The Effects of Long-Acting Stimulant and Nonstimulant Medications in Children and Adolescents with Attention-Deficit/Hyperactivity Disorder: A Meta-Analysis of Randomized Controlled Trials


Abstract

OBJECTIVE:
The aim of this study was to assess the efficacy and safety of stimulant and nonstimulant medications in children and adolescents using as an outcome measure the Attention-Deficit/Hyperactivity Disorder Rating Scale-IV (ADHD-RS-IV), and to examine the effect of medications in different ADHD subtypes (i.e., inattention and hyperactivity/impulsivity).

METHODS:
MEDLINE, Scopus, EMBASE, EBSCO (E-journal, CINAHL and SportDiscus), PUBMED, and The Cochrane Central Register of Controlled Trials databases were searched. Randomized controlled trials (RCTs) with parallel group or placebo-controlled studies comparing the effect of medications (stimulants or nonstimulants) in children and adolescents with ADHD were included. The main outcomes were the ADHD-RS-IV total score and subtypes (inattention and hyperactivity/impulsivity). Treatment-emergent adverse events (TEAEs) and secondary outcomes such as systolic and diastolic blood pressure, and pulse rate were considered.

RESULTS:
The search strategy identified 15 RCTs, including a total of 4648 children and/or adolescents diagnosed with ADHD aged 6 to 17 years old. Overall, both stimulant and nonstimulant medications reduce the ADHD-RS-IV score with a standardized mean difference (SMD) of -0.70 (confidence interval [95% CI], -0.85 to -0.55); in subgroup analyses, the SMD was -0.83 (95% CI, -1.11 to -0.54) for stimulant medications and -0.58 (95% CI, -0.69 to -0.46) for nonstimulant medications. Similar results were observed in inattention and hyperactivity/impulsivity subtypes. The placebo group also showed a medium effect SMD of -0.68 (95% CI, -0.82 to -0.54). The most frequent TEAEs for stimulant and nonstimulant medications, respectively, were decreased appetite (28.6% and 14.2%) and somnolence (4.4% and 34.1%).

CONCLUSIONS:
These results suggest that both stimulant and nonstimulant medications mitigate ADHD symptoms in children and adolescents, although subgroup analyses suggest a greater effectiveness of stimulant medications.