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Evaluation of Oral Health Status and behavior of Children with Autism Spectrum Disorder in Derna, Libya

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Abstract:

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder that constitutes a multifactorial problem that affect all aspects of affected children. One of these problems is the oral health including the daily oral health activities, the access to dental care, as well as the associated habits that influence oral health. The aim of this study was to evaluate oral health status and behavior of children with autism spectrum disorder in Derna city, Libya. The study included 51 children from two specialized centers in the city. Data collected from their parents using a questionnaire. The questionnaire assessed oral care at home, access to dental care and dental symptoms and behaviors. The study found that the majority of children 76.6% need help during tooth brushing. They are not regularly got access to dental care as around 49% of them are visiting the dentist only when needed. The most frequent reasons to seek dentists were tooth pain and carries 44.4% and 25% respectively. 47.2% of parents reported that the dental visits were hard and unpleasant time. In conclusion autistic children have several multifactorial barriers to appropriate oral hygiene as well as access to dental care. More attention is needed from the health care services for autistic children and their families to overcome these barriers.

Keywords: Autism spectrum disorders, Oral health status, Oral health behaviors, Dental care

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تقييم حالة وسلوك صحة الفم لدى الأطفال المصابين باضطراب طيف التوحد في درنة، ليبيا

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الملخص

اضطراب طيف التوحد هو اضطراب نمائي عصبي ذو مشاكل متعددة العوامل التي تؤثر على جميع الجوانب النمائية للأطفال المصابين به. إحدى هذه المشاكل هي صحة الفم بما في ذلك الأنشطة اليومية لصحة الفم، والحصول على رعاية الأسنان، فضلاً عن العادات المرتبطة بها التي تؤثر على صحة الفم. هدفت هذه الدراسة إلى تقييم حالة صحة الفم وسلوك الأطفال المصابين باضطراب طيف التوحد في مدينة درنة، ليبيا. وشملت الدراسة 51 طفلاً من مركزين متخصصين في المدينة. البيانات التي تم جمعها من أولياء أمور الأطفال باستخدام استبيان. قيم الاستبيان عدة جوانب منها العناية بالفم والأسنان في المنزل، والحصول على رعاية الأسنان وأعراض الأسنان وسلوكياتها. ووجدت الدراسة أن غالبية الأطفال 76.6% يحتاجون إلى مساعدة أثناء تفريش أسنانهم. وهم أيضاً لا يحصلون على رعاية الأسنان بشكل منتظم حيث أن حوالي 49% منهم يزورون طبيب الأسنان عند الحاجة فقط. وكانت أكثر أسباب طلب طبيب الأسنان شيوعاً هي آلام الأسنان والتسوس 44.4% و 25% على التوالي. كما وقد أفاد 47.2% من أولياء الأمور أن زيارات طبيب الأسنان كانت صعبة للغاية وغير سارة. في الختام، نستخلص أن لدى الأطفال المصابين بالتوحد العديد من الحواجز متعددة العوامل التي تحول دون نظافة الفم المناسبة وكذلك الوصول إلى رعاية الأسنان. هناك حاجة إلى مزيد من الاهتمام من خدمات الرعاية الصحية للأطفال المصابين بالتوحد وأسره للتغلب على هذه الحواجز.

الكلمات المفتاحية: اضطراب طيف التوحد، صحة الفم والأسنان، سلوكيات صحة الفم، صحة الأسنان.

Introduction

Autism spectrum disorder (ASD) is a complex neurodevelopmental disorder that involves deficits in social communication, restricted and repetitive behaviors and aberrant interests [1]. ASD is clinically associated with different impairments including epilepsy, attention problems as well as motor problems [2,3]. ASD and associated impairments affect the nervous system, which makes them unable to interact with others [4-7]. Also, it relates to some features such as gastrointestinal, cognitive, attention deficit and depression, immune system aberration, mitochondrial impairments, and epilepsy [2,3].

Based on the latest reports by the Centers for Disease Control and Prevention (CDC), the ASD prevalence has rapidly increased to 1 in 68 children worldwide [8,9]. Recently, World Health Organization (WHO) estimated the incidence where it was reported that 1 in 160 children is affected by autism [10]. boys are affected four times more than girls. Around 50% of autistic people have moderate intellectual disability. In addition to the main symptoms there are many other non-specific symptoms such as abnormal sensory response, hyperkinesia, aggressiveness, sleeping and eating problems, as well as anxiety and behavioral problems and obsessive-compulsive behavior [11].

