Original Article

Oral health comprehension in parents of Saudi cerebral palsy children

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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).
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 (AAPD&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 socioeconomic 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 ≤ 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 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).
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 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

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

| Question                                      | Number | %  |
|-----------------------------------------------|--------|----|
| Importance of good dental health? (multiple responses allowed) |        |    |
| 1. Chewing                                    | 148    | 94.3 |
| 2. Speech                                     | 101    | 64.3 |
| 3. Esthetics                                  | 120    | 76.4 |
| 4. Not important                              | 0      | 0   |
| Importance of good dental health for general health? |        |    |
| 1. Yes                                        | 155    | 98.7 |
| 2. No                                         | 0      | 0   |
| 3. Don’t Know                                 | 2      | 1.3 |
| How often one needs to visit a dentist?       |        |    |
| 1. Twice/year                                 | 103    | 65.6 |
| 2. Once/year                                  | 22     | 14.0 |
| 3. Only when there is pain/dental problem     | 32     | 20.4 |
| What should be the frequency of toothbrushing?|        |    |
| 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 |
| What you use mainly for tooth cleaning        |        |    |
| 1. Toothbrush                                 | 112    | 71.3 |
| 2. Toothbrush + Miswak                        | 42     | 26.8 |
| 3. Miswak                                     | 3      | 1.9 |
| 4. Electric brush                             | 0      | 0   |
| Do you use toothpaste with toothbrush?        |        |    |
| 1. Yes                                       | 147    | 95.5 |
| 2. No                                        | 7      | 4.5 |

### Table 2 Questions about fluoride.

| Question                                      | Number | %  |
|-----------------------------------------------|--------|----|
| Have you heard about fluoride?                |        |    |
| 1. Yes                                        | 135    | 86.0 |
| 2. No                                         | 22     | 14.0 |
| Main benefit of fluoride?                     |        |    |
| 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 |
| Various sources of fluoride? (multiple responses allowed) |        |    |
| 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 |

### Table 3 Questions about tooth decay.

| Question                                      | Number | %  |
|-----------------------------------------------|--------|----|
| Which food group mainly causes dental decay?  |        |    |
| 1. Meats                                      | 1      | 0.6 |
| 2. Sugary Food                                | 155    | 98.7 |
| 3. Oily food                                  | 0      | 0   |
| 4. Fresh vegetables and fruits                | 1      | 0.6 |
| Which of the drinks can cause tooth decay?    |        |    |
| 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 |
| What you need to do on finding a cavity starting in your tooth? |        |    |
| 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 | %  |
|-----------------------------------------------|--------|----|
| Blood on your tooth brush while brushing usually means: |        |    |
| 1. Gum disease                                | 133    | 84.7 |
| 2. Tooth decay                                | 3      | 1.9 |
| 3. I don’t know                               | 21     | 13.4 |
| What should be your action when regularly see blood on your toothbrush? |        |    |
| 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 |
optimum general health. A complimentary correlation between oral health and systemic health is now well documented (DHHSV, 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 (Wiener, H.W., Kempf, M.C., Warren, J., Cavanaugh, J.E., 2015. Oral health and its relation to general health was adequate.

Factors associated with early childhood caries incidence among CP children (deCastilho et al., 2013). Influence of family environment on children’s oral health. North Jordan. J. Dent. Educ. 70, 179–187.

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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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