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The Effect of ADHD and Psychotropic Medication use on College Performance

Melody Y. Knight[1], Larry P. Knight[2] & Lorraine Killion[3]

Abstract

The use of psychotropic medication in children and adolescents has been increasing steadily over the past 20-25 years. Of particular concern are medications for the control of Attention Deficit Hyperactivity Disorder (ADHD) (Olfson, Marcus, Weissman, & Jensen, 2002; National Conference of State Legislatures, 2004; Kelleher, McInerney, Gardner, Childs, & Wasserman, 2000; Safer, 1997; Zito, Riddle, Safer, & Magder, 1995). The percentage of college students using prescription psychoactive medications for ADHD is unknown. Of all medications used for this disorder, stimulants are most often prescribed for treatment of ADHD in this age group and are seen as an effective treatment for this disorder (Staufer & Greydanus, 2005; Baverstock & Finlay, 2003). Students enrolled at a regional university in South Texas were surveyed (N=199). Of students surveyed, only ten identified themselves as having been diagnosed with ADHD and of these only seven used prescribed medications. The most commonly prescribed medication was Ritalin, followed by Concerta, Adderal and Vivance. The behaviors the medications were used to control included: excitability, disruptive behavior, inability to be still, inability to concentrate and the inability to follow instructions. All students with diagnosed ADHD identified at least one of these behaviors as needing to be controlled. Two students reportedly had difficulties with four of the five listed behaviors, while most indicated at least two. Side effects of the medications mentioned by the students included: sleeplessness, loss of appetite, feelings of fatigue, headaches, dehydration, feeling like a zombie, and in one case, worse behavior. Several students indicated that they had moved from medication to medication in an effort to minimize these side effects. In two cases, use was discontinued because the side effects were so bothersome. In this study, students with self-reported ADHD, with or without medication, did not have a significantly lower GPA than those not diagnosed with ADHD. Though the overall mean was lower (2.799 for those with ADHD, compared to 2.968 for those without), this difference was too small to be significant.

Keyword: ADHD, stimulants, adolescents

Review of the Literature

The use of psychotropic medication in children and adolescents for the treatment of psycho-behavioral disorders has been increasing steadily over the past 20-25 years (Olfson, et al, 2002, National Conference of State Legislatures, 2004; Kelleher et al., 2000; Safer, 1997; Zito et al., 1995). These medications are used to control a variety of conditions including Attention Deficit Disorder (ADD), Attention Deficit Hyperactivity Disorder (ADHD), depression, anxiety and mood disorders (Knight, et al., 2011;NIMH, 2004; Manninen, 2006). Not only are more children and adolescents using psychotropic medications, but they are beginning use at younger ages (Kelleher et al., 2000; Safer, 1997; Rappley, Mullan, Alvarez, Eneli, Wang, & Gardiner, 1999; Zito et al., 2000). Estimates of use vary, however, all show increases. One national report showed that between 1987 and 1996, for example, the use of psychotropic medication use in children and adolescents increased from 1.4 to 3.9 per 100.

[1] PhD., RN., MCHES, Texas A&M University-Kingsville. Email: Kfmy000@tamuk.edu, Phone: 361-455-1421
[2] PhD., RN, Texas A&M University-Kingsville. Email: Kflpk00@tamuk.edu, Phone: 361-522-4052
[3] EdD, Texas A&M University-Kingsville. Email: Lorraine.killion@tamuk.edu, Phone: 361-593-3095

