COMORBID DIAGNOSIS AND CONCOMITANT MEDICAL TREATMENT FOR CHILDREN WITH EMOTIONAL AND BEHAVIORAL DISABILITIES

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The purpose of the current study was to determine the types of psychiatric disorders and the corresponding medications prescribed to children enrolled in elementary Emotional Behavioral Disability (EBD) programs. The project employed a questionnaire that was distributed to elementary level teachers (EBD) to: (a) determine the proportion of children identified with single and multiple psychiatric disorders; (b) determine the proportion of children treated with single and multiple psychiatric medications; (c) investigate possible adverse drug interactions for children receiving combinations of medications for their psychiatric disorders; and (d) assess the attitudes of teachers (EBD) concerning the use of psychiatric medication to treat elementary level children. Results revealed 76.8% of the 617 students were identified as having one or more psychiatric disorder(s) and 21.2% of students were identified as having been diagnosed with multiple psychiatric disorders. Approximately 65% of the elementary students in EBD programs were identified as receiving psychiatric medication for the treatment of one or more psychiatric disorders. Fifteen percent of students were identified as receiving combinations of medications, and 6.2% were identified as receiving three or more medications concurrently. Implications of the rates of pharmacological treatment of children and potential concomitant target and adverse effects were discussed.

According to the American Academy of Child and Adolescent Psychiatry an estimated 7-12 million Americans under 18 years of age suffer from emotional, behavioral, developmental and mental disorders that are often treated with psychiatric medication (aacap.org). A meta-analysis of the current literature indicates that 9-13% of children in the United States suffer from mental disorders that warrant treatment with medication (Weisz & Jensen 1999). Research indicates that the diagnosis of psychiatric disorders among school-age children with emotional and behavioral disabilities (EBD) and concomitant treatment of such disorders with psychotropic medications has increased dramatically in the last 15 years. In 1987 Cullinen, Gadow, and Epstein (1987) reported 9.3% of children in EBD programs received psychiatric medication. In 1996, Runnheim, Frankenberger, and Hazelkorn (1996) reported 40% of children in EBD programs were treated with stimulant medication. The increasing rate of diagnosis and treatment of children with psychiatric disorders has raised many questions. The questions raised are especially important because data concerning the prevalence of psychiatric disorders among children and the prevalence of child treatment is fragmented and inconclusive (Weisz & Jensen, 1999). In addition, the validity and reliability of the diagnosis

of disorders such as ADHD, mood disorders, and schizophrenia in young children are controversial (Coyle, 2000).

Incidence of Psychiatric Disorders

There is a dearth of information related to the prevalence of psychiatric conditions in the school-aged population. Although the following study did not provide data for actual prevalence, an extensive review of existing literature conducted by Weisz and Jensen (1999) reported ADHD, depression, bipolar disorder, anxiety disorder, autism and obsessive-compulsive disorder to be among the most commonly treated psychiatric disorders occurring in childhood. Attention-Deficit/Hyperactivity Disorder (ADHD) has been estimated to occur in approximately 3-7% of school-aged children according to the Diagnostic and Statistical Manual of the American Psychiatric Association (American Psychiatric Association, 2000). However, estimates as high as 10% have been proposed more recently (Rowland, Umbach, Stallone, Naftel, Bohlig & Sandler, 2002).

