AOTA Evidence Briefs

Attention Deficit/Hyperactivity Disorder

**A product of the American Occupational Therapy Association's Evidence-Based Literature Review Project*

A#8

Combined treatment and medication management are more effective than behavioral treatment and community care in reducing children's ADHD symptoms

MTA Cooperative Group. (1999a). A 14-month randomized clinical trial of treatment strategies for attention-deficit/hyperactivity disorder. *Archives of General Psychiatry, 56,* 1073–1086.

Level: IA1a

Randomized control trial, 20 or more participants per group, high internal validity, high external validity

Why research this topic?

Research has shown the effectiveness of medication management and behavioral treatment as therapies for attention-deficit/hyperactivity disorder (ADHD) when they are used for 4 months or less. However, there have been few studies comparing the long-term effectiveness of the two therapies individually or in combination.

What did the researchers do?

The MTA Cooperative Group (1999a) designed a study to answer three questions: (1) When medication management and behavioral treatment are used for longer than 4 months, how do they compare? (2) When they are used together, do they produce additional benefits? (3) "What is the effectiveness of systematic, carefully delivered treatments [versus] routine community care?" (p. 1073). MTA is an abbreviation for the Multimodal Treatment Study of Children with Attention-Deficit/Hyperactivity Disorder.

The researchers recruited study participants from a variety of sources: mental health settings, pediatricians, advertisements, and school notices. To be eligible, children had to be between 7 and 9.9 years of age, in grades one through four, and residing with the same primary caretaker for at least the previous 6 months. They also had to meet the criteria for ADHD Combined Type specified in the Diagnostic and Statistical Manual of Mental Disorders (4th ed.). From a pool of 4,541 children, the researchers identified 579 (465 boys and 114 girls) who met their criteria. The average age of the sample was 8.5 years.

The children were randomly assigned to one of four interventions, each lasting 14 months:

1. Behavioral treatment, which involved 27 group sessions (6 families per group) and 8 individual (one family) sessions of parent training; 8 weeks of child-focused treatment in a summer camp, 5 days per week, 9 hours per day; and school-based treatment, which included 10–16 sessions of biweekly teacher consultation and 12 weeks of a part-time paraprofessional aide working directly with the child.
2. Medication management, which started with administration of methylphenidate (Ritalin). After 28 days, the researchers established the best dose for each child and continued with that. Children who were not responding well to methylphenidate received alternative medications as appropriate (e.g., dextroamphetamine, pemoline, imipramine).
3. Combined treatment, which involved behavioral treatment and medication management. The researchers integrated the two treatments, rather than administering them separately. That is, as needed, they made adjustments in one treatment instead of first intervening with the other.

4. Community care, which involved providing participants with a list of community mental health resources. Most of the participants in this group received medication through these resources. No additional information is included about other services offered or provided (e.g., psychotherapy).

The researchers were interested in six domains: *ADHD symptoms* (inattention, as rated by teachers and parents, and hyperactivity/impulsivity, as rated by teachers, parents, and a classroom observer, all using SNAP, an instrument named using the initials of its developers); *oppositional/aggressive symptoms* (as rated by teachers, parents, and a classroom observer, all using SNAP); *social skills* (as measured by teachers and parents using the Social Skills Rating System, and by peers); *internalizing symptoms*—for example, anxiety and depression (as measured by teachers and parents using the Social Skills Rating System, and by the children themselves, using the Multidimensional Anxiety Scale for Children); *parent-child relations* (power assertion and personal closeness, as measured by a questionnaire); and *academic achievement* (as measured by the Reading, Math, and Spelling subscales of the Wechsler Individual Achievement Test). Assessments were made before the intervention and at 3, 9, and 14 months (the end of the study).

What did the researchers find?

Medication management was **significantly** (see *Glossary*) better than behavioral treatment for ADHD symptoms (according to teachers' and parents' ratings of inattention and parents' ratings of hyperactivity/impulsivity).

Combined treatment was significantly better than behavioral treatment for ADHD symptoms (according to teachers' and parents' ratings of inattention and parents' ratings of hyperactivity/impulsivity), oppositional/aggressive symptoms (according to parents' ratings), internalizing symptoms (according to parents' ratings), and reading achievement. Combined treatment did **not** differ significantly from medication management in any domain.

Combined treatment and medication management both were significantly better than community care for ADHD symptoms (according to teachers' and parents' ratings of inattention and hyperactivity/impulsivity). Combined treatment was significantly better than community care for oppositional/aggressive symptoms, internalizing symptoms, social skills (as reported by teachers), parent-child relations, and reading achievement. Medication management was significantly better than community care for social skills (as reported by parents).

What do the findings mean?

For therapists and other providers, the findings suggest that combined treatment and medication management are more effective than behavioral treatment and community care in reducing children's ADHD symptoms. They are not necessarily more effective in other areas of function, though.

The findings also show that the benefits found for short-term medication management persist for at least 14 months.

What are the study's limitations?

This benchmark ADHD study is unmatched in scope, size, and rigor in design and execution. The findings emphasize the effectiveness of medication for ADHD and also raise interesting and important questions (e.g., Is medication therapy less effective when used in a community care setting? Would other subgroups of ADHD [other than combined type] benefit in the same way?). One limitation of this study is that there was no placebo or nontreatment group to compare with the behavioral management group. Study results confirm effectiveness in reducing children's ADHD symptoms.

Glossary

significance (or significant)—A statistical term, this refers to the probability that the results obtained in the study are not due to chance, but to some other factor (such as the treatment of interest). A significant result is likely to be generalizable to populations outside the study.

Significance should not be confused with clinical effect. A study can be statistically significant without having a very large clinical effect on the sample. For example, a study that examines the effect of a treatment on a client's ability to walk may report that the participants in the treatment group were able to walk significantly longer distances than the control group. However, if you read the study you may find that the treatment group was able to walk, on average, 6 feet, whereas the control group was able to walk, on average, 5 feet. Although the outcome may be statistically significant, a clinician may not believe that a 1-foot increase will improve his or her client's function.

■ Terminology used in this document is based on two systems of classification current at the time the evidence-based literature reviews were completed: *Uniform Terminology for Occupational Therapy Practice—Third Edition* (AOTA, 1994) and *International Classification of Functioning, Disability and Health (ICIDH-2)* (World Health Organization [WHO], 1999). More recently, the *Uniform Terminology* document was replaced by *Occupational Therapy Practice Framework: Domain and Process* (AOTA, 2002), and modifications to *ICIDH-2* were finalized in the *International Classification of Functioning, Disability and Health* (WHO, 2001).

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