

## Article

# Psychoeducational groups for youth attention-deficit hyperactivity disorder: a family medicine pilot project

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### ABSTRACT

Attention-deficit hyperactivity disorder (ADHD) is the most commonly diagnosed behavioural disorder of youth and is estimated to affect ~4% of school-age children. Although medication is the most common and efficacious treatment for ADHD, some experts believe that multimodal treatment strategies help children improve symptoms more than medicine alone. Psychoeducational strategies focus on educating youth and families about a given disorder. This study compared youth who participated with their parents in a five-session, one-hour psychoeducational group at a family medicine clinic and those who received customary treatment and were on a waiting list for the intervention. Findings of youth behaviour from parent and teacher perspectives were compared at the outset of the group and one month after group completion using the Vanderbilt scales. Results revealed that youth in

both conditions improved over the two months of the study from the parent perspective in terms of all ADHD symptoms (e.g. inattention, hyperactivity/impulsivity) and in terms of school functioning. However, no gains were made in youth functioning or ADHD behaviour from the teacher perspective. Youth in the treatment group made modest gains in school performance from the parent perspective when compared with youth in the control condition. The results suggest that parents of ADHD youth should be involved in the treatment process to maximise the likelihood of improvement. Psychoeducational groups can be of modest benefit to help educate parents and youth regarding the challenges of ADHD management.

**Keywords:** ADHD, family medicine, psycho-education

### Introduction

Attention-deficit/hyperactivity disorder (ADHD) is a pervasive behavioural disorder that manifests in clusters of symptoms of inattention, hyperactivity and impulsivity in at least two settings, some of which have onset before the age of 7.<sup>1</sup> According to the DSM-IV-TR, the prevalence of ADHD in school-age children is between 3 and 7%. Onset of hyperactive symptoms usually occurs in toddlers,

but diagnosis is usually delayed until elementary school years, where school adjustment is often compromised. A broad review of numerous studies shows that both genetic and environmental factors contribute to the development of ADHD.<sup>1</sup>

ADHD treatment typically consists of pharmacological management, which is well-researched,<sup>2</sup> and psychosocial treatment, the efficacy of which has

been established in the past, although to a lesser extent. There are over 250 published studies of psychopharmacological treatments in school-age children with ADHD.<sup>2</sup> Researchers at Duke University reviewed stimulant use in children with behavioural and learning problems over the previous 40 years and found convincing evidence of significant improvement in ADHD symptoms with stimulant treatment.<sup>3</sup> Based on those results and others, psychostimulants have become a mainstay of treatment in school-age children with ADHD.

Psychosocial treatment of ADHD is an umbrella term for a variety of non-pharmacological methods aiming to mitigate symptoms in the home, at school and in the social sphere. Behavioural interventions involve manipulating environmental factors that are antecedents to or consequences of maladaptive behaviour.<sup>4</sup> Cognitive behavioural therapy, parent training and teacher training are good examples. Cognitive behavioural therapy uses the principles of rewards and consequences to shape target behaviours.<sup>5</sup> Parent/teacher training gives parents and teachers strategies for managing the child's disruptive behaviour through rewards/punishments and can also be implemented with the child to improve the parent-child relationship. Social interventions aim to treat social impairments in children with ADHD that may predispose them to substance abuse and other at-risk behaviours.<sup>5</sup> The existing research on psychosocial treatment of ADHD does show promise, but not at the same level of efficacy when compared with psychostimulant use.

In the 1990s, the Multimodal Treatment Study for Attention-Deficit Hyperactivity Disorder (MTA) was one of the first and biggest studies to investigate the efficacy of combined treatment of ADHD in 579 patients. Results demonstrated that combined treatment using both medication and psychosocial intervention significantly reduced ADHD symptoms compared with psychosocial treatment alone or community management, but not medication management alone.<sup>6</sup> Since then, research has further investigated the efficacy of psychosocial treatment alone or in addition to medication management.

