Original article

Oral Health Knowledge, Practices and Attitude among Parents/Caretakers of Children with Heart Disease on Follow up at Tikur Anbessa Hospital

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Abstract

Back ground: Infective endocarditis is one of the most dreaded complications of structural heart disease. Poor oral hygiene has been implicated in the predisposition to infective endocarditis. The objective of this study is to assess the knowledge and practice of oral hygiene among parents of children with heart disease.

Method: A **c**ross sectional study using examiner administered questionnaire was used to obtain information on the oral health knowledge and practice of parents/caregivers of children with heart disease attending the pediatric cardiology clinic at Tikur Anbessa specialized Hospital. The study was conducted from April 1 to August 15, 2014.

Results: A total of 384 caretakers of children participated in the study. About two-third (255) of the caretakers were informed on the importance of oral hygiene. Even though majority of the participants 317(82.6%) were aware about the benefits of tooth brushing, only 108(28.1%) reported using tooth brush and paste. The reason for not brushing teeth among the majority of caretakers (198, 71.7%) was that they did not think it was necessary. Lack of availability was mentioned by 53(19.2%) caretakers and unaffordability was mentioned by15 (5.4%).

Caretakers' knowledge on dental carries was also unsatisfactory. The role of the caretakers in the supervision of their children's oral hygiene was also poor with only 19(4.9%) caretakers reportedly brushing their children's teeth and 126(32.8%) watching and advising while the rest reportedly never cared, 89 (23.2%), or only gave advice but never watched, 150 (39.1%).

Conclusion: This study has shown that the knowledge, attitude and practice of caretakers of children with heart disease on dental care to be poor. Many participants were not informed on the importance of oral hygiene on the prevention of infective endocarditis. Thus educating caretakers on the importance of regular tooth brushing habit, oral hygiene and regular preventive dental visit to reduce the risk of complication of the cardiac condition is recommended. [*Ethiop. J. Health Dev.* 2018; 32(2):82-87]

Key words: oral health, children, heart disease.

Background

WHO regional office for Africa reported that the burden of cardiovascular disease is rapidly increasing in Africa and it is now a public health problem throughout the African region. It was also noted that rheumatic heart disease (RHD) is the most important form of acquired heart disease in children and adolescents (1).In Ethiopia among children at Tikur Anbessa hospital --pediatric cardiac clinic, 63.1% had RHD while 29% had congenital heart diseases (CHD) and 4.7% had both RHD and CHD (2).

The survival rate of children with CHD has increased and an overall decrease in RHD has been observed in developed countries but this is not true in developing countries where RHD is still a major public health problem. The prevalence of RHD among school children in Addis Ababa is 6.4 per 1000 children (3). In a recent study which screened school children between the ages of 6-18 years using echocardiography across many regions of Ethiopia found that the prevalence of RHD was 19/1000 (4).Infective endocarditis (IE) is one of the major complications of heart disease in children among cardiac patients in Addis Ababa (5).

Given the heavy colonization of the mucosal surfaces like the oropharynx, gastrointestinal and genitourinary tract by the potentially pathogenic bacteria, these surfaces are thought to be the origin of transient bacteremia. Transient bacterimia was reported to occur in 20-68 % of what? after tooth brushing, 7-51 %after chewing food, which is also similar with dental procedures(6). Studies have shown that children with congenital heart disease have poorer dental health (7-11).

Oral disease is a major health problem worldwide, and in Ethiopia there is very little epidemiological data in that regard. A cross sectional school-based study assessed major oral health problems among children 12 years and above in Addis Ababa. The prevalence of dental caries was 21.1% and it was found to increase significantly with increasing age, high consumption of sweets and in those who did not clean their teeth regularly. Periodontal disease affected more than half (53.4%) of the study subjects (12). However, there is no study that assessed the oral hygiene knowledge and practice of caretakers/ parents among children with heart disease in Ethiopia.

During childhood, parents especially mothers, play the most important role in oral hygiene and dental health of children. Hygienic measures practiced by mothers may be adopted as life-time habits by children. Oral care is often neglected by parents/caregivers of children with

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heart diseases for they have other concerns (13) Thus, caretakers/parental knowledge and practice play key roles in good oral hygiene. Therefore, the objective of this study is to assess the knowledge and practice of oral hygiene among caretakers/parents of children with heart disease

Materials and methods

Study setting: The study was conducted in Tikur Anbessa Specialized Hospital located in Addis Ababa. It is the largest referral hospital in the country, with over 700 beds. It is a teaching hospital of Addis Ababa University, College of Health Sciences. The department of pediatrics has 150 beds and the annual outpatient flow is above 150,000. There are 10 specialty clinics one of which is pediatric cardiology clinic. At least 120 children per week are served in the cardiology clinic.

