

Oral health knowledge in parents of Saudi cerebral palsy children

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ABSTRACT

Objectives: To determine oral health knowledge in parents of cerebral palsy (CP) children, and the parents' attitude to oral health of their CP children.

Methods: A self-administered questionnaire was utilized to collect the required information from the parents. One hundred and six parents, 73 (68.9%) mothers, and 33 (31.1%) fathers completed the questionnaire between April and June 2006 in Riyadh, Kingdom of Saudi Arabia.

Results: All (100%) the parents thought that good oral health was important for maintaining optimum general health. Most (95.3%) of the parents believed that they can maintain good dental health in their CP children by supervising their children's tooth brushing, reducing sugary food intake and making regular visits to a dentist. A significantly high ($p=0.005$) percentage of high education parents (96.8%) had heard of fluoride as compared with low education parents (79.5%).

Conclusion: The overall oral health knowledge and attitude of parents of CP children is satisfactory.

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Parents' responsibilities include supervising and maintaining their young children's oral hygiene and dietary routines. Parents also play an important role in formation of their children's oral hygiene and dietary habits. It has been reported that parents with good oral health knowledge can play a better role in maintaining optimal oral health in their children.¹⁻³ Oral health knowledge is of greater importance in parents of children with special care needs including cerebral palsy (CP) children. The clearance of food particles from the mouth is delayed in these children due to abnormal function of the tongue, lips and cheeks, as well as abnormal swallowing pattern. The CP children are usually served with a soft diet high in carbohydrates. Lack of muscle movement and coordination makes tooth brushing very difficult in these children. The combination of high carbohydrate diet and poor oral hygiene predisposes these children to a higher risk for dental caries and gingival disease. Therefore, these children need continuous dietary supervision and assistance in maintaining good oral hygiene. Information on the prevalence of CP in Saudi Arabia is scarce. However, a study of neurological diseases in the Eastern Province of Saudi Arabia reported a prevalence ratio of 5.3 in every 1000 individuals among the Saudi population.⁴ Another study which covered 99,788 live births in a military hospital (from 1984 to 2003) in Riyadh, the capital city of Saudi Arabia has reported a relatively high CP incidence of 0.41%.⁵ Anecdotal evidence also suggests that it is one of the most common disabling conditions in Saudi Arabia. The parents of CP children need to understand the importance of optimal oral health in these children. These children usually have several additional general health problems, and poor dental health may further compromise their general health status.⁶ Poor dental health may also aggravate negative self-image in these children resulting in poor social interaction.⁶ A high caries experience and poor oral hygiene among CP children from Riyadh, Saudi Arabia has already been reported,⁷ which highlights the need for improvement in oral/dental health of these children. Several studies have been carried out in various parts of the world,^{1,3,8} and in Saudi Arabia^{9,10} on the parents' knowledge and attitude to dental health. However, there are no such reports available on parents of CP children in Saudi Arabia. Therefore, the aim of the present study was to determine oral health knowledge in parents of CP children, and the parents' attitude to oral health of their CP children in Riyadh, Saudi Arabia.

Methods. A self-administered questionnaire was especially developed in Arabic language for the study. The questionnaire was tested on parents not participating in the study. Some changes were

made in the questionnaire to make it comprehensible for the parents of all socioeconomic and educational backgrounds. Assistance was provided to illiterate parents in its completion. The following information was collected through the questionnaire: demographic information such as age, gender and educational level of parents, importance of good dental health and dental visits, oral hygiene practices, possible causes of tooth decay, importance of fluoride and its sources, parents' source of oral health information, CP child's age and gender, parent's monitoring of the child's dental health, the child's oral hygiene routine and the child's dental visits. Seven centers for disabled children in Riyadh were selected and visited between April and June 2006. The purpose of the project was explained to the authorities of the selected centers and ethical approvals were obtained. The questionnaires were then handed over to the parents after informed consents. All the questionnaires had a covering letter for the parents, explaining the research objectives and ensuring anonymity/confidentiality of the information obtained through the questionnaire. Parents of children with disabilities other than CP were not included in the study.