Research on behavioural interventions shows some positive effects for youths with ADHD. A meta-analysis in 2009 reviewed 174 studies of behavioural treatment in children with ADHD. Studies were classified as between-group designs, pre-post designs, within-subject designs and single subject designs. Across all designs, results consistently showed a large effect size for behavioural treatment over control, supporting the use of behavioural treatment for ADHD.<sup>7</sup> A review by Chronis *et al*<sup>4</sup> concludes that the existing literature clearly supports the use of behavioural interventions in the treatment of childhood ADHD, both alone and in combination with

stimulant treatment. The study cites extensive experimental evidence in designating behavioural parent training and classroom interventions as 'empirically supported' psychosocial treatments for ADHD. Studies suggest family based interventions such as parent training improve parent ratings of problem behaviour, observed negative parent and child behaviours, and parental reports of stress. Another review by Reeves and Anthony<sup>8</sup> concludes that combined treatment improves both ADHD symptoms and family functioning compared to pharmacotherapy alone.

Regarding parent intervention, some recent results have been promising. A study published in 2006 examined treatment outcomes for objectively measured parenting behaviour in the 1999 MTA study discussed above. Positive parenting behaviours were called 'constructive parenting' and were measured in the treatment groups: combined treatment, medication management alone, behavioural treatment alone and community management. Results showed that combined treatment resulted in significantly greater amounts of constructive parenting behaviours compared with medication management alone or community management, but not behavioural treatment alone.<sup>9</sup> Another study using a pre-post design investigated the efficacy of group parent training in the families of 45 children with ADHD. Results from parent ratings, telephone interviews and home recordings showed reduced hyperactive, defiant and aggressive behaviour in children, improved parenting behaviour and reduced parent stress.<sup>10</sup> A study by Kienle *et al*<sup>11</sup> investigated the efficacy of parent training in 16 mothers compared with a waiting list control. Results showed that mothers receiving parent training reported significantly fewer ADHD symptoms, better acceptance of their children, and a trend toward better relationship satisfaction. However, fathers did not report any improvements. These studies, to varying degrees, support the use of psychosocial treatments, particularly parent training, to treat ADHD alone or as part of a multimodal treatment regimen.

While some studies are supportive, others challenge the conclusion that multimodal treatment is optimal in ADHD. In one study, children with ADHD who showed improvements with medication were given intense multimodal treatment. Parent and teacher ratings demonstrated no significant further improvement with combination treatment.<sup>12</sup> Another study measured the academic performance and emotional state of children with ADHD upon adding psychosocial intervention to those already taking methylphenidate. Combination treatment showed no improvements in these measures compared to medication alone or medication and attention control.<sup>13</sup> A more recent study randomised 50 children

with ADHD to methylphenidate alone or methylphenidate plus multimodal behavioural therapy. Parent, teacher and child ratings demonstrated no significant differences between the two treatments. No evidence was found for the additive effect of multimodal treatment over medication alone.<sup>14</sup> These studies do not appear to be in line with other evidence supporting the use of multimodal treatment of ADHD over medication alone, and demonstrate the need for more research to examine the efficacy of multimodal treatment.

This pilot study uses a brief psychoeducational model to teach children with ADHD and their parents about the diagnosis of ADHD and its consequences. The purpose of this study is to determine the efficacy of a psychoeducational intervention for youth with ADHD and the youth's parent/caregiver. This study's hypothesis is that youth whose families receive psychoeducational training will have lower ratings of symptoms and better academic performance compared with youth in a waiting list control group. These improvements are hypothesised to be evident from both the parent and teacher perspectives.

## Methods

### Participants

This is a pilot study of a psychosocial, educational (psychoeducational) treatment intervention for school-age youth previously diagnosed with ADHD. Participants were voluntarily solicited for participation through an urban outpatient family medicine centre. Inclusion criteria for this study were that participants must be youth aged 7–12 years, seen in a primary care setting, and have an existing diagnosis of ADHD. Youth may have been diagnosed with any of the three subtypes of ADHD to be eligible, predominantly inattentive-type, predominantly hyperactive-impulsive type and combined type. Prospective participants were excluded if they had a co-morbid diagnosis of psychotic disorder.

