



ORIGINAL ARTICLE

Oral health comprehension in parents of Saudi cerebral palsy children



Amjad H. Wyne^{a,*}, Nouf S. Al-Hammad^a, Christian H. Splieth^b

^a Department of Pediatric Dentistry and Orthodontics, King Saud University College of Dentistry, Riyadh, Saudi Arabia

^b Department of Preventive and Pediatric Dentistry, University of Greifswald, Rotgerberstr, Germany

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Abstract *Objective:* To determine oral health comprehension among parents of cerebral palsy (CP) children.

Methods: A self-administered questionnaire was utilized to obtain the required information. The study was conducted in two main centers for disabled children in Riyadh, Saudi Arabia.

Results: Parents of all 157 CP children registered in the two centers completed the questionnaire. Mothers mostly (86.6%) completed the questionnaire. Majority (98.7%) of the parents knew the importance of dental health for general health. More than two-third (70%) of the parents thought that teeth should be brushed thrice daily or after each meal. About three in every ten (29.9%) parents were not aware of the beneficial effect of fluoride in preventing dental caries; and very few (9.6%) were aware of water as a source of fluoride. Almost all (98.7%) the parents knew that sugary foods caused dental caries. Three-fourth (75.8%) of the parents were not aware of the possible harmful effects of bottled juices on teeth. There were no significant ($p > 0.05$) associations between the parental age/gender with any of the dependent variables.

Conclusion: Parents of CP children generally showed satisfactory oral health comprehension. However, they need further oral health education in several areas.

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1. Introduction

Knowledge forms the basis for most human actions and behaviors; and those with better level of knowledge are expected to have more appropriate decision making and practices (Heskett, 2017). Parents play an important role in providing knowledge to their children and formation of their habits and behaviors related to health (deCastilho et al., 2013). This is specifically important in case of intellectually and physically challenged children, where parents make most of the decisions for them including oral hygiene and dietary routines (He et al., 2014).

* Corresponding author at: Department of Pediatric Dentistry and Orthodontics, King Saud University College of Dentistry, PO Box 60169, Riyadh 11545, Saudi Arabia.

E-mail address: ahwyne@ksu.edu.sa (A.H. Wyne).

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Cerebral palsy (CP) is one of the most highly prevalent conditions in the world; population-based studies from around the world report prevalence estimates of CP ranging from 1.5 to more than 4 per 1000 live births (CDC&P, 2017). CP describes a group of permanent disorders of the development of movement and posture, causing activity limitation; attributed to non-progressive disturbances which occurred in the developing fetal or infant brain. The motor disorders are often accompanied by disturbances of sensation, perception, cognition, communication & behavior, epilepsy, and secondary musculoskeletal problems (AACPD&DM, 2005). Due to these handicapping characteristics, these children are dependent on their parents/care givers for their daily care including oral hygiene care and dietary intake (Grammatikopoulou et al., 2009). The parents with better and appropriate comprehension in these areas are expected to take good care of their children (Al-Omiri et al., 2006). However, CP parents/care givers have been reported to have low comprehension in these areas (Verrall et al., 2000). Therefore, it is important to collect information about oral health comprehension of these parents; and monitor their knowledge level as well as provide them with oral health education in weak areas.

There is a scarcity of information internationally about oral health comprehension in parents of CP children. A study was conducted on this topic in Riyadh, Saudi Arabia about a decade ago, which though reported satisfactory level of oral health knowledge among the CP parents; still pointed out towards several areas where the parents needed further oral health education (Wyne, 2007). No further studies have been published after that. In the wake of rapidly changing socio-economic environment; continuous monitoring and gauging the CP parents oral health comprehension is necessary. The purpose of the present study was to collect latest information on oral health comprehension of CP children's parents.

