

Assessment of oral cleanliness and gingival condition among intermediate Thamarian school students

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ABSTRACT

Aims: To evaluate the oral cleanliness and gingival health among intermediate school students and to find if there was any variation between age and sex groups in Thamar-Yemen. **Material and Methods:** A sample of 596 students aged 13–15 years old (308 males, 288 females) were examined using plaque index score by Silness and Løe (1964) and gingival index by Løe and Silness (1963). The clinical examinations were carried out in the school using plane mouth mirrors, WHO periodontal probes to detect the dental plaque and gingival health. **Results:** The mean plaque score for the total sample was 0.90. The plaque index was increasing with age, females reported less mean plaque scores than males with statistically significant difference between them. The mean gingival score was 0.52 for the total sample and it was increasing with age with statistical significant difference. Females also reported less gingival scores than males with statistical significant difference between them. The study revealed that 45.1 % of the total sample did not brush their teeth. **Conclusion:** Gingival and periodontal diseases are indirectly related to the exposure of bacterial plaque for long time which calls for integrated, coordinated planning of preventive and treatment services as an urgent priority.

Key Words: Oral cleanliness, plaque index, gingival index, intermediate school students.

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INTRODUCTION

Gingival inflammation is present in most communities,⁽¹⁾ and it is universal in young people⁽²⁾ and widespread in children.⁽³⁾ The prevalence of gingivitis increases with increasing age, beginning in deciduous dentition and reaching a peak at puberty.⁽⁴⁾ The time of puberty is between 12–15 years old. During this time, progression of periodontal breakdown may be observed.⁽⁵⁾

The association may be a reflection of the aging progress *per se*, but it is more likely an indirect reflection of the length of time the periodontal structures have been exposed to bacterial plaque.⁽⁶⁾

The lack of resources from which this country suffers underlines the necessity for a careful planning of oral health services and emphasizes the need for prevention and control rather than a curative and rehabilitative approach.^(7, 8)

The trend for this disease in this developing country calls for integrated, coordinated planning of preventive and treatment

services for oral health services as an urgent priority.⁽⁹⁾

The aims of this study were to evaluate the oral cleanliness and gingival health among intermediate school students and to find if there was any variation between age and sex groups in Thamar-Yemen.

MATERIAL AND METHODS

This study was conducted in Thamar-Yemen during the period between October 2001–January 2002.

The sample of the study was composed of 596 intermediate school students ages 13–15 years old (308 males and 288 females) selected randomly from four intermediate schools (2 for boys and 2 for girls). The sample was divided into 3 age groups; namely, 13, 14, 15 years old, which represents the first, second and the last year of intermediate schooling. Each student was asked about frequency of tooth brushing by direct contact whether infrequent, once, twice or more. Clinical examinations were carried out in the school under

adequate daylight. Each student was sit in upright position in front of the examiner and examination was done using plane mouth mirrors, WHO periodontal probes to detect the dental plaque and gingival health and 0.2 % Septicin for sterilization of instruments.

The indices used for assessment of gingival and periodontal conditions were as follow:

1) Plaque index by Silness and Loe⁽¹⁰⁾ to evaluate the oral hygiene of the students:

Score 0: No plaque in gingival area.

Score 1: A film of plaque adherent to the gingival margin and the adjacent area of the tooth. The plaque may only be recognized by running a probe across the tooth surface.

Score 2: A moderate accumulation of soft deposit within the gingival pocket on the tooth and gingival margin. This can be recognized with the naked eye.

Score 3: A heavy accumulation of plaque within gingival pocket or on the tooth and gingival margin.

2) Gingival index by Loe and Silness⁽¹¹⁾ to evaluate the gingival health of the students:

Score 0: Normal gingiva.

Score 1: Mild inflammation: This includes slight change in colour, slight oedema, no bleeding on probing.

Score 2: Moderate inflammation: Redness, oedema, bleeding of the gum on probing.

Score 3: Severe inflammation: Marked redness, oedema, ulceration and there is a tendency for spontaneous bleeding.

The statistical analysis of the data included the mean and standard error for plaque and gingival indices using one way analysis of variance (ANOVA) and Duncan's Multiple Range Test. Comparing between total males and females was done using F-ratio test. Differences were tested for their significance for plaque index and gingival index at $p \leq 0.01$ level.

RESULTS

There were 596 intermediate school students comprising 51.67% males and 48.33% females. The population sample was divided into 3 age groups (Table 1). The number and percentage of children according to the frequency of tooth brushing were shown in Table (2). The study indicated that 45.1% of the sample did not brush their teeth. Females reported more frequently brush their teeth (33%) than males. Also the older age groups (14 and 15 years old) more frequently brushed their teeth (30% and 41%, respectively) than younger age group (28.7%).

Table (3) showed plaque index scores according to sex and age groups. The mean plaque for the total sample was 0.9 and males reported higher mean than females in all age groups and the total males also higher than total females with statistical significant difference at $p \leq 0.01$.

The study showed that the mean plaque increased with significant difference between 13 and 14 and between 13 and 15 years old.

