Knowledge, attitude and practice towards oral health care among parents of autism spectrum disorder children

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Abstract

Background: Parents, usually, are the primary decision makers on matters affecting their child’s overall health including oral health. Owing to the lack of cooperation, co-occurring disorders and its financial burden on parents, oral health is often neglected in children with autism spectrum disorders (ASD). The aim of this study is to assess the knowledge, attitude and practice toward oral health care among parents of ASD children.

Materials and Methods: A cross-sectional survey was conducted at an Autistic school for children, in North Bengaluru. The data were collected using a self-administered questionnaire, which was distributed to 60 parents. Oral examination of the children was done to record gingival status using dichotomous scale and dentition status was recorded using decayed missing filled teeth (DMFT)/dmft indices. Descriptive analysis was performed. The data were analyzed using the Statistical Package for Social Science Version 19.0 (IBM Corp. Released 2010. IBM SPSS Statistics for Windows, Version 19.0. Armonk, NY: IBM Corp.).

Results: About 76.9% of the parents had the knowledge that oral health affects the overall health of the child. 40.4% thought that they should consult a pediatric dentist when the child had dental problems. 71.2% parents felt the importance of maintaining primary teeth. However 61.5% did not want any treatment for decay in primary teeth. 82.7% parents brushed their child’s teeth once daily. 94.2% of the parents used conventional toothbrushes for their children. Attitudes and practice of parents seemed to be governed by financial restraints, and preconceived notions regarding co-operation of their child.

Conclusion: The knowledge toward oral health was noted to be inadequate among majority of the parents. Furthermore, parents whose knowledge was adequate had not incorporated healthy daily practices. Parents of ASD children need to be educated about consequences of oral health neglect and importance of regular check-ups. Education of parents, access to dental care and affordability of oral health care services for this special group are critical factors for achieving optimal oral health in these patients.

Keywords
Autism spectrum disorder, knowledge, oral health practices, parents

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Introduction

Autism spectrum disorder (ASD) is a lifelong neurodevelopment disorder characterized by a restricted, stereotyped, repetitive repertoire of interests and activities. It was first described by the American child psychiatrist Kanner in the year 1943. ASD includes Autistic disorder, Asperger syndrome, Rett’s syndrome, childhood disintegrative disorder and pervasive developmental disorder not otherwise specified as defined by the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition. This disorder is present since birth. However its symptoms are gradually noticed after the age of 6 months and become established by age two or 3 years. The prevalence has been estimated to be 1-2/1000 for autism and close to 6/1000 for ASD, with about four times as many males as females being affected.

Boulet et al. reported 96% of children with autism had a coexisting developmental condition. The most common conditions seen were learning disability, attention deficit hyperactivity disorder, mental retardation, and stuttering. Children suffering from ASD are more likely to have a variety of medical and psychiatric conditions requiring frequent physician visits for preventive, non-emergency and emergency care and are on high medication usage. These children are at an increased risk of developing caries and periodontal diseases due to poor
dietary habits, damaging oral habits such as bruxism or pica, and poor oral self-care.[8,9] Dental care for such patients is neglected as they often face significant adversities in accessing dental care, due to the difficulty to locate a dentist specialized to treat such individuals.[8–10]

Parents are the decision makers in matters of health care for children with special health care needs; thus, they play an important role in achieving the best oral health outcomes for their children. Since parents are responsible for almost all health issues related to their children, their role in modeling their children toward practicing preventive oral health throughout life is crucial. Thus, parents should be educated about importance of oral health care that in turn also influences general health of their children. There is a lack of studies which have elicited parental knowledge, attitudes, and practice (KAP) behaviors toward oral health of children with ASD. Thus, the aim of this study was to assess the KAP regarding oral health care among parents of autistic children in North Bengaluru city, Karnataka, India.