Study design: A cross sectional study with examiner administered questionnaire was used to obtain information on the oral health knowledge and practice of parents/caregivers of children with heart disease attending the pediatric cardiology clinic at Tikur Anbessa Specialized Hospital. The study was conducted from April 1 to August 15, 2014.

Source population: All parents/caretakers of children attending pediatric cardiac clinic at Tikur Anbesa Specialized Hospital.

Study Population: Parents/ caretakers of all children with heart disease between 1 and 14 years of age having follow up at the pediatric cardiology clinic and who were visiting the clinic at least for the second time during the study period were included in the study. Parents/caretakers coming to the pediatric cardiology clinic for the first time or who are not willing to participate were excluded from the study.

Sample Size and Sampling Technique: Although similar local study is not available the prevalence of parents/caretakers who understood the importance of good oral health to prevent infective endocarditis was estimated at 35% by adapting from a distant study from elsewhere (14).

Sample size was calculated using prevalence (p) taken as 35%, margin of error (d) of 0.05, with 95% confidence level. Based on the above assumption the calculated sample size was 350. Considering that 10% of the caregivers may not provide complete information, 10% of the calculated sample size was added to yield 385. Participants were taken consecutively according to their presentation to the clinic.

Data collection: Data collecting nurses were trained on the use of the questionnaire, purpose of the study and the inclusion and exclusion criteria. Prior to data collection parents/caretakers were given adequate explanation about the purposes of the study to obtain a verbal consent. The questioners were filled by the data collecting nurses from parents/caretakers during their presentation to the clinic by face to face interview. The chart numbers of the children under follow-up were registered on the questionnaire paper and also on a separate paper to avoid repeating and for checking by the primary investigator in order to document the occurrence of IE from the chart.

Quality and completeness of gathered information was checked daily at the end of the cardiology clinic day by one of investigators (SH) and timely corrections were made.

Data analysis: After manual cleaning, data entry and analysis was done using SPSS version 21.0 statistical software. Variables were defined, categorized and recoded then frequencies of the different variables were determined. Variables included were age, sex, socioeconomic status, level of education, place of residence, and knowledge attitude and practice on oral hygiene and occurrence of infective endocarditis.

Ethical considerations: Ethical clearance was obtained from Department of Pediatrics Research and Publication committee by the mandate given by Addis Ababa University, College of Health Sciences Institutional Review Board. All the study participants were reassured that the data collection is anonymous. Respondents were clearly told that there is no known or potential risk from participating in the study and the service would not be withheld from refusal to participate. They were given the chance to ask anything about the study and were free to refuse or stop the interview at any moment they want.

Results

There were a total of 384 parents/caretakers of children in this study. Among the total children of these parents/caretakers 256 (66.7%) had CHD while 128 (33.3%) had acquired heart disease (AHD), mainly RHD. The mean duration of illness was 3.6 (SD=2.9) years. Of 384 children of these parents/caretakers seen, 6 of them were treated for IE and none of them had clinical procedure 6 months prior to diagnosis.

As shown in table1 the age of the children ranged from 1 to 14 years with a mean of 7.9 (SD = 3.9) years. Two hundred (52.08%) of the children of these parents/caretakers were females and 184(47.92%) were males. Concerning marital status of parents/caretakers 334(87%) children were living with currently married parents/caretakers.

Sixty (15.6%) of parents were illiterate, 31(8.1%) can only read and write, 134(34.9%) attended primary school, 102 (26.6%) attended high school and 57(14%) have attended college education.

The monthly income of the family was below 150 Birr for 7% of the participants, 46.6% had income in the range of 651-1400 Birr, 19.5% between 1400-3500 Birr and 2.1% were above 3500 Birr.

Knowledge of oral health: About two-third (255) of the parents/caretakers were informed on the importance

of oral hygiene. Among the total respondents, 273(71.1%) thought toothache treatment to be as important as treatment of any other organ of the body, while 92(24%) did not think so and 19 (4.9%) did not know. Concerning the necessity of visiting the dentist regularly, 78(20.3%) knew that it is important, 83(21.6%) did not agree with its importance and 223 (58.1%) did not know (Table 2).