Incidence of Treatment with Psychiatric Medications

Some of the most commonly prescribed types of psychiatric medications for children include stimulant, antidepressant, antianxiety, antipsychotic, and antiseizure medications (Weisz & Jensen, 1999). The incidence of stimulant treatment in the school-age population has increased dramatically in the past few years as the acceptance of pharmacotherapy for ADHD increased. Currently, estimates as high as six million children being treated with stimulant medication for treatment of ADHD appear in the literature (Hearn, 2004). The large increase in the treatment of ADHD with stimulant medication since 1990 is evidenced by the following research. In a national survey of 19 school districts, Frankenberger, Lozar, and Dallas (1990) reported fewer than 1.5% of the students surveyed were diagnosed with ADHD and were receiving treatment with stimulants. More recently, Rowland, Umbach, Stallone, Naftel, Bohlig, and Sandler (2002) completed a school-based survey that revealed 10% of the 6099 children included in the study were identified as having ADHD and were treated with stimulant medication. The increase in stimulant use is also evinced by data from the United States Drug Enforcement Administration (DEA, 2002). According to DEA data, there was nearly a 900% increase in methylphenidate (Ritalin) production from 1990 to 2001. With the introduction of Concerta and Metadate, the production of methylphenidate has increased by 40% from 2000 to 2002. Furthermore, from 1993 to 2006 the production of amphetamines (Dexedrine and Adderall) increased by 7143% (DEA, 2006).

Researchers have also investigated use of antidepressant medication to treat children. Zito, Safer, dosReis, Gardner, Soeken, Boles, et al. (2002) found a three to five fold increase in antidepressant treatment among children between 1988 and 1994. Antidepressant use in children increased by 9.2% each year from 1998 to 2000 (Delate, Gelenberg, Simmons, Motheral, 2004). Selective serotonin reuptake inhibitors (SSRIs) were most frequently prescribed by pediatricians and family physicians (Delate, 2004; Zito, et al, 2002; Rushton, Clark, & Freed, 2000). However, recent research has questioned the efficacy of antidepressant medication for the treatment of children (Keller, Ryan, Strober, Klein, Kutcher, Stan, et al., 2001; Zito & Safer, 2001; Emslie, Rush & Weinberg, 1997). Furthermore, there is concern over the potential risks of antidepressant use in the pediatric population. The FDA issued a public health advisory regarding a potential increased risk of suicidality (suicide ideation and attempts) and worsening of depressive symptoms associated with pediatric use of SSRIs to treat major depressive disorder (FDA, 2004).

Researchers have generally not addressed the use of combinations of medications to treat psychiatric disorders in children. The use of multiple psychotropic medications substantially increased throughout the 1990s. A national sample of physician office visits revealed the rate of combined antidepressant and stimulant use increased 25% from 1994 to 1997 (Safer, Zito, dosReis, 2003). Children with more emotional, social, or educational difficulties were more likely to receive multiple medications (Safer, Zito, dosReis, 2003). Bussing, Zima, and Belin

(1998) found 20% of children in an elementary special education program were receiving multiple psychotropic medications. One of the most common psychotropic medication combinations was that of an antidepressant and a stimulant (Bussing, Zima & Belin, 1998). Rushton and Whitmore (1998) reported 30% of children in North Carolina were receiving an SSRI concurrently with a stimulant. Despite the recent increase in use of multiple psychotropic medications, there is a lack of research supporting its use and exploring potential risks. In the adult literature, consistent findings reveal that as the number of concomitant medications increases, the risk of adverse drug effects increases as well (Safer, Zito, dosReis, 2003). Such adverse effects include an increased possibility of unfavorable drug interactions that can lead to serious physical and/or behavioral complications (Ambrosini & Sheikh, 1998).

Issues related to use of Psychiatric medication with children

Many studies have demonstrated the positive impact of psychiatric medication on symptoms of psychiatric disorders in children. For example, the MTA Cooperative Group (MTA, 2004) revealed stimulant medication appeared to successfully treat symptoms of ADHD as long as the treatment continued. However, fewer data are available for other types of medications and potential risks associated with these medications have recently been identified. The period from early childhood to late adolescence is characterized by rapid physical, psychological and social change, and though children are being treated with the same psychiatric medications as are adults, their options for drug treatment are different due to pharmacokinetic and pharmacodynamic effects that change with age (Weisz & Jensen, 1999; Wiznitzer & Findling, 2003). The brain of a child is an evolving organ with myelination, pruning, and the maturation of synaptic connections continuing throughout adulthood (Wiznitzer & Findling, 2003).