The data collected through the questionnaires were entered into the computer utilizing the FOXPRO program. Statistical Package for Social Sciences (SPSS - Version 10) was utilized to drive various frequencies. Pearson Chi-Square test and Fisher's Exact Test were used to determine any significant differences in parents' response to various questions in terms of gender of parents and their educational status.

Results. One hundred and twenty-four questionnaires were distributed among the CP children's parents, out of which 106 parents, 73 (68.9%) mothers, and 33 (31.1%) fathers completed the questionnaires with a response rate of 85.5%. The mean age of the parents was 34 (standard deviation [SD] 8.6) years, ranging from 21-70 years. Thirty-three percent of the parents had university education, 25.5% had high school, 15.1% middle school, and 16% had primary school education. Approximately one in 10 (10.3%) parents was illiterate. The parents' education was divided into 2 categories: "high school and above" and "middle school and below" for the purpose of cross-tabulation with other variables. Out of 106 CP children, 74 (69.8%) were male and 32 (30.2%) female with the mean age of 7.4 (SD 2.9) years ranging from 2-15 years. The CP children were divided into 2 age groups: younger group with children included from 2-8 years and older group with children from 9-15 years of age for purpose of cross-tabulation with other variables. All (100%) the parents thought that good dental health is important for optimal general health, and that regular check-up dental visits are important in

maintaining good dental health. The parents' response to questions on oral health knowledge is presented in Table 1. Majority of parents were of the opinion that one must visit a dentist every 6 months, or even every 3 months. Most of the parents believed that they have been taught personal oral health care, and their main oral health educators included dentists, electronic media, and their own parents. All the parents thought that cleaning teeth was important. The main importance of keeping teeth clean was to prevent tooth decay. A combination of toothbrush, miswak (traditional wooden toothbrush), and dental floss was considered as the best cleaning aid. Approximately 3 in every 4 parents selected "after each meal" as ideal practice for tooth cleaning. Most of the parents had heard of fluoride, and were aware that fluoride helps in preventing tooth decay (Table 2). More than two-thirds of the parents recognized toothpaste as a source of fluoride. However, only 15.1% considered water as a possible source of fluoride. Approximately 6 in 10 parents recognized poor oral hygiene as a cause of tooth decay, more than half were unaware of the role of sugar and bacteria in tooth decay (Table 2). Similarly, a very high percentage of parents were unaware of the

Table 1 - Response to questions on oral health care.

Question	n (%)
<i>How often one must visit a dentist for regular check-ups?</i>	
1. Every 3 months	25 (23.6)
2. Every 6 months	66 (62.3)
3. Every 12 months	8 (7.5)
4. Only when in pain	7 (6.6)
<i>Did anyone teach you personal oral health care?</i>	
1. Yes	99 (94.3)
2. No	6 (5.7)
<i>If "Yes", who taught you oral health?*</i>	
1. Parents	27 (25.5)
2. School teacher	4 (3.8)
3. Dentist	60 (56.6)
4. Print media	13 (12.3)
5. Media (television or radio)	27 (25.5)
6. Nobody	3 (2.8)
<i>Do you think that it is important to clean your teeth?</i>	
1. Yes	106 (100.0)
2. No	0 (0.0)
<i>If "Yes" why do you think it's important?*</i>	
1. To prevent bad breath	32 (30.2)
2. To prevent tooth decay	95 (89.6)
3. To keep teeth beautiful	25 (23.6)
<i>Which of the following is the best tooth cleaning aid?</i>	
1. Toothbrush	16 (15.1)
2. Miswak	1 (0.9)
3. Toothbrush, miswak and dental floss (combination)	89 (84.0)
<i>Teeth should be cleaned:</i>	
1. Once a day	3 (2.8)
2. Twice a day	24 (22.6)
3. After each meal	77 (72.6)
4. Once a week	1 (0.9)
5. Sometimes	1 (0.9)

