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ROLE OF ORAL HYGIENE ON OCCURRENCE OF RHEUMATIC FEVER AMONG BANGLADESHI CHILDREN

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Abstract: *Oral hygiene is the practice of keeping the mouth clean and healthy by brushing and flossing to prevent tooth decay and gum disease This case control study was aimed to compare oral hygiene practices and oral health status between Rheumatic Fever case and control group among Bangladeshi Children and to assess socio –demographic and environmental factors influencing Rheumatic fever. Among 124 children 62 rheumatic fever cases of 5-15 years of age children were taken; 62 children of the same age without rheumatic fever were chosen as control group. The mean ± SD age of the children was 10 ± 2.41 years with a range between 6 and 15 years of age and 56 (45.2%) were male and 68(54.8%) were female. Regarding the method of tooth brushing 45.2% of rheumatic fever cases practiced. Satisfactory method of tooth brushing and only 12.9% of the control , so there was significant difference in method of tooth brushing between two groups (x^2=15.557.p=0.00). Female 62.9% were more affected by rheumatic fever than males (37.1%). Fever and joint pain were the most common sign and symptoms of rheumatic fever. Rheumatic fever occurrence was more in the children whose mothers were housewives (x^2=11.090; P=0.011).*

Keywords: *Oral hygiene, Rheumatic fever, Tooth brushing*

Introduction

Rheumatic fever and rheumatic heart disease is the commonest cause of cardiac morbidity in children of developing countries[1]. In Bangladesh, 95% of the people are not all aware of their oral hygiene and dental care. Oral hygiene is defined as methods and procedures for the removal-of soft deposits from the teeth and surrounding tissue[2]. This lack of knowledge results in the lack of care of their oro-dental hygiene and thereby different types of oro-dental disease are commonly seen among them[3].The bio-ecology of Rheumatic Fever and Rheumatic Heart Disease includes Illiteracy, poverty, overcrowding, poor sanitation, poor oral health, inadequate housing; with increased number of children exposed to streptococci beta haemolyticus and under nourishment[4-7].Poor oral hygiene and periodontal infections may spread hearth threatening bacteria in the absence of dental process. In poor oral Health conditions, bacteria from the mouth can enter the bloodstream and can affect heart causing rheumatic heart disease[8,9]. The purpose of the present study was to assess the relationship between Rheumatic Fever and oral hygiene and oral health among the Bangladesh children of 5-15 year-age group.

Materials and Methods

Case-Control study between Rheumatic Fever cases of 5-15 years age group studying in Holy Crescent School in Bonosree, Rampura, Dhaka; and those patients of same age group also studying in same school without Rheumatic Fever. The total period of the study was from July to December, 2013. Data were collected from "10th September to 20" September, 2013.Both male and female children between 5 to 15 years of age were included in the study population. This sample size was calculated according to "Sample size determination in health studies". So, 62 cases of Acute Rheumatic Fever of 5-15 year-age group & 62 control of same age group without Rheumatic Fever. Data collected by face-to-face interview questionnaire and clinical examination check-list. The examination of teeth-gums, tongue, oral mucosa and tonsils was carried out in a normal chair with the help of a torch light. After proper verification, the data were entered into computer by using software SPSS Win Version 13.Data was analyzed according to the objectives of the study.

Result

Table 1: Distribution of Case as Control by Age

Age in Years	Case of Control		Total and present
	Case %	Control	%
6	3.2	8.1	5.6
7	6.5	16.1	11.3
8	11.5	16.1	13.7
9	6.5	19.4	12.9
10	6.5	9.7	8.1
11	17.7	9.7	13.7
12	24.2	12.9	18.5
13	8.1	6.5	7.3
14	11.3	1.6	6.5
15	4.8	00	2.4
Total	100.0		100.0

The respondents of the study of both groups were children aged between 6 and 15 years. The mean ±SD age of the children was 10±2.41 years. Out of total 124 respondents, 45.2% were males and 54.8% were females. In cases, 37.1% were males and 62.9% were females and in control group, 53.2% were male and 46.8% were females.

