Oral Health Status Of Children Affected With Cerebral Palsy

Research Article

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Abstract

Cerebral palsy is a developmental disorder that causes limitation of movements and postural activities. This causes crippling conditions in children and is one of the chief neurological disorders The aim of this study is to find out the oral hygiene status of children who suffer from cerebral palsy. Case records of patients who visited the department of pediatric and preventive dentistry at Saveetha Dental College from June 2019 to March 2020 were reviewed. 12 children who were diagnosed with cerebral palsy were included in the study. Age, gender, DMFT, dmft, total number of caries teeth,OHI were evaluated. The data was analysed through chi-square test. It was observed that there is no significant difference in oral health of children suffering from cerebral palsy p value > 0.05. Within the limitations of our study it was found that children in the age groups 7 to 9 years with cerebral palsy had poor oral health. Providing adequate oral care requires adaptation of special dental skills to help families manage the ongoing health issues that may arise. As oral health is increasingly recognized as a foundation for general wellbeing, caregivers for CP patients should be considered an important component of the oral health team and must become knowledgeable and competent in home oral health practices.

Introduction

Cerebral palsy (CP) is a developmental disorder that causes limitation of movements and postural activities. This causes crippling conditions in children and is considered as a neurological disorders [1-3]. It is a non-progressive disorder that occurs in the developing fetal or infant brain. The motor disorder of cerebral palsy is often accompanied with limitations of sensation, cognitive skills, behaviour, communication [4-6].

The prevalence of CP occurs in 2.5% of thousand live births globally, and the oddity varies with hemiplegia and diplegia, and changes in age and surgery [7-9]. Studies have demonstrated that increased risk of new logical damage and children with CP have resulted in poor oral hygiene [10,11] .

A study reported that children with CP had Decayed, Filled ,Missing Surfaces(DMFS) was 12 .86 which is significantly higher than the normal children where 2.87 [12,13]. A recent study conducted by Sinha et al., in 2015 demonstrated the Indian children with CP had poor oral hygiene and class to my location and compare to control. This is mainly attribute able to compromise general health and lack of dental awareness [14].

Patients with CP are at increased risk of developing dental caries affecting negatively their quality of life [15-17]. Children with more severe neurological insult are at a greater the risk [18,19]. The degree of cognitive and motor deficits is directly proportional to the likelihood of developing dental caries [20,21]. Severe motor incoordination affects the ability to perform adequate oral hygiene and cognitive deficits makes cooperation for effective oral care more difficult [22,23] Previously our team has a rich experience in working on various research projects across multiple disciplines The [5, 24, 25, 23, 26-36].

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Materials And Methods

The study was conducted in a university setting, at Saveetha Dental College and Hospitals, Chennai. Predominantly the advantages of the study was flexibility and less time consumed to collect data. The disadvantage was that the study is limited to certain populations. Children with cerebral palsy were included in the study. The study was initiated only after approval was obtained from the institutional ethics committee (SDC/SIHEC/2020/DIAS-DATA/0619-0320). 2 examiners were involved in the study. Retrospective data was collected from the records of patients who visited the Department of Pediatric and Preventive Dentistry in Saveetha Dental College andHospitals,Chennai from June 1, 2019 to March 31, 2020 . Inclusion criteria included patients who had CP and were below 18 years . Patients older than 18 or suffering from any other disease were excluded from the study. Cross verification of data for error was done by the presence of additional reviewers and was done by photographic valuation. Simple random sampling was done to minimise the sample bias. 12 patients who fulfilled the inclusion and exclusion criteria were included in the study. The data verification was based on age, sex, DMFT, dmft, total number of carious teeth. Any patient with incomplete data was excluded from the study. The data was entered in an excel sheet in a methodical manner and was imported to SPSS. Incomplete or censored data was excluded from the study. IBM SPSS 23 software was used for data analysis. Independent variables include age, gender and dependent variable include dmft, DMFT, OHI, total carious teeth. Descriptive and inferential statistics were used. The descriptive statistics includes frequency of distribution of age and sex. Correlation analysis and association was evaluated using Chi Square test.