2. Methods

The study, cross-sectional in design, was conducted in two main centers for disabled children in Riyadh, Saudi Arabia from December 2014 to May 2015. A self-administered questionnaire in Arabic was utilized for the present study; which was a modified version of a questionnaire utilized in a previous study by Wyne (2007). The questionnaire was pre-tested for validity and reliability in 30 parents of CP children not participating in the main study. There was a time interval of two weeks for the test-re-test reliability. Pertinent modifications were made to enhance its clarity for the participating parents.

The information collected through the questionnaire is listed below.

- Demographics: parent's age/gender, and the CP child's age/gender
- Significance of dental health
- Significance of optimal dental health for better health in general
- Reason and frequency for dental visits
- Oral hygiene routine
- Various sources and importance of fluoride
- Possible foods & drinks that cause tooth decay
- Action to be taken on finding a cavity in their mouth

- Possible reason(s) for bleeding of gums and action needed if there is bleeding from gums after tooth-brushing.

The study was registered with Research Center (CDRC) of King Saud University College of Dentistry. The ethical approval was also obtained for the study from CDRC including the questionnaire utilized in the study. The two centers selected for the study are the main centers for special children in Riyadh, where education and health care are provided to the children with various conditions/disabilities. One (NH) of the researchers visited the selected centers. All the parents of the CP children registered in the two centers were included in the study. The questionnaires were distributed among the parents for completion. The questionnaires had a consent form with a covering letter that explained the research objectives and also ensured the parents about confidentiality of the collected information.

The data collected were stored in the computer utilizing Statistical Package for Social Sciences (SPSS – Version #19). Various frequencies were derived. Chi-Square test was utilized to establish any significant ($p \leq 0.05$) association between various responses and independent variables (such as parental age/gender).

3. Results

The parents of all the 157 CP children registered in the two centers completed the questionnaire. Mothers mostly (86.6%) completed the questionnaire. The mean parental age was 34.0 years (SD 7.3, ranging from 20 to 58 years). The CP children's mean age was 6.7 years (SD 2.7, ranging from 2 to 12 years) [males 57.7%, females 42.3%].

Responses to questions on importance of dental and oral hygiene are listed in Table 1. Although most (94.3%) of the parents were aware of good dental health for mastication, more than one third (35.7%) did not consider it important for speech. Almost all (98.7%) of the parents knew that good dental health is important for general health. About two-third (65.6%) of the parents thought that one must visit a dentist every six months. However, one-fifth (20.4%) of them were of the opinion that dental visit is needed only for pain or dental problem. More than two-third (70%) of the parents thought that teeth should be brushed thrice daily or after each meal. A great majority (98.1%) of the parents was using toothbrush or both toothbrush and miswak for tooth cleaning.

Table 2 presents results on various questions regarding fluoride. About three in every ten (29.9%) parents were not aware of the beneficial effect of fluoride in preventing dental caries; and very few (9.6%) were aware of water as a source of fluoride. Table 3 lists the parent's responses about tooth decay. Almost all (98.7%) the parents were aware that sugary foods cause dental caries. Similarly, 91.7% of the parents knew about the harmful effects of soft/carbonated drinks on teeth. However, fewer parents had similar comprehension about flavored fizzy drinks (35.7%), sweetened/flavored milks (32.5%) and bottled/canned juices (24.2%). A large majority (84.1%) of the parents would visit a dentist immediately if they find a cavity staring in their tooth/teeth. Most (84.7%) of the parents knew that regular bleeding on tooth brushing could be a sign of gum disease, however, only 52.2% would see a dentist for the problem (Table 4).

Table 1 Questions and response regarding importance of oral health, and oral hygiene.