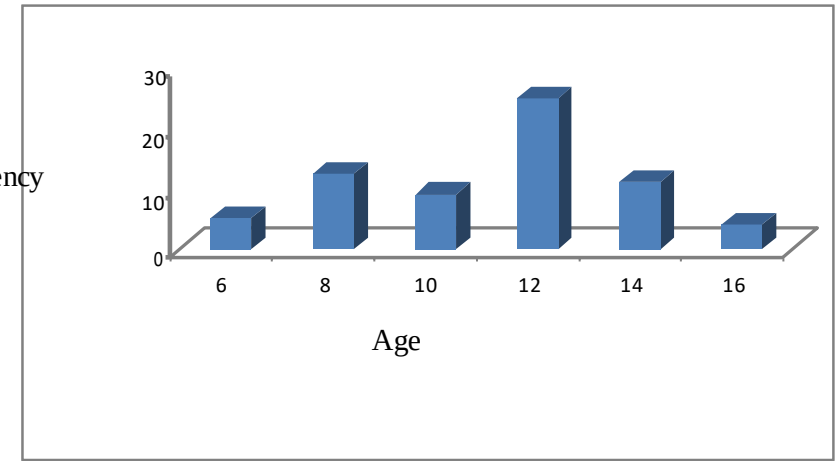

Figure 1 show that minimum age is 6 years and maximum age is 15 years .The frequency of age rheumatic fever cases was found to be normally distributed around the mean.

Oral hygiene of the respondents were determined by daily tooth brushing ,regularity of tooth brushing ,frequency, timing, method and material used for tooth brushing .It was observed that almost all the respondents brush their teeth daily.

Table 2 :Distribution of Respondents by their age and Frequency of Tooth Brushing.

Age in Years	Frequency of tooth brushing				Total	Statistics
	0	1 time	2 times	3 times		
6	1	6	1	2	7 (5.6)	
7		9	5	1	14 (11.3)	
8		12	3	1	17 (13.7)	
9		10	5	1	16 (12.9)	$x^2 = 27.95$
10		7	2		10 (8.1)	df = 27
11		7	9		17 (13.7)	p = 0.414
12		20	3		23 (18.5)	
13		5	4		9 (7.3)	
14		3	4		8 (6.5)	
15		2	1		3 (2.4)	
Total	1 (0.8)	81 (65.3)	37 (29.8)	5 (4)	124 (100.0)	

It was found that the frequency of tooth brushing was changing with their age. At the age of 11 years, 9 respondents brushed their teeth twice a day. At the age of 7 years and 9 years, 5 respondents from each age group brushed their teeth twice a day.

Table 3:Timing of Tooth Brushing on Daily basis by the Respondents.

Timing of tooth brushing	Case	Control	Total	Percent Total
Morning	41	3	81	65.3
Morning & evening	2	3	9	7.3
Morning & before sleep	18	13	28	22.6
Morning after lunch & evening	1	4	5	4.0
Morning System		1	1	0.8
Total	62	62	124	100.00

Table 4: Time spent for tooth bruising by the respondents:

Timing of tooth brushing	Case	Control	Total	Percent Total
1 Minute	1	3	4	3.2
2 Minute	6	3	9	7.3
3 Minute	11	13	24	19.4
4 Minute	2	1	3	2.4
5 Minute	27	21	48	38.7
More than 5 minutes	15	21	35	29.0
Total		62	124	100.00

Out of 124 respondents, 48 (38.7%) brushed their teeth for 5 minutes and 36 (29%) brushed their teeth for more than 5 Minutes for one session. Average time spent was 4.53 Minutes.

Table 5: Materials used for tooth brushing.

Materials of tooth brushing	Case	Control	Total	Percent Total
Tooth brush & tooth paste	41	38	80	64.5
Tooth brush & tooth powder	8	11	19	15.3
Finger &charecoal	5	3	8	6.5
Finger & tooth powder	2	1	3	2.4
Finger & Tooth paste		1	1	0.8
Ash	1	2	3	56
Finger & Tooth paste & Ash	3		3	2.4
Other	1	6	7	2.4
Total		62	124	100.00

Table 6: Manner of Tooth Brushing:

Manner of tooth brushing	Case	Control	Total	Percent Total
Upper-lower	21	6	27	21.8
Side-side	41	56	97	78.2
Total	32	62	124	100.00

Among the 124 respondents, 97 (78.2) brushing their teeth from side and to side and right manner of brushing upper lower- was practiced by 27 (21.8%) respondents.

Table 7: Distribution of Dental Problems among the Respondents

Dental Problems		Case	Control	Total Frequency	Percent	Statistics
Dental Problems	Present	17 (27.4)	14 (22.6)	31	25.0	$x^2 = 1.008$ df=1 p = 0.315
	Absent	45 (72.6)	48 (77.4)	93	75.0	
	Total	62 (1.6)	62 (100.0)	124	100.0	
Oral Problems	Present	1 (27.4)	62(100.0)	1	0.8	$x^2 = 1.008$ df=1 p = 0.315
	Absent	61 (98.4)	48 (77.4)	123	99.2	
	Total	62 (100.)	62 (100.0)	124	100.0	

Table 7shows that 25% of the total respondents have oral problems. Between case and control, 27.4% of case and 22.6% of the control have dental problems. So there is no significance difference between two groups.