While the short-term effects of multiple psychotropic medications have been documented, the long-term effects of such drugs are not known (Wiznitzer & Findling, 2003). Recent research may shed light on this issue. The MTA Cooperative Group revealed that the group treated with medication showed a significantly reduced growth rate and continued growth suppression (MTA, 2004). Until recently, experimental animal studies examining the effects of psychotropic agents on brain maturation during critical periods of development were absent from literature (Weisz & Jensen, 1999). However, recent research indicates that methylphenidate may have long term effects on the brain and behavior due to changes discovered in the brains of young animals that persisted into adulthood (Brandon, Marinelli, Baker & White, 2001; Carlezon, Mague & Andersen, 2003; Bolanos, Barrot, Berton, Wallace-Black & Nestler, 2003).

The issue of psychopharmacological treatment in the child population is difficult to address due to the fact that supporting data comes predominantly from small scale, non-blind assessments, case reports, and a few regional surveys rarely involving systematic study (Safer, Zito & dosReis 2003; Weisz & Jensen, 1999). Unfortunately, studies assessing the effectiveness of psychopharmacological treatment in children are absent from the existing research literature (Weisz & Jensen, 1999). Several important issues concerning the use of antianxiety, antipsychotic, antiseizure and combinations of medications in the childhood population currently remain unaddressed.

The purpose of the current study was to determine the types of psychiatric disorders and the corresponding medication prescribed to children enrolled in elementary Emotional Behavioral Disability (EBD) programs. Additionally, the study was designed to determine the most common psychiatric diagnoses in the elementary EBD population, along with the most common multiple diagnoses and corresponding single and multiple prescribed combinations of medication. More specifically, the study was designed to determine the proportion of children enrolled in the elementary Emotional Behavioral Disability (EBD) programs who were currently prescribed medication for psychiatric disorders. Through a comprehensive literature review and analysis of data, the current study also aims to address issues concerning

possible adverse drug interactions of single and multiple combinations of psychiatric medication. Finally, the study examined the attitudes of EBD teachers toward diagnosis of psychiatric disorders and use of psychiatric medication to treat children.

Method

Participants

The participants were elementary teachers of students with emotional and behavioral disabilities in the state of Wisconsin for the 2003-04 school year. A list of elementary EBD teachers was obtained from the Wisconsin Department of Public Instruction. Of the 3,562 teachers, 500 (14%) were randomly selected to receive the questionnaire. A cover letter (explaining the purpose of the study and assuring anonymity), questionnaire, magnet incentive and return envelope were mailed to each participant. Two weeks after the initial mailing, reminder postcards were mailed, asking teachers to complete and return the questionnaire if they had not already done so.

Instrument

A four page questionnaire was designed based on the survey employed in the Runnheim (1996) et al. study to collect the data. The questionnaire was designed to gather information through a series of Likert-type questions that assessed the teachers' attitudes about the incidence of childhood psychiatric disorders, and the use of psychiatric medication to treat children in the teachers' classroom. In addition, the teachers were asked to provide demographic data and information regarding the grade level(s) they taught, their class size or size of caseload, and the number of students receiving medication for a psychiatric disorder(s). For each reported student receiving medication, the teachers were asked to supply the following information: (a) grade level, (b) type of psychiatric disorder(s), and (c) the particular psychiatric medication(s) administered to treat the corresponding disorder(s).

Results

Of the 500 questionnaires distributed, 146 teachers (29%) returned a questionnaire. Of the questionnaires, 39 were returned as unusable due to not reaching the appropriate individuals and five were returned after data analysis was completed. A total of 102 teachers provided information on 617 elementary-aged children in Wisconsin placed in programs for students with emotional and behavioral disabilities.

Information About the Students in EBD programs

Approximately 77% (474) of the 617 students were identified as having one or more psychiatric disorder(s) and 21.2% (131) of students were identified as being diagnosed with multiple psychiatric disorders. Approximately 65% (400) of the elementary students in EBD programs were identified as receiving psychiatric medications for the treatment of one or more psychiatric disorders. Fifteen percent (94) of students were identified as receiving combinations of medications, and 6.2% (38) were identified as receiving three or more medications.

