Volume 47, Number 3, September 2014

ISSN 1978-3728

Dental Journal

Published quarterly per year

Majalah Kedokteran Gigi

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Accredited No. 56/DIKTI/Kep./2012

Volume 47, Number 3, September 2014 ISSN 1978 - 3728

Dental Journal

Majalah Kedokteran Gigi

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Printed by: *Airlangga University Press*. (RK 002/01.15/AUP-~~B5E~~). Kampus C Unair, Mulyorejo Surabaya 60115, Indonesia. Telp. (031) 5992246, 5992247, Telp./Fax. (031) 5992248. E-mail: aupsby@rad.net.id; aup.unair@gmail.com
Accredited No. 56/DIKTI/Kep/2012.

Dental Journal
Majalah Kedokteran Gigi
Volume 47, Number 3, September 2014

Research Report

Oral health knowledge among parents of autistic child in Bandung-Indonesia

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ABSTRACT

Background: *Autistic children as well as other special needs individual demand special care given by their parents. But there exist limited awareness among parents in Indonesia society, especially with regard to their oral health.* ***Purpose:*** *The study was aimed to assess the oral health related knowledge, attitude and behavior of the parents; and oral health status of their autistic children in comparison with non-autistic children.* ***Methods:*** *Total of 56 children (23 autistic and 23 normal) between 7-12 years was included in this study. Data on parents' knowledge, attitude, oral health practice and behavior of their children were gathered from the questionnaires. The oral health status of the children was recorded using deft and DMFT caries index.* ***Results:*** *All obtained data were analyzed using SPSS version 13 to correlate the index of the sample. It showed that caries index of autistic child was lower and limited oral health knowledge among parents.* ***Conclusion:*** *There is need of greater awareness to be spread among the population of Indonesia about the existing professional help for the special children and educate the parents to maintain their child's oral health for a better quality of life.*

Key words: *Parental knowledge, autism, oral health, child, dental caries*

ABSTRAK

Latar belakang: *Anak autis seperti juga individu berkebutuhan khusus lainnya memerlukan perhatian khusus dari orang tuanya. Namun banyak keterbatasan kesadaran orang tua dalam masyarakat Indonesia, terutama berkaitan dengan kesehatan mulut anak autis mereka.* ***Tujuan:*** *Penelitian ini bertujuan untuk menguji pengetahuan kesehatan gigi, perilaku orang tua dan anak mereka yang autis.* ***Metode:*** *Data pengetahuan orang tua dikumpulkan dari kuesioner dan status kesehatan mulut anak dicatat menggunakan indeks karies DMFT dan deft. Sejumlah 56 anak (23 autis dan 23 non-autis sebagai kelompok kontrol) usia 7-12 tahun ikut serta dalam penelitian ini.* ***Hasil:*** *Data yang didapatkan dianalisis menggunakan SPSS versi 13 untuk mengkorelasikan indeks subjek. Hasil menunjukkan indeks karies anak autis lebih rendah dengan pengetahuan kesehatan mulut orang tua yang terbatas.* ***Simpulan:*** *Diperlukan penyebarluasan kesadaran yang lebih tinggi di antara populasi orang Indonesia mengenai mempertahankan status kesehatan mulut anak autis mereka untuk mencapai kualitas hidup yang lebih baik.*

Kata kunci: *Kesehatan mulut, peran orang tua, autis, karies, anak*

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INTRODUCTION

Autistic disorder (AD) is an organic disorder affecting the cerebellum and limbic system of the brain, resulting in behavioral and cognitive aberrations. It is characterized by impaired interpersonal and communication skills, limited attention span, hyperactivity interests, repetitive bodily movements and a stereotype behavioral pattern, that is established in the early childhood.[1] Its incidence ranges from 0.2-1.5% across the globe,[2,3] with a higher predilection in males (four times), but in its most oppressive form in females.[4]

In 2009, Ministry of Health in Jakarta, Indonesia reported the prevalence of autism as one in every 150 children and the numbers of children diagnosed with this neurodevelopmental disorder are perpetually increasing. Yet, there exists a limited knowledge and awareness among parents concerning the health, habits and management of their children with autism including their oral health. Autistic individuals' exhibit severe abnormality of reciprocal social relatedness and communicative incompetence prevents them to interact, understand and follow the instructions. Their sensory and auditory hyperactivity to odors, lights and sounds in the dental clinic stimulate them for an unpredicted and exaggerated response on the dental chair, making them uncooperative in the dental setting.[1]

