" OR DE "Rational Emotive Behavior Therapy" OR DE "Reality Therapy" OR DE "Recreation Therapy" OR DE "Relaxation Therapy" OR DE "School Adjustment" OR DE "Social Adjustment" OR DE "Sociotherapy" OR DE "Stress Management" OR DE "Systematic Desensitization Therapy" OR DE "Therapeutic Community" OR DE "Yoga"
S23	("acceptance commitment" OR art# OR assertive OR autosuggestion OR aversive OR behav* OR (client W1 cent*) OR cognitive OR colour OR compassion* OR couples OR dance OR directive OR family OR "human givens" OR humanistic OR implosive OR interpersonal OR milieu OR nondirective OR (patient W1 cent*) OR (person W1 cent*) OR play OR socioenvironmental OR socio-environmental OR suggestion) W2 (therap* or intervention*)
S22	"psychological adaptation" OR aromatherap* OR asanas OR (autogenic W2 train*) OR autosuggest* OR bibliotherap* OR (biofeedback N2 psychol*) OR ("compassionate mind" W2 train*) OR (conditioning N2 psychol*) OR counselling OR "crisis intervention" OR (desensitization N2 psychol*) OR "early intervention" OR "emotional freedom tapping" OR exercise OR ("eye movement" W2 desensitization) OR ("eye movement" W2 reprocessing) OR "psychological feedback" OR flooding OR

(Continued)

	"free association" OR hypnosis OR imagery OR meditation OR mindfulness OR motivational interview* OR music* OR mozart* OR neurofeedback OR pranayama OR progressive muscle relax* OR (relax* W2 (therap* or intervention* or treat*)) OR "residential treatment" OR "rewind techniques" OR "stress management" OR "therapeutic community" OR yoga
S21	S3 AND S20
S20	S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19
S19	(family or social) N3 support
S18	DE "Social Support"
S17	(ambulator* OR health OR home) N3 (monitor* OR track*)
S16	DE "Counseling" OR DE "Community Counseling" OR DE "Cross Cultural Counseling" OR DE "Educational Counseling" OR DE "Genetic Counseling" OR DE "Gerontological Counseling" OR DE "Grief Counseling" OR DE "Group Counseling" OR DE "Marriage Counseling" OR DE "Microcounseling" OR DE "Multicultural Counseling" OR DE "Occupational Guidance" OR DE "Pastoral Counseling" OR DE "Peer Counseling" OR DE "Premarital Counseling" OR DE "Psychotherapeutic Counseling" OR DE "Rehabilitation Counseling" OR DE "School Counseling"
S15	"health education" OR ((health* OR care) AND (advise OR advice OR counsel*))
S14	DE "Health Education" OR DE "Drug Education" OR DE "Public Health Campaigns"
S13	self N3 (care OR manag*)
S12	DE "Self-Care" OR DE "Self-Help Techniques" OR DE "Self-Management"
S11	S9 OR S10
S10	epilep* N3 (nurs* OR specialist*)
S9	S3 AND S8
S8	S4 OR S5 OR S6 OR S7
S7	(speciali* OR dedicated OR home) N3 (nurs* OR service OR care OR center OR centre OR clinic)
S6	(service* OR care OR healthcare OR intervention OR treatment) N3 (deliver* OR package* OR program*)
S5	program* N2 evaluat*
S4	DE "Outpatient Treatment" OR DE "Outpatient Commitment" OR DE "Program Evaluation" OR DE "Educational Program Evaluation" OR DE "Mental Health Program Evaluation" OR DE "Caregiving" OR DE "Health Care Delivery" OR DE "Clinical Practice" OR DE "Health Care Access" OR DE "Health Care Utilization" OR DE "Quality of Care" OR DE "Quality of Services" OR DE "Treatment Planning" OR DE "Discharge Planning" OR DE "Posttreatment Followup" OR DE "Disease Progression" OR DE "Treatment Outcomes" OR DE "Treatment Compliance" OR DE "Treatment Duration" OR DE "Home Care"
S3	S1 OR S2
S2	epilep*

(Continued)

S1 MM "Epilepsy" OR MM "Epileptic Seizures" OR MM "Lennox Gastaut Syndrome" OR MM "Grand Mal Seizures" OR MM "Petit Mal Seizures" OR MM "Status Epilepticus"

HISTORY

Protocol first published: Issue 3, 2023

CONTRIBUTIONS OF AUTHORS

YH: Designed, co-ordinated, collected, managed, analysed and interpreted the data for review.

