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## Comparative efficacy and safety of therapy for the behavioral and psychological symptoms of dementia: a systemic review and Bayesian network meta-analysis.

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### Abstract

**OBJECTIVE:** To assess the comparative efficacy and safety of both pharmacological and non-pharmacological therapies for the behavioral and psychological symptoms of dementia, using direct and indirect evidence from randomized data.

**METHOD:** A systematic review and Bayesian network meta-analysis was conducted on only randomized controlled trials (RCTs) of all the available interventions for **BPSD**. RCTs were selected from Pubmed, EMBASE, the Cochrane library, and CINAHL. The efficacy outcomes were Neuropsychiatric Inventory (NPI) and Cohen-Mansfield Agitation Inventory (CMAI). The outcomes of safety were total adverse events (AEs), diarrhea, dizziness, headache, falls, nausea, vomiting, and cerebrovascular diseases.

**RESULT:** 146 RCTs comprising 44,873 patients with **BPSD** were included in this study. On NPI, aripiprazole (MD - 3.65, 95% credible interval (CrI) = - 6.92 to - 0.42), escitalopram (MD - 6.79, 95% CrI - 12.91 to - 0.60), donepezil (MD - 1.45, 95% CrI - 2.70 to - 0.20), galantamine (MD - 1.80, 95% CrI - 3.29 to - 0.32), **memantine** (MD - 2.14, 95% CrI - 3.46 to - 0.78), and risperidone (MD - 3.20, 95% CrI - 6.08 to - 0.31) were superior to placebo. On CMAI, aripiprazole (MD - 4.00, 95% CrI - 7.39 to - 0.54) and risperidone (MD - 2.58, 95% CrI - 5.20 to - 0.6) showed superiority to placebo. On the

risk of total AEs, donepezil (OR 1.27, 95% CrI 1.07-1.50), galantamine (OR 1.91, 95% CrI 1.58-2.36), risperidone (OR 1.47, 95% CrI 1.13-1.97), and rivastigmine (OR 2.02, 95% CrI 1.53-2.70) owned higher risk than placebo.

**CONCLUSION:** Pharmacological therapies should be the first choice for **BPSD**. Aripiprazole, haloperidol, quetiapine, and risperidone of antipsychotics showed the significant efficacy, while **memantine**, galantamine, and donepezil may provide the modest effectiveness. The safety of all was thought to be acceptable.

**KEYWORDS:** Behavioral and psychological symptoms of dementia; Dementia; Network meta-analysis; Non-pharmacological therapy; Pharmacological therapy; Systematic review

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