Most Common Single or Multiple Psychiatric Diagnoses

Table 1 reveals percentages of children diagnosed with single or multiple psychiatric disorders. Approximately 52% (322) of elementary students in EBD programs were identified as having ADHD. The next most common disorder reported was anxiety disorder, with 12% (74) of students identified, and bipolar disorder was identified for 10.4% (64) of the students.

Table 1
Percent of Children With Single or Multiple Psychiatric Disorders

Disorder	Number	Percentage
ADHD	322	52.2
Anxiety	74	12.0
Bipolar	64	10.4
Depression	56	9.1
Autism	18	2.9
Seizure Disorder	14	2.3
Other	57	9.2

* percentages include all children that were diagnosed with either a single or multiple disorders

Most Common Multiple Psychiatric Diagnoses
Table 2 reveals that the most common multiple disorders were included in the category of *other* due to the extent of multiple unique combinations of two or more diagnoses which occurred very infrequently. The next most common multiple psychiatric diagnosis was ADHD and anxiety disorder identified for 3.7% (23) of the students. Of children diagnosed with more than two disorders, ADHD, anxiety disorder and bipolar disorder occurred most frequently accounting for 1% (8) of the students.

Table 2
Percent of Children With (most common) Multiple Psychiatric Disorders

Disorders	**Number**	**Percentage**
ADHD + anxiety	23	3.7
ADHD + bipolar	14	2.3
ADHD + depression	13	2.1
ADHD + anxiety + bipolar	8	1.3
ADHD + bipolar + depression	7	1.1
ADHD + OCD	7	1.1
Other	59	9.6
Total	131	21.2

Most Commonly Prescribed Psychiatric Medications (Medication Specific)
In order to more clearly identify patterns of pharmacological treatment of psychiatric disorders, specific medications were collapsed into classes specified in Table 3 and Table 4 that included stimulant, antidepressant, antianxiety, antiseizure or mood stabilizers, antipsychotic and other medications. Table 3 reveals that 49.3% (304) of the students were identified as receiving stimulant medication (Strattera was included in the stimulant category). Of those receiving stimulants, 46.4% (141) of the students were identified as receiving amphetamine (Dexedrine & Adderall), 36.5% (111) of the students were identified as receiving methlyphenidate (Ritalin, Concerta, Metadate & generic methylphenidate), and 17.1% (52) of the students were identified as receiving Strattera.

The next most commonly prescribed psychiatric medications were antidepressants that accounted for 10% (62) of the students. Of the students treated with antidepressants, 67.7% (42) were receiving treatment with SSRIs (Zoloft, Paxil, Prozac & Celexa). Other newer non-SSRIs (Wellbutrin, Effexor & Remeron) accounted for 29% (18) of the students.

Table 3
Percent of Children Receiving Single or Multiple Psychiatric Medications (by drug class)

Drug Class	Number	Percentage
Stimulant	304	49.3
Antidepressant	62	10.0
Antipsychotic	55	8.9
Antiseizure/Mood Stabalizers	29	3.9
Antianxiety	18	2.9
Other	2	1.1

* percentages include all children that are receiving either single or multiple medications

Approximately 8% (50) of the students were identified as receiving antipsychotic medication, with 70% (35) of those treated with antipsychotics receiving Risperdal and 20% (10) of the students were receiving Zyprexa. Approximately 3% (18) of the students were identified as receiving antianxiety medication. It should be noted that 77.8% (14) of those treated with antianxiety medication received Clonidine. Finally, 3.9% (24) of the students were identified as receiving antiseizure or mood stabilizing medication, with 58.3% (14) identified as receiving Depakote and 20.8% (5) receiving lithium.

Most Common Combinations of Psychiatric Medications (by Drug Class)
Table 4 reveals that the most common combinations of multiple psychiatric medications were identified by the category of *other* due to the extent of multiple unique combinations of two or more medications which occurred infrequently (4.1%, 24). The two most common medication combinations were a stimulant plus an antidepressant and a stimulant plus and antipsychotic, both of which occurred for 2.4% (15) of the students. The most common three medication combination was a stimulant, an antidepressant and an antipsychotic medication accounting for 1% (6) of the students.