Heterogeneous proclamation has been reported in the literature concerning oral health status and dental needs of autistic children and young adults. Where studies in the 80s-late 90s have found the prevalence of caries and periodontal disease to be of no difference compare with non-autistic individuals,[5-6] contradicted to some studies in recent years that have evidenced comparatively lower prevalence of caries in children with ASD.[8,9] It is well established that health related practices are derived from the norms, goals, values and behaviors of the family members/parents, who contribute to their children's healthy lifestyle habits.[10-11] Therefore this study was aimed to determine the oral health related knowledge, attitude and behavior of the parents; and oral health status of their autistic children.

MATERIALS AND METHODS

This two-phased study was conducted at Bandung, West Java, Indonesia. Ethical clearance was obtained from Health Research Committee, Universitas Padjadjaran, Indonesia. Total of 56 children and their parents were included for this project. Twenty-three children with AD were selected randomly from three institutions. Besides the diagnosed of autism, all children were medically healthy and were not on any therapeutic drugs. Similarly, the number, age and gender matched counterparts were chosen from one private elementary school. All the children were aged between 7-12 years. In the first phase of the study, parents of all the children participants were informed about the study purpose and procedures; and all the parents were provided with 12-itemed questionnaire to elicit the knowledge, attitude, Oral hygiene practice and behavioral habits in their children. In the second phase, informed consent was obtained from the parents to conduct oral examination on minor children using dental diagnostic instruments (single use disposable plain mouth mirror, blunt probe, tweezers), light source (flash light) and personal protective attire (disposable surgical gown, masker, gloves) under cotton roll isolation, to record deft and/ DMFT index for primary and permanent dentition respectively.

The questionnaire for the parents targeted on the following concern; knowledge (awareness in tooth brushing and fluoridated toothpastes), attitude (previous experience of toothache, toothache management, reason for not seeking professional care), oral hygiene practice (frequency, timing, and parental assistance of tooth brushing activity), behavior (preference and frequency of sweetened food, pocket money to buy food from venders at school, frequency of those foods). While, the dental examinations was performed in the classroom by a single examiner in a conventional method using FDI tooth numbering system; scoring decayed, extracted missing and filled tooth index (deft) for primary teeth; and Decayed, Missing, and Filled tooth index (DMFT) for permanent teeth was done using WHO caries criteria.[12]

RESULTS

Among the children participants in this study, 20 were males and 3 were females in both autistic and control groups. In each group, six children ranged from 7-9 years and seventeen children ranged from 10-12 years. All the parent samples involved in this study responded completely for the survey questionnaire and their reports are illustrated in Table 1.

Knowledge

It was fortunate to know that most of the parents for autistic children (82.60%) and normal children (60.86%) knew about fluoridated toothpaste. Table 1 also identified that majority of normal children (82.61%) have self awareness to brush their teeth. In contrast most of parent for autistic children claimed that their children were assisted for the routine oral hygiene practice.

Attitude

More than 2/3 (69.56%) of the autistic children were previously experienced with episodes of toothache and 56.52% of them was seeking the treatment from dentist, but 39.13% of the children were medicated by the parents themselves. It was described by 56.52% of the parents of autistic children that, it was unnecessary to get a professional helped for child's toothache. In contrast, all the children in the control group had pervious experience of toothache. Though majority of parents did self-medication (47.82%) to their children, considerable proportion (43.47%) of them incurred dentist's advice and treatment. Cost and the fear

Table 1. Parental report on knowledge, attitude, oral health practice and behavior between autistic and normal children.