These increases were significant across geographic region, age, race, socio-economic status and insurance groups (Olfson, et al, 2002; Kelleher et al.,2000; Safer, 1997).Regional reports showed increases from as low as 1.9% in 1990 to as high as 4.7% in 1995 (Zito et al., 1995). And in 2005, 15 million prescriptions for antidepressants were written for children and adolescents (Manninen, 2006). Throughout theten years from 1995-2005, six million prescriptions for the single drug ,Ritalin, were filledeach year to treat ADHD. During the same period spending on ADHD alone increased by 122 percent (Science Daily, 2006). Children on public assistance were the most likely to receive stimulants, antidepressants, anti-psychotics and mood stabilizers. These drugs are extremely potent, can significantly alter behavior and have serious side effects (American Academy of Child and Adolescent Psychiatrists, 2002). Anti-psychotic drugs include Zyprexa, Haldol, and Risperdal; mood stabilizers include Tegretol, Depakote, and Lithium; anti-depressants include Prozac, Xanax, and Zoloft; antianxiety medications include Anafrani and Buspar, and stimulant drugs used for ADHD include Ritalin, Concerta, Cylert, Dexedrine, and Dextrostat. Of these, the most commonly prescribed for pediatric patients are Ritalin and Prozac (Block, Dube, & VanderKey, 2004; Littell, 2001; NCSL, 2004). A psychotropic drug is a chemical substance that crosses the blood-brain barrier and acts upon the central nervous system to alter brain function so that changes will occur in perception, mood, consciousness, cognition and behavior. These drugs are used most often to control the undesirable behaviors associated with Attention Deficit Hyperactivity Disorder (ADHD). This disorder is characterized by developmentally inappropriate levels of hyperactivity, impulsivity and inattention (Vance &Weyandt, 2008). These behaviors interfere with classroom control and lead to poor academic performance for all students. Between 5 and 10% of children in the United States have been diagnosed with ADHD (Vance & Weyandt, 2008; Heiligenstein et al., 1999).Interestingly, African American and Hispanic children are diagnosed with ADHD at only half the rate of Caucasian children (Rothe, 2005) and Non-Hispanic white males have the highest rate of diagnosis (Vance &Weyandt, 2008). Though it used to be believed that children "outgrew" this disorder, it has now become more accepted among diagnosticians that this disorder continues into adulthood even though ADHD symptoms decrease with age by approximately 50% every five years (Heiligenstein, Conyers, Berns, & Smith, 1998). While some studies indicate that up to 70% of children diagnosed with ADHD continue to have symptoms into adolescence and adulthood (Heiligenstein, et al., 1998; Heiligenstien, Buenther, Levy, Savino, & Fulwiler, 1999), Barbaresi,et al., 2013, found that only 29.3% of childhood ADHD cases persisted into adulthood. Unfortunately, there is no specific test to diagnose ADHD in young adults includeing college students.

The number of students with disabilities enrolled in college tripled between 1986 and 1998 and is still rising (Wolf, 2006). Twenty-five percent of students receiving disability support services receive those accommodations for ADHD (Vance & Weyandt, 2008; DuPaul, Wyandt, O'Dell, & Varejao, 2009), in spite of lack of normative data to determine DSM-IV ADHD criteria thresholds in college students (Heiligenstien et al., 1999). Even with no published studies documenting the rate of ADHD in college, it has been found that between 2-8% of students self-report clinically significant symptoms of ADHD (Weyandt & DuPaul, 2006). And it has been reported by some studies that those students who self-reported ADHD had lower GPAs, and reported more academic concerns, more depression, emotional instability and more substance use than those who did not claim to have this disorder (Blasé, Gilbert, Anastopoulos, Costello, Hoyle, Swartzwelder, &Rabiner, 2009). Studies examining academic performance in college students with ADHD have produced conflicting results. Fewer adolescents diagnosed with ADHD attend college than peers not diagnosed with ADHD. It is generally accepted that students with diagnosed ADHD who attend college are at risk for poor academic achievement and studies have shown that of those who do attend, fewer complete degree programs and graduate (Barkley, Murphy, & Fischer, 2008). Even though students with ADHD who attend college have higher cognitive abilities and greater past school success and coping skills than students diagnosed with ADHD who do not choose to attend college, performance difficulties are still great (DuPaul, et al., 2009). The study by Blasé, et al, 2009, which found that students with ADHD had lower GPAs and other difficulties confirmed the findings of other studies which found poorer social and emotional adjustment (Shaw-Zirt, Papali-Lehane, Chapline, & Bergman, 2005), lower self-esteem (Dooling-Liftin & Rosen, 1997),and more psychological distress including depression (Weyandt, Rice, Linterman, Mitzlaff, & Emetr, 1998; Rabiner et al., 2008). These findings, however, are not conclusive. Conflicting studies found that students with diagnosed ADHD graduated with GPAs similar to those without the disorder (Heiligenstein, Guenther, Levy, Savino, &Fulwiler, 1999; Sparks, Javorsky, & Philips, 2004) and did not have significantly more depression, anxiety and substance abuse problems (Heiligenstein, et al., 1999). There have been no studies of the long term effects of past and current ADHD medications on college performance.