In addition, oral hygiene and habits are considered as social skills and feeding difficulty is a result of these problems. Abnormal eating behavior such as sensitivity to food texture and limit their diet to particular species of foods, and sometimes a strong urge for soft, sweet, and sticky stuffs to these children. Compared to healthy children, parents of children with ASD were more likely to report dental and oral problems related to chewing, swallowing, and drooling of saliva. Self-injurious behaviors were more practiced by children with ASD than others [12].

Reviewing literature shows inadequate research about dietary habits of autistic children and their dental health in general, especially in Libya. Therefore, in this study, the aim was to evaluate oral health status and behavior of children with autism spectrum disorder in Derna, Libya.

Material and methods

The study was approved by the ethical committee of College of Medical Technology, Derna, Libya. The study included 51 children diagnosed as ASD from two specialized centers in the city. A full verbal and written explanation of the study was given to the parents, and informed consent was obtained from them. A self-administered questionnaire was written in Arabic language and presented to parents of autistic children. The administration of each center were contacted and ethical approval was obtained before spreading the questionnaires to the parents.

The questionnaires collected demographic data including age, gender and the child's eating and dental habits. Parents were also asked to answer questions regarding the oral health of the child, if they are practicing regular tooth brushing, the frequency of brushing teeth and if the child has/had any dental problems like dental caries, bleeding gums or pain. The questionnaires were distributed to all the families with the help of the staff members working in the selected centers. The collected data was analyzed using Statistical Package for Social Sciences (SPSS) software for frequencies distribution of all variables in number and percentage.

Results

The total questionnaires distributed were 57. A total of 51 questionnaires were returned with an overall response rate of 89.5%. The children's age ranges from 5 to 14 years with mean age of 9.35 ± 2.348 . Thirty-three (64.7%) of them were male and 18 (35.3%) females. The mean age at diagnosis was 4.08 ± 1.798 years range from 2 to 10

years. Nearly half of the parents had university education 23(45.1%) and few 4(7.8%) were uneducated. Also, most of autistic 35(68.6%) were in medium family income. Sixteen of the parents with ASD reported that their children are prescribed different types of medications, 15 of 16(93.75%) were taking omega 3. Other drugs such as atomoxetine and Risperidone were prescribed for only two children for treatment of associated features.

Table 1 Oral care at home for children with autism

Question	No	%
How many times does your child practice tooth brushing?		
Never	4	7.8
Sometimes	23	45.1
Once/ day	18	35.3
Twice/ day	5	9.8
Three times/ day	1	2
Does your child need assistance during tooth brushing?		
Never	11	23.4
Sometimes	10	21.3
Always	26	55.3

The questionnaire was divided into four main sections to cover oral care at home, access to dental care and dental symptoms and behaviors. In regards to oral care at home, only four children (7.8%) were not practicing tooth brushing and 23/51(45.1%) brushed their teeth irregularly. While the frequency of autistic children who were practicing tooth brushing on a regular basis were 18/51 (35.3%) brushed their teeth once and 5/51 (9.8%) brushed twice. Out of those who were brushing, 26/47 (55.3%) of children with autistic were not brushing their teeth independently, 11/47(23.4%) brush alone and 10/47(21.3%) sometimes alone sometimes need help (Table 1).

In regard to experience and access to dental care, data showed that 36 out of 51 (70.6%) of autistic have visited a dentist, 9.8% of them visit the dentist every year, 11.8% every 6 months and nearly half 49% when needed. However, only 29.4% of the children did not visit a dentist. The autistic children had visited a dentist more commonly for tooth pain followed by decay tooth, check-ups, extractions and gingivitis respectively (Table 2).

Out of the 70.6% who had visited dentist, 11.1% reported that the visit was good and without difficulty as well as 33.3% of the children's visits were pleasant experience with only minimal resistance, while 47.2% encountered an unpleasant experience with anxiety and refusal, and 8.3% reported that it was terrifying experience and hard time (Table 2).