Variable name	Autistic children		Normal children	
	n	%	n	%
Demographic:				
Sex				
Male	20	86.96	20	86.96
Female	3	13.04	3	13.04
Age				
7 – 9 years	6	26.09	6	26.09
10-12 years	17	73.91	17	73.91
Question Item:				
Knowledge				
Heard of Fluoridated toothpastes				
Yes	19	82.60	14	60.86
No	4	17.39	9	39.13
Awareness in tooth brushing				
Told by parent	-	-	4	17.39
Self awareness	-	-	19	82.61
Attitude				
Experience in toothache				
Yes	16	69.56	23	100
No	7	30.43	0	0.00
Managing Toothache				
Leave it	1	4.34	2	8.69
Take some medication	9	39.13	11	47.82
Went to a dentist	13	56.52	10	43.47
Reason didn't go for a dentist				
Scared	5	21.73	6	26.08
Lazy	1	4.34	1	4.34
Unnecessary	12	52.17	3	13.04
No pain	4	17.39	7	30.43
Cost	1	0.00	6	26.08
Oral hygiene practice				
Frequency of tooth brushing				
Once	0	0.00	2	8.70
Twice	15	65.22	19	82.61
Thrice	8	34.78	2	8.70
Timing of Tooth Brushing				
Before taking a bath	9	39.13	6	26.09
After meal & before bath	1	4.35	2	8.70
During take a bath & before sleeping	8	34.78	8	34.78
After meal & before sleeping	3	13.04	5	21.74
Take a bath, After meal, before sleep	2	8.70	2	8.70
Assisting in brushing teeth				
Yes	17	73.91	-	-
No	6	26.09	-	-
Behavior				
Pocket money to buy food from venders				
Yes	-	-	20	89.96
No	-	-	3	13.04
Frequency of buying food from venders at school in one week				
Once	-	-	3	13.04
2-3times	-	-	8	34.78
Everyday	-	-	4	17.39
Never	-	-	0	0.00
If parent gave the money	-	-	8	34.78

Variable name	Autistic children		Normal children	
	n	%	n	%
Sweet consumption				
Yes	19	82.60	14	60.86
No	4	17.39	9	39.13
Frequency sweet consumption				
Once	10	43.47	11	47.82
Twice	1	4.34	8	34.78
Thrice and more	12	52.17	4	17.39

Table 2. deft and DMFT Index in the study samples

No	Sex	Age	Autistic children		Normal children	
			def-t	DMF-T	def-t	DMF-T
1	M	7	0	0	5	3
2	M	8	2	1	6	1
3	M	8	7	0	8	3
4	M	8	3	2	7	0
5	M	8	1	2	10	1
6	M	9	3	4	8	0
7	M	10	1	3	5	2
8	M	10	2	1	4	2
9	M	10	7	1	4	4
10	M	10	0	2	5	2
11	F	10	2	1	4	4
12	F	11	0	1	0	5
13	M	11	0	5	0	7
14	M	11	0	1	4	0
15	M	11	8	1	6	1
16	M	11	4	0	2	3
17	M	11	2	4	0	4
18	M	11	4	2	4	0
19	F	12	0	0	3	4
20	M	12	0	0	0	5
21	M	12	2	3	0	2
22	M	12	6	0	0	5
23	M	12	0	2	0	1
TOTAL			28	36	85	52

Table 3. Mann-Whitney test for the comparison for def-t index between autistic children and normal children

	d	e	f	def-t	D	M	F	DMF-T
Mann-Whitney U	228.500	141.000	264.500	197.500	221.000	264.500	241.500	185.500
Wilcoxon W	504.500	417.000	540.500	473.500	497.000	540.500	517.500	461.500
Z	-.876	-3.087	.000	-1.503	-.979	.000	-1.430	-1.767
Asymp. Sig. (2-tailed)	.381	.002	1.000	.133	.328	1.000	.153	.077

sig: < p =0.05; *0.77/2 = 0,039 (2-tailed)

