

Efficacy and safety of drugs for attention deficit hyperactivity disorder in children and adolescents: a network meta-analysis

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Eur Child Adolesc Psychiatry (2018).

DOI: <https://doi.org/10.1007/s00787-018-1125-0>

Abstract

The aim of this study is to gather evidence of head-to-head double-blind randomized-controlled trials on the efficacy and safety of available treatments for attention deficit hyperactivity disorder (ADHD) in children and adolescents. A systematic review was conducted by two independent reviewers in ten electronic databases (PROSPERO register CRD42016043239). Methodological quality of included studies was evaluated according to the Jadad scale. Network meta-analyses were performed including double-blinded head-to-head trials comparing active allopathic drugs in patients (0–18 years old) diagnosed with ADHD. The results of efficacy and safety of atomoxetine (ATX), bupropion, bupirone (BSP), dexamphetamine, edivoxetine (EDX), guanfacine (GXR), lisdexamfetamine (LDX), methylphenidate (MPH), mixed amphetamine salts, modafinil, pindolol (PDL), reboxetine (RBX), selegiline, and venlafaxine were analyzed using ADDIS software v.1.16.5. Forty-eight trials were identified (n = 4169 participants), of which 12 were used for efficacy analysis and 33 for safety analysis. On the CGI-I scale, the analysis revealed that MPH was more effective than ATX and GXR. For the safety outcomes, according to drug ranks, LDX was more likely to cause sleep disorders (39%) as well as loss of appetite (65%) and behavior problems such as irritability (60%). BSP (71%) and EDX (44%) caused less appetite decrease. For behavioral effects, PDL was considered safest (50%). For any adverse events, RBX (89%) was the safest alternative. The lack of head-to-head trials properly reporting outcomes of interest limited some comparisons. Network meta-analysis offered a broader overview on the available treatments for ADHD, especially for safety issues, and contributes towards evidence gathering and clinical practice decisions. A core outcome set for ADHD should be designed to guide the conduction and report of clinical trials.