Oral Health Awareness and Status Among Universiti Kebangsaan Malaysia First Year Dental Students

ZAMIRAH ZAINAL ABIDIN, SHAHIDA MOHD SAID, IRMA SHIDA ABU SAMAH & MOHD YUFI ARIANDI MOHD YUSOFF

ABSTRAK

Kesedaran dan status kesihatan mulut di kalangan pelajar pergigian Universiti Kebangsaan Malaysia tahun satu telah dikaji. Tujuh puluh tiga subjek menjalani dua komponen penilaian: borang kaji-selidik untuk menilai kesedaran dan amalan kesihatan mulut dan pemeriksaan klinikal status kesihatan mulut. Indeks-indeks yang digunakan termasuk Plak, Kalkulus, Community Periodontal Index for Treatment Needs (CPITN) dan total score of Decayed, Missing, Filled and teeth indicated for Extraction (DMFX[T]). Lebih daripada 90% subjek dilaporkan memberus gigi dua kali atau lebih dalam sehari dan menggunakan alat-alat pembersihan yang lain. Mereka juga mengetahui kepentingan keadaan mulut yang sihat, pelbagai penyebab dan pencegahan kerosakan gigi dan penyakit-penyakit gusi. Walaupun 70.3% merasakan mereka memerlukan rawatan pergigian, majoriti (81.9%) berjumpa dengan doktor gigi hanya apabila dirasakan perlu. Pemeriksaan klinikal menunjukkan skor yang rendah iaitu 0.99 min indeks plak dan 0.40 min indeks kalkulus, sementara 80.8% daripada subjek mempunyai penimbunan kalkulus yang sederhana. Kod 2 indeks CPITN adalah yang tertinggi (70.3%) di antara subjek. Jumlah DMFX adalah 291, dengan min skor 0.14/subjek, dan komponen kerosakan adalah yang tertinggi (D=186 batang gigi). Ini mengesyorkan bahawa subjek mempunyai kesedaran kesihatan mulut yang memuaskan, dan juga status kesihatan mulut yang baik.

Kata kunci: Kesedaran kesihatan mulut, pelajar pergigian, Community Periodontal Index for Treatment Needs (CPITN), Total Decayed, Missing, Filled and indicated for Extraction (DMFX[T]), plak, kalkulus.

ABSTRACT

The oral health awareness and status among the Universiti Kebangsaan Malaysia first year dental students were studied. Seventy-three subjects underwent two components of assessment: questionnaire assessing oral health awareness and behaviour, and clinical examination of oral health status. Indices used including Plaque, Calculus, Community Periodontal Index for Treatment Needs (CPITN) and total score of Decayed, Missing, Filled and teeth indicated for Extraction (DMFX[T]). More than 90% of the subjects were reported to brush their teeth twice or more daily and used supplemental cleaning tools. They also knew the importance of healthy oral condition, the various causes and prevention of tooth decay and gum diseases. Although 70.3% felt they need dental treatment, the majority (81.9%) visited the dentist only when they feel it is necessary to

do so. Clinical examination showed low scores of 0.99 and 0.40 for mean plaque and calculus indices, respectively, while 80.8% of the subjects have mild calculus accumulation. Code 2 of the CPITN Index was the highest (70.3%) among the subjects. The total DMFX was 291, with mean score of 0.14 per subject and the decayed component was the highest (D=186 teeth). These findings suggest that the subjects have acceptable oral health awareness, and also good existing oral health status.

Key words: Oral health awareness, dental students, Community Periodontal Index for Treatment Needs (CPITN), Total Decayed, Missing, Filled and indicated for Extraction (DMFX[T]), plaque, calculus.

INTRODUCTION

Oral health has been clearly shown to be one of the most important factors that are responsible for general health and well-being. Good oral health knowledge and awareness contributes to good oral health behaviour, which in turn results in good oral health status (Tada et al. 2004; Petersen 2003; Al-Ansari et al. 2003). Many people claim that they know a lot about dental facts, including how to keep their oral hygiene to the best level. In spite of that, dentists in Malaysia still see a lot of cases pertaining to dental caries and periodontal diseases, which is mainly related to poor oral hygiene and lack of dental knowledge. In addition, it has been observed that numerous campaigns in promoting oral health awareness to the public by dental healthcare providers have always received poor responses and yielded results less than hoped for.

Dental caries and periodontal disease are known to be the most common oral diseases worldwide. Dental caries or tooth decay is described as a progressive damage to tooth surface caused by acid produced by bacteria. The damage is through decalcification of the enamel matrix, which later moves into other tissue structures (Dofka 2000). Meanwhile, periodontal disease is an inflammatory condition caused by bacterial infection in the periodontium. Therefore it is not surprising that maintaining good oral hygiene, by means of personal and professional care, is considered to be the best prevention for both dental caries and periodontal diseases (Albandar 2002).