Table 4. Correlation among the questionnaires with def-t and DMF-T index

Question Item	Autistic children						Normal children					
	def-t			DMF-T			def-t			DMF-T		
	χ^2	χ^2_{table}	C	χ^2	χ^2_{table}	C	χ^2	s^2_{table}	C	χ^2	χ^2_{table}	C
Frequency of tooth brushing	6.744	7.815	0.476	2.196	7.815	0.295	4.81	15.51	0.416	4.784	12.59	0.415
Timing of tooth brushing	9.044	21.03	0.531	31.83	21.03	0.762	7.124	26.29	0.486	10.76	21.03	0.565
Assisting in brushing teeth	2.579	7.815	0.318	4.110	7.815	0.389	-	-	-	-	-	-
Awareness in tooth brushing	-	-	-	-	-	-	2.930	9.49	0.336	2.229	7.815	0.297
Heard of Fluoridated toothpastes	6.034	7.815	0.456	1.369	7.815	0.237	5.317	9.488	0.433	6.809	7.815	0.478
Pocket money to buy food from venders at school	-	-	-	-	-	-	9.334	9.49	0.537	0.993	7.815	0.203
Frequency of buying food from venders at school in one week	-	-	-	-	-	-	12.66	21.03	0.596	6.625	16.92	0.473
Experience in toothache	1.746	7.815	0.266	3.598	7.815	0.368	-	-	-	-	-	-
Managing toothache	2.973	12.59	0.338	23.14	12.59	0.708	5.882	15.51	0.451	13.92	12.59	0.614
Reason didn't go for a dentist	11.19	16.92	0.572	5.691	16.92	0.445	26.91	26.29	0.734	6.202	21.03	0.461
Sweet consumption	6.034	7.815	0.456	1.369	7.815	0.237	5.317	9.488	0.433	6.809	7.815	0.478
Frequency sweet consumption	3.925	7.815	0.382	0.901	7.815	0.194	10.58	15.51	0.561	6.202	12.59	0.461

Note: Chi square: χ^2 ; Contingency Coefficient: C ; Correlation significant: $\chi^2 > \chi^2_{table}$

of dentist were the main reasons among the control group for not obtaining professional consultation for toothache in their children.

Oral hygiene practice

It was claimed by the parents of autistic children that 65.22% of them brushed twice a day and 34.78% brushed three times a day. While greater percentage (82.61%) of the control group brushed two times per day. More than 1/3 (34.78%) of the study population in each of the group practiced their routine habit of brushing during bathing time in the morning and prior to sleeping in the night. However majority (39.13%) of the autistic children brushed before bathing hours and 73.91% of them were assisted by the parents during the daily ritual of brushing. All the children in the control group brushed themselves.

Behavior

According to the parents, 82.60% of the autistic children showed their favourism towards sweet food and 52.17% of them consumed sweetened food three or more times a day. On the contrary, though 60.86% of normal children carved for sweetened food, their snacking frequency was only once a day in 47.82% and two times in a day among 34.78%. The parents of normal children were questioned regarding pocket money given to the children to buy food from venders. This was to identify the possibility of unhealthy food consumption, which in turn could increase caries index. ninety precent of the normal children were given pocket money and 34.78% bought food from the venders during school hours, for 2-3 times in a week. However, autistic children were very selective in their food preference and were forbidden to buy meals from the venders without parents' knowledge.

As an oral health status reflected by the caries index showed in Table 2. Three autistic children were completely free from carious attack (0). The caries experience recorded using deft/DMFT index illustrates that autistic children had lesser caries incidence than normal children. In autistic individuals deft was 28 and DMFT were 36; in contrast to 85 deft and 52 DMFT in normal healthy children.

Mann-Whitney test performed to determine the significance between the deft index in autistic and normal children showed no statistical difference except for the index "e" (extracted primary teeth), which shows the difference as very significant (P = 0.002 with 95% confidence level). Similarly, the DMFT index between autistic children and normal children showed statistical significant difference (p = 0.039 with 95% confidence level) (Table 3.).

Chi-square test was performed to correlate the parent's reply of the questionnaire and caries index in the samples. The DMFT Index in autistic children and parental practice of oral hygiene with regard to the timings of brushing (31.83 > 21.03); and parental attitude towards managing toothache (23.14 > 12.59) for their autistic children were significant correlated. Whereas for deft index in the control group and the parental attitude with regard to their reasoning for not consulting the dentist (26.91 > 26.29) for their child's toothache problem (cost, fear of dentist and unreasonable cause) was significant (Table 4).

Contingency Coefficient would be the most appropriate measure of association between the two variables. The calculated value for this statistics suggests association of timing of tooth brushing with DMFT in autistic children (0.762), displaying strong correlation. Likewise, strongest correlation in normal children was the reason for not sending their children to the dentist when their child's experienced toothache with deft (0.734).

