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EFFECTS OF MEDICATION ON CHILDREN WITH ADHD: DOES MEDICINE FOR ADHD NEGATIVELY IMPACT CHILDREN DIAGNOSED WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER?

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ABSTRACT:

Attention deficit hyperactivity disorder, more commonly known as ADHD, is highly prevalent in children. Due to the prevalence of this disease, more research is being performed in areas such as practitioner effectiveness, treatment adherence, varieties of treatment, and disease experience. These factors heavily influence the course of the disease and oftentimes the child's life experience. Various studies have found problems with the current handling of the disease and suggest better options for parents, children, and providers.

OVERVIEW OF ADHD

Attention Deficit Hyperactivity Disorder is a behavioral condition that makes focusing on everyday requests and routines challenging (APA, 2011). People with ADHD typically have trouble getting organized, staying focused, making realistic plans and thinking before acting. They may be fidgety, noisy and unable to adapt to changing situations (APA, 2011). Approximately 1 in 10 children in the United States is diagnosed with ADHD.¹ This makes ADHD a widespread problem which needs to be treated appropriately.

RITALIN DEBATE

Jadad, Boyle, Cunningham and Schachar (1999) completed a meta analysis and came to the conclusion that stimulant medication tended to reduce behavioral disturbances but not help academically and that short-term side effects were mild. However, the Drug Enforcement Administration (DEA) shows that Ritalin production has increased 650% during 1990-1997, and that amphetamine medication, which is a more recent trend of treatment, i.e., Adderall, increased production 4504% during 1995-2000. These medications account for 42% of the stimulants produced in the United States and mostly are used to treat ADHD.² Many express concern

over these high numbers as doctors may be over-diagnosing and the use of such addictive medications could be potentially harmful.⁵ With many studies showing behavioral treatment is just as effective as stimulants, and many others showing it might not be, it becomes important that we differentiate between what is actually beneficial.⁴

IMPORTANCE OF STUDYING MEDICATION EFFECTS

If we don't study medication effects, we could be giving those diagnosed a potent and possibly harmful drug that is not required, which is unethical. The purpose of this paper is to review the existing literature to understand the current recommendations and how well they are applied, what parental perceptions of available treatments are, and what children's perceptions of the medication are. This review will show that perceptions of medication have a clinically significant impact on their use, which can result in negative effects on the children who take them.

EFFECTS OF MEDICATION ON CHILDREN WITH ADHD CURRENT MEDICATION USE AND TREATMENT RECOMMENDATIONS

Ambalavanan and Molten (2005) published a guideline for diagnosing and treating ADHD. It was derived from evidence-based clinical practice at Cincinnati Children's Hospital Medical Center and is targeted for children between the ages of 5 and 18 with symptoms of ADHD, excluding autism and other mental disorders.⁵ It incorporates the DSM-IV criteria for diagnosis. The current recommendations based on this data are as follows: use comprehensive screening forms to evaluate symptoms, impairment, and co-morbidity; combine medication and behavioral therapy; and use stimulants as the first line medicine because they are safe for up to 24 months. Also use group therapy for 1-6 months, do not try alternative therapies, and communicate with schools for monitoring and follow up.⁶ This piece provides a thorough example of what current practices are supposed to look like to eliminate other possible diseases to ensure accurate diagnosis and guidelines for the safety of the patient.

Waschbusch, Carrey, Willoughby, King and Andrade (2007) conducted a quasi-experimental study that looked at how children with conduct problems (CP), like rule-breaking, and children with CP caused by callous/unemotional traits (CU), such as no remorse or empathy, react to various therapies. Children who early on develop both CU/CP have a higher likelihood of significant social problems. The purpose of the study was to see what approach works best for both children with ADHD-CP and children with ADHD-CP/CU, and to discern if the treatments produce

