Original Research Paper

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"Knowledge, Awareness and Practice Oral Health Survey Among Parents of Children with Congenital Heart Diseases.": A Cross Sectional Study.

Abstract:

Aim : To investigate the oral health of pediatric cardiac patients and their parents' knowledge of and attitude towards the importance of oral health and Infective Endocarditis. (I.E.)

Material and Method:- Descriptive cross-sectional survey with total 100 CHD patients, age ranges 2-12 years was performed with a validated questionnaire. Recording of each patients'- demographic data, oral hygiene habits, knowledge and awareness of dental and general health, and attitudes toward professional dental care. The oral hygiene (DI-S) and caries experience (deft/DMFT) indices were utilized.

Statistical Analysis:-Pearson's Chi Square test was used to observe the relation between categorical study and outcome variables.

Result:- In the present study 43 % parents were aware of the importance of maintaining good oral hygiene in patients with CHD. Around 56% of parents were unaware of antibiotic prophylaxis for the dental procedure and 67 % of parents were unaware about the term IE. Oral hygiene of these patients was good while caries experience was higher and deft/DMFT Score, was lower among the <5 years age group than 6 years and above and it was statistically significant.

Conclusion :- Parental knowledge was limited and fragmented and their attitude towards a specialized dental treatment or maintaining good oral health status wasminimal. Comprehensive team approach by the Pediatric Dentists, Cardiologists and Pediatrician could help improve dental care for these children.

Keywords: Congenital heart disease, oral health, awareness, attitude, parents, children.

Introduction :

Congenital Heart Defects (CHD) is the most common congenital defect and defined as an abnormality in the structure of the heart or the major vessels. The incidence of CHD detectable by routine clinical examination has been estimated to be 7.5 per 1000 live births.[1]

The American Heart Association (AHA) guidelines published in 2007 recommend dental evaluations and treatment prior to cardiac valvar surgery, or repair of congenital defects, in order to decrease the risk of Infective Endocarditis (IE).[2] These children require special dental care because of the risk of developing IEdue to the higher oral health risk factors.[3]

Several reasons have been suggested for this issue such as extensive use of liquid medicationscontaining sugar, increased prevalence of enamel developmentallesions and oral hygiene neglect due to greater concerns and attention to the child's heart condition.[4]

CHDchildren have a diminished quality of life compared to healthy children.[5-6] Knowledge of parental attitudes and practices of dental care plays a key role in providing early preventive dental care to the special needs of CHD children.[7] Therefore, the aim of this study was to assess the disease awareness and knowledge about the importance of

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oral health among parents of CHD children in Gujarat. The objectives of the study were to assess oral hygiene and dental caries status of the CHDchildren.

Material and Method:

In this descriptive cross-sectional study, upon procuring IRB approval, total of 100 CHD patients, ages 2-12 years were selected from Institute of cardiology and research centre of the State of Gujarat. All patients with CHD were included, whereas children with other systemic disorder and non-residents of Gujarat state were excluded. Prior consent was obtained from the parents and respective hospital authorities for examination.

Single trained investigator, interviewed parents to complete the questionnaire, which included demographic data, oral hygiene habits, knowledge and awareness of dental and general health, and attitudes toward professional dental care. Assessments of oral hygiene habits included items on oral hygiene methods used, parental supervision of brushing and intervals.

Examination was done visually at hospital under good light source, using a sterile mouth mirror and probe to record Simplified Debris Index (DI-S) and deft index (for 2-5 years old), deft/DMFT (for 6-12 years old).

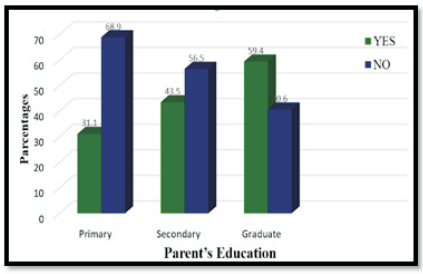
Data were analysed Using SPSS Pc + Version 21.0 Statistical Software. Descriptive statistics (Frequency And Percentages) were used to quantify the study variables. Pearson's Chi-Square test was used to observe the relation between categorical study and outcome variables. $P < 0.05$ was considered statistically significant.