Regarding the number of participants, an exploratory analysis of the number of youth who met the study criteria within the practice revealed that there were 200 youth. It was estimated from prior studies involving youth that ~20% of those families in the practice might agree to participate in the study. Thus, this pilot study included 40 participants, 20 receiving the experimental psychoeducational intervention and 20 control participants who were on a waiting list to receive the intervention at a later date. The participants in the control condition had

all agreed to participate in the study intervention at a later date. Although it was initially decided to randomly assign youth to treatment and control conditions, it was later determined that so few families agreed to participate that all would be welcome to receive the treatment intervention if they desired. Demographic data on age, gender, race and pre-existing treatments for ADHD was collected for each participant. Each group session consisted of three to five youth and their family members.

### Measures

The NICHQ Vanderbilt Assessment Scale (Vanderbilt) was used as the instrument to measure change in ADHD symptoms and academic performance. The Vanderbilt is a brief rating scale for parents and teachers to complete, designed to assess youth ADHD in a clinical setting, as well as conduct disorder, oppositional defiant disorder, anxiety, depression and academic functioning. The Vanderbilt has been demonstrated to have acceptable internal consistency, adequate factor structure, and good reliability and validity as a measure of youth behaviour and school functioning.<sup>15</sup>

### Intervention

The intervention consisted of five separate 60-minute psychoeducational group sessions about ADHD. The groups were held weekly for five straight weeks, with the exclusion of a rare holiday or an inclement weather day. Because the intervention was in addition to their already existing medical and behavioural health services, there was no charge to the participants for the psychoeducational group. Parents were instructed in one room and children in another. Attendance was recorded, and children and parents who missed more than half the sessions were dropped from the study as it applies to the recording of data. The sessions were led by a licensed psychologist and a psychology intern experienced in ADHD treatment. The topics of the five sessions were:

- Session 1: What is ADHD?
- Session 2: Communication Skills.
- Session 3: Behavioural Management.
- Session 4: Problem Solving.
- Session 5: Family Anger Management and Review.

## Procedures

Prior to the first treatment group, parents who agreed to have their child included in the study completed the Vanderbilt scales. With parental consent, Vanderbilt forms were also sent to a teacher at school who would be most familiar with the child (typically a form teacher) for them to complete the teacher rating of the Vanderbilt scale. Both the experimental and control group participants had data gathered in this same manner. The primary data collection point was referred to as time 1, a pre-treatment baseline. Demographic information was also gathered at that time. Parents and teachers completed the scale again four weeks following the final session of the group. This was typically two to three months after time 1. For the control participants, data was collected four weeks following the five-week waiting period so as to closely follow the elapsed time of the experimental group. As with the experimental group, this period was typically two to three months. There were no significant differences in time elapsed between measurements as it applies to the two conditions. This second measurement was referred to as time 2, a post-treatment follow-up. Time 2 was determined to be four weeks after the final group so that lasting change could be measured in the child. It was believed that a measurement immediately following the final group might be less reflective of any permanent changes in youth behaviour and possibly unduly influenced by the final group's review session, particularly from the parent perspective as they participated in the groups.

## Results

Demographic data for the control and experimental groups was compared (Table 1). Both groups were comprised of mostly male participants. In addition, both groups were mostly of white racial/ethnic background, with smaller, though comparable percentages of African American participants. The control group consisted of three participants of Asian racial/ethnic background, while the experimental group had one participant who was identified as Latino. The control group was on average slightly younger than the experimental group, but not at a statistically significant level. A series of chi-square tests for differences in demographic background found no statistically significant differences between the two groups. Thus, both groups were reasonably similar in terms of participant demographic variables.

About half of all youth in the study had some type of treatment ongoing at the time of the initial group meeting. As it applies to history of pre-existing treatment for ADHD (Table 2), more youth in the control group received treatment from a psychologist than youth in the experimental group. However, more youth in the experimental group received treatment from a psychiatrist than youth in the control condition. Hence, more participants in the experimental group were currently prescribed medication for ADHD than control group participants. A series of one-way analyses of variance (ANOVA) demonstrated no key differences in outcomes from the parent or teacher perspective for either youth who had been treated by a psychologist as compared with a psychiatrist, or for youth who were on medi-