SJN: Designed, collected, managed, analysed and interpreted the data for review.

JM: Collected data, managed data, analysed and interpreted the data for review.

NF: Conceived, designed, managed, analysed, interpreted the data for review. Performed previous work that was the foundation of the current review.

RAH: Designed, co-ordinated and provided general advice on the review.

AJD: Co-ordinated, collected the data for review.

NW: Collected the data for review.

PB: Collected the data for review.

AC: Collected the data and provided general advice on the review.

HB: Collected the data for review.

EJW: Collected the data for review.

MM: Designed the review and collected the data

EJS: Designed and provided general advice on the review.

CTS: Designed and provided general advice on the review

RK: Co-ordinated and provided editorial checks for the review.

AGM: Conceived, designed, co-ordinated, provided general advice and secured funding for the review. In addition, analysed and interpreted the data for review.

All review authors contributed to the writing of the review.

DECLARATIONS OF INTEREST

YH: works as a neurology specialist doctor at The Walton Centre NHS Foundation Trust.

SJN: declares personal consultancy fees from Saluda Medical Americas Inc for projects outside the current work during 2023. SJN was the Statistical Editor of the Cochrane Epilepsy Group; however, she was not involved in the editorial process of this review.

JM: is funded by the Association of British Neurologists, Stroke Association and Epilepsy Research UK. She is also a Neurology Speciality Trainee at the Walton Centre NHS Foundation Trust, Liverpool.

NF: none.

RH: declares an honorary contract with NHS Wales as a health professional.

AJD: is funded by the National Institute for Health and Care Research (NIHR) Applied Research Collaboration (ARC) North West Coast (NWC). The views expressed are those of the authors and not necessarily those of the NIHR or the Department of Health and Social Care. She was also part-funded by the NIHR 20/34 Evidence Synthesis Programme Grants 2020.

NW: none.

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HB: is an independent contractor, consultant, for the University of Liverpool.

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MM: none.

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DIFFERENCES BETWEEN PROTOCOL AND REVIEW

We made no changes with respect to trials of service delivery interventions.

For behavioural and self-management interventions, we decided to focus the review on interventions that aimed to improve seizure control rather than other aspects of functioning. We therefore limited the inclusion of behavioural and self-management interventions to studies that included a measure of seizure control as a primary or secondary outcome.

For seizure frequency, we redefined short term as up to and including six months, and long term as beyond six months. Where more than one 'short-term' or 'long-term' result was reported for a study, we present the latest reported result within each timeframe and/or results at a time point where meta-analysis was possible.

We were not able to perform formal statistical checks of publication bias due to the limited numbers of studies included in meta-analyses. We have therefore described our approach to minimising the risk of publication bias.

We did not use standardised mean difference for studies that used different scales for continuous outcome, as the health-related quality of life (HRQoL) scales focused on different aspects of quality of life, and therefore it was more informative to report the scales for HRQoL separately.

We extracted additional information regarding any adverse events related to the intervention, to assess the potential harm of the interventions.

For the summary of findings tables, we originally planned to present data for all comparisons, including all seizure control and health-related quality of life outcomes using validated scales. However, due to the large number of heterogeneous outcomes extracted, we considered that the summary of findings tables would be too complex and not useful for readers. Therefore, we decided post-analysis to

prioritise specific comparisons, time points and outcome measurements, to improve clarity and highlight the most useful comparisons for clinical decision-making.

We have adjusted wording throughout our methods section, for clarification purposes.

NOTES

This review supersedes a published Cochrane review ([Bradley 2016](#)).

INDEX TERMS

Medical Subject Headings (MeSH)

Anticonvulsants [therapeutic use]; *Behavior Therapy [methods]; Bias; *Epilepsy [psychology] [therapy]; Quality of Life; Randomized Controlled Trials as Topic; Seizures; *Self-Management [methods]

MeSH check words

Adult; Humans