As shown in table 2, 271(70.6%) of parents thought that avoiding sweets can prevent tooth decay, 74(19.3%) did not think it will decrease the risk of tooth decay and 39 (10.2%) of them did not know. Only 70(18.2%) of parents/caretakers knew that tooth decay cab prevented by flourides while 44 (11.5%) did not know that fluorides can prevent dental decay. Furthermore, 270 (70.3%) did not know whether fluorides are beneficial or not in prevention of dental decay.

Table 1: **Socio-demographic characteristics of study subjects**

Characteristics	No.	%
Age group		
1 -5	125	32.5
6 -10	127	33.2
11-14	132	34.3
Sex		
Male	184	47.9
Female	200	52.1
Educational status of care givers		
Illiterate	60	15.6
Read & write only	31	8.1
Primary School	134	34.9
High School	102	26.6
Higher Education	57	14.8
Monthly income of caregivers		
<651 Birr*	122	31.7
651-1400 Birr	179	46.6
>1441 Birr	83	21.6

* 1 US Dollar is about 22 Birr

Table 2: **Parental/caretakers knowledge dental care**

Variables	Yes	No	Do not Know
Did you get information to look after your child's oral hygiene?	255 (66.4)	129 (33.6)	
Is treatment of tooth ache as important as any organ of the body?	273 (71.1%)	92(24%)	19(4.9%)
Do you think poor oral hygiene can complicate your child's heart condition?	66 (17.2%)	167 (43.2%)	151 (39.3)
Are regular visit to dentist necessary?	78(20.3%)	83(21.6%)	223(58.1%)
Tooth decay can be prevented by			
• Tooth brushing	317(82.6%)	25(6.5%)	42(10.9%)
• Reduced use of sweets	271(70.6%)	74(19.3%)	39(10.2%)
• Use of Fluoride	70(18.2%)	44(11.5%)	270(70.3%)
Do you know what infective endocarditis is?	32 (8.3%)	352 (91.7%)	
Are you aware that your doctor may need to prescribe antibiotics if your child needs dental procedure	36 (9.4%)	348 (90.6%)	
Are you interested in education about importance of oral health on general well being especially of the heart	362 (94.3%)	22 (5.7%)	

Among the total participants, 66(17.2%) thought that poor oral hygiene can complicate a child's heart condition while 167(43.2%) did not think so and the rest, 151(39.3%), did not know (Table 2). Over 90% were not aware that their doctor may prescribe antibiotics if their child undergoes a dental procedure.

Even though majority,317 (82.6%),of the parents/caretakers were aware of the benefits of tooth brushing (Table2), only 108(28.1%) of their children used toothbrush and paste. Among those who claimed to use tooth brush, 66(61.1%) brush in the morning only, 3(2.8%) brush only before bed, 16(14.8%) brush at other time of the day while only 23(21.3%) brush twice daily, in the morning and before bed. The remaining parents/caretakers reported that their children used mouth wash 182(47.4%) though they used plain water, while 89(23%) used tooth pick and 5(1.3%) liked using charcoal (Table 3).

The reason for not brushing teeth among the majority of caretakers (198, 71.7%) was that they did not think it was necessary. Lack of availability was mentioned by 53(19.2%) caretakers and unaffordability by 15(5.4%), while nearly a quarter had variety of reasons (Table 3).

The role of the parents in the supervision of their children's oral hygiene was also poor with only 19(4.9%) parents reportedly brushing their children's teeth and 126(32.8%) watching and advising their children during tooth brushing. One hundred fifty (39.1%) only advised but did not watch their children as their brushed their teeth, while the rest indicated that

they did not care to supervise their children's oral hygiene practice (Table 3).

As shown in table 3, only 18(4.7%) of children had dental visit in the last twelve months while 320 (83.3%) have never visited a dentist. Regarding the frequency of dental visit, 4(1%) had regular dental visit, 52(13.5%) visited a dentist only when in pain, and 8(21%) visited a dentist occasionally. The reasons given for no regular dental visits were high cost 19(4.9%), no nearby dental clinic 4(1%), lack of time 2(5%), and perceived unimportance. Fifty one (13.3%) of the participants however did not have any specific reason.