**Table 1** Participant demographic descriptive statistics

	Control		Experimental	
	<i>n</i>	%	<i>n</i>	%
Participants	20	50	20	50
Gender				
Male	15	75	17	85
Race				
White	15	75	15	75
African American	2	10	4	20
Latino	0	0	1	5
Asian	3	15	0	0
Age (years)	M	SD	M	SD
	9.3	1.94	10.2	2.01

**Table 2** Treatment history descriptive statistics

	Control	Experimental
Psychology treatment (%)	60	34
Male	60	35
Female	60	33
Psychiatry treatment (%)	5	30
Male	5	35
Female	0	0
Currently on medication (%)	50	75
Male	47	88
Female	60	33

Note:  $n=40$ .

cation versus those youth not on medication. This absence of differences held true at both time 1 and time 2. Thus, although these important between-group demographic and treatment differences were noted, they did not affect the study dependent variables significantly.

In order to determine the effects of the psychoeducational group over time on Vanderbilt scores from the parent and teacher perspectives, a series of one-within, one-between multivariate analyses of variance (MANOVA) were performed, with time as the within-subjects factor and treatment group as

the between-subjects factor. Group means and standard deviations are displayed for time 1 and time 2 in both conditions (Tables 3 and 4). NICHQ Vanderbilt scale scores are provided across eight measures, four rated by parents and four rated by teachers. The ratings measured totals of symptoms for the inattentive-type, hyperactive-type and combined-type of ADHD as well as school performance from the perspective of parents and teachers.

The multivariate tests indicated significant main effects for the within-subjects variable of time across all four parent-rated Vanderbilt variables ( $P < 0.01$ ). From time 1 to time 2, participants improved significantly across all measured parent-rated variables including inattention, hyperactivity, a combination of the two ADHD measures, and parent-rated school performance. The time elapsed from the first to the second measure, again, was approximately two months for all participants. This consisted of a rating one month after the groups ended, and just over two months for those who did not attend the group, so that the same amount of time was being measured. The within-subjects factor of time was not a significant main effect as it applies to all teacher-rated variables. However, time approached, but did not attain significance for teacher-rated variables of inattentive-type ADHD  $F(1,32) = 3.69$ ,  $P=0.06$  and combined-type ADHD  $F(1,32) = 3.75$ ,  $P=0.06$ .

The multivariate tests indicated no significant main effects for the between-subjects variable (treatment group) across all four teacher-rated Vanderbilt variables. The interaction of the treatment group (experimental vs. control) and time approached, but did not attain, significance in teacher-rated school performance,  $F(1,32)=3.54$ ,  $P=0.07$ . This lack of sig-

**Table 3** Parent and teacher Vanderbilt scales control data

Vanderbilt score	Time 1		Time 2	
	M	SD	M	SD
Parent				
Inattention <sup>a,b</sup>	7.1	2.76	6.1	2.46
Hyperactivity <sup>a,c</sup>	5.8	3.17	4.5	3.15
Combined <sup>a,d</sup>	12.9	5.28	10.6	5.62
School Perf. <sup>a,e</sup>	3.5	2.52	2.4	1.90
Teacher				
Inattention	3.5	3.50	3.2	3.12
Hyperactivity	2.6	3.39	2.2	3.05
Combined	6.1	6.15	5.4	5.36
School Perf.	3.3	2.95	3.4	2.80

Note:  $n=40$ . <sup>a</sup>Within-subjects  $F$  significant,  $P < 0.01$ . <sup>b</sup>Inattention  $F=10.52$ . <sup>c</sup>Hyperactivity  $F=8.04$ . <sup>d</sup>Combined  $F=11.28$ . <sup>e</sup>School performance  $F=7.48$ .