DISCUSSION

Psychosocial, neurobiological and emotional disorder of autism presents with pathognomonic behavioral pattern and preference in the victim patients. They exert extreme and distinct sensitivity to varying environmental factor and are dependents for their routine activities. Perhaps, they are not devoid of dental disease and through a good oral care an optimum oral health can be achieved. However, this greatly depends on the knowledge and attitude of the parents, guardians or the caretakers of these patients. A systematic assessment of varied parental factors that could influence the overall oral health of the children is very much of a necessity to undertake the schemes and, therefore to provide a comprehensive dental health in all the children uniformly.

The change in food habits and current trend in food consumption pattern demonstrates its inclination towards frequent and refined carbohydrates. This has reported higher incidence of dental caries in the literature and the autistic children are not exempted from this. It is demonstrated in the literature that higher priority caries risk group for all between 11-14 years.[13] Year 12 being the average age is the important in conducting the survey as it is the age at which the child leaves the schools, from where the reliable source of samples can be obtained from and also this is the highest priority risk group.[14-16]

It was well established in this study that the parents of both groups were knowledgeable with the beneficial effect of fluorides in the toothpastes. Though majority of the normal children were aware of tooth brushing and its benefit, there were not affirmative about the correct method of brushing which could have increased the caries index. Considering the fact that the autistic children have problems with fine motor control and were assisted by their parents for the routine oral hygiene practice, a thorough and correct procedure has to be known by the parents.

It is concluded in the literature that significant predictors of children's favorable habits were parents' favorable attitudes towards controlling their children's tooth brushing and sugar snacking habit.[17] Autistic children being highly sensitive to taste and food consistency, early introduction to good food and oral hygiene habits may play a role in "oral perception" of the child with communicative disorder.[13] It was observed in this study that the frequency of brushing was more in autistic children than the normal children with a majority of them practicing their brushing during bathing and prior to sleeping. This was in similarity with the normal children. However in three-fourth (73.91%) of the autistic children, brushing was assisted by the parents, while all the children in the control group brushed themselves, without any parental guidance, assistance or supervision. This may affect the overall oral hygiene of the child to a considerable extent, as the manual dexterity of the children is still immature in the earlier years of development and improves over time gradually, therefore affecting the oral hygiene index of the study sample.

This study was also an effort to understand the beliefs and attitudes of parents towards dentists and dental health. Based on the children's oral health status, it was evident that the behavior of parents was comparably different in both the groups. Though all the samples in the control group had experienced toothache, greater proportion of their parents (47.82%) self-medicated their children. This was in contrast to the autistic children group, where half (56.52%) of them seeked the professional help and the quantity of parents doing self medication were comparably less (39.13%), while Only 4.34% ignored the child's complain about toothache. This reflects the care and concern of the parents of autistic children, despite their limited knowledge about oral health. This corroborates the requirement of specially training dental professionals for treating these children and their parents.

Diverse reasons were attributed in this study by the parents for avoiding dental treatment and the reasons being the fear of dentist, cost issue, ignoring the complaint and not considering the problem as real serious; and therefore managing toothache by parents themselves was apathetic. Though major percentage of parents of autistic children found it was unnecessary to seek professional help for their child's dental problem, none worried about the cost. But more than 25% of the parents of normal children considered cost as one of the major issue to avoid dentist. This was followed by the fear of dentist in children preventing them from professional care, thus projecting care from an expertised specialist, who can formulate structured timings and space for better patient management.[18]

Regarding the behavior of samples to their food habits, in this study autistic group preferred sweeter food and increased frequency of consumption in comparison with their control group; They also postulating lower deft/DMFT index, which was independent of the parents attitude and knowledge, while only 'extracted' primary teeth index showed significance difference in both the study sample. This indicates that the severity of the dental disease that needed extraction, implying the severity of the disease. However, there difference in the DMFT index between the groups reflected statistically significant difference, which in concordance recent studies.[8,9,18-20]

The study culminates the caries experience in autistic children as less in comparison with their normal counterparts and was independent of the parents' behavior, knowledge, practice and attitude. Yet, there are needs moulding and modulation in parental attributes that can

be achieved by schemed professional training by the general dentist or by the specialists and/ or experts in the fields of managing challenging children. There is need of greater awareness to be spread among the population in Indonesia about the existing professional help for the special children and educate the parents to maintain their oral health for betterment. A greater effort has to be implemented for community dental services with optimum and timely parental education and follow up. This should be amalgamated with interdisciplinary approach and Oral health education program that would assist and guide the children as well as their parents for complete oral rehabilitation.

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