different outcomes. The hypothesis was that children with ADHD-CP/CU would respond less to behavioral therapy alone and that medication would be needed more than for those with only ADHD-CP. There were 37 children involved in the study, 19 of whom had attention deficit hyperactivity disorder with CP-only and 18 who had ADHD-CP/CU. The children attended an eight-week summer treatment program at Dalhousie University. All participants were diagnosed with ADHD-ODD (oppositional defiant disorder) or ADHD-CD (conduct disorder). They were then sorted into their groups by parent and teacher ratings using the Antisocial Process Screening Device (which uses 20 questions to measure narcissism, impulsivity and CU). Only those that specifically referred to CU were used in this study; those with a CU score above 65 were placed in the ADHD-CP/CU group and those below placed in the ADHD-CP group. The children were then given a placebo, a low dose, or a high dose of medication that was changed daily based on random assignment. A child could either be on behavioral only therapy, BT with a low dose, or BT with a high dose. For the behavioral therapy children were awarded points for good behavior in daily activities such as swimming, softball, soccer, art, etc., which they could trade in for rewards or honors. Medication was either .5 mg/kg twice daily or .6 mg/kg twice daily, administered when they arrived at the program and right before lunch. Medication was administered in a double-blind fashion. In the STP basic rules were set to be followed always and teachers/counselors would record rule violations as would an independent observer. Inter-rater reliability was tested by running correlations on both sets of data and ranged from .58-.91 the average being .79, which is high. At the end of the day the students were also rated by the teachers on the IOWA scale measuring impulsivity/inattention/overactivity (IO) and oppositional/defiant (OD) behaviors; these scores were averaged. The independent variable then was the type of therapy received: BT-only, BT-low or BT-high. The dependent variable was the teacher and counselor ratings and the IOWA scores.

BT-only children with ADHD-CP/CU exhibited more anti-social behaviors than those with only ADHD-CP. However, the measures only differed significantly on antisocial behaviors, not on positive behaviors or typical ADHD behaviors, such as interrupting. Both groups responded equally well to the combination of medication and behavioral therapy; researchers needed to modify the hypothesis because medicine-only and BT-only did not produce the desired results. ⁷ This is concurrent with the

current recommendations provided by Ambalavanan and Molten (2005). It is thought that the children in this study will be a good representation of the ADHD population because they have a severe form of the disease which in turn makes effects more significant when they are found. However, it has also been proposed that perhaps children with CU traits may respond differently to rewards and that a finer study with less broad anti-social definitions may be required.

PARENTAL PERCEPTIONS OF TREATMENTS

In a community-based study, Concannon and Tang (2005) conducted a differential analysis exploring parental perceptions of diagnosis and treatment of their children who were diagnosed with ADHD. 278 children, ages 10-12, with ADHD were identified and their parents completed an anonymous questionnaire covering perceptions of overall treatment, diagnosis, and management. The research was conducted in Sydney, Australia through the public schools. The purpose was to find out information about parental perceptions of treatment. Then the information would be used to assess quality and identify shortcomings in the care of children and then be addressed. The questionnaire asked about the child's gender and age, ADHD status, category of the person that made the diagnosis, methods used to make the diagnosis, treatments used and their perceived usefulness, and parental satisfaction.

The study found that 73% had been diagnosed by pediatricians, 9% by psychologists and 10% by other professionals. Ninety percent of the participants remembered an interview with them and the child, while only 66% remembered a survey. There was also a low incidence of vision and hearing tests which could rule out other disorders.⁸ Eighty-two percent had tried medication, 66% were continuing it, and all participants had been offered it as a treatment option. As for non-drug conventional treatments, less than 50% reported being offered any type of therapy. The most helpful of these therapies were academic support, 85-88 %, and counseling, 63%, of the small percentage that were offered them.⁹ The use of non-conventional therapies was reported by 71% of the parents with the most common being elimination diet (57%), fatty-acid supplementation (31%), and vitamins (22%). Fifty-five percent of parents were satisfied or very satisfied overall. Two groups were very likely to express high satisfaction, those on medication and those who visit the doctors more frequently than every six months.¹⁰ The major reasons for dissatisfaction were: the doctor only wanted to prescribe medication, health and

educational professionals did not understand the child's problem, and the professionals did not appear interested.¹¹ This can lead to the conclusion that some parents want to explore options beyond medication but because of the unavailability of other treatments cannot find them. This may also be the reason for the high incidence of non-conventional therapies but more studies would have to be done.

