ABA Literature Summary

e-newsletter

Topic : Popular Complementary and Alternative Treatments for Individuals with Autism Spectrum Disorders

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Special Learning

The Use of Alternative Treatments in Autism

When providing treatment to individuals with autism spectrum disorder (ASD), professionals must make educated decisions about treatments available. There are many treatments that have not been empirically researched. In addition, there are treatments that have been shown to result in little to no effect.The ethicality involved in choosing a treatment is important, as professionals have the responsibility of utilizing treatments that have been identified in research as producing a desirable effect and resulting in clinically significant changes in behavior. Even though professionals must use empirically-based interventions, alternative treatments continue to be used at a high frequency, specifically to treat autism symptomology.

A. How to Behave Ethically in a World of Fads

Schreck and Miller (2010) expressed that Applied Behavior Analysis (ABA) is often considered the gold standard of autism treatments. ABA has been empirically researched and proven effective in many different studies. Other treatments used for ASD are often not empirically validated. While BCBAs must follow a set of ethical guidelines stating only scientifically supported interventions must be used, the authors expressed that many professionals have difficulty not using unsupported treatments.This article had 2 purposes: assist professionals (BCBAs) in how to evaluate alternative treatments and help BCBAs respond to misperceptions of ABA.

How to evaluate and make decisions about alternative treatments for ASD

The authors emphasized that treatment must be scientifically researched. When evaluating an alternative treatment, the first step is to determine if the intervention has research supporting its use. Professionals must analyze individual articles regarding an intervention in question. When analyzing, one must ensure the studies are methodologically sound. Once this is completed, the professional should then be sure the article contains sufficient scientific information to support the treatment. The components of the intervention should be analyzed as well to determine that each has scientific support. If research support exists, the intervention may be used and evaluated. If research does not exist, the professional may determine if any components of the intervention can be explained behaviorally. If so, specific behavioral components can be implemented and evaluated.

Potential obstacles and misperceptions against implementing ABA

Schreck and Miller (2010) expressed that often times, the professional needs to be convincing in their decision to use ABA. Many who are advocates to alternative treatments may be opposed to ABA and argue their treatment to be superior. The authors listed seven common misperceptions that a BCBA is often faced with. Counter-arguments for each are presented.

B. Parents' Views and Experiences about Complementary and Alternative Medicine Treatments for Their Children with Autism Spectrum Disorder

Şenel (2010) aimed to examine the type of complementary and alternative medicine (CAM) treatments parents of children with autism spectrum disorder (ASD) used, their experiences and views toward treatment, and how beneficial they believed the treatment to be.

Methods

Independent variable: The survey tool contained two parts. The first part consisted of questions related to the parents and the child such as age, gender, diagnosis, placement, education level, and when the CAM treatment started and how. The second part was comprised of questions related to CAM treatments. 18 treatments were listed and participants were asked their experience and opinions on each. A variety of treatments were listed, such as acupuncture, chelation, herbal products, nutritional supplements, and yoga, among others.

Dependent variable: The survey measured the following: the type of CAM treatment used, opinion of treatment (positive and negative), when treatment began, how long it had been implemented, how many CAM treatments were used, and any additional information.

Type of research design: A non-experimental survey design was used.

Type of participants in study: 38 Turkish parents of children with ASD participated in the study.

Results/Outcomes

Şenel (2010) found that the parents surveyed used 17 of

the 18 CAM treatments. The most frequently used CAM treatment was the use of vitamins and minerals. Following a special diet and sensory integration were the second and third most frequently used respectively. Osteopathy was the only treatment not used by any parents. Results of the survey found that each treatment had both positive and negative sides, and there were no treatments that resulted in 100% satisfaction. Parents frequently reported communication, learning, health, and behavior as the most improved areas following a CAM treatment. When asked why they decided to try a treatment, parents reported other parents' advice and results as being the main reason. In addition, the average number of CAM treatments used, not all at the same time, was five.

Limitations/Future Research

The author expressed that the results of the findings may not be representative of all parents who have children with ASD due to the small sample size and data limited to self-report. Also, the survey presented through the internet obtained only those participants with internet access. Also, there was a low return rate of the surveys.