Materials and Methods
A cross-sectional study was conducted at ASHA charitable trust for autistic children at North Bengaluru, India. The center offers an intensive rehabilitation program for children diagnosed with ASD and had 60 registered children aged 7-14 years. Ethical clearance was obtained by the Faculty of Dental Sciences, MS Ramaiah University of Applied Sciences Ethical Committee, following which permission from respective school authorities for conducting this research was obtained. Consent was obtained from parents and every family was assured of the confidentiality of the collected data and that the resultant information would be used only for the research purposes. Non-randomized sampling technique and a convenient sample of 52 children (males and females) were obtained. All the children had been previously examined and diagnosed medically as ASD patients according to the centre's medical records. A self-administered questionnaire in English/Kannada was distributed to the parents after checking its content and face validity. Content validity process was done by 6 experts. Content validation ratio (CVR) was reported to be significant for all items included under the three domains of KAP in the questionnaire. The CVR was reported to be 0.950 for 6 examiners ($P < 0.05$). The questionnaire included questions on demographic information (name, age and gender of the child and parent), their knowledge on oral health, child’s oral hygiene practices and visits to their dentist. A positive response of more than 5 was considered as adequate knowledge by the authors. On examination, each child was accompanied by his/her teacher along with their parent. Children were informed by his/her teacher about the procedure and were asked to cooperate with the examiner. The developed questionnaire was then distributed among the parents. The children were seated on a chair, and oral examination was carried out. Oral examination was done using a mouth mirror and probe in broad daylight in accordance with ADA Type III$^{[11]}$ specification by a single examiner. The criteria of bleeding on probing was used to assess the gingival status using a dichotomous reference scale.$^{[12]}$ Decayed missing filled teeth (DMFT)/dmft indices was used to record dentition status according to WHO modification (1997).$^{[13]}$ Frequency distribution of responses was obtained as descriptive statistics. The data were analyzed using the Statistical Package for Social Science Version 19.0 (IBM Corp. Released 2010. IBM SPSS Statistics for Windows, Version 19.0. Armonk, NY: IBM Corp.).

Results
This study group ($n = 52$) showed more males ($n = 40$) registered in the center than females ($n = 12$) of age group 7-14 years. 53.8% of these children were on pharmacotherapy. 76.9% of the parents had the knowledge [Table 1] that oral health has an impact on the overall health of an individual. 40% thought that they should consult a pediatric dentist, and 35% would consult their general physician in case of dental problems. 71.2% of the parents agreed that it was necessary to do fillings in primary teeth; however, only 38.5% wanted carious teeth to be filled. 61.5% of the parents thought that a visit to the dentist is required only during tooth pain. All the parents brushed their child’s teeth once a day using a toothbrush and fluoridated toothpaste. 94.2% of the parents used regular toothbrushes for their child. 86.5% of the parent’s assisted their child while brushing. Mean percentage

| Table 1: Knowledge and attitude towards oral health among the study population ($n=52$) |
|---------------------------------|-----------------|-----------------|
| Does the health of mouth and teeth affect the overall health of the child | Frequency | Percentage |
| Yes | 40 | 76.9 |
| No | 12 | 13.1 |
| Is maintenance/treatment of milk teeth important | Yes | 37 | 71.2 |
| No | 15 | 28.8 |
| When should you consult a dentist | Once in 6 months | 9 | 17.3 |
| | Once in 3 months | 2 | 3.8 |
| | Once a year | 9 | 17.3 |
| | When in pain | 32 | 61.5 |
| If your child complains of tooth pain you will consult | General physician | 18 | 34.6 |
| | General dentist | 13 | 25 |
| | Pediatric dentist | 21 | 40.4 |
| Do you want to get your child’s tooth filled | Yes | 20 | 38.5 |
| | No | 32 | 61.5 |
of knowledge scores among these parents was 51.44%. However only 39.74% of them incorporated this knowledge in their daily practices.

Oral examination revealed DMFT score of these children was 0.15, where the “decayed,” “missing” and “filled” components were 0.15, 0 and 0 respectively. Whereas, dmft score was 0.87 where the “decayed,” “missing” and “filled” components were 0.86, 0 and 0.01, respectively. 75% of the children showed presence of gingivitis. 63.5% of the parents complained of halitosis. Only 7.7% children used additional oral hygiene aids like mouthwashes, 23.1% used tongue cleaners [Table 2].

Discussion

Incidence of ASD or rather the number of diagnosed cases has increased dramatically since the 1980s. This could be partly due to changes in diagnostic practice, referral patterns, availability of services, age at diagnosis, and public awareness,[14] though unidentified environmental risk factors cannot be ruled out.[15] Over the past decade, ASD has emerged as a major public health concern in many countries, characterized by a complex, behaviorally defined, static immature brain disorder.[16] Providing oral care to children with ASD requires patience and a thorough understanding of the patient’s degree of intellectual ability. In day to day life, parents function as role models for their children, and, therefore, parents’ knowledge about oral health is very meaningful. Moreover, children with ASD are totally dependent on their parents even for basic necessities of life. Thus, parental characteristics and beliefs are important considerations to improve children’s oral health. Therefore, in attempts to achieve the best oral health outcomes for children, parents should be considered as key persons.