Johnston and Leung (2001) conducted a correlational study to determine how parents' and child's attribute behavior based on the type of therapy the child is receiving (medication, behavioral, both, or none). The researchers had 74 mothers, 41 fathers, and their 6-15-year-old ADHD-diagnosed sons watch videos of children performing symptoms of ADHD, compliance and non-compliance. Then they were told that the child was either not on any therapy, taking medicine, in behavioral therapy or doing both medication and behavioral therapy. Then they asked them to rate using a scale of 1-10 why the child was acting out (casual locus), how likely the behavior was to repeat (stability), the amount of control the child had over the behavior (control), and how intentional the behavior was (intentionality). Additionally, the researchers had the parents rate how they reacted to the behavior. The researchers predicted that medicine would be perceived to increase stability in problem and positive behaviors and also increase perceptions of control in child behaviors. To ensure that behaviors were common across the board, the researchers had children act out ADHD symptoms and behaviors and then the videotape was played for the parents and their sons who were then told what type of therapy the child was receiving (Independent Variable). The gender of the parents was another variable. The reactions to the tapes were the dependent variable, with the group receiving no therapy at all as the control.¹²

The results were true to the predictions. Mothers reacted with favor to compliance, while fathers did less so. Compliance behaviors for the medicine group showed less child control and more stability (behavior was likely to happen again) but were viewed more favorably. Behavioral treatments showed that the locus of the problem was more external and was also more likely to occur again. Both were consistent with predictions. For ADHD behaviors, mothers rated behaviors as less intentional than did fathers. With medication, results showed more child control. Medication also gave more credit to things outside of the child and less intentionality. For noncompliance behaviors, in all three treatment conditions parents rated greater control and less stability. But behavior was still ranked as

slightly more control and stability. Medication and combined treatments also received less intentionality and were reacted to more favorably.

CHILDREN'S PERCEPTIONS OF TREATMENTS

In the same study as above, Johnston and Leung (2001) also rated children's attributions of ADHD behaviors. Also, as previously mentioned, the boys were 6-15 years old and were the sons of the 71 families which participated. They watched the same videos of the behaviors with their parents. For the boys' reactions, compliance behaviors had no significant effects. ADHD behaviors were attributed to be more controllable whenever there was a behavioral component to the treatment. And with noncompliance, the boys believed that it was more intentional and slightly more controllable with any treatment but significantly more controllable with behavior management.

In another publication, Moline and Frankenberger (2001) completed a differential study that evaluated how middle and high students in grades 6-12 felt about ADHD medication. Six hundred and fifty-one primarily white students, ages 8-11, in the Wisconsin and Minnesota area completed a survey after responding positively or negatively that they had been diagnosed with ADHD and were taking stimulant medication. If they indicated they had ADHD and were taking medication, a group of 50 students, they then answered a Likert-type survey on how they felt about their treatment and the experiences that went along with medication such as social, behavioral, academic, and attention effects on a scale of 1=never to 5=always. If they responded that they did not have ADHD or were not taking medication, they answered different questions about their perceptions of students who did take medication. The surveys were given anonymously and voluntarily. The study had several purposes: whether those diagnosed wanted to continue taking their medication and if they liked it; the students perceptions of academic, social, behavioral and attentional side effects; and their self-reported side effects of the medication itself. The survey itself was clustered to be able to help predict what made a child want to continue or stop a medication. The independent variable was whether or not the students were taking medication; the dependent variable was their attitudes towards themselves and/or other students.¹⁵

The results for the students who were diagnosed with ADHD and were taking medication were concurrent with expectations. The mean grade was 10th and for those taking medication they had been taking it for

an average of 3.73 years.¹⁴ Thirty-five percent would stop their medication, while 43% would continue it and the remaining 23% were unsure, which means over half or 58% of the sample wanted to discontinue their medication or were unsure if they wanted to continue it¹⁵. Students stated that they felt medication helped them improve behaviorally, socially with parents and peers, and with attention, but academic achievement was significantly lower than all other categories. Also, social ability with friends was lower than that with parents. Sixty-four percent of students reported feeling side effects from their medication, including headache, sleepiness, restlessness, and stomach aches. Thirty-four percent of students also reported being asked to sell their medication.¹⁶ These findings are significant because although students report positively in many areas, they feel that parents like them better on medication, and that it does not help them academically, and 35% wanted to stop taking their medication which is significantly high. Also the study found that the frequency of doctor's visits positively correlates with dosage, which positively correlates with side effects. Whether or not children liked their medication and if it helped them pay attention in school were both predictors of if the children wanted to continue their medication.