Şenel (2010) stated several ideas for future research. Future research should obtain a larger sample of participants. Also, rather than using the internet, surveys should be passed out to individuals at conferences or other events. Also, participants should be informed of survey results. Finally, a meta-analysis should analyze research related to each CAM treatment.

C. Use of Complementary and Alternative Medicine Among Children Diagnosed with Autism Spectrum Disorder

Hanson et al. (2007) studied the prevalence of complementary and alternative (CAM) treatments for children diagnosed with autism spectrum disorder (ASD). The authors also aimed to survey parent's attitudes regarding treatments.

Methods

Independent variable: A questionnaire was developed to assess parents and their use of CAM treatments for children diagnosed with ASD.

Dependent variable: Several measures were collected and included: diagnostic and demographic information, the CAM treatments parents used, parents' opinions of treatments, and how/why specific treatments were selected.

Type of research design: A non-experimental survey design was used.

Type of participants in study: 112 parents were surveyed. All parents had children diagnosed with ASD and were seen at the Developmental Medicine Center at Children's Hospital Boston.

Results/Outcomes

Hanson et al. (2007) found that 74% of parents surveyed used CAM interventions. The most frequently used therapies included conventional therapies such as education techniques, sensory therapies, and prescription drugs. Conventional therapies were not considered CAM treatments. Using biologically based therapies (modified diet, vitamins, supplements, herbal remedies, and secretin) were the second group of most used therapies. The authors found that CAM treatments were related to the severity of diagnosis. When examining parent's perceptions of treatment efficacy, it was found the highest approval scores were for conventional therapies. Hanson et al. (2007) also found that children diagnosed with an ASD for a longer period of time used CAM treatments the most.

Limitations/Future Research

The authors noted several limitations. Participants may have scored the questions within the survey differently. There may have been inaccurate reporting of CAM treatment use. The sample did not have much diversity. Future research should compare treatment efficacy of CAM treatments, reasons for choosing one treatment over another, family beliefs, and the relation between decreased symptomology and CAM treatments. In addition, a standardized list of treatments would help to better compare findings from different studies.

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Gluten-Free, Casein-Free (GFCF) Diet

It is often thought that a GFCF diet may have a positive impact on a variety of autism symptoms. This type of dietary treatment calls for the removal of milk, wheat, barley, and rye products from one's food repertoire. Milk and wheat products are thought to increase abnormal intestine permeability, trigger inflammation and result in immune reactions in individuals with autism. The diet is often thought to alleviate behavioral concerns and have a positive effect on physiology and cognition. Because of these beliefs, the GFCF diet is frequently used to help individuals with autism overcome many obstacles. The following studies examined the use of GFCF diets and the impact they had on autism symptoms.

A. The Gluten-Free, Casein-Free Diet In Autism: Results of a Preliminary Double Blind Clinical Trial

Elder et al. (2006) examined the effects of a GFCF diet on symptoms of autism spectrum disorder (ASD).

Methods

Independent variable: Two groups participated in the study. During baseline, the participants ate their regular diet. Participants were randomly assigned to a GFCF or placebo diet. The food within the GFCF diet was dependent on the participant's preferences. The food was also disguised so that participants were blind to the experimental conditions they were receiving.

Dependent Variable: Symptoms of autism were measured using two scales: the Childhood Autism Rating Scale (CARS) and the Ecological Communication Orientation Scale (ECOS). Direct behavioral observation data and urinary peptide levels were also examined. Behavioral observation examined child initiating, child responding, and intelligible words spoken. Several parent behaviors were measured that included parent initiating, responding, and expectant waiting.

Type of research design: A randomized, double blind repeated measures crossover design was used.

Type of participants in study: 15 children, diagnosed with ASD, participated in the study. The age of participants ranged from 2 to 16 years, with an average age of 7 years old.

Results/Outcomes

Following statistical analysis, Elder et al. (2006) found no significant difference in the dependent variables for the group that received the GFCF diet. Anecdotal reports by parents indicated that their child showed improvements in language, decreased tantrums, and decreased hyperactivity. The authors also noted that when asking parents if their child was in the group that received the GFCF diet, five parents were correct, six were incorrect, and two did not know.