Question	Number	%
<i>Importance of good dental health? (multiple responses allowed)</i>		
1. Chewing	148	94.3
2. Speech	101	64.3
3. Esthetics	120	76.4
4. Not important	0	0
<i>Importance of good dental health for general health?</i>		
1. Yes	155	98.7
2. No	0	0
3. Don't Know	2	1.3
<i>How often one needs to visit a dentist?</i>		
1. Twice/year	103	65.6
2. Once/year	22	14.0
3. Only when there is pain/dental problem	32	20.4
<i>What should be the frequency of toothbrushing?</i>		
1. Once daily	9	5.7
2. Twice daily	37	23.6
3. Thrice daily	52	33.1
4. After each meal	58	36.9
5. 1–2/week	1	0.6
<i>What you use mainly for tooth cleaning</i>		
1. Toothbrush	112	71.3
2. Toothbrush + Miswak	42	26.8
3. Miswak	3	1.9
4. Electric brush	0	0
<i>Do you use toothpaste with toothbrush?</i>		
1. Yes	147	95.5
2. No	7	4.5

Table 2 Questions about fluoride.

Question	Number	%
<i>Have you heard about fluoride?</i>		
1. Yes	135	86.0
2. No	22	14.0
<i>Main benefit of fluoride?</i>		
1. Whitens teeth	16	10.2
2. Protection from dental caries	110	70.1
3. Protection from gum diseases	3	1.9
4. I don't know	28	17.8
<i>Various sources of fluoride? (multiple responses allowed)</i>		
1. Drinking water	15	9.6
2. Tooth paste	98	62.2
3. Application by dentist	69	43.9
4. I don't know	33	21.0

Parents were divided into three age groups (20–30, 31–40 and ≥ 41 years) for the purpose of further analyses. However, there were no significant associations ($p > 0.05$) between the parental age/gender with any of the dependent variable.

4. Discussion

The study has fielded information about oral health comprehension in parents of cerebral palsy children. The results have

Table 3 Questions about tooth decay.

Question	Number	%
<i>Which food group mainly causes dental decay?</i>		
1. Meats	1	0.6
2. Sugary Food	155	98.7
3. Oily food	0	0
4. Fresh vegetables and fruits	1	0.6
<i>Which of the drinks can cause tooth decay? (multiple responses allowed)</i>		
1. Soft drinks (Pepsi or coke)	144	91.7
2. Fizzy flavored drinks	56	35.7
3. Flavored/sweetened milks	51	32.5
4. Canned and Bottled juices	38	24.2
5. Fresh milk	4	2.5
6. Fresh juices	6	3.8
<i>What you need to do on finding a cavity starting in your tooth?</i>		
1. Wait till it is big enough to be filled	2	1.3
2. Wait till there is pain in that tooth	19	12.1
3. Visit you medical doctor	4	2.5
4. Visit your dentist immediately	132	84.1

Table 4 Questions about gingival health.

Question	Number	%
<i>Blood on your tooth brush while brushing usually means:</i>		
1. Gum disease	133	84.7
2. Tooth decay	3	1.9
3. I don't know	21	13.4
<i>What should be your action when you regularly see blood on your toothbrush?</i>		
1. Stop tooth brushing	9	5.7
2. Stop brushing the bleeding area	27	17.2
3. Just continue brushing	35	22.3
4. See a dentist immediately	82	52.2
5. I don't know	4	2.5

shown some strong areas of oral health comprehension, while in other areas there appears to be a need for further enhancement. It is contemplated that parents with adequate oral health comprehension would play a better role in oral health care of their CP children.

Parents of all the CP children registered in the selected centers completed the questionnaire. The questionnaire was in the native language of the parents and was thoroughly pretested. However, it is worth mentioning that results from a questionnaire study have to be interpreted with caution. Knowing that the survey is being carried out by dentists/health care professionals may prompt favorable responses. Some parents may not have been able to fully comprehend the questions.