Result:

A Total 100 CHD children(48 girls and 52boys)and their parents participated in thestudy.The level of parental education recorded-45% primary education , 23% secondary and 32% were graduates.

Overall 53% of parents reported thatinformation provided regarding the relevance of oral health and its implications on CHD by thePediatric cardiologist was inadequate.

Graph- 1 depicts awareness regarding the importance of oral health among the parents based on their educational levels, the difference was statistically significant.



Graph – 1 Parental knowledge about Importance of oral health

About the awareness and knowledge of dental and general health 57 % knew that dental disease has impact on general health while others were not sure. Around 65% were aware that dental care is as important as any other body part. Concerning the deleterious effect of sweets on dental health 71% were aware. More than half (56%) of the parents had adequate knowledge about the causes of tooth decay.Pertaining to necessity of dental treatments before cardiac surgery 48% responded affirmatively. Around 74% parents were unaware about antibiotic prophylaxis for the dental procedure. 67 % parents were uninformed about the term IE.

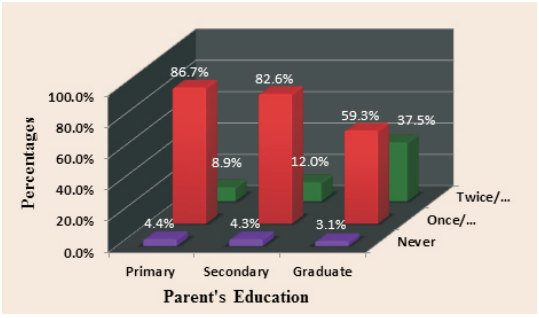
Regarding the frequency of brushing, 8.9% primary educated, 12% secondary educated and 37.5% graduatesanswered that twice/day brushing was advisable. This was statistically significant as the graduates showed greater awareness in this aspect. (Graph -2)overall more than half (63%) of parents supervised their child's oral hygiene practice.

	Parent's Education n (%)			Total n (%)
	Primary	Secondary	Graduate	
Is care about teeth as important as any part of body?				
Yes	27 (60)	15 (65.2)	23 (71.9)	65 (65)
No	3 (6.7)	2 (8.7)	2 (6.2)	7 (7)
Not sure	15 (33.3)	6 (26.1)	7 (21.9)	28 (28)
Total	45	23	32	100
Is oral hygiene especially important for you because of the CHD ?				
Yes	14 (31.1)	10 (43.5)	19 (59.4)	43 (43)
No	31 (68.9)	13 (56.5)	13 (40.6)	57 (57)
Total	45	23	32	100
Do sweets affect the oral health ?				
Yes	29 (64.4)	16 (69.6)	26 (81.2)	71 (71)
No	3 (6.7)	3 (13)	0 (0)	6 (6)
Not sure	13 (28.9)	4 (17.4)	6 (18.8)	23 (23)
Total	45	23	32	100
What is the cause of tooth decay ?				
Excess sugar in diet	13 (28.9)	7 (30.4)	8 (25)	28 (28)
Lack of oral hygiene	6 (13.3)	1 (4.3)	1 (3.1)	8 (8)
Sticky food	5 (11.1)	1 (4.3)	2 (6.2)	8 (8)
All of the above	7 (21)	14 (60.9)	21 (65.5)	56 (56)
Total	45	23	32	100
Was oral health mentioned by your paediatric cardiologist when your child was first diagnosed with Heart Disease?				
Yes	18 (40)	13 (56.5)	16 (50)	47 (47)
No	27 (60)	10 (43.5)	16 (50)	53 (53)
Total	45	23	32	100
Do you know if dental treatment is necessary before the corrective cardiac surgery?				
Yes	18 (40)	14 (60.9)	16 (50)	48 (48)
No	8 (17.8)	2 (8.7)	1 (3.1)	11 (11)
Not sure	19 (42.2)	7 (30.4)	15 (46.9)	41 (41)
Total	45	23	32	100
Do you know the term endocarditis?				
Yes	10 (22.2)	8 (34.8)	15 (46.9)	33 (33)
No	35 (77.8)	15 (65.2)	17 (53.1)	67 (67)
Total	45	23	32	100
Did your child ever receive antibiotics in the context of a dental procedure?				
Yes	3 (6.7)	8 (34.8)	8 (25)	19 (19)
No	3 (6.7)	0 (0)	4 (12.5)	7 (7)
Not sure	39 (86.6)	15 (65.2)	20 (62.5)	74 (74)
Total	45	23	32	100