Limitations/Future Research

Elder et al. (2006) expressed that the lack of significant findings may have resulted from the limited sample size or from the large degree of variance within the groups. Also, due to the large variability within the population, the behavioral and language improvements noted by parents may not have been enough to yield significant results. The authors expressed difficulty in interpreting the statistical conclusions because of the variability of the group. It was also reported that several participants occasionally ate food that was not a part of the diet. Finally, it was possible that CARS did not reflect the small changes noted by parents.

It was expressed that future research should examine the effects of the GFCF diet using a larger, less heterogenous sample or using single subject experimental measures. Replication should also involve a setting that is more controlled or data collection for a longer period of time. In addition, a greater amount of assessment tools should be used, along with direct observation to account for smaller changes in behavior. The possibility of parental placebo effects should be examined as well.

B. Effects of Gluten Free/Casein Free Diet in Young Children with Autism:A Pilot Study

Johnson et al. (2011) compared the effects of two different diets for children with autism: the GFCF diet and a healthy diet paired with an attention control condition.

Methods

Independent variable: The participants were randomly assigned to two conditions. One group was assigned to the

GFCF diet condition, while the other was assigned to the healthy diet, attention control condition. Each group received information and instructions regarding their assigned diets.

Dependent variable: Two assessment tools were used. One tool included the Mullen Scale of Early Learning AGS Edition. The assessment scored several domains such as fine/gross motor, receptive/expressive language, and visual reception. Another tool was the Child Behavior Checklist 1 1/3-5. The checklist consisted of several domains such as emotional regulation, anxiety/depression, attention, aggression, among others. Direct behavioral assessment was completed as well. Safety outcomes, nutritional status, and adherence were also reported on.

Type of research design: A randomized, single blinded, parallel groups design was used in the study.

Type of participants in study: 22 children, ages 3 to 5 diagnosed with ASD participated in the study.

Results/Outcomes

Johnson et al. (2011) found that the only measure for the GFCF group to be statistically significant was the receptive language score obtain from the Mullen Scale of Early Learning assessment. The scores for the placebo group using the Mullen Scale showed statistically significant improvement in the visual reception subscale, and gains were shown in all other subscales as well. On the CBCL assessment for the GFCF group, statistically significant findings were shown on aggression and ADHD measures. The scores on behavioral outcomes for all participants did not result in statistical significance. The authors found that both groups showed a decrease in vocalizations and attending, in addition to an increase in initiating interactions. The authors discovered that safety outcomes and nutritional status between groups were not significantly different and the GFCF group had a greater amount of dietary infractions than the healthy diet, attention control condition.

Limitations/Future Research

The authors presented several limitations to their findings. First, the sample size was small. Also, the wrong assessment tools and dependent measures may have been used. In addition, the study did not provide an adequate amount of control as a double blind, placebo control study would have. Future research should examine these limitations.

C. Using Analog Assessment Procedures for Determining the Effects of a Gluten-Free and Casein-Free Diet on Rate of Problem Behaviors for an Adolescent with Autism

Irvin (2006) conducted a study to compare the effects of a GFCF diet with a participant's regular diet to determine both diet's effects on behavioral concerns.

Methods

Independent variable: Two diet phases were implemented: GFCF diet and regular diet. A GFCF diet was developed by a registered dietician to provide a balanced menu of foods and snacks. The regular diet consisted of foods the participant typically ate.

Dependent variable: Analog assessments presenting several conditions were implemented during each phase of the diet at several different times. The conditions were demand, attention, play, and self-restraint interruption. A variety of behaviors were measured and included: self-injury, property destruction, and aggression. Also, staff were required to estimate the volume of food the participant consumed during mealtime.

Type of research design: A BABA design was implemented in this study.

Type of participants in study: One boy, diagnosed with autism and mental retardation, participated in the study. He was 12 years old. He frequently displayed aggression and other forms of problematic behaviors.

Results/Outcomes

Irvin (2006) found that problem behaviors did not decrease following the implementation of the GFCF diet and expressed that there was no behavioral benefit of the diet for the participant.