The results for the students who did not take ADHD medication were generally positive and also were concurrent with the experimenters' expectations. Many stated that they act the same as other students, but that the medication had not changed them positively or negatively. Fifty-three percent stated that they had seen some students give away or sell their medication. This is a dangerously high number for students when amphetamines, which are very addicting, is a growing trend in the stimulant medication used, which was another finding of this study.

It is also important to point out that 52% of students diagnosed stated that they never needed the medication to pay attention to tasks they really like to do, while only 9.5 % indicated they always do. This indicates that the desirability of the task is a possible variable that determines attention, not medication.

DISCUSSION

SUMMARY AND CONCLUSIONS

The purpose of this paper is to review the existing literature to understand the current recommendations and how well they are applied, and also what the perceptions of parents and children regarding medication are. The thesis, that perceptions lead to a significant clinical effect and may result in negative effects on children, was supported.

Parents perceive medication as providing more child control and that instances of negative behavior are less likely to happen again in the future, which supports my thesis.¹⁷ Parents also reacted more favorably and rated negative behaviors as less intentional in the children on medication. They also gave more credit to things outside of the child causing the problems.¹⁸ Concannon and Tang (2005) found that perceptions of medication do lead to a higher incidence of use, a higher satisfaction rating in parents and are often the only treatment offered which also support my thesis. Another support to my thesis is the data that showed that the majority of children have a high incidence of negative side effects, are unsure of whether they should continue their medication or not, and believe that their parents like them better on medication. They also believe the medicine does not help them academically and that the attractiveness of the task is a possible variable for whether or not they pay attention.¹⁹ Although combined therapy of medication and behavioral therapy are the current recommendations as given by Ambalavanan and Molten (2005), and have been found to be helpful, the study cited showing its effectiveness did not contain a control group, which makes it hard to make an accurate comparison.²⁰ Also diagnostic tests are not being fully incorporated before a diagnosis is delivered, meaning other problems could be missed.²¹

IMPLICATIONS

There are several implications to be drawn from the literature. These findings lead to the conclusion that in order to satisfy parents, doctors may prescribe medication, may encourage medication as the main viable option and not follow up with any behavioral help because it may be viewed as unnecessary. They may be over-diagnosing because the instances of using the recommended diagnostic tools to rule out other problems are underused. Children may not speak up about how they feel about their medication because they believe their parents like them better if they continue it. Therefore, children may be taking medication that isn't helping them or that is potentially harmful. Doctors may be over-dosing and over-prescribing. Parents may not understand that the medication is possibly affecting their child negatively and that there are other options to explore.

LIMITATIONS

Although quality research has been done, there are some limitations. Many of the studies include people of mainly European descent, and are in isolated areas, such as the Midwest and Sydney, which could make it hard to generalize to the general public. The sample sizes were small and

concurrent with the 3-4% of those diagnosed with ADHD, but could still be a hard representation of the population as a whole. Doctors' perceptions of medication and knowledge of other diagnostic tools available and why they are used were also not studied. Therefore doctors' perceptions are another possible variable.

FUTURE RESEARCH

Future research should focus on doctors' perceptions and knowledge of other diagnostic tools to see if it is a common factor with the findings of this paper. The literature on the effects of ADHD medication is lacking and should be bolstered, specifically the side effects and how many are truly affected, the long-term effects, and what children really think the medication is supposed to do, and what it actually does. Other questions include, why children stay on the medication when they want to quit and what the availability and offering of other treatment options is. All studies concerning ADHD should also try to minimize parental influence since it is shown as a strong reason for staying on medication, even if it is not working for the child.

ENDNOTES

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