Results

The study included 12 children suffering from CP , 58.3% boys and 41.6% girls, their age range were 4 to 17 years old with 16.6% of participants less than six years old, 33.3% of participants between 6 to 10 years and 50% of the participants above 9 years old. The correlation between age and DMFT in permanent teeth is depicted in (Figure 1). DMFT score of >3 is reported as 8.33% and score < 3 is 41.67% of given population between 6 to 10 years. While the remaining age group has score < 3 with value 16.67% .

Pearson chi square value is 1.185 and p value - 0.276. Not statistically significant p value (>0.05).

The association between age and dmft in primary dentition is depicted in (Figure 2). Between 6-10 years, the dmft score <3 is 50% and all other age groups reported 8.33% of dmft score <3 and >3,=7 equally. Pearson chi square value is 4.0 and p value - 0.261. Not statistically significant p value (>0.05).

The relation between age group and total caries teeth is represented in (Figure 3). The highest was recorded in 6 to 10 years group children. 25% of the children had 4-7 carious teeth and 8.3% had >8 carious teeth and 16.6% < 3 carious teeth. All other age groups had 8.33 % of < 3 caries teeth and 8.33% of 4-7 caries teeth. Pearson chi square value is 1.2 and p value - 0.977. Not statistically significant p value (>0.05).

The information about age and OHI is depicted in (Figure 4). Out of 50% of children between 6- 10 years, the OHI range between >1,<=2 reported 25% of children and remaing 25% had OHI <=1 . Pearson chi square value is 1.714 and p value - 0.634. There is no significant difference since P value (> 0.05).

 The association between gender and DMFT is depicted in (Figure 5). It is noted that out of 41.7% of females all had DMFT score <=3 while out of 58.3% of males 50% had DMFT score <= 3 and remaining 8.33% had score >3,<=7. Pearson chi square value is 0.779 and p value is 0.377. Not statistically significant p value (> 0.05).

The association between gender and dmft is shown in (Figure 6). Out of 58.3% of males 50% had DMFT score <= 3 and remaining 8.33% had score >3, <=7 while out of 41.7% females 16.67% had dmft range >3, <=7 and 25% had dmft range <=3. Pearson chi square value is 1.03 and p value is 0.31 . Not statistically significant p value (> 0.05).

Correlation between gender and total caries teeth is depicted in (Figure 7). It is evident that 33.3% females had 4-7 caries teeth and 23% of males had > 4 caries teeth. Pearson chi square value is 3.22 and p value is 0.2. Not statistically significant p value (> 0.05).

The association between gender and OHI is depicted in (Figure

Figure 1: Shows correlation between age and DMFT in permanent teeth. X axis represents age , Y axis represents dmft. Blue colour represents <3 and green colour represents >3<=7. It is evident that the DMFT score for permanent teeth was higher among 6- 10 age groups compared to childrens of other age. Pearson chi square value is 1.185 and p value - 0.276. Not statistically significant p value (>0.05).
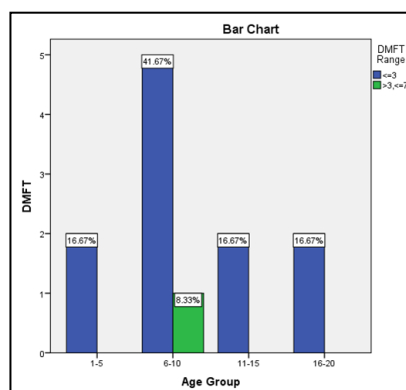
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Figure 2: association between age and dmft in primary dentition. X axis reppresents age , Y axis represents dmft. Blue colour represents <3 and green colour represents >3<=7. Between 6-10 years, dmft score for primary teeth was lower compared to other age groups . Pearson chi square value is 4.0 and p value - 0.261. Not statistically significant p value (>0.05).
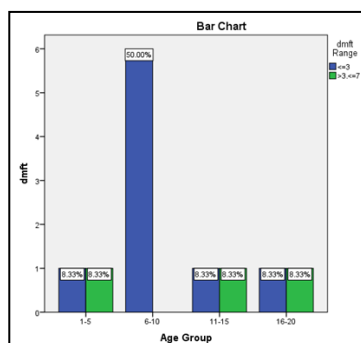