Table (4) showed the mean gingival score index according to sex and age groups. The mean for the total sample was 0.52. Males reported higher mean gingival score than females. This difference was found to be significant at $p \leq 0.01$.

Table (1): Number and percentage of individuals distributed according to sex and age groups

Age Groups (Years)	Male		Female		Total	
	No.	%	No.	%	No.	%
13	100	32.46	108	51.92	208	34.89
14	108	54.54	90	45.45	198	33.22
15	100	52.63	90	47.36	190	31.87
Total	308	51.67	288	48.33	596	100

Table (2): Frequency and percentage distribution of individuals according to tooth brushing by sex and age groups

Age Groups (Years)		13		14		15		Total	
		No.	%	No.	%	No.	%	No.	%
Male	Never	62	62.0	64	59.3	71	71.0	197	64.0
	Infrequent	19	19.0	28	25.9	17	17.0	64	20.8
	Once	13	13.0	7	6.5	3	3.0	23	7.5
	Twice or more	6	6.0	9	8.3	4	9.0	19	7.8
Female	Never	38	35.2	19	21.1	15	16.7	72	25.0
	Infrequent	39	36.1	44	48.9	38	42.2	121	42.0
	Once	22	20.4	11	12.2	17	18.9	50	17.4
	Twice or more	9	8.3	16	17.8	20	22.2	45	15.6
Total	Never	100	48.0	83	41.9	86	46.4	269	45.1
	Infrequent	58	27.8	72	36.3	55	26.7	158	31.0
	Once	35	16.8	18	9	20	10.8	73	12.2
	Twice or more	15	7.2	25	12.6	24	12.9	69	11.5

Table (3): Analysis of variance and Duncan's Multiple Range Test of plaque index according to sex and age groups

Source	df	Sum of square	Mean Square	F-value	p-value
Between Groups	2	0.852	0.426		
Within Groups	285	37.367	0.131	3.249	0.040
Total	287	38.219			

Age Groups (Years)	Mean \pm SE		
	Male	Female	Total
13	0.96 \pm 0.04 a	0.70 \pm 0.03 a	0.83 \pm 0.02 a
14	0.99 \pm 0.03 a	0.83 \pm 0.04 b	0.92 \pm 0.03 b
15	1.11 \pm 0.04 b	0.79 \pm 0.05 ab	0.96 \pm 0.03 b
Total	1.02 \pm 0.02 *	0.77 \pm 0.02	0.90 \pm 0.02

Means with the same letters were statistically not significant ($p > 0.05$).

* Significant difference between males and females as total at $p \leq 0.01$.

Table (4): Analysis of variance and Duncan's Multiple Range Test of gingival index according to sex and age groups

Source	df	Sum of Square	Mean Square	F-value	p-value
Between Groups	2	1.889	0.944		
Within Groups	285	40.006	140	6.728	0.001
Total	287	41.895			

Age Groups (Years)	Mean \pm SE		
	Male	Female	Total
13	0.55 \pm 0.04 a	0.38 \pm 0.03 a	0.46 \pm 0.02a
14	0.53 \pm 0.03 a	0.54 \pm 0.04 b	0.53 \pm 0.03 ab
15	0.60 \pm 0.03 a	0.55 \pm 0.05 b	0.57 \pm 0.03 b
Total	0.56 \pm 0.02	0.48 \pm 0.02	0.52 \pm 0.02

Means with the same letters were statistically not significant ($p > 0.05$).

DISCUSSION

Tooth brushing data indicated that about 45.1% of the total sample did not brush their teeth. The percentage of subjects brushed their teeth is less than other studies carried out in developing and developed countries; ⁽¹¹⁻¹⁵⁾ where in Iraq (Mosul), it was 60% ⁽¹²⁾ and in Finland it was 80%. ⁽¹⁵⁾ As in most of studies, females reported more frequently brushed their teeth than males, especially in older age groups because females are consistently more likely to brush frequently than males. This was in accordance with many studies. ⁽¹³⁻¹⁹⁾

The mean plaque score for the total sample was 0.9. There was a significant difference between the three ages. This finding was in agreement with other studies carried out in developing and developed countries. ⁽²⁰⁻²³⁾ Females reported less mean plaque score than males with statistical significant difference because females care much about their looking and the amount of plaque is influenced by the person's oral hygiene and by various plaque retention factors. This was in accordance with other studies. ^(20, 24, 25)

The mean gingival score was 0.52 for the total sample and it increased with age, because tooth brushing is associated with grouping and personal hygiene. These results came in agreement with those of other studies. ⁽²⁶⁻²⁸⁾

This study showed that the gingival health in females was better than males with statistical significant difference, because females care much about their looking and they brush more frequently than males. ^(14, 29, 30) This confirmed the finding of other studies carried out in developing countries that females reported better periodontal conditions than males, ⁽³¹⁻³⁵⁾ and many studies in developed countries. ^(27, 36-38)

CONCLUSION

Gingival and periodontal diseases are indirectly related to the exposure of bacterial plaque for long time which calls for integrated, coordinated planning of preventive and treatment services as an urgent priority.

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