* May choose more than one response

cariogenic potential of packed juices and sweetened milk. A great majority of parents could identify "blood on toothbrush during brushing" as a possible sign of gum disease, with 52.8% parents attributing gum disease to improper tooth brushing technique and 44.3% to poor oral hygiene (Table 2). Approximately two-thirds of the parents correctly thought that cleaning teeth daily keeps your gums healthy. Most parents claimed to monitor their child's oral health. Similarly, most parents claimed spending time on their child's oral health. Table 3 illustrates the parents' awareness of their CP child's oral health. Only 37.6% parents believed that their child had good oral health. Most parents believed that they can maintain good dental health in their children by supervising their children's tooth brushing, reducing sugary food intake, and making regular visits to a dentist. More than half of the parents described their child's oral hygiene as fair. Most of the parents

indicated that their CP child needed assistance in maintaining good oral hygiene. The manual toothbrush was the main oral hygiene tool used for CP children. More than two-thirds of parents reported that their child had visited a dentist. The reasons for not visiting a dentist included (in descending order) child's behavior difficulties, inaccessibility to dental services for CP children, and being too busy in the medical care of the child. Approximately two-thirds of the children made their last dental visit within the previous 6 months. According to parents' response, for approximately half of the children, the last dental visit was the first ever dental check-up, and for approximately one-fourth, the last visit was made due to dental pain. Additional analyses were carried out to determine any significant associations between independent variables such as the parents' age, gender and education status with other variables (related to parents and CP children). There

Table 2 - Response to questions on dental prevention.

Question	n (%)
<i>What does fluoride mainly do?</i>	
1. It makes teeth white	6 (6.3)
2. Helps prevent tooth decay	87 (91.6)
3. It makes teeth grow	9 (0.0)
4. I don't know	2 (2.1)
<i>What are the various fluoride sources?*</i>	
1. Drinking water	16 (15.1)
2. Toothpaste	74 (69.8)
3. Tea	2 (1.9)
4. I don't know	13 (12.3)
<i>Which of the following may cause tooth decay?*</i>	
1. Poor oral hygiene	63 (59.4)
2. Sugar	8 (7.5)
3. Bacteria	1 (0.9)
4. Sugar and bacteria	47 (44.3)
<i>Which of the following drinks may cause tooth decay?*</i>	
1. Soft drinks	81 (76.4)
2. Packed juices	17 (16.0)
3. Sweetened milk	26 (24.5)
<i>Blood on your tooth brush during brushing may be a sign of:</i>	
1. Gum disease	103 (97.2)
2. Tooth decay	0 (0.0)
3. I don't know	3 (2.8)
<i>Bleeding from the gums can be because of:</i>	
1. Improper brushing	56 (52.8)
2. General illness	2 (1.9)
3. Poor oral hygiene	47 (44.3)
4. Mixing hot and cold food	1 (0.9)
<i>How can you keep your gums healthy?*</i>	
1. Eat a good diet	38 (35.8)
2. Clean your teeth every day	66 (62.3)
3. Take vitamins	9 (8.5)
4. Use mouth wash	24 (22.6)
5. I don't know	7 (6.6)

* May choose more than one response

Table 3 - Parents' awareness of their CP child's oral health, hygiene, and dental visits.

Question	n (%)
<i>How would you describe your child's oral health?</i>	
1. Poor	8 (8.6)
2. Fair	49 (52.7)
3. Good	35 (37.6)
4. Don't know	1 (1.1)
<i>In your opinion, how can you maintain the good dental health of your child?</i>	
1. By supervising and helping in tooth brushing	2 (1.9)
2. By reducing consumption of sugary items	2 (1.9)
3. By regular dental check up visits	1 (0.9)
4. All of the above	101 (95.3)
<i>How do you rate your child's oral hygiene?</i>	
1. Good	41 (38.7)
2. Fair	59 (55.7)
3. Poor	6 (5.7)
<i>What type of oral hygiene aids does your child use?*</i>	
1. Manual tooth brush	98 (92.5)
2. Electric tooth brush	5 (4.7)
3. Miswak	1 (0.9)
4. Dental floss	2 (1.9)
<i>Has your child ever visited a dentist?</i>	
1. Yes	84 (79.2)
2. No	22 (20.8)
<i>If "No", the reason is:</i>	
1. Over-indulgence in medical care	5 (22.7)
2. Child's behavior difficulties	9 (40.9)
3. Difficulties in accessing dental services	8 (36.4)
<i>If "Yes", when was the last visit to dentist?</i>	
1. Within the last 6 months	55 (65.5)
2. Within the last 12 months	16 (19.0)
3. Within the last 2 years	8 (9.5)
4. More than 2 years	5 (6.0)
<i>What was main reason of your child's last dental visit to dentist?</i>	
1. First dental check-up	41 (48.8)
2. Recall appointment	23 (27.4)
3. Pain in the tooth	20 (23.8)