Limitations/Future Research

One limitation the author expressed was the lack of experi-

mental control that a double blind placebo-controlled study has. Another limitation was that the second GFCF experimental phase may have been too short. This brief phase was a result of the participant refusing meals. Also, more time may have been necessary to determine the negative effects of the GFCF diet.

D. The ScanBrit Randomized, Controlled, Single-Blind Study of a Gluten- and Casein-Free Dietary Intervention for Children with Autism Spectrum Disorders

Whiteley et al. (2010) aimed to determine the impact a GFCF diet had on children diagnosed with PDD/ASD using a battery of assessment tools.

Methods

Independent variable: The intervention consisted of two groups: GFCF group and non-diet group. The GFCF diet was monitored by nutritionists. The non-diet group continued with their regular diet.

Dependent variable: Core and secondary symptoms of participants were measured. The symptoms were measured with the Autism Diagnostic Observation Schedule (ADOS) and the Gilliam Autism Rating Scale (GARS). The Vineland Adaptive Behavior Scale (VABS) was used to measure developmental ability. The Attention-Deficit Hyperactivity Disorder – IV rating scale (ADHD-IV) measured inattention and hyperactivity. A urine test was given to each participant to determine the amount of compounds associated with dietary efficacy that were present. Measures were taken at baseline, 8, 12, and 24 months.

Type of research design: A two-stage randomized controlled study was conducted between April 2006 and October 2008.

Type of participants in study: 72 Children, ages 4 to 10 years old and diagnosed with pervasive developmental disorder (PDD)/ASD were included in the study.

Results/Outcomes

Whiteley et al. (2010) found statically significant improvements within the GFCF group at 8, 12, and 24 months. The second stage of the study found an improving trend in several areas such as social interaction, repetitive behaviors, and stereotypies. When comparing the two groups, the authors reported there was a difference in inattention and hyperactivity, which may have been a function of the GFCF intervention. Both core and secondary symptoms showed improvement within the GFCF group. Whiteley et al. (2010) expressed that a GFCF diet may assist in the developmental outcome of children diagnosed with PDD/ASD.

Limitations/Future Research

The authors expressed additional research is needed to determine why the diet appeared to have an effect on some children and little to no effect on others. Also, nutritional support must be provided to monitor long-term implementation of a GFCF diet.

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Additional types of Alternative Treatments

The use of alternative and complementary treatments are ever present. While many treatments have not been empirically tested, there are many that have shown to not be effective when researched. Often times, treatments that lack effectiveness are very expensive. For example, as reported by Jepson et al. (2011), the use of hyperbaric oxygen therapy may cost approximately $1,395 per month. The following interventions are comprised of research on the effects of several well-known alternative treatments for individuals with ASD.

A. Controlled Evaluation of the Effects of Hyperbaric Oxygen Therapy on the Behavior of 16 Children with Autism Spectrum Disorders

Jepson et al. (2011) studied the effects of hyperbaric oxygen therapy on adaptive and aberrant behavior and stereotypy of children diagnosed with an ASD.

Methods

Independent variable: Hyperbaric oxygen therapy (HBOT) was used. Following baseline measures, the HBOT procedure entailed sitting in a chamber that delivered approximately 24% oxygen at 1.3 atmosphere absolute (ATA). Participants were required to spend about 80 to 90 minutes in therapy.

Dependent variable: Social and verbal functioning and problematic behaviors were measured and included: vocal/physical initiations, vocal/physical response, self-injurious behavior, disruption, tantrums, vocal/physical, toy contact, and physical activity. Measures were summarized and divided into three groups: adaptive behavior, aberrant behavior, and stereotypy.

Type of research design: A non-concurrent multiple baseline across participants design was used.

Type of participants in study: To be included within the study, participants had to have a diagnosis of autistic disorder, pervasive developmental disorder not otherwise specified (PDD-NOS), or Asperger's Syndrome and be between ages 2 and 10 years old. Additional conditions stated that there should be no changes in treatment or diet prior to and during the study. A total of 16 children completed the study.

Results/Outcomes

Jepson et al. (2011) found no clear effect on the dependent variables following implementation of intervention. The authors concluded that HBOT resulted in no effect on the symptoms of children diagnosed with an ASD.