Table 3: **Parental/caretakers practices of dental care**

Variables	No	%
Oral hygiene methods used		
• Tooth brush & paste	108	28.1
• Mouth wash	182	47.4
• Tooth picks	89	23.2
• Others	5	1.3
Brushing interval		
• In the morning	66	61.1
• Before bed	3	2.8
• Before bed &at morning	23	21.3
• Other times	16	14.8
Reason for not brushing		
• Doesn't think it's necessary	198	71.7
• Could not afford	15	5.4
• Others	63	22.8
Role of parent in supervision of oral hygiene		
• Parents watch &advice	126	32.8
• Parents only advice but do not watch	150	39.1
• parents brush their child's teeth	19	4.9
• Parents never cared	89	23.2
Have you taken your child to a dentist in the last 12 months	18	4.7
• Yes	366	95.3
• No		
How often do you visit the dentist		
• Regularly	4	1.0
• When in pain	52	13.5
• Occasionally	8	2.1
• Never	320	83.3
Reasons for not visiting the dentist		
• High cost	19	5.0
• No nearby clinic	4	1.1
• No time	2	5
• Don't think it is important	304	80.0
• No specific reason	51	13.4

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Discussions

Oral disease is a major health problem worldwide, but in Ethiopia there is very little epidemiological scientific data concerning oral disease and its implications. In this study one third of the of parents were not informed on how to look after their children's oral hygiene (table 2). The bulk of the participants were aware of the benefits of tooth brushing and reduced intake of sweets, however, only 28.1% of the parents practiced tooth brushing of which 21.3% brushed twice daily. This is not satisfactory as most of the children were not using tooth brush and those using practiced it irregularly .This was concurrent with a Nigerian study. Knowledge on the use of fluorides observed in this study was much lower than that reported in the Nigerian study (68.3% Vs 18.2%) and a study done at Guys hospital in London (10,15). In contrast to our study, the habit of using tooth brush was better in India (16). Parents failure to supervise their children's oral health has important contribution to children's oral hygiene and dental health.

In this study the findings were also comparable with other studies with regard to poor knowledge of parents about dental carries (14,17,18). A good number of subjects (71.1%) agreed on the fact that treatment of tooth ache is as important as treatment of any organ of

the bodysimilar with the result observed in an Indian study (18).

A previous study showed that fewer children with congenital heart disease had parental help with tooth brushing compared to controls (10). The practice towards regular dental visit was greatly disappointing as majority (83.3%) of the participants had never visited the dentist, while a small percentage visited when in pain and few visited occasionally. The reasons for the irregular, infrequent or no dental visits was that most of the parents did not perceive it as being important, some had no specific reason, small percentage claimed the visits would be costly and others did not have time or there was no dental clinic in the nearby. Only 18(4.7%) of the participants have visited a dentist in the last 12 months which is not unexpected as 80% do not think it is important to visit a dentist (table 3). This result though unsatisfactory was not peculiar to our set up and was concurrent with the results seen in other developing countries like India and Nigeria (15,16) and even in developed countries though it was relatively better (10).

Over 94% of the respondents showed considerable willingness to seek information on the importance of oral hygiene and its impact on general wellbeing and the wellbeing of the heart in particular (table 2). However, 5.7% percent of the respondents need motivation to seek information on oral hygiene and dental care practices. In this study, parents' lack of awareness on IEwas widespread and there was poor knowledge when it came to recognizing the relationship between poor oral hygiene and complication of heart conditions in children. Most parents were also unaware that dentists prescribe antibiotics to a child who requires a dental procedure. This was also reflected in a Brazilian study which assessed the knowledge of parents on IE where only 34% of parents satisfactorily responded about IE but majority of (72%) the parents knew about the need for prophylactic antibiotics (13). This difference may be related to the difference in knowledge about health in our society compared to Brazil. In a study from Iran, almost all parents who took part in the study were aware of the practice of prescribing prophylactic antibiotics prior to dental procedures (17), On the other hand, outcomes from an Indian and Nigerian studies were similar to our study, where there was poor awareness around antibiotics before dental procedures (15,16). This knowledge gap needs to be improved as only about a third of the study subjects had professional advice even in developed countries (10).

In conclusion, it is shown that the knowledge and practice of parents of children with heart disease on oral health and dental care is significantly poor. The participants were not informed on the importance of oral hygiene with regards to the prevention of IE. Thus, every effort should be made to educate parents thoroughly on the importance oforal health care andregular preventive dental visit to prevent the risk of IE.

Acknowledgments
We extend our gratitude to the Department of Pediatrics and Child Health for facilitating the research process. We also thank the patients and their parents/ caretakers for their full cooperation to participate in the study.

Competing interests: Both authors declare no conflict of interest.

Author's contribution:
SH wrote the proposal, conducted the study, and performed the statistical analysis and drafted the manuscript. AM conceived, designed the study, participated in the preparation the manuscript. All authors read and approved the final manuscript.

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