One study showed no benefits of medication in college students with ADHD, and stated that it is "…unclear what effects medications have on academic, interpersonal, and psychological outcomes among college students" (p.16). (Rabiner, et al., 2008).A 2007 Mayo clinic study stated that children diagnosed with ADHD do worse in school than children without ADHD (Barbaresi, et al., 2007), but treatment with stimulant medication improved reading performance, decreased school absenteeism, and decreased grade retention – the longer the treatment, the greater the improvement (Barbaresi, 2007). Conversely, a 2009 study published by the National Institutes for Mental Health (NIMH), stated that in an eight year follow-up, there were no long-term differences in academic performance, behavior and other ADHD related symptoms for children and adolescents who were treated with medication alone, medication and therapy, and community support alone (Molina, 2009). The percentage of college students using prescription medications for ADHD is unknown. Stimulants are most often prescribed for this age group and have been recommended as an effective treatment of ADHD in college students, and are the most frequently prescribed medications for this group (Staufer&Greydanus, 2005; Baverstock& Finlay, 2003). Some students are self-medicating with stimulants to improve function, concentration, attention, focusing and overall college performance as well (DuPaul, Weyandt, O-Dell, &Varejao, 2009; DeSantis, Webb, &Noar, 2008; White et al., 2006). Of all college students, Hispanic students are less likely to be diagnosed with ADHD and when diagnosed are less likely to receive medications than other ethnic groups (Rothe, 2005). While prescription drug use has increased for students with ADHD, marijuana and alcohol are still the "drugs of choice" among young adults with ADHD (Wolf, 2006). According to Wolf, 2006, there is a clear association between alcohol use disorders and ADHD in young adults. Once again there is conflicting data. Kaloyanides et al., in 2007 suggested that college students with ADHD have significantly higher rates of stimulant, alcohol and other drug misuse than those without ADHD. A2008 study, however, foundno more use of drugs and alcohol among those with ADHD than those without (Rabinereta.l, 2008). A much earlier study, in 1999,also found no difference in depression, anxiety, interpersonal relationships or substance use between those with and without ADHD (Heiligenstein et al., 1999).

College students applying for University Disability services for mood disorders or learning disabilities (LD)often also exhibit symptoms of ADHD(Wolf, 2006). Both LD and ADHD tend to be accompanied by social skill deficits (San Miguel, Fornes and Kavale, 1996) which can increase academic impairment in college students. Medications are designed to control intrinsic factors like difficulty concentrating, inattention, hyperactivity and impulsivity, but on a short term basis only (Molina, 2009). ADHD can also be caused by external factors such as loss of family structure, living away from home and lack of individualized education. Medications will not improve these (DuPaul et al., 2009). With increasing numbers of students asking for disability services for ADHD, colleges are looking for ways to deal with all these factors. Universities are working to diminish effects of the external factors through increased support, individualized attention and tutoring, extended time for examinations, access to a note taker, program modifications and living-learning communities for social support (Wolf, 2006). With this help mandated by the Americans with Disabilities Act (ADA) enacted by Congress in 1990, college students with ADHD can do very well in college. Many have also developed greater compensatory skills and higher ability levels that those with ADHD who do not attend college (Frazier, Youngstrom, Glutting, & Watkins, 2007), and, in fact, not all students with ADHD have academic deficits (Forness, Youpa, Hanna, Cantwell, & Swanson, 1992).

Methods

Students enrolled at a regional university in South Texas were surveyed (N=199). Of those students, 76 were male and 123 were female. Ethnicity was primarily Hispanic with 139 students claiming that ethnicity, 44 claiming Caucasian, 9 self-identifying as African American and 7 claiming "other." Students were also categorized by family income level and by college classification. Students who self-identified with ADHD were asked for additional information including behaviors, age at diagnosis, whether or not they were prescribed medication and if so, how long they took that medication. They were also asked about diet restrictions, activity restrictions, medication side effects, and whether or not they felt they performed better at school and at home when on the medication. If the medication was discontinued before they started college, the students were asked at what age this happened, why the medication was discontinued and whether or not they felt that their performance in school was worse without it.