Limitations/Future Research

A limitation mentioned by Jepson et al. (2011) discussed the possibility that the method of observation may not have been sensitive enough to detect additional benefits of the intervention that have been reported anecdotally. Other limitations were that biological variables were not measured and the physical well being of the participants were not noted. The authors suggested that future studies should assess participants while in learning activities, or to obtain measurements using a functional MRI. Also, participants with physical dysfunction should be examined to determine the effects of HBOT.

B. Comparison of Behavioral Intervention and Sensory-Integration Therapy in the Treatment of Challenging Behavior.

This study compared behavioral intervention with sensory-integration therapy to determine the effectiveness of each on challenging behavior.

Methods

Independent variable: The study compared sensory-integration therapy (SIT) with behavioral therapy. Prior to implementation of the treatment phase, functional analyses were conducted to determine the function of each participant's challenging behavior.

Once baseline was taken, SIT was alternated with behavioral therapy. SIT consisted of vestibular, proprioceptive, and tactile input, joint compression and brushing. Participants had access to each activity for 15 minutes before sitting in class. When a target behavior occurred, participants were provided access to activities as well. Non-contingent reinforcement as provided during class time. The behavioral intervention was determined from the functional assessment.

For each participant, a different intervention was implemented because of the different maintaining variables of the challenging behaviors. Some interventions utilized were: fast-pace instruction, variable schedule of reinforcement, errorless learning, extinction, differential reinforcement, over-correction, differential reinforcement of alternative behavior and demand fading.

Dependent variable: Several measures were taken and defined differently for each participant and included a behavioral function measures, challenging behavior, and stress measures. For all participants, challenging behavior may have consisted of self-injurious behavior, aggression toward others, crying, tantrum-like behaviors, hand-mouthing/biting, scratching, hair pulling, sudden tensing of face and jaw, and body rigidity, among others.

Type of research design: An alternating treatments design was used with the addition of a final best treatment phase.

Type of participants in study: Four children, all male, ranging from ages 6 to 11, diagnosed with an ASD participated in the study.

Results/Outcome

Devlin et al. (2011) found the behavioral intervention more effective in decreasing challenging behavior than SIT for each participant. It was found that SIT had little to no effect compared to baseline measures. The stress measurement found that cortisol measures were the lowest during the behavioral intervention compared to SIT and baseline, leading to the belief that stress was the lowest during this phase as well.

Limitations/Future Research

The authors point to the potential limitation within the type of research study used, that the therapeutic effects of SIT were limited. It was mentioned that future research should determine the effect of SIT on behaviors with a sensory function and to measure cortisol levels over an extended period of time using one intervention. Also, the findings should be replicated with additional participants.

C. Polyunsaturated Fatty Acid Supplementation in Young Children with Autism

This study investigated the use of polyunsaturated fatty acid supplementation (PUFA), specifically Docoahexanoic Acid (DHA), as an alternative treatment for autism. PUFA is a lipid that is taken as a dietary supplement.

Methods

Independent variable: A PUFA supplement, DHA only, was added to the child's daily regime. The children took two pills per day for three months.

Dependent variable: A variety of measures were taken and included the following: emotional regulation, anxiety/depression, somatic complaints, withdrawn, attention problems, aggressive behaviors, sleep problems, positive vocalizations, attending to task/activity, social initiations (determined by checklists completed by parents, teachers and other caregivers)

Type of research design: A prospective, open label, blind selection parallel groups design was implemented.

Type of participants in study: The experimental group consisted of 10 children (six with Autistic Disorder, four with Pervasive Developmental Disorder) with an average age of 3.725 years. The control group complied with healthy diet regulations only and contained 13 children (11 with Autistic Disorder, two with Pervasive Developmental Disorder) with an average age of 3.2 years. Groups were selected randomly.

Results/Outcomes

Johnson et al. (2009) expressed that no clinical gains in behavior or developmental outcomes were found.

Limitations/Future Research

Several limitations were noted and included the following: a small sample size, limited outcome measures, lack of placebo control, dosage might not have been adequate, both behavioral and developmental outcome measures were included (both were limited in scope), only one measure was blinded, and the trial time was short. Future research should examine each limitation.