**Table 4** Parent and teacher Vanderbilt scales experimental data

Vanderbilt Score	Time 1		Time 2	
	M	SD	M	SD
Parent				
Inattention <sup>a,c</sup>	5.8	2.68	4.8	2.81
Hyperactivity <sup>a,d</sup>	5.3	3.01	3.3	3.39
Combined <sup>a,e</sup>	11.1	5.29	8.1	5.25
School Perf. <sup>a,b,f</sup>	2.5	1.90	1.3	1.03
Teacher				
Inattention	5.1	2.81	3.4	2.71
Hyperactivity	3.6	2.93	2.3	2.55
Combined	8.7	5.15	5.7	4.70
School Perf.	4.2	2.37	3.3	2.30

Note:  $n=40$ ; <sup>a</sup> Within-subjects  $F$  significant,  $P<0.01$ . <sup>b</sup> Between-subjects  $F$  significant, school performance only,  $P=0.05$ . <sup>c</sup> Inattention  $F=10.52$ . <sup>d</sup> Hyperactivity  $F=8.04$ . <sup>e</sup> Combined  $F=11.28$ . <sup>f</sup> School performance within-subjects  $F=7.48$ , school performance between-subjects  $F=4.00$ .

nificant findings was consistent with prior within-subjects results from the teacher perspective. By contrast, as it pertains to parent ratings of school performance, participants in the experimental group improved significantly  $F(1,32) = 4.00$ ,  $P = 0.05$ . Thus, parents of youth in the experimental treatment group rated them as having better school performance than parents whose children were in the waiting list control group. The between-subjects factor of treatment group was not a significant main effect as it applies to the other three parent-rated variables. Thus the treatment group effect could be described as modestly positive in this pilot study, with only one of the eight Vanderbilt variables of interest demonstrating a significant change.

## Discussion

The aim of this pilot study was to test the efficacy of a psychoeducational group intervention for youth with ADHD and their parents/caregivers. The study compared parent and teacher ratings of youth behaviour from time 1, before the intervention, to time 2, four weeks after the intervention between an experimental group that received the group intervention and a waiting list control group of youth whose parents agreed to participate in the study. The results demonstrated that symptoms of ADHD behaviour and school problems decreased in the experimental group per both parent and teacher ratings. The improvement was more pronounced with

parent ratings, indicating greater improvement after the intervention than as judged by teacher ratings, which demonstrated no significant improvements. The data, with one lone exception, failed to suggest that the youth who received the intervention had lower rated symptoms of ADHD and school problems based on the intervention itself. Waiting list control data showed similar patterns of improvement from both the parent and the teacher perspective. The mean differences between the experimental and control groups from time 1 to time 2 confirmed that although both groups improved, there was no significant difference between the experimental and control groups in terms of ADHD symptom improvement. Thus the psychoeducational intervention used in this study, in and of itself, did not significantly improve symptoms of ADHD for those who received the intervention more than for those who did not have the intervention. Prior studies on this important topic have also at times indicated no support for multimodal treatment versus the standard medical intervention for ADHD.<sup>12-14</sup>

While most of the hypotheses in this study were not supported, the data still demonstrate results that are worthy of future consideration. Over the course of the study, while the teacher change in ratings were not statistically significant, the parents rated significant decrease in their children's symptoms from time 1 to time 2 in both treatment and control conditions. Further analyses in this study showed that treatment from a psychologist, treatment from a psychiatrist or medication management did not significantly impact the ratings of ADHD symptoms. Thus, other possible causes must contribute to such

changes in parent ratings of youth. Potentially, just participating in a study or being tracked by professionals might improve symptoms of ADHD behaviour or improve parents' perception of such symptoms. This could then indicate therapeutic value for regular follow-up in these patients. The observed change during the study seems to indicate that more frequent clinic visits from parents and children to the clinic, may lead to more positive outcomes in terms of ADHD and school problems. This idea is consistent with prior research indicating a benefit of involving parent education and training in the treatment of youth with ADHD.<sup>9-11</sup>

One thing that youth in both the experimental and control conditions had in common was that they were all being seen at their primary care clinic. While some received extra attention from a behavioural health specialist such as a psychiatrist or psychologist, a good many of the youth received treatment only from their primary care clinic. Although not the aim of this study, the results may point to the value of the already existing primary care medical treatment that youth received. The typical cut-off score for ADHD on both inattention and hyperactivity-impulsivity was not attained for the average youth in either condition of this study from the teacher perspective. In addition, youth in this study were not gauged hyperactive or impulsive from the parent perspective, and were just at the cut-off mark for inattention (a score of 6) from the parent perspective. Thus, the youth receiving primary care treatment were already having their ADHD fairly well managed at time 1 of the study. Thus, one hypothesis could be that their medical treatment at the primary care level was already reasonably efficacious prior to this study. Improvements for youth who are already well managed would naturally be hard to attain.

