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Survey on different intervention modalities used for Iraqi children with ASD in clinical population

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Abstract

Objective: The aim of this study is to investigate different treatment modalities used for Iraqi children with ASD in the clinical population.

Methodes: A six intervention modalities are included in the questionnaire, namly: dietary intervention, hyperbaric oxygen therapy (HBOT), neurofeedback, treatment protocols, drug and behavioural therapy. The included interventions were selected based on initial surveys and our clinical observation.

Results: In a total of 70 children with ASD (age range= 2-16 years, mean= 6.8, SD= 2.96), behavioural therapy is the most frequently used intervention in all participants. Drug treatment accounted for about 37% of the participants, while dietary interventions have been tried for about one third of the participants (34%) in some points of their lives. Protocols are used for 14.5%. Neurofeedback and hyperbaric oxygen therapy are used for only 2% of the children.

Conclusions: Behavioural therapy is the most commonly used intervention, followed by drug therapy and dietary intervention. The minority of participants are using HBOT, neurofeedback and protocols .

Keywords: Autism spectrum disorder, Interventions, Iraqi children.

1. Introduction

Autism is a developmental disability involving impairments in social interaction, verbal and nonverbal communication, appearing within the first three years of life [1]. It has been estimated that 1 in 68 of children is diagnosed with autism; more common in boys than in girls [2]. Autism was first recognized by Kanner, 1943 and included in DSM III as a separated disorder for the first time in 1980. DSM IV expanded the definition of autism and included five types, however, in 2013 DSM-5 includes all subcategories into one umbrella diagnosis of autism spectrum disorder (ASD)[3]. The awareness of the disorders has increased in the last decades, so have the number of therapeutic modalities used to treat the symptoms .

The aim of our work is to broaden current knowledge of the different intervention types that are used for Iraqi children with ASD. In this context, we selected six types of treatment for our survey:

1.1 Dietary intervention: Dietary therapies, particularly elimination diets, are commonly used in autism spectrum conditions [4.[

1.1.1The gluten and casein free (GFCF) diet

This diet is achieved by the elimination of gluten and excluding all food items containing wheat, oats, barley or rye, that is, all flours, bread, rusks, pasta, pastries and other bakery products made with these cereals. In addition, elimination of casein requires no intake of dairy products: milk, including breast milk, yoghurt, cheese, butter, cream or ice cream, among others[5.[

Supporters of the opioid-excess theory of autism have found increased levels of opioid peptides in the urine of some autistics children that they attribute to malabsorption of gluten and casein [6]. They suggest improper metabolism of gluten and casein derived from grains and dairy products and this result in increasing urinary peptides as one of the outputs[7]. Then these peptides , according to the leaky gut hypothesis which proposes that intestinal mucosa is permeable in unusual ways, will enter the bloodstream [8].

These peptides may be activated by binding to the opioid receptors and work as opioid and induce some autistics behaviours [9.[

1.1.2 Ketogenic diet

The ketogenic diet is a high-fat, adequate-protein, low-carbohydrate diet. This is achieved by excluding high-carbohydrate foods such as starchy fruits and vegetables, bread, pasta, grains and sugar, while increasing the consumption of foods high in fat such as nuts, cream and butter[10]. reports of application of ketogenic diet on patients with Rett syndrome for control of seizure, also revealed some motor and behavioural improvement [11]. The beneficial effect of the ketogenic diet in epilepsy and improvement of mitochondrial function draw the attention for trying this diet to improve some autism associated symptoms[12[

1.1.3 Feingold diet

The hypothesis behind this diet is the elimination of food additives resulting in high improvement in some ADHD cases hyperactive symptoms Feingold, (1985) as quoted by Neggers,2011. At this time no solid randomised trials have been conducted to evaluate the effectiveness of this diet in ASD [13].

1.2 Hyperbaric oxygen therapy

Hyperbaric oxygen therapy (HBOT) is defined by The Undersea and Hyperbaric Medical Society as a type of therapy in which interrupted exposure of the patient to almost 100% oxygen while inside a hyperbaric chamber under pressure to more than sea level pressure one atmosphere absolute [14]. Theory behind the use of HBOT is to provide the tissues with elevated partial pressure of oxygen and subsequently correct the hypo perfusion state [15] Supporters of this theory argue that children with ASD suffered from hypo perfusion in core regions in the brain and this correlate with the severity of their symptoms [16].

Only a few researchers studied the benefits of HBOT in improving symptoms of ASD. Many validity problems have been found in these studies with much controversy surrounding the results regarding the relationship between alteration in body physiology after treatment sessions and clinical improvement. Moreover, there is an obvious neglect for measuring and reporting the possible side effects of HBOT in these studies [17].