Although most of the parents were aware of importance of good dental health in effective chewing, yet many did not consider it important for speech and esthetics. It is understandable; as these parents are usually so overwhelmed by the demands of caring for their CP child that importance of these two functions might become secondary for them (Waldman et al., 2010). A previous study in parents of CP children showed similar results (Wyne, 2007). A positive aspect of the result was awareness of the importance of oral health for

optimum general health. A complimentary correlation between oral health and systemic health is now well documented (DHSV, 2017). This also forms the basis for recommendation that a routine check-up visit be made at least once a year. However, in present study, considerable number of parents believed that dental visit was only necessary for dental pain or a problem. The present results are in contrast to previous study in parents of Saudi CP children (Wyne, 2007), where most of the parents were aware of the importance of yearly check-up dental visits. The results about frequency of tooth brushing and use of tooth brush and miswak were strongly positive. Previous study in parents of CP Children and those of healthy children have shown similar strong comprehension about oral hygiene practices (Al-Tamimi and Petersen, 1998; Wyne, 2007). Miswak (*Salvadora persica*) is a wooden tooth-brush/chewing stick traditionally used in various parts of the world including Saudi Arabia. The efficacy of miswak in tooth cleaning and its anti-bacterial effects have been well-summarized (Haque and Alsareii, 2015).

Fluoride has been proven to have a clear anti-cariogenic effect (Re Weng et al., 2011), and most of the caries decline is contributed to fluorides (Bratthall et al., 1996). However, some parents did not hear about fluoride or knew that it protects teeth from caries. Similarly, very few parents knew about water as a fluoride source. This mirrors the results of the 2007 study (Wyne, 2007) in CP children's parents, and stress the need of further information about fluoride use in these parents.

The parents of CP children showed strong knowledge about harmful effects of sugar containing foods and soft drinks on teeth. However, similar knowledge was lacking about flavored fizzy drinks, bottled/canned juices and sweetened/flavored milks. These results are also similar to the 2007 study (Wyne, 2007) in CP children's parents. As frequent consumption of sweetened drinks is a major reason for the catastrophic carious destruction (Ghazal et al., 2015), this risk factor should be monitored in all chronically ill children. Regarding action on finding a cavity in their tooth/teeth, a majority of the parents knew to visit a dentist immediately, but some preferred to wait till they felt some pain.

A great majority of parents knew that blood seen regularly on toothbrush meant gum disease, however only half of them recognized the need to see a dentist immediately. The factor possibly responsible for not visiting a dentist could be dental anxiety/fear that is highly prevalent among Saudi adults (Gaffar et al., 2014). In addition; these parents are usually so overwhelmed by the demands of caring for their CP child that their own health issues may become of secondary importance to them (Waldman et al., 2010).

An association between parental comprehension of oral health and oral health habits of their disabled children has been established (Klingberg and Hallberg, 2012; Limeres et al., 2014). Inadequate parental oral health comprehension could be a serious barrier to optimal dental care in children especially CP children (deCastilho et al., 2013; He et al., 2014; Limeres et al., 2014). This study attempted to gauge the oral health comprehension in parents of CP children, so that if needed, assistance can be provided to the parents in this area. The present study has shown mixed results; some areas of strong oral health comprehension, others satisfactory and some weak areas among parents of CP children. The results are not different than those obtained about a decade ago (Wyne, 2007). The results of the present study strongly indicate

a need for enhanced efforts towards improvement of oral health comprehension in the parents. A better oral health comprehension shall result in better oral health in these parents (Brennan et al., 2010). It is also expected to consequently benefit the oral health of their CP children (Klingberg and Hallberg, 2012; deCastilho et al., 2013).

5. Conclusions

- The parental comprehension about importance of oral health and its relation to general health was adequate.
- The awareness about tooth brushing was also positive. However, one-fifth would visit a dentist only for a dental problem or pain.
- Very few parents were aware of water as a source of fluoride.
- The parents were fully aware about harmful effects of sugary foods and soft/carbonated drinks on teeth. However, fewer parents had similar comprehension about flavored fizzy drinks, sweetened/flavored milks and bottled/canned juices.
- There were no significant associations ($p > 0.05$) between the parental age/gender with any of the dependent variable.

Conflict of interest

None.

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