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Review

Systematic review of neurocognition in people with co-occurring alcohol misuse and depression

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ABSTRACT

Background: Alcohol misuse and depression represent two major social and health problems globally. These conditions commonly co-occur and both are associated with significant cognitive impairment. Despite this, few studies have examined the impact on cognitive functioning of co-occurring alcohol misuse and depression. This study aims to critically review findings from peer-reviewed published articles examining neuropsychological test performance among samples of people with co-occurring alcohol misuse and depression.

Method: A comprehensive literature search was conducted, yielding six studies reporting neuropsychological profiles of people with co-occurring alcohol misuse and depression. Results comparing cognitive functioning of people with this comorbidity to those with alcohol misuse alone, depression alone, healthy controls and published norms were examined as well as those describing the correlation between depressive symptoms and cognitive functioning in people with alcohol use disorders.

Results: In the majority of instances, the comorbid groups did not differ significantly from those with depression only or alcohol misuse only, nor from healthy controls or published norms. In the cases where a difference in neuropsychological test scores between groups was found, it was not consistently identified across studies. However, visual memory was identified in two studies as being impaired in comorbid samples and is worthy of inclusion in future studies.

Limitations: Due to the small number of included studies and the large variation in inclusion criteria as well as differing assessment tools and methodologies between studies, the review did not include a quantitative synthesis.

Conclusions: Research into cognitive deficits among people with singly occurring versus co-occurring alcohol misuse and depression is accumulating. Evidence suggests that the neuropsychological performance among samples with this comorbidity is generally not severely impaired and is unlikely to preclude benefit from treatment.

Contents

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1. Introduction

Depression is a serious and prevalent mental health problem. Recent population studies suggest that 4.1% of Australians and 6.7% of Americans have a 12-month prevalence of Major Depressive Disorder (MDD) (Kessler et al., 2005; Teesson et al., 2009). Similarly, alcohol use disorders (AUD) are thought to have a 12 month prevalence of 2.9% in Australia and 8.0% in the United States (Aldworth, 2009; Teesson et al., 2009). MDD and AUD are also more likely than chance to co-occur in people seeking treatment for one of these conditions. The prevalence of depression in people seeking treatment for AUD ranges from 25.7% (Penick et al., 1988) to 70% (Conner et al., 2009) and people with alcohol dependence are up to 4.5 times more likely to meet criteria for an affective disorder than non-dependent people (Degenhardt et al., 2001).

Neurocognitive impairments have been observed across the clinical state of MDD. During a major depressive episode (MDE) deficits in memory, psycho-motor function, executive function, verbal fluency, speed of information processing and attention have been identified (Austin et al., 1992; Beatty et al., 1990; Burt et al., 1995; Douglas and Porter, 2009; Elliott, 2002; Ravdin et al., 2003; Smith et al., 2006). Similarly, a meta analysis of cognition in first episode MDD by (Lee et al., 2012) identified significant deficits with small to moderate effect sizes in the domains of psychomotor speed, attention, visual learning and memory, attentional switching, verbal fluency and cognitive flexibility relative to healthy controls. Less consistent results have been found in the remitted state of depression, with persistent cognitive impairment in sustained attention, working memory and psychomotor function but improvement in verbal learning and memory (Weiland-Fiedler et al., 2004).

Likewise alcohol misuse has been associated with cognitive impairments ranging from the acute effects of intoxication through impairments in memory, visuospatial functioning, executive function, verbal fluency, attention and impulsivity commensurate with frequent or heavy use (Beatty et al., 2000; Burt et al., 1995; Loeber et al., 2009; Nixon et al., 1995; Pitel et al., 2007, 2009; Saults et al., 2007; Veiel, 1997). Meta-analysis of cognitive impairment in abstinence following heavy alcohol use has found a similar pattern of impairment across a range of tasks (e.g. verbal fluency, processing speed, working memory, attention, executive functions, verbal learning and memory, visual learning and memory and visuospatial abilities) in both short- and intermediate-term abstinence, suggesting a stable pattern of impairment up to a year after ceasing alcohol use (Stavro et al., 2013). Recovery of cognitive function in longer term (i.e. post 12-months) appears to be possible with ongoing abstinence (Parsons and Nixon, 1998; Rourke and Grant, 1999; Stavro et al., 2013).

There is an extensive body of evidence for the nature and severity of cognitive impairment in depression and alcohol misuse when they occur in isolation, with several published syntheses of the cognitive findings in depression (Burt et al., 1995; Castaneda et al., 2008; Douglas and Porter, 2009; Hasselbalch et al., 2011) and alcohol misuse (Goldstein et al., 2004; Parsons and Nixon, 1998). To date, no systematic reviews or meta-analyses of the literature examining cognitive function in co-occurring alcohol misuse and depression have been published.

Cognitive functioning in this comorbid group has potential relevance to treatment selection and response (Mohlman and Gorman, 2005), optimism about maintaining health behaviour change (Wells and Matthews, 1996) and the ability to generalize cognitive strategies (such as those learnt in Cognitive Behaviour Therapy; CBT) across problem areas and into the future (Mohlman and Gorman, 2005). In light of these issues, this systematic review aims to identify and critically review published studies reporting on neuropsychological test performance of people with co-occurring alcohol misuse and depression.

2. Method

2.1. Literature search strategy

During December 2013 a systematic literature search was conducted. In the first stage an exhaustive search of three databases, MEDLINE, EMBASE and PsycINFO was carried out by the first author (S.A.H.) using the following key words: 'alcohol' OR 'alcoholism'; AND 'depression' OR 'MDD'; AND 'cognition' OR 'cognitive dysfunction' OR 'cognitive deficits' OR 'problem solving' OR 'executive function' OR 'memory' OR 'impulsivity' OR 'attention' OR 'neuropsychological'. Articles were limited to those published in the English language in peer-reviewed journals. The reference lists of articles selected for inclusion were manually searched for other potentially relevant articles. The combined searches of the three databases located 2526 articles. After removal of duplicates and the addition of one study found through manual searching of reference lists 1412 articles remained.