The study group showed more males (n = 40) registered in the center than females (n = 12), which might reflect the higher prevalence of autism in males which is also reported in other studies around the world.[17-20] The results of the gingival status of the children showed that 75% of the children had gingivitis which could be related to many reasons such as the irregular brushing habits, difficulties encountered by the parents while brushing or lack of ability to brush themselves. Orellana et al.[21] reported that only 25% of autistic individuals know how to brush their teeth unassisted. Also, the presence of gingivitis might be the side-effects of medications used to control the manifestations of autism as 53.8% of the children were on pharmacotherapy. Though 86.5% of the parents assisted their child while brushing, oral hygiene was poor, so it is important to educate parents about appropriate techniques of brushing. Parents should also be educated and made aware about the advantages of modified toothbrushes as 94.2% used the conventional brushes. Use of additional oral hygiene aids should be advocated to prevent halitosis that was reported by 63.5% of the parents. 69.2% parents reported no usage of any additional oral hygiene aids which reflected poor oral health practices among this group. Marshall et al.[22] in their study confirmed the validity of considering autism as an indicator of high caries risk. They reported oral hygiene may be the most influential risk indicator associated with new caries in children with autism.

In the present study, even though 71.2% of the parents agreed that it was necessary to do fillings in primary teeth, however, only 38.5% wanted carious teeth to be filled. Similar results were found by Blinkhorn et al.[23] where 74% of mothers thought that treatment of dental decay in milk teeth was very important, but only about 47% wanted carious teeth filled, while 15% wanted them to be left and 28% wanted them extracted. 76.9% of the parents were aware that dental health affects the overall health of their child yet 51.9% of the children had never visited a dentist. The reasons for not visiting a dentist were, 55.8% parents believed that their child lacked cooperative ability, and 42.3% found the oral health services to be unaffordable. McIver[24] reported similar barriers for seeking dental care among children with special health care needs in Washington. DMFT score of these children was 0.15, where the “decayed”, “missing” and “filled” components were 0.15, 0 and 0 respectively. Whereas dmft score was 0.87 where the “decayed”, “missing” and “filled” components were 0.86 and 0.01 respectively. This result indicates lower DMFT/dmft scores and also less dental treatment in this group of children. Similar results were reported by Subramaniam and Gupta[16] where the decayed, missing and filled components were 0.22, 0 and 0.05 respectively. Autistic children are more likely to have decreased caries susceptibility as compared to typically developing children. This is in accordance with Shapira

| Table 2: Practice of oral hygiene habits among the study population (n=52) |
|---------------------------------------------------------------|
| Oral hygiene methods used                                      | Frequency | Percentage |
| Tooth brush and tooth paste                                   | 52        | 100        |
| Tooth brush and tooth powder                                  | 0         | 0          |
| Tooth paste and finger                                        | 0         | 0          |
| Toothbrush only                                               | 0         | 0          |
| Additional aids                                              |           |            |
| Mouthwashes                                                  | 4         | 7.7        |
| Tongue cleaner                                                | 12        | 23.1       |
| None                                                         | 36        | 69.2       |
| Frequency of brushing                                         |           |            |
| Once a day                                                   | 43        | 82.7       |
| Twice a day                                                  | 9         | 17.3       |
| Role of parents in supervision of oral hygiene                |           |            |
| Parents assisted                                             | 45        | 86.5       |
| Parents neither assist nor watch                              | 7         | 13.5       |
| Type of toothbrushes used                                     |           |            |
| Conventional                                                 | 49        | 94.2       |
| Modified                                                     | 2         | 3.8        |
| Electronic                                                   | 1         | 1.9        |
Conclusion

Knowledge about oral health seemed to be inadequate in this study group. However, in those with knowledge, it did not seem to be incorporated in their attitude and practices. It is important for pediatricians to make worthwhile attempts to conduct regular oral health education programs, with stress on preventive measures and regular dental checkups among parents of such children at special schools or care centers. Education of parents, access to dental care and affordability of oral health care services for this special group are critical factors for achieving optimal oral health in these patients.

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