The British National Health Service NHS, not recommend HBOT and considered it as one of the “Fake and harmful autism treatments” [18].

1.3 Neurofeedback

Neurofeedback refers to a technique done by using a headband or pads attached to the forehead and scalp connected to a screen in front of the client to check their brain waves and see them displayed on the screen. Supporters of the neurofeedback claimed that users of this technique train themselves to regulate their own cortical activity in a way similar to those typically developing children leading to clinical improvement. Real-time representation of electroencephalographic (EEG) is usually used in the process of self-regulation of cortical activity [19].

1.4 protocols

1.4.1DAN protocols

Defeat Autism Now (DAN), was set up in 1967 as a project of the nonprofit organisation, Autism Research Institute (ARI). Founder of the DAN protocol believed that a combination of diminished immune response; accumulated toxic material in the body; and certain food problems, collectively can cause ASD [20]. Despite being closed down in 2011, DAN still in use in some Arab countries [21]

1.4.2 Date, walnut and pumpkin diet

This protocol is designed by the Syrian researcher H. Kialy claimed that usage of mixtures made of date ,walnut and pumpkin can improve or even cure children with ASD [22]. This protocol received attention in some Arabic media and tried by many ASD parents hoping to cure their children in spite of the great restrictions of the diary items introduced to the children .

1.5 Drug therapy

1.5.1 Risperidone & Aripiprazole

Both are second-generation antipsychotic, highly potent blockade of serotonin 2A and dopamine D2 receptors, used for treatment of psychiatric disorders like schizophrenia, bipolar I disorder and other psychotic conditions [23].

The Food and Drug Administration (FDA) had approved risperidone and Aripiprazole in 2006 and 2009 subsequently, as the first drugs to be used in children with ASD aged 5 and more who displayed aggressive or destructive behaviors [23] Despite the available evidence about the effectiveness of risperidone on reducing the problematic behaviors in ASD, a significant health effects like weight gain and metabolic disturbance may occur [24].

1.5.2 other pharmacological agents

Despite not being approved by the FDA, a number of drugs are used by clinicians to treat different conditions associated with ASD like Oxytocin, Antidepressants, antipsychotics, Methylphenidate and Atomoxetine[25].

2. Methodes

2.1 Participants

A total of 70 children with ASD from Emam Alhussain and other private ASD treatment centres in Babylon province were called to take part in this survey with a mean age of (mean= 6.8 years, SD=2.96), Gender(F= 8, M=62), age of diagnosis at 2 y=28, at 3 y=29, a 4 y =7 and 5 years or more 6 participants .

Ethical approval for this project was granted by the Ethics Committee of Jaber Ibn Hayyan Medical University. Parents of child participants were made aware of the project approval and gave full consent for their child's participation.

2.2 Procedure

After informed consents are obtained, a thorough clinical assessment of participants were done by both child and adolescent psychiatrist and pediatrician including full medical history, general physical examination and developmental assessment. Medical history includes prenatal, natal and postnatal history, drug history, developmental history and any developmental delay. Expressive and receptive language, stereotyped behaviors exhibited by the child; beside the observation of the child playing manner, and social reactivity during child's presence in the examination room are all assessed for both group.The diagnostic criteria in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM- 5) were used to prove the diagnosis of ASD group [26].

2.3 Childhood Autism Rating Scale CARS

Is one of the available and widely used tests in ASD diagnosis and assessment of the severity. A trained clinician can give an ASD diagnosis and differentiate them from those with other developmental disabilities based on direct behavioural observation of the child according to the 15 scale items. The total score can obtained is 60, and ASD diagnosis comes at score of 30 or less [27].

2.4 ASD intervention modalities questionnaire

A six intervention modalities are included in the questionnaire, namly: dietary intervention, hyperbaric oxygen therapy (HBOT), neurofeedback, treatment protocols, drug and behavioral therapy. Despite the availability of a wide range of interventions for ASD, whether based on scientific evidence or not [28]. We selected the most commonly used interventions for Iraqi children with ASD based on initial surveys about the treatment used for children with ASD that were made by direct questions to their families in addition to our observation in a clinical setting, and then we included their answers to make the questionnaire. A separate section is set for each intervention asking first whether this intervention is used or not. If intervention is not used currently or by history, parents select 'no' and proceed to the next section. Otherwise, subsequent questions like the type of specific intervention and duration of using therapy should be answered .