D. The Effect of Therapeutic Horseback Riding on Social Functioning in Children with Autism

Another treatment for autism is horseback riding. In a study by Bass, Duchowny, and Llabre (2009), the effects of therapeutic horseback riding on social functioning of children with autism are investigated.

Methods

Independent variable: A 12-week therapeutic horseback riding intervention was implemented. The riding sessions entailed training on mounting/dismounting, warm-up exercises, riding skills, mounted games, and horsemanship activities.

Dependent variable: To assess social functioning, two measures were used, the Social Responsiveness Scale (SRS) and Sensory Profile. The assessments were given before the intervention began and after it was completed. The parents of the participants completed both measures. Among the behaviors assessed included social awareness, social communication, social motivation, decreased inattention, distractibility, sedentary behaviors, sensory seeking/sensitivity, and fine motor among others.

Type of research design: A pre-test, post-test experimental design with a waitlisted control group was used.

Type of participants in study: Participants included 34 children diagnosed with ASD.

Results/Outcomes

Bass, Duchowny, and Llabre (2009) found that therapeutic horseback riding may have had an effect on social functioning. Social skills areas that showed the most improvement within the experimental group included directed attention and sensory integration. Other social components showing improvement included sensory sensitivity and social motivation. A decrease in inattention and distractibility was also found. Those areas that showed the least improvements were fine motor, social cognition, and social awareness measures.

Limitations/Future Research

There are several limitations noted. First, the experimenters were unaware of what medications the participants were taking or if they were participating in any therapies other than horseback riding. The authors express that it is difficult to conclude the intervention had a positive result on social skills due to confounding factors. Another limitation was attrition. Future studies should increase the duration of the intervention and provide a more comprehensive assessment to measure its impact on social functioning.

E. Melatonin Versus Placebo in Children with Autism Spectrum Conditions and Severe Sleep Problems not Amenable to Behavior Management Strategies: A Randomized Controlled Crossover Trial

Wright et al. (2010) studied children, diagnosed with an ASD, who were not successful in behavioral therapy for the treatment of sleep problems. The authors aimed to study the impact melatonin had on sleep problems, compared to a placebo control.

Methods

Independent variable: A medication regimen was implemented that consisted of melatonin and placebo controls. The medication was taken orally, one hour prior to going to sleep. The melatonin dosage was gradually increased from 2 mg to a maximum dosage of 10 mg.

Dependent variable: Parents of the participants completed sleep diaries. A variety of behaviors were documented, including: when the bedtime routine started, when medication was taken, and the number of times asleep and awake throughout the night. Several assessment tools were used as well, such as the Sleep Difficulties Questionnaire (SDQ), the Developmental Behavior Checklist (DBC), General Health Questionnaire (GHQ), and the Side Effects Questionnaire (SEQ). The assessment tools helped to provide a clear picture of the participant's health and sleep behaviors and were completed prior to the start of the study, after each three-month period, and upon completion of the study. Overall, sleep latency, total sleep time, and number of times wakenings were tracked.

Type of research design: A double blind, randomized, controlled crossover trial versus placebo control was imple-

mented.

Type of participants in study: 17 children diagnosed with ASD completed the study, ages 3 to 16 years old. All participants were not successful with behavior management with parent support in treatment for sleep problems. Those selected for the study may exhibit any one of the following sleep problems: sleeplessness, excessive sleep latency, night-waking, or little time spent sleeping at night.

Results/Outcomes

Statistically significant results were found supporting the use of melatonin over placebo to help with the sleep behaviors of the participants, specifically for sleep latency and total sleep time. Wright et al. (2010) found that melatonin resulted in an increase of 45 minutes of sleep on average over a three-month period. The authors also found that there were few side effects to treatment. It was also expressed that during the melatonin phase, the children showed improved daytime behaviors.

Limitations/Future Research

Wright et al. (2010) mentioned the difficulty in recruiting participants, as many children were already taking or have taken melatonin in the past. The authors expressed that metabolism of children be examined in future research to determine its relation to dosage of melatonin. Also, replications of the findings are necessary.

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