Table 2 Access to dental care for children with autism

Question	No	%
Visiting the dentist		
Every 6 months	6	11.8
Yearly	5	9.8
When needed	25	49
Never	15	29.4
Reason to visit the dentist		
Gingivitis	2	5.5
Tooth pain	16	44.4
Caries	9	25
Extraction	5	13.8
Check up	4	11.1
How was the child's dental visit experience		
Good	4	11.1
Pleasant	12	33.3
Unpleasant	17	47.2
Terrifying	3	8.3

In regard to dental symptoms and problems reported by parents, the most common complaint was toothache (53%) followed by presence of tooth decay (49%). Acute gingivitis and gum bleeding were reported in 21.5% of the children. On the other hand, parents reported some behaviors their children frequently are doing. Finger suckling was the most frequent behavior noted (43.1%) followed by nail biting (31.4%), teeth grinding (27.5%) and drooling (25.5%) (Table 3).

Table 3 Oral & dental problems and Habits:

Oral & dental problems	No	%
Tooth Decay	25	49
Acute gingivitis	11	21.5
Mouth smell	23	45
Gum bleeding	11	21.5
Toothache	27	53
Breathe through mouth	14	27.5
Mouth ulcer	3	6
Oral habits observed by parents	No	%
Tongue biting	10	19.6
Lip biting	11	21.6
Tooth grinding	14	27.5
Nail biting	16	31.4
Finger suckling	22	43.1
Drooling	13	25.5

Discussion

Autistic spectrum disorder is a new challenge for healthcare workers as its prevalence is increasing and awareness is needed when they encounter autistic children. This includes understanding its features, associated problems as well as the way to approach children with this disorder.

This descriptive study was carried out on a group of autistic children with age ranging from 5 to 14 years old and this means that there is paucity in children who must be diagnosed early as ASD can be diagnosed as early as age of 2.5 years [13]. But this is under the influence of many factors that make the early diagnosis difficult, as reported in a meta-analysis that showed a mean age at diagnosis of 43.18 months [14]. Male to female ratio was 1.8:1 which is reasonable as ASD affects boys more than girls as reported in previous studies in Libya and worldwide with the ratio reaching 4:1 [15]. This difference is still under study on the biological basis of the male preponderance of autism and other neurodevelopmental disorders includes a higher genetic burden in females and sex-specific gene mutations or epigenetic changes that significantly confer risk to males or protection to females. Other mechanisms discussed are sex chromosome and sex hormone involvement [16].

As regards to oral hygiene and practicing tooth brushing, only 7.8% of the children were not brushing their teeth which is consistent with previous studies; those reported around 6% in a case control study done on autistic and healthy children in Benghazi, Libya [17]. While in another study performed in Egypt, around half of the autistic children were not practicing toothbrushing [18]. Also, the majority of children 76.6% need help during tooth brushing that adds on extra work from the parents for daily health habits. This was similar to the previous studies that range from 78% to 96% [12, 17-19]. However, these percentages are attributed to multiple factors including the associated behavioral problems, abnormal motor and sensory deficits as well as significantly limited interest. In addition, the chronicity of the disorder and the diversity of associated features discourage the parents from giving attention to oral hygiene.

According to our study, autistic children do not regularly get access to dental care as around 49% of them are visiting dentists only when needed, which means just to solve acute overwhelmed dental problems as the most

frequent reasons to seek dentists were tooth pain and carries 44.4% and 25% respectively. This is attributed to the previously mentioned factors and to the challenges that face the parents, the children as well as the dentist during each visit. Of these, parental barriers reported were cost, finding a dentist to treat ASD children, and behavior of their ASD child [20]. Some parents have paucity in knowledge about successful ways and experiences to approach manage and following up dentists [21]. On the other hand, dentists have a role in making the visit more pleasant for children and this require special training and experience for providing appropriate dental care for this sector of children with special needs. In this study, 47.2% of parents reported that the dental visits were hard and unpleasant time. Similarly, previous studies reported several challenges supposed to be the reasons to find difficulties in dental visits for autistic children [12,18,22].

As regards oral habits reported by parents in the current study, finger suckling was the most common habit noticed by percentage reach to 43% of children. This followed by tooth grinding and drooling as common habits (27.5% and 25.5% respectively). This was consistent with previous study that found grinding and drooling common habits with nearby percentages, but still not statistically significant as compared to healthy non autistic children [19].

Autistic children and their families need more knowledge and constant dental care services as well as other fields are provided. Dentists need special training to approach and learn management methods to make dental care easier for this sector of children in the community.

Conclusion

In conclusion, autistic children have several multifactorial barriers to appropriate oral hygiene as well as access to dental care. More attention is needed from the health care services for autistic children and their families to overcome these barriers. This needs a professional support system to be built parallel to behavioral intervention targeting other problems associated with ASD.

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