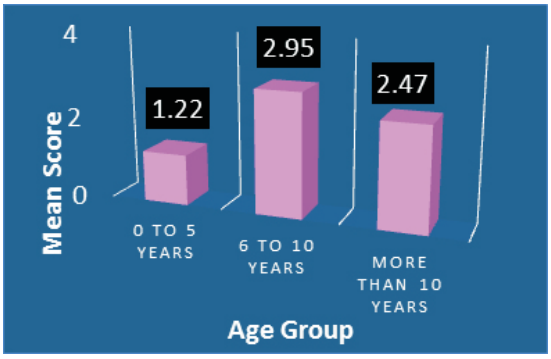
Table– 1 Parental Response To Questionnaire

With respect to age wise distribution of deft/DMFT Score, It was lower among the <5 years age group than 6 years and above and it was statistically significant (Graph -2). Consideration of the deft/DMFT index shows decayed tooth components were more than filled and missing tooth components in both dentitions. deft/DMFT score between male and female was similar (2.08 ± 2.58 and 2.25 ± 2.01 respectively)

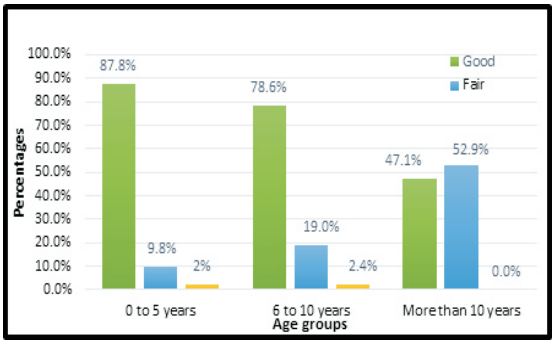
No statistical significant difference was found in OHI index score in the comparison between genders. Comparison of OHI index score among various age groups showed that majority of children (87.8%) under age of 5 years demonstrated good oral hygiene as compared to children over 10 years (78.8%). (Graph- 4)



Graph -2 Parental knowledge about oral hygiene measures



Graph -3 deft /DMFT score among various age groups



Graph -4 OHI-S index among various age groups

Discussion:

Oral Health is an important aspect of a child's general health, and this is of particular importance to the child with CHD.[8] Gingival infections and poor oral hygiene may spread heart threatening bacteria.3 Therefore, it is critical to maintain good oral and dental health by brushing twice daily with a fluoride-containing toothpaste and flossing. In fact taking good care of teeth and gums is not only for a healthy smile but also for a healthy body in cardiac patients.[9] A perception of Multi disciplinary care for the guardians of children with CHD is essential and facilitates the maintenance of the quality of life of such patients.[10]

However, parents understanding of oral health and the after math of developing IE is inadequate as demonstrated in this study. Majority of the graduates were better informed and knowledgeable regarding the importance of dental health within the perspectives of Cardiac disease.(Table 1) Cetta F(1993)11, Bulat DC(2003)12 and Cheuk DK(2004)13found that the knowledge and attitude of the parents and guardians towards maintaining good oral health and its effect on cardiac tissues in children with CHD were poor 56% , 25%, and 26.9% respectively. The poor knowledge observed in our study could be linked to the lack of oral health resources, lower economical and educational exposures. In contrast, Balmer et al (2003)14 found that 64% of parents were aware of the link between the oral health of their children and IE.