Also worthy of note is the fact that parents, but not teachers, rated improvement in both conditions. This may indeed speak to the value of involving parents in treatment protocols for youth. While the youth are often identified as the target of psychological and psychiatric interventions, these data suggest that involving the parents more may lead to improvements from the parent perspective. This is consistent with the research of Danforth, who, in parent training studies, has advocated for greater involvement of parents in the treatment process for numerous years.<sup>17</sup> A family medicine-based study in 2003 found similar results in that youth who received family based group interventions improved as compared with a control group, but only as it applied to parent ratings, and in that case, only as rated in the home setting.<sup>18</sup> How might this impact school behaviour for youth with ADHD? Researchers may wish to target teachers in future psycho-

educational studies to determine if involving teachers in a series of educational groups might make teacher ratings mimic that of parents in this pilot study in both the treatment and control conditions.

The one dependent variable that did change between youth in the experimental and control groups was that of school performance as rated by parents. Teacher-rated school performance, of course, is a better indicator of how a child is actually doing at school. Just as parents know more about a child's home life, teachers would tend to have a better feel for their functioning and performance at school. Nonetheless, if a parent believes a child is improving at school, that belief does have value. Parents may be more willing to reward their child and stick with positive reinforcements if they believe their school behaviour is changing for the better. Furthermore, it would also seem that parents would be satisfied with treatment if they believe that it is having a positive impact on schooling for the child. Prior research has shown that involving parents in training groups can improve youth functioning from the parent perspective,<sup>4</sup> and that seems consistent with this study. In addition, family and youth education programmes are seen by some researchers as a key vehicle to implement programmes that can influence the mental and physical health of youth diagnosed with ADHD.<sup>19</sup> Clinical implications would be that primary care physicians need to incorporate parents into their treatment protocols and educate parents regarding youth ADHD.

A few things need to be mentioned regarding the limitations of the study. Because this study was a pilot project, there was a small sample size. A group of 40 children, although easy to manage from a clinical standpoint, does not present a large enough sample to draw many hard and fast conclusions. This limited the power of the study and thus made it more difficult to determine statistically significant changes in youth. Funding is being pursued to implement the aforementioned protocol in a larger group of participants to further investigate the effect of the group intervention in a more widespread project.

Compounding the power issue in this study is the fact that it was more difficult to recruit participants for a free psychoeducational group than was originally expected. Those who participated were doing so willingly and sacrificing one evening a week with the purpose of better understanding the child's ADHD. This may have resulted in a possible selection bias towards youth and caregivers who may be more likely to change for the better, or improve ADHD symptoms. Thus, families who agree to give an extra evening a week in the interest of improving ADHD symptoms may already be more likely to see changes in behaviour than those who do not. This

possible selection bias may also have limited the ability of the study to adequately test its hypotheses.

One idea supported in this study is that parents should be more involved in the treatment, not only as informants of youth behaviour, but also as participants in the education process regarding ADHD, what it means, and how its symptoms can be improved. Physicians would do well to reach out to the family and educate parents and guardians regarding youth ADHD. This study suggests that outcomes could improve if parents are involved more in the treatment process. In addition, it has been suggested by others that nurses and other allied health professionals can also be successful in educating families and youth about the challenges of ADHD.<sup>16</sup> The knowledge and skills that parents received from the educational intervention appeared to be valuable, thus patient families can benefit from extra information and guidance in addition to the customary primary care treatment for ADHD.

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#### DECLARATION

This study has not been submitted for publication in any other journal.

#### ETHICAL APPROVAL

This study was reviewed and approved by the Charleston Area Medical Center/West Virginia University Institutional Scientific Review Board and the Institutional Review Board for the protection of human subjects (Protocol # 04–03–1588). Patient parental consent and youth assent was obtained for all 40 participants in this manuscript. Every effort was made to maintain patient and family confidentiality throughout all portions of the project.

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