Table 4
Percent of Children on Multiple Psychiatric Medications (by drug class)

Drug Class	**Number**	**Percentage**
Antidepressant + Stimulant	15	2.4
Antipsychotic + Stimulant	15	2.4
Stimulant + Stimulant	11	1.8
Antianxiety + Stimulant	7	1.1
Antidepressant + Stimulant + Antipsychotic	6	1.0
Antipsychotic + Stimulant +Stimulant	5	0.8
Antipsychotic + Stimulant + Antiseizure	5	0.8
Stimulant + Stimulant + Antidepressant	4	0.6
Antidepressant + Antidepressant + Antipsychotic + Stimulant	2	0.3
Other	24	4.1
Total	94	15.2

* 6.2% (38 students) were identified as receiving three or more medications.

Teachers' Attitudes of Childhood Psychiatric Disorders and Use of Medication
The elementary EBD teachers were asked a series of questions regarding their views on the incidence of childhood psychiatric disorders and the use of psychiatric medication in the EBD classroom. The teachers' responses were based on a scale of 1 to 5 as specified in Table 5. A mean response between 4.00 and 5.00 was labeled *agree* or *greatly increase.* A mean for a particular statement between 3.50 and 3.99 was labeled a *tendency to agree* or *increase*. A mean located between 2.50 and 3.49 was labeled *neutral* or *remained the same.* A mean

falling between 2.01 and 2.49 was labeled a *tendency to disagree* or *decrease*. A mean of 2.00 or below was labeled *disagree* or *decrease greatly*.

Table 5
Survey Questions With Means and Standard Deviations

Teachers Attitudes of Childhood Psychiatric Disorders and Use of Medication

THE FOLLOWING SCALE WAS USED TO RESPOND TO THE QUESTIONS BELOW:
1= Decreased greatly **2**= Decreased **3**= Remained same **4**= Increased **5**= Increased greatly

Question	**N**	**M**	**SD**
1. In your experience in the last five years the incidence of anxiety disorder in the EBD population has	100	3.82	.626
2. In your experience in the last five years the incidence of Attention-Deficit/Hyperactivity Disorder in the EBD population has	100	3.71	.715
3. In your experience in the last five years the incidence of depression in the EBD population has	98	3.66	.555
4. I am aware when a child has not taken his/her medication.	102	4.63	.525
5. Medication significantly benefits students in terms of controlling their own behavior.	102	4.01	.724
6. Medication significantly improves academic performance of children with EBD.	101	3.98	.735
7. In my experience, medication has been a benefit to maintaining classroom control.	102	3.92	.841
8. Children with EBD receiving medication behave more appropriately in social situations than they would without the medication.	101	3.88	.864
9. Classroom behavior control would be much more difficult for me if children were not treated with prescription medication.	101	3.68	.916
10. Behavioral interventions can be as effective as medication for maintaining classroom control.	102	3.24	.925
11. I am concerned with the long-term impact of medication on children.	101	4.02	.883
12. I believe that stimulant medication (e.g. Adderall) has few side effects.	97	2.95	.795
13. I believe that antidepressant medication (e.g. Paxil) has few side effects.	99	2.93	.732
14. I believe that antianxiety medication (e.g. Zoloft) has few side effects.	96	2.90	.703
15. I believe that antipsychotic medication (e.g. Geodon) has few side effects.	92	2.77	.648
16. Most children with EBD are more teachable as a result of treatment with medication.	101	4.08	.744
17. Medication tends to improve a child's social adjustment.	102	3.71	.839
18. Most children with EBD are more likeable as a result of treatment with medication.	101	3.33	1.04
19. Medication tends to change a child's natural personality.	102	2.74	.984

Statements 1-3 addressed opinions regarding recent trends of psychiatric disorders. Teachers tended to agree that the incidence of anxiety disorder, Attention Deficit/Hyperactivity Disorder and depression in the EBD population had increased within the last five years. Statements 4-10 assessed teachers' attitudes concerning the effects of psychiatric medication on classroom behavior of students in EBD classrooms. In response to questions 4 and 5 the teachers agreed with the statements, *I am aware when a child has not taken his/her medication*, and *Medication significantly benefits students in terms of controlling their own behavior.* The teachers had a tendency to agree with question 6, *Medication significantly improves academic performance of children with EBD* and question 7, *In my experience, medication has been a benefit to maintaining classroom control.* On question 10, *Behavioral*

interventions can be as effective as medication for maintaining classroom control, the teachers' responses were in the neutral range.