Figure 3; Depicts relation between age group and total caries teeth. X axis represents age and Y axis represents of No. of caries teeth. Blue colour represents 0-3, green colour represents 4-7, brown colour represents >8. The highest number of carious teeth was recorded in 6 to 10 years group children.. Pearson chi square value is 1.2 and p value - 0.977. Not statistically significant p value (>0.05).
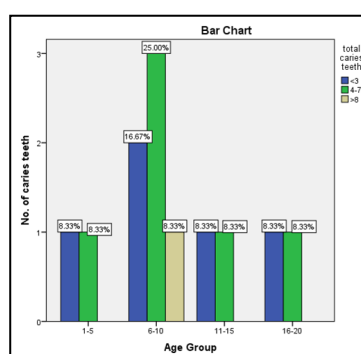

Figure 4; Depicts the information about age and OHI. X axis represents age and Y axis represents OHI. blue colour represents <=1 and green colour represents >1<=2. The OHI score was comparatively higher between 6-10 years children . Pearson chi square value is 1.714 and p value - 0.634. There is no significant difference since P value (> 0.05).
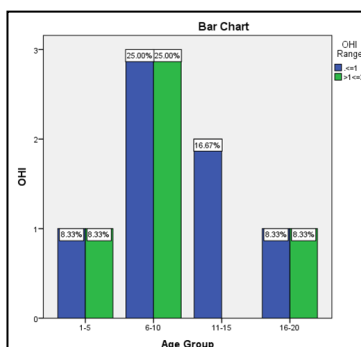

Figure 5: Provides information about association between gender and DMFT. X axis reppresents gender , Y axis represents dmft. Blue colour represents <3 and green colour represents > 3 <= 7. It is evident that DMFT score for permanant teeth were higher in males than females. Pearson chi square value is 0.779 and p value is 0.377. Not statistically significant p value (> 0.05).
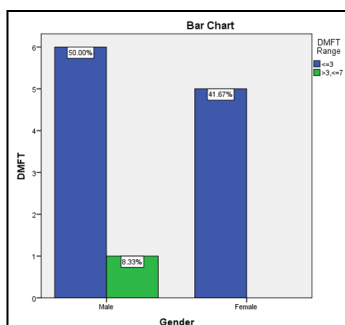

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Figure 6: Provides information about association between gender and dmft. X axis represents gender , Y axis represents dmft. Blue colour represents <3 and green colour represents >3<=7. The dmft score for primary dentition was higher in females than males. Pearson chi square value is 1.03 and p value is 0.31 . Not statistically significant p value (> 0.05).
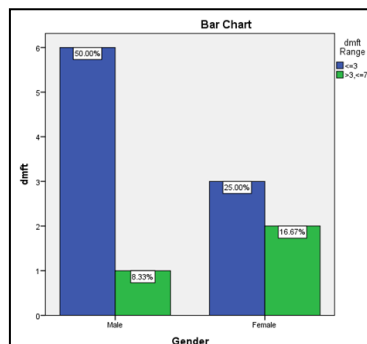