Results

Of students surveyed, only 10 identified themselves as having been diagnosed with ADHD and of these only 7 used prescribed medication. The most commonly prescribed medication was Ritalin, followed by Concerta, Adderal and Vivance. Only 2 students were still using medication in college. Only one student had a dietary restriction (no sugar), and another had activity restrictions. Specifically what the activity restrictions entailed was not given (though the question was asked). The student on the no sugar diet stopped taking the medication (Ritalin) and tried the diet because of the side effect of medication-debilitating headaches. The behaviors the medications or lifestyle changes were used to control included: excitability, disruptive behavior, inability to be still, inability to concentrate and the inability to follow instructions. All students with diagnosed ADHD identified at least one of those behaviors as needing to be controlled. Two students reportedly had difficulties with four of the five listed behaviors, while most indicated at least two. Those students who took medications took them for a number of years. The longest course of medication was 12 years, beginning at age 8. This student was still taking medication. She felt that she performed better both at school and during her leisure time when she was on the medication. She did not like the way the medication made her feel. She said that "she did not feel like herself," when she was on the medication, but she claimed that it was worth taking the medication anyway to help with school. Other students have been on medications for shorter periods of time – the least being two years, and some of them, since they were diagnosed as late as 17 or 18 years of age, had only stopped taking the medications quite recently.

Side effects of the medications mentioned by the students included: sleeplessness, loss of appetite, feelings of fatigue, headaches, dehydration, "feeling like a zombie," and in one case, worse behavior. Several students have moved from medication to medication in an effort to minimize these side effects. In two cases, use was discontinued because the side effects were so bothersome. Of those students surveyed, 73 identified a family income of less than $30,000 per year, 42 students a family income of between $30-$50,000 per year, 36 with an income of $50-$75,000 per year, 18 with a family income between $75-$100,000 per year, 7 with a family income between $100-120,000 per year, and only 6 with a family income greater than $120,000 per year. The income distribution of those who self-identified with an ADHD diagnosis was similar: 3 had family income less than $30,000, 2 between $35-$50,000, 1 between $50-$75,0000 and only one with a family income greater than $120,000. Three students with ADHD were not able to give a family income estimates. In this study, students with self-reported ADHD, with or without medication, did not have a significantly lower GPA than those not diagnosed with ADHD[$F(1,198) = .762$; $p < .0001$], Although the overall mean was lower (M=2.799 for those with ADHD, compared to M=2.968 for those without), this difference was too small to be significant.

Limitation

Almost 200 students were surveyed, and 5% self-identified as having been diagnosed with ADHD. This percentage is compatible with the percentage in the general population. However, the overall number of students who identified themselves as having ADHD and the even smaller number of these who used medication, limited the usefulness of this study. In addition, the population largely identified themselves with Hispanic ethnicity and low socioeconomic status reported, make the results less generalizable to the population at large. Since all the data was self-report in nature and many of those identified with ADHD did not give details of their medication use history, not much information could be garnered concerning individual medications.

Discussion

Increasing numbers of college students are applying for disability services under the Americans with Disabilities Act of 1990. There is no definitive diagnosis criterion for ADHD in college students. In spite of this, ADHD is being diagnosed in college students, especially in conjunction with learning disabilities. Even with conflicting findings about ADHD, it is generally agreed that college students with ADHD or ADHD like symptoms can do well academically with some support. Hispanic students are diagnosed at a lower rate than Caucasian students and fewer receive prescription medications when they are diagnosed. However, since the percentage of students with ADHD in this study of largely Hispanic students was the same as the percentage found in other studies, it seems that Hispanic college students with ADHD type symptoms need to be given as much recognition and support as other college students with ADHD. If there are truly problems with academic performance these need to be addressed, especially in the face of rising university costs and rising demands for disability services. However, regardless of ethnicity, there is no normative data on which to base a definitive diagnosis of ADHD in college age students. In spite of this, many are taking medications to control it and receiving disability services for it.

It would be helpful in determining who needs help and services and who does not need them if specific guidelines for diagnosis were used that would differentiate between a true disorder and a non-disorder. In addition, it would be important to understand how use of medications for ADHD and other disorders such as depression or anxiety impact college performance (Heiligenstein, et al., 1998), and how many of the difficulties that students face in college can be addressed through non-medical interventions such as social support networks, tutoring, etc.

Conclusion

The primary finding of this study is that lower income students and minority students are less likely to either be diagnosed with, and/or take medications for ADHD. This finding may change over time, but that will have to be determined by a later study. This study also tends to side with the studies that show that taking psychotropic medications for ADHD do not have an adverse effect on GPA's. In fact, this study showed that those students taking medications had a slightly higher GPA than their counterparts. Finally, though studies conflict, this study indicates that there is little difference between Hispanic students with ADHD and their white counterparts.

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