* May choose more than one response, CP - cerebral palsy

Table 4 - Variables regarding parents' oral health knowledge that had a significant association with parents' education.

Variable	Parents education n (%)		P-value
	Middle school and below	High school and above	
<i>Opinion on frequency of parents' dental visits</i>			
3 months	16 (36.4)	9 (14.5)	0.010
6 months	21 (47.7)	45 (72.6)	
12 months	2 (4.5)	6 (9.7)	
When in pain	5 (11.4)	2 (3.2)	
<i>Heard of fluoride</i>			
Yes	35 (79.5)	60 (96.8)	0.005
No	9 (20.5)	2 (3.2)	
<i>Did someone educate you on dental care</i>			
Yes	37 (86.0)	62 (100)	0.004
No	6 (14.0)	0	

were no significant ($p>0.05$) associations between the parents' age and gender with any other variable. However, there were some significant differences in parents' response in terms of their educational status (Table 4). Approximately three quarters of the parents with education "high school and above" were of the opinion that one should visit a dentist every 6 months as compared with less than half in parents with "middle school and below" education. A higher percentage of parents (11.4%) with "middle school and below" education thought that one should visit a dentist only in case of pain as compared with 3.2% of parents with education "high school and above". A high percentage of parents with education "high school and above" had heard of fluoride as compared with low education parents. Similarly, all the parents with education "high school and above" had been educated by some one on dental care as compared with 86% of parents in the low education category. Analyses were also carried out to determine any association between independent variables such as the CP children's age and gender with other variables (related to parents and CP children). There was no significant ($p>0.05$) association between the CP children's gender with any other variable. However, there were some significant differences in parents' response in terms of their children's age group (Table 5). All the parents of young CP children responded that their child needed assistance with oral hygiene maintenance as compared with 86.8% in older age children. A higher percentage of older children had visited a dentist as compared with younger children. More than three quarters of the younger children had visited a dentist in the last 6 months as compared with

Table 5 - Variables regarding cerebral palsy (CP) children that had a significant association with children's age.

Variable	Age of CP child n (%)		P-value
	2-8 years	9-15 years	
<i>Does your CP child need oral hygiene assistance</i>			
Yes	68 (100)	33 (86.8)	0.006
No	0 (0)	5 (13.2)	
<i>Has your CP child visited a dentist</i>			
Yes	49 (72.1)	35 (92.1)	0.007
No	19 (27.9)	3 (7.9)	
<i>When was your child's last visit to the dentist</i>			
Last 6 months	38 (77.6)	17 (48.6)	0.014
7-12 months	6 (12.2)	11 (31.4)	
13-24 months	5 (10.2)	4 (11.4)	
More than 24 months	0 (0)	3 (8.6)	

less than half in the older group. Some children in the older age group had visited a dentist more than 24 months ago.

Discussion. The present study was an effort to field basic information on oral health knowledge of parents of CP children in Riyadh. Thus far, the lack of such information might have hindered the development of a fresh approach to oral health education of these parents. This information will assist policy makers, and others related to oral health care of these children, in designing effective oral health educational programs for the parents of these children, consequently leading to better oral health in these special children.

