

Accepted 18.4.23

Commentary on “Information flow and dynamic functional connectivity during electroconvulsive therapy in patients with depression”

Read J

I write in response to ‘Information flow and dynamic functional connectivity during electroconvulsive therapy in patients with depression’ (Kyuragi et al., 2023). The paper summaries the research literature on the efficacy and safety of ECT in just two sentences:

‘Electroconvulsive therapy (ECT) is useful for treatment-resistant cases (Sackeim, 2017), and the modified ECT performed today is safe (Read and Bentall, 2010). The main side effects include headache, elevated blood pressure, nausea, delirium, and memory impairment, although they are usually reversible (Lisanby, 2007).’ (pp. 141,142).

One might expect that when a single reference is relied on to support a strong claim, the reference would be to a meta-analysis or a systematic review. The Sackeim paper is neither. It is not even a research study. It is a two-page editorial bemoaning ‘the extraordinarily low rate of ECT use’. Similarly, the one reference in support of the claim that the memory impairment caused by ECT is ‘usually reversible’ is a case study supported by a brief narrative review, which concludes that ‘for many patients, recovery is incomplete, with prolonged amnesia regarding events that occurred close to the time of treatment’ (p. 1943). This is not consistent with the claim by Kyuragi and colleagues that it is ‘usually reversible’.

At least the Read and Bentall (2010) reference in support of the proposition that modern ECT is ‘safe’ is to a systematic review. Here, however, are some extracts from that review, which show that the review actually found the opposite of what is claimed by Kyuragi and colleagues:

‘CT scans have revealed increased frontal lobe atrophy amongst ECT recipients (Calloway *et al.*, 1981; UK ECT Review Group, 2003). One review, which acknowledged that “both anterograde and retrograde memory impairment are common,” actually documents the various forms of neurobiological dysfunction underlying the subtypes of ECT-induced memory dysfunction (Rami-Gonzalez *et al.*, 2001).’ (p. 345)

‘A review identified four studies of memory loss at least six months post-ECT (n = 597), with a frequency range of 51% to 79%, and a weighted average of 70% (Rose et al., 2003). Four studies (n = 703) found a range for “persistent or permanent memory loss” of 29% to 55%, with a weighted average of 38%. The New Zealand Government

report concluded that “ECT may permanently affect memory” (Ministry of Health, 2004) and bemoaned the “slowness in acceptance by some professional groups that such outcomes are real and significant in people’s lives”.’ (p. 343)

‘Even the American Psychiatric Association report (2001) acknowledges: “In some patients the recovery from retrograde amnesia will be incomplete, and evidence has shown that ECT can result in persistent or permanent memory loss”.’ (p. 344)

‘

Our review concluded:

‘Given the strong evidence (summarised here) of persistent and, for some, permanent brain dysfunction, primarily evidenced in the form of retrograde and anterograde amnesia, and the evidence of a slight but significant increased risk of death, the cost-benefit analysis for ECT is so poor that its use cannot be scientifically justified’.
(Read & Bentall, 2010, p. 333)

Kyuragi, Y., Oishi, N., Yamasaki, S., Hazama, M., Miyata, J., Shibata, M., et al., 2023. Information flow and dynamic functional connectivity during electroconvulsive therapy in patients with depression’ *J. Affect. Disord*, 328, 141-152.

Lisanby, S., 2007. Electroconvulsive therapy for depression. *New. Engl. J. Med.*, 357 1939-1945

Read, J., Bentall, R., 2010. The effectiveness of electroconvulsive therapy: A literature review. *Epidemiol, Psychiatr, Sci*, 19, 333-347.

Sackeim H., 2017. Modern Electroconvulsive Therapy: vastly improved yet greatly underused. *JAMA Psychiatry* 74,779-780.