



Review article

Cognitive remediation in schizophrenia: A methodological appraisal of systematic reviews and meta-analyses

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ABSTRACT

Objective: Systematic reviews and meta-analyses are a primary source of evidence when evaluating the benefit(s) of cognitive remediation (CR) in schizophrenia. These studies are designed to rigorously synthesize scientific literature; however, cannot be assumed to be of high methodological quality. The aims of this report were to: 1) review the use of systematic reviews and meta-analyses regarding CR in schizophrenia; 2) conduct a systematic methodological appraisal of published reports examining the benefits of this intervention on core outcome domains; and 3) compare the correspondence between methodological and reporting quality.

Method: Electronic databases were searched for relevant articles. Twenty-one reviews met inclusion criteria and were scored according to the AMSTAR checklist—a validated scale of methodological quality. Five meta-analyses were also scored according to PRISMA statement to compare ‘quality of conduct’ with ‘quality of reporting’.

Results: Most systematic reviews and meta-analyses shared strengths and fell within a ‘medium’ level of methodological quality. Nevertheless, there were consistent areas of potential weakness that were not addressed by most reviews. These included the lack of protocol registration, uncertainty regarding independent data extraction and consensus procedures, and the minimal assessment of publication bias. Moreover, quality of conduct may not necessarily parallel quality of reporting, suggesting that consideration of these methods independently may be important.

Conclusions: Reviews concerning CR for schizophrenia are a valuable source of evidence. However, the methodological quality of these reports may require additional consideration. Enhancing quality of conduct is essential for enabling research literature to be interpreted with confidence.

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Cognitive impairments are a core feature of schizophrenia. These deficits are strongly and consistently related to poor real-world outcomes including residential independence, self-care, and social and occupational engagement (Fett et al., 2011; Green et al., 2000; Harvey and Strassnig, 2012). Antipsychotic medication – the “gold-standard” for managing positive psychotic symptoms – has a small effect, if any, on cognitive symptoms (Keefe et al., 2007). Consequently, behavioral approaches, such as cognitive remediation therapies, have been developed as potential treatment options to alleviate this component of the illness.

1. Cognitive remediation in schizophrenia

Cognitive remediation (CR) represents a broad range of learning-based interventions that aim to achieve improvements in cognition and/or the self-management of these abilities (Saperstein and Kurtz, 2013). The ultimate goal of CR is generalization to untrained cognitive skills as well as transfer to real-world psychosocial outcomes (Saperstein and Kurtz, 2013). CR may involve exposure to repetitive training exercises (i.e. “drill-and-practice”), strategic discussions about how to manage cognitive difficulties (i.e. internal compensation) and how training tasks are relevant to areas of everyday life, or a combination of both (McGurk et al., 2013). CR is distinct from therapies that do not target underlying cognitive deficits, such as social-skills training, or external compensatory methods that circumvent impairment via environmental modification (Lyman et al., 2014; McGurk et al., 2013). Nonetheless, CR is commonly paired with these methods (Kurtz, 2012).

Over 40 randomized controlled trials (RCTs) have been conducted to explore the efficacy of CR in people with schizophrenia (Lyman et al., 2014). The most common outcome domains include cognition, measured on neuropsychological tests, and real-world community function. However, clinical symptoms (particularly

negative symptoms) are also frequently measured given their strong relationship with both cognition and psychosocial outcomes (Fett et al., 2011; Wykes et al., 2011). There has also been a relatively recent shift toward considering the impact of CR on personal recovery as well as neurobiological change(s) (Castle, 2013; Thorsen et al., 2014). Together, these domains are aligned with the overarching objectives of CR and thus form the primary outcome measures in clinical studies (Wykes et al., 2011).

The results from multiple trials examining the efficacy of CR have been pooled into systematic reviews (Kluwe-Schiavon et al., 2013; Thorsen et al., 2014) and meta-analyses (McGurk et al., 2007; Wykes et al., 2011) to evaluate the benefit of this intervention on key outcome domains. Systematic reviews and meta-analyses are designed to be structured, transparent, replicable, and minimize the potential for bias or subjectivity (McCall and Connor, 2010). Consequently, these reports are considered to be among the highest levels of scientific investigation (Liberati et al., 2009).

1.1. Systematic reviews and meta-analyses for CR in schizophrenia

Systematic reviews and meta-analyses examining the utility of CR in schizophrenia are often used to disseminate information to academics, clinicians, carers, mental health consumers, and funding bodies about the current state of knowledge in a manageable format (Liberati et al., 2009). These reports also guide future research trials, inform clinical decision-making and service delivery, and enable researchers to compare their results in the context of weighted literature findings (Lau et al., 1998; Liberati et al., 2009).

The results from the majority of these reports in the field have been positive, with only one meta-analysis (i.e. Pilling et al., 2002) concluding that there was little, if any, evidence to support the use of CR in schizophrenia (Kurtz, 2012). Overall, combined research findings suggest that neurocognitive remediation (i.e. CR

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