3. Results

Participant's characteristics

The participant's age range (2-16 years), (mean= 6.8, SD= 2.96). The gender is also enquired, male gender (N=62) were significantly higher than female gender (N=8). Age range at which children were diagnosed with ASD (2-5 years), (Mean=3, SD= 0.91).

Types of interventions

Types of interventions and frequency of their use are included in the tables below :

Table 1 Types of therapies used for participants

Type of Therapy	Used	Not used
Dietary intervention	24 (34.3%)	46 (65.7%)
HBOT	2 (2.9)	68 (97.1%)
Protocols	11(14.5%)	59 (85.5%)
Neurofeedback	2 (2.9)	68 (97.1%)
Drug therapy	37 (52.9%)	33 (47.1%)
Behavioral therapy	70 (100%)	

Table 2 Types of Dietary intervention used for participants

Types of Dietary intervention	Number (percentage)
gluten and casein free (GFCF) diet	18 (75%)
GFCF + Feingold diet	7 (29.2%)
Ketogenic diet	1 (4.2%)
Other	2 (8.3%)

Table 3 Types of drug therapy used for participants

Types of Drug Therapy	Number (percentage)
Risperidone	16 (43.2%)
Omega3 & multivitamins	6 (16.2%)
Clonidine	3 (8.1%)
Herbal preparations	9 (24.3%)
Others	3 (8.1%)

4. Discussion

Of the 70 subjects who completed the questionnaire, behavioural therapy was the most frequently used intervention among ASD children, which applied for almost all of them. This is consistent with the recommendations of NHS [29] and Autism speaks [30] about using consistent behavioural programs as the main step in ASD treatment .

Behavioural therapy is a broad term that includes different types of interventions all aimed at increasing desirable behaviours and at the same time reducing the maladaptive behaviours[31].

No further verifications about the program type is required in the questionnaire, however, where the programs are administered were questioned. From them, 16 children received behavioural programs at home , 15 at special centres and 39 in both places.

The second frequently used intervention was drug treatment accounted for about 37(52.9%) of respondents. Types of medications are also asked in the survey. About 16 children are using risperidone under different generic names like risperdal, rispekern and repiral.

Omega3, multivitamins and herbal preparations are used by about 9% of the children and clonidine in only 3% of them. Speak, mintat, memo up, are some forms of syrups made of herbs that are used for ASD participants in hope to improve memory, enhance speech or clear the body from heavy metal.

The duration of drug treatment was also obtained in the survey. The majority (59.5%) used medication for less than a year. The same percent of the children (10.8) used drugs for 3,4,5 and more years. Only (8.1%) used for one year .

Other medications like Atomoxetine (Strattera), furazol and neuroton are also mentioned by some parents.

Approximately one-thirds of those surveyed (N= 24, 34%) reported the use of dietary interventions for their children at some points of their lives. Gluten-free, casein-free diet was the most commonly used diet, accounting for 75% of cases used alone or in combination of other

food restrictions like avoiding all food additives and sugary preparations. A ketogenic diet is used for only one participant. Vitamins, minerals and diet supplements are added to the usual diet of about 8.3% of them.

On the other hand, protocols are used for 9 (14.5%) children. Date, Walnut and pumpkin diet and bleaching (CD) are only used for one (1.4%) participant. While DAN protocol is considered by 2 (2.9%) participants. All these protocols are only used for less than a year. Other protocols were also mentioned by those interviewed.

Neurofeedback and hyperbaric oxygen therapy are used for only 2 (2.9%) children. Both of these therapies are not available in our province where the study is conducted and parents have to get their children to the capital city (Baghdad) to receive weekly or monthly sessions. One of Neurofeedback users only underwent one session and the other users had more than five. While for HBOT the two users only received one to two therapy sessions.

Most of the applied interventions are not advised to be used for ASD by the NHS [18] because there is little or no evidence of their effectiveness or even high possibility of harmful effects on their users.

5. Limitation

We are aware that our research may have a number of limitations. The small sample size was the most obvious limitation. This survey also missed important information like effects and complications of the treatments included and whether interventions were prescribed by qualified clinicians or used by parents based on their search for a way to help their children.

6. Conclusions

Our work has led us to conclude that different intervention modalities have been used for children with ASD. The most frequently observed intervention type is behavioural therapy using various programs applied at home, in special ASD treatment centres or in both. The next commonly used intervention is pharmacological treatment by different drugs whether DFA approved or not. Minority of participants are using other therapeutic modalities that are not recommended to use by the NHS like HBOT, neurofeedback and protocols. Our work clearly has some limitations. Despite this we believe our work could be the starting point for further studies in this subject.

Conflict of Interest

The author declared that the research was conducted in the absence of any commercial or financial conflicts.

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