Statements 11-15 addressed opinions regarding the effects of psychiatric medications. The teachers agreed with question 11, *I am concerned with the long-term impact of medication on children.* However, teachers' responses were in the neutral range to questions 12-15 concerning whether they believed stimulant medication, antidepressant medication, antianxiety medication, or antipsychotic medication, have few side effects.

Finally, questions 16-19 assessed teachers' opinions regarding the social effects of psychiatric medication on their students. They agreed with question 16, *Most children with EBD are more teachable as a result of treatment with medication.*

Discussion

Incidence of Psychiatric Disorders

Few studies have looked specifically at the prevalence of psychiatric diagnoses among children. An extensive review of existing literature conducted by Weisz and Jensen (1999) reported ADHD, depression, bipolar disorder, anxiety disorder, autism and obsessive-compulsive disorder to be among the most commonly treated psychiatric disorders occurring in childhood, even though the study did not specify actual prevalence rates. Similarly, results of the current study indicate that ADHD, anxiety disorder, bipolar disorder, and depression were the most prevalent psychiatric disorders occurring in children in EBD programs, with the exception of obsessive-compulsive disorder, which appeared very infrequently.

Incidence of Treatment with Psychiatric Medications

Cullinan, Gadow, and Epstein (1987) reported that of the 11% of children in EBD programs receiving pharmacological treatment, 71% were receiving stimulant medication. Children were treated with other types of psychiatric medications in only 3% of the EBD population at that time (Cullinan, Gadow, & Epstein, 1987). The current study revealed that of the 65% of children in EBD programs were receiving pharmacological treatment, 76% received stimulant medication alone or combined with other medications. In the current study children were treated with medications other than stimulants in 27% of the cases. In fact, almost 9% were being treated with antipsychotic medication and more than 15% of the children in EBD programs were receiving multiple psychiatric medications.

Changes in Rates of Psychiatric Medication Over Time

Cullinen, Gadow, and Epstein (1987) reported that approximately 14% of children in EBD programs were receiving medication to treat all categories of psychiatric disorders including seizure disorder. In 1996 Runnheim et al. reported 40% of elementary school children in EBD classrooms in Wisconsin were receiving medication to treat ADHD. To date, only the current study has investigated the use of psychotropic medication in EBD classrooms since 1996. Results of the current study reveal that 65% of children in elementary EBD programs were receiving medication for treatment of psychiatric disorders, with 49.3% receiving psychopharmacological treatment for ADHD. In addition, the current study revealed 21.2% of children in elementary EBD programs were diagnosed with multiple psychiatric disorders and 15.2% of those diagnosed with multiple disorders were receiving concomitant multiple psychopharmacological treatment. Currently the proportion of children being treated for multiple disorders with multiple medications exceeds the proportion of children receiving any type of psychiatric medication in 1987**.**

Possible Adverse Effects and Drug Interactions

An issue of concern related to side effects of medication is the use of antipsychotic medications with children. Data from the current study revealed an increasing number of children were receiving antipsychotic medication alone and in combination with other psychiatric medications. Risperdal was the antipsychotic medication used most frequently

with children in this study. The pharmaceutical company that produces Risperdal recently received a warning letter from the FDA stating the company had minimized the risks associated with Risperdal and made misleading claims regarding efficacy of the medication (FDA, 2004). The long-term effect this medication may have on children is generally unknown but drowsiness caused by the medication may hinder educational goals in the classroom.