All the parents seem to understand the importance of good dental health and importance of regular dental check-ups in maintaining good dental health. The knowledge of parents on the frequency of regular dental visits was also satisfactory. A previous study in Saudi mothers of healthy children also showed a positive attitude to prevention.² Similarly, a more recent study among parents of healthy children in Riyadh also showed a positive attitude to oral health.¹⁰ Most of the parents had been educated on oral health care by their dentists, media, and parents. It was interesting to note that schoolteachers did not play any significant role in this. A recent study in Saudi male secondary schoolchildren in Riyadh also showed that only 1.8% of the children selected teachers as the main source of oral health information.¹¹ So, the schoolteachers' participation from the oral health education point of view has not improved over a generation in Riyadh. The parents' knowledge of the importance of oral hygiene and frequency of tooth cleaning was profound. A great

majority of parents used a combination of toothbrush, traditional miswak and dental floss, which is a healthy trend in light of oral health benefits reported to be associated with the miswak.¹² Very few parents considered water as a fluoride source. Fluoridated water has several advantages (such as cost-effectiveness, independence from compliance, and non-selective benefits for all) over other fluoride vehicles.¹³ Therefore, the parents must be encouraged to use fluoridated water for drinking and preparing foods for CP children; as several drinking water brands are available with optimal fluoride levels (0.7 part per million or above). Desalinated tap water in Riyadh has a mean fluoride level of 0.24.¹⁴ The parents of CP children, especially those with less education need to be educated on the benefits of fluoridated water use for their children. Most parents did not consider packed juices and sweetened milk as harmful for teeth. Packed juices can cause tooth erosion,^{15,16} and sweetened milk is potentially cariogenic.^{16,17} A study of mothers of healthy children in Madina Al-Munnawara, Saudi Arabia also showed that most of the mothers were unaware of the harmful effects of sugary drinks.² It is important for parents of CP children to know of the possible harmful effects of packed juices and sweetened milk, as these children are exposed to additional risks such as compromised oral hygiene due to poor neuromuscular coordination, inadequate intellectual development, and use of sweetened foods and medicines.¹⁸

The overall impression was good upon looking at the parents' response to questions on monitoring their CP child's oral health and how they can maintain good dental health in their CP children. However, most of the parents believed that their child's oral health was not good, which shows lack of adequate support services for these parents. Most of the parents described their CP child's oral hygiene as fair, and acknowledged the assistance required by their child in maintaining good oral hygiene. A previous study available on oral health status of CP children in Saudi Arabia reported that most of these children had poor oral hygiene and very high decayed, missing and filled teeth (dmft)/DMFT scores.⁶ The result of the present study showed that parents need more education on how to maintain their CP children's oral hygiene and utilize electric toothbrush for efficient cleaning. Other studies have also recommended training programs in oral health care for parents of disabled children.¹⁹ Many disabled children had never visited a dentist; mainly due to either the child's behavior problems or difficulty of access to specialized dental care. The parents need support from appropriate authorities responsible in these areas in overcoming these hurdles. Formation of dental teams with knowledge, empathy, and training in the dental care of CP children is essential in improving access to dental care for these children.²⁰

Fear, anxiety, and physical/cognitive impairment act as a barrier to dental care in CP children. This problem can be ameliorated with greater provision and use of general anesthesia facilities for these children.²¹ All the parents also need to be informed that they must not wait for symptoms of dental disease in their child to visit a dentist; rather regular dental check-ups must be made to prevent any dental problem. This information needs to be targeted especially to less educated parents and those with younger age CP children. An early first dental check-up affords a dentist with an opportunity to provide dental health information (such as good oral hygiene practices, dietary information, and fluoride supplements) to the parents, and early intervention if a dental problem already exists.

The conclusions from the questionnaire surveys have to be drawn with a certain amount of caution. There is always a possibility of a bias created by favorable response. The parents who participated in this study were aware that dentists were carrying out the survey. The non-response bias also has to be considered. It is possible that the parents with poor knowledge of oral health decided not to complete the questionnaires. Nevertheless, the study has provided useful information on oral health knowledge in the parents of CP children in Riyadh. The information obtained will assist in oral health education of parents of CP children. These children desperately need their parents' help, and educating their parents is likely to have a positive effect on the oral health of these children. The parents who have sufficient oral health knowledge are more likely to take good care of their children's oral health.^{22,23} There is also a need for continuous encouragement of the parents of these children. The dental community has to increase its effort for providing full support to parents and these children in the form of oral health education and dental care facilities.

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Related topics

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