Table 8: Condition of Gums, Oral Mucosa, Tongue and Tonsils among Respondents.

Condition of the oral tissues		Case	Control	Percent	Statistics
GUMS	Normal Inflammation Gingivitis	57 (91.9) 5 (8.1)	48 (77.4) 1 (1.16) 13 (21.0)	105 (84.7) 1 (0.8) 18 (14.5)	$x^2 = 5.327$df=2 p = 0.070
	Total	62 (100.0)	62 (100.0)	124	
ORAL MUCOSA	Normal Coated Ulceration	62 (100.0)	55 (88.7) 6 (9.7) 1 (1.6)	117 (94.4) 6 (4.8) 1 (0.8)	$x^2 = 7.419$df=2 p = 0.024
	Total	62 (100.0)	62 (100.0)	100.0	
TONGUE	Normal Coated	62 (100.0)	58 (93.5) 4 (6.5)	120 (96.8) 4 (3.2)	$x^2 = 4.133$df=2 p = 0.042
	Total	62 (100.0)	62 (100.0)	124	
TONSILS	Healthy Unhealthy	56 (90.3) 6 9.7)	55 (88.7) 7 (11.3)	111 (89.5) 13 (10.5)	$x^2 = .086$ df=1 p = 0.769
	Total	62 (100.0)	62 (100.0)	124	

Table 8 shows that among the cases, 57(91.9%) had normal gums and among the control, 48(77.4%) had normal gums. Control of the oral mucosa was normal in all of the cases and 6(9.7%) from control group had coated oral mucosa. Condition of the tongue was normal in all of the cases but 4(6.5%) respondent from the control group had coated tongue.

Table 9: Visit to Dental Surgeon Among Respondents

Visit to dental surgeon		Case	Control	Total Frequency	Percent	Statistics
Regular visit to dental surgeon	Yes No	7(11.3) (88.7)	3 (4.8) 55 (95.2)	10 93	8.1 91.9	$x^2 = 1.740$df=1 p = 0.187
	Total	62 (1.6)	62 (100.0)	124	100.0	
Frequency of visit to dental surgeon	0 1 2 5	56 (90.3) 1 (1.6) 4 (6.5) 1 (1.6)	60 (96.8) 2 (3.2)	116 1 6 1	93.5 0.8 4.8 0.8	$x^2 = 2.805$df=3 p = 0.423
	Total	62 (100.)	62 (100.0)	124	100.0	

Table 9 shows that among all the respondents 8.1 had regular visit to dental surgeon .Between case and control, cases,(11.3%) had more regular visit to dental surgeon then control (4.8%).

Table 10: Signs and Symptoms of Rheumatic Fever Cases

Signs and Symptoms	Frequency	Percent
Fever and joint pain	46	74.2
Fever, joint pain and sore throat	13	21.0
Fever, joint pain & Cough	1	1.6
Fever, joint pain & vision problem	1	1.6
Fever, joint pain and chest pain	1	1.6
Total	62	100.

Table 10 shows that among the RF cases, fever and joint pain is present in 100% cases.

Discussion

In this study, all most all the respondents (99.2%)brush their teeth on the regular basis Regarding with the frequency of tooth brushing 68 female respondents (54.85%) and 55 male respondents (44.35%) brush their teeth from once a day to thrice a day. This findings is similar with study by Kazi MahdihUl Alam[12] and study by D. Blay[13]. The mean age of Rheumatic fever case was 10±2.37 years; minimum 6 years and maximum15 years age children have risk of rheumatic fever. A study prevalence of RF and RHD among school children done by Haque[3,11] showed that maximum number of (51%) of RF and RHD cases were in the age group 11-15 years and 46% were in the age group 5-10 years. Regarding the method of tooth brushing, 45.2% of RF cases practiced satisfactory method of tooth brushing and only 12.9% of the comparison group was found to be satisfactory. There was significant difference ($p < 0.05$) between the two groups about oral mucosa and condition of the tongues. But, it did not indicate that there was relationship between RF and condition of oral mucosa and tongue.

Conclusion

On the basis of the results obtained and discussion with regard to the oral hygiene, oral health, socio-demographic characteristics among 5-15 years old Bangladeshi children, the study concluded that: (1) the education of mother had significant influence on the frequency of tooth brushing of their children. (2) There was significant difference in manner and method of tooth brushing between Rheumatic Fever cases and control. (3)Females (62.9%) were more affected by Rheumatic Fever than males (37.1%), (9%) in this study, fever and joint pain was the most common sign and symptom of the Rheumatic Fever cases.

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