The results of the current study highlight the need to address the issue of possible adverse drug interactions related to the use of multiple psychiatric medications in young children. Data from the study revealed that 15.2% of the children were receiving multiple psychiatric medications (two or more) and 6% of the sample was being treated with three or more medications. In the current study, the most common combination of medications was a stimulant taken concurrently with an antidepressant (SSRI). The combination of stimulants and SSRIs may enhance the risk of serious side effects in adults, but the type of interaction that may occur in children is unknown. Though existing research addresses interaction effects for pairs of medications, there is little research investigating the effects of three or more medications given in combination.

Teachers' Attitudes of Childhood Psychiatric Disorders and Use of Medication

Questionnaire data from the current study revealed teachers believe medication improves the behavior and learning ability of children in EBD classrooms. Teachers' attitudes related to the target effects of psychiatric medication were generally positive while their attitudes related to side effects were generally in the neutral range. Other research indicates that teachers have not been aware of relevant information related to side effects of psychiatric medications (Snider, Busch & Arrowood, 2003). Research has shown that some medications, such as antipsychotics and antiseizure medications, may result in a number of cognitive or memory impairments that could interfere with learning (Forness & Kavale, 1988). Also, findings from a study conducted in 1984 suggest that antidepressant medication may have had adverse effects on children's classroom performance (Forness & Kavale, 1988).

Implications

First, the current study reveals that the rate of treatment of psychiatric disorders of children in EBD programs has increased dramatically over the past 15 years. Research is needed to determine whether children in EBD programs have intensive and individualized behavioral, social, and educational interventions that are aimed at controlling and helping the child control the behaviors for which they are receiving medication. Medication can help to control symptoms while children are being treated, but children cannot learn from medication. Historically, EBD teachers employed behavioral, social and academic interventions to address the issues evinced by the children in their program. Results of the current study indicate that there is an increasing trend towards using pharmacological interventions in educational settings.

The increase in the use of medication for the treatment of psychiatric disorders and school related issues in the absence of research supporting long-term efficacy of such treatment may be attributed to the increased acceptability by society, professionals and teachers. Results of the current study revealed that teachers were aware of the positive impact medication had on controlling the behavior of children in their classroom. Teachers were less aware of the side effects and lack of long-term efficacy data related to the use of medication.

Secondly, results of the current study revealed that children in EBD programs were treated with antipsychotic medication more frequently than in the past. This trend raises questions based on the known side effects associated with such medications. Teachers should be made aware of the documented long-term effects of antipsychotic medication in the population of institutionalized children with mental retardation, and the possibility that these medications may interfere with a child's ability to learn. (Gualtieri, Schroeder, Hicks, & Quade, 1986).

Finally, a significant proportion of students in EBD programs received multiple medications for multiple disorders. This finding is important because the impact of single medications on developing children is often unclear, and the impact of multiple medications is unknown. Research reveals that the potential side effects of single and multiple medications ranges from a negative effect on growth rate to impaired development and learning in young children (MTA, 2004; Forness & Kavale, 1988). The treatment of children with multiple psychiatric medications is a nascent trend and positive as well as negative long-term effects of such treatment are unknown.

Limitations

Approximately 30% of the questionnaires were returned which raises the question of whether the returned sample is representative of the original random sample. One reason the return rate was not higher may be that the questionnaire did ask teachers to provide a great deal of information that may have required them to do some research. However, the obtained data was very much in line with the results reported by Runheim, et al. (1996). In fact, the increased rate of stimulant use from the time of the Runheim et al. (1996) study to the time of the current study agreed with other data indicating similar increases in rates of stimulant treatment with children (Lefever & Dawson, 1999). The same consistency was also found in relation to the use of multiple medications (Moline and Frankenberger, 2001). The internal validity of the study was assessed via two different methods used to identify the percent of children receiving medication. Teachers were asked to specify the number of children in their EBD program and the number of children who were being treated with medication. They were also asked to provide detailed information on each child receiving medication. Both the initial number identified as receiving medication and the actual number of children for which detailed information was provided correlated exactly.

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