Figure 7: provides information about gender and total caries teeth. X axis represents gender and Y axis represents number of caries teeth. Blue colour represents 0-3, green colour represents 4-7, brown colour represents >8.It is evident that males had more number of carious teeth than females. Pearson chi square value is 3.22 and p value is 0.2. Not statistically significant p value (> 0.05).
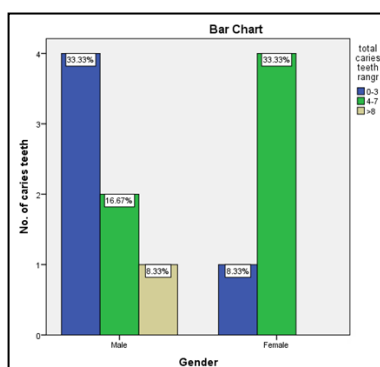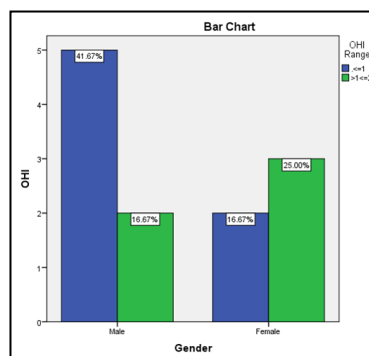

Figure 8: Provides information about gender and OHI. X axis represents gender and Y axis represents OHI. blue colour represents <=1 and green colour represents >1<=2.It is reported that OHI score was higher in females than males. Pearson chi square value is 1.18 and p value is 0.311. Not statistically significant p value (> 0.05).

8). It is reported that OHI score of >1,<=2 was found to be 25% in females and 16.7% in males. Pearson chi square value is 1.18 and p value is 0.311. Not statistically significant p value (> 0.05).

Discussion

In the study, the percentage of boys with CP was higher than that of the girls, which is in similar with the findings of previous studies [37-39]. The caries prevalence among them participating children was recorded as 65.8% which is higher than the findings of Chu and Lu, where they recorded 43%, indicating high caries prevalence among Chinese students [40].

In our study the caries prevalence was found comparatively higher but no significant difference was found in caries for children

with CP. This is similar to findings of previous studies [41,42][41] which found no significant difference in caries but found more extracted and untreated decay and less poor quality restoration in CP children. This could be because of food stagnation in the buccal and labial sulci due to their poor masticatory muscular control and diet rich in soft mushy cariogenic food which is easy to swallow.

Another contributory factor is the sweetened medications (carbamazipine most commonly and sometimes even herbal formulation) given to them to control seizures and other medical problems[6,14,28]. The prescribed anticonvulsants are sweetened, highly viscous and used at night, which enhances the progression of dental caries.The oral hygiene status OHI score was 66.6% which seems to be poor ,this agrees with the results reported by preetika et al, where assessment of oral hygiene showed poor sta-

tus [43,44].

It was also noted from this study that the females had poor oral hygiene compared to males, the OHI score of >1,<=2 was found to be 16.7% in males and 25% in females and the number of caries teeth was also higher in females, 33.3% females had greater than 4 carious teeth while 23% of males had more than 4 carious teeth. This in contrast with the study done by Sumaya et al, where they reported that boys diagnosed with CP had poor oral health status compared to girls[45,46,47,48]. Our institution is passionate about high quality evidence based research and has excelled in various fields [49-59].

The limitations of this study are a limited sample size and a single centre study, it can be said that the oral cavity is a dynamic environment with many factors both present inside the saliva or from outside like the diet that can contribute to progression or regression of oral disease. To be able to recommend a certain oral health regime other factors associated with the oral health environment need to be examined. However, such studies may enable comparison and future planning of dental services to the autistic children and young adults.

Conclusion

Within the limitations of the study, among the children with cerebral palsy,females had poor oral hygiene compared to males , and 6 to 10 years age group children had higher DMFT,dmft, OHI and caries teeth. This is primarily because of their condition and also because children suffering from CP usually do not seek the services of a dental professional. Effort should be made to spread the awareness and importance of oral health among these children and their family because everyone deserves the opportunity of good oral health and hygiene.

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