Parental knowledge of IE in developed countries may be higher, due to better public awareness, and close interaction between Pediatric cardiologist and dentist. While in developing countries, child's cardiac disease is always given priority by the parents and the cardiologist.15Ghajari MF (2014)16 and Rai et al.(2009)17 evaluated the knowledge and attitude of parents of CHD children in India and found very low level of knowledge about the importance of adequate oral and dental health and the need for preventive dental measures for prevention of caries among their children. Consequently, the equally important oral health care needs were overlooked. The relationship between information deficit and low level of education was also observed in the present study, considering that many of the parents were poor high school drop outs.

This research revealed, 53% parents received inadequate information by pediatric cardiologist regarding importance of oral health in child with CHD. This is certainly a feature that

has to be explained to the parents during their first contact with a paediatrician and Pediatric cardiologist that has to ring a bell in parents and dentists alike. Nevertheless, more than half of all participants report that their information about oral health in the context of CHD was non-existent or inadequate.

In currentsurvey, knowledge regarding harmful effects of sweets and etiological factors for tooth decay was satisfactory. However, high rates of Primary tooth decay observed, may be justified by the excessive benevolence of parents due to the heart disease of their children, which makes them offer sweets as a reward. The emotional and functional overload then involves the process of child care or the reluctance of children to perform brushing, ensuingin the parents, possiblyto neglect oral health care.[18]

In thepresent study, only19% children brushed twice a day, 77% brushed once a day. Around 50% parents observed their brushing. Al-Omiri and colleagues in North Jordan (2006)[19], Suvarna R et al (2011)[7] and Koerdt S et al (2018)20 found similar results that a high percentage of CHD children brush once or twice a day but this chore was not always assisted by the parents. Also, the intervals of brushing were found to be irregular. Parental supervision for tooth brushing among patients is very important as poor oral hygiene may increase risk of dental bacteraemia that may lead to IE.

Findings of our study revealed that oral hygiene status according to age distribution, younger children had good oral hygiene than older children and over all fair oral hygiene among CHD children, which was in accordance to Koerdt S et al (2018)[20]. On the contrary, Zafar S. et al (2009)[21] reported poor oral hygiene and had higher levels of plaque among children with CHD aged 2-12 year.Although specific causes for this observation are unclear,we may propose that greater time spent and attention paid by parents to younger CHD children, compared to older ones lead to better oral health.

The results showed that cardiac group generally had a higher decayed tooth component and a lower missing and filled tooth component. Decay was more in primary dentition than the permanent dentition. Kerrod B. (1992)[22] and Zafar S. et al (2009)[21] reported similar results that caries experience is slightly higher in the primary dentition than the permanent dentition in CHD children. Perhaps, poor condition of primary teeth in cardiac children could be related to the difficult situations that these children face during their initial years of life.[16] Additionally, it could be the result of predisposing factors such as increased susceptibility to the development of enamel defects, to the chronic use of sugared medicines, and to the high consumption of sweets as compensation,[13]

Conclusion:

- Parental attitude towards specialized dental treatment or maintaining good oral health status was inadequate.
- Parents were unaware that poor oral status can be a predisposing factor for IE.
- Caries prevalence was higher in primary dentition than the permanent dentition.

There is a need to raise awareness about the preventive dental health care measures by educating parents of CHD children . Specialized centers with the close interdisciplinary care of CHD children that involves pediatric cardiologist, Paediatrician and pediatric dentist should stimulate and coordinate the education of parents at an early stage and implement preventive programsas early as six months of age and dental screening prior to their cardiac surgery.

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