In a global survey reported by World Health Organisation (WHO) conducted among Malaysians, the total score of decayed, missing, filled and teeth indicated for extraction due to caries (DMFX[T]) index for 12-year-olds was grouped as low (1.2 – 2.6), while for 35-44-year old adults was moderate (9.0 -13.9) (Petersen 2003). In the 2000 dental survey on Malaysian adults carried out by the Oral Health Division, Ministry of Health, Malaysia, caries prevalence was reported as 90.7%. Only 9.8% of the surveyed subjects were found to be periodontal disease-free. Moreover, 83.2% of them required instructions on correct oral hygiene care. This report suggested that the level of oral health status and knowledge of Malaysian population were still poor.

Based on the report above, there is a need to understand which of the many aspects that interplay in maintaining healthy oral environment that needs to be improved. Other studies have suggested that this could be due to lack of knowledge or awareness (Farsi et al. 2003; El-Qaderi et al. 2004; Zhu et al. 2003), attitude (Spivak et

al. 2004; Schuller et al. 2003) or faulty oral hygiene practices/behaviour (Al-Wahadni et al. 2004; Shah et al. 2004; Zhu et al. 2003).

We decided to take up the task to find out the possible reasons, using fresh first year dental students who will represent the general population of university students. The aims of this cross-sectional study are to obtain basic information on oral health awareness, attitude and behaviour among first year Universiti Kebangsaan Malaysia (UKM) dental students, and also to evaluate their existing oral health status.

MATERIALS AND METHODS

SUBJECTS

The subjects for this study were seventy-three (n = 73) UKM first year dental students of the first semester of 2003/2004 session. Their age (average: 19 years old) and ethnicity are as shown in Table 1. The subjects undergone two components of assessment: (i) a self-administered questionnaire and (ii) clinical examination to determine their oral health status.

SURVEY PROCEDURE AND DESCRIPTION

The questionnaire was developed to gain information on (i) subjects personal details, (ii) oral health behaviour, (iii) dental service utilisation and (iv) oral health awareness. It was a close-ended questionnaire, with some of the questions permitted the subjects to choose more than one answer. It was pre-tested and revised on an appropriate sample of 10 subjects of non-dental related background. Each subject took an average of 10 minutes to complete the self-administered questionnaire prior to clinical examination.

CLINICAL EXAMINATIONS

Two examiners were employed for this purpose, and calibration was carried out between them to standardise readings of data. The percentage of agreement between the two examiners was 78%. Indices employed include (i) Plaque Index (Silness & Löe 1964), which was used to assess the thickness of plaque growth at the gingival margin of teeth; (ii) Calculus Index, which was used to assess the presence of calcified deposits on teeth (Greene and Vermillion 1964); (iii) Community Periodontal Index for Treatment Needs (CPITN), which was used to assess the periodontal health status (Ainamo et al. 1982) and (iv) Total Decayed, Missing, Filled and indicated for Extraction (DMFX[T]) to assess the caries prevalence of the subjects (Table 2). Plaque and calculus scores were recorded for six selected index teeth and surfaces. In the absence of an index tooth, the adjacent tooth was used as replacement.

DATA ANALYSIS

Frequency distributions of the subjects from the questionnaire data were analysed. For clinical findings, the means for DMFX, calculus and plaque index, together with frequency of distributions for calculus accumulation and CPITN scores were calculated. The analyses were carried out using SPSS version 12.0 software.

RESULTS

Most subjects reported that they brushed their teeth twice (46.6%) or more (50.7%) a day, compared to only 2.7% who brushed once a day. Flossing was the second highest method of teeth cleaning (47.1%), followed by mouth washes (44.3%), tooth picks (12.9%) and others (1.3%). The reasons cited for cleaning their teeth daily include to prevent tooth decay (38.4%), while preventing gum disease and as routine were accounted for 37% of the subjects each. Only 6.8 % said they did it to prevent bad breath.

The frequency of sweets consumption appeared to be quite high, with more than half (58.1%) of the subjects took sweets either daily or several times a week (Table 3). Some 33.8% consumed it once a week, 14.9% once a month, and only 1.4% said they never took sweets (Table 3).

Majority of the subjects, in which accounted for 81.9%, admitted they visited the dental clinics only when 'they feel it is necessary to do so'. Only 12.5% made it a habit to do regular check up, while the rest 5.6% had never been to the dental clinic before. Of those who made dental visits, 43.8% said their last visit was less than 6 months before this study was carried out, 16.5% made their last dental visit around 6-12 months ago and 39.7% admitted their last visit was more than a year ago.

Majority (79.2%) made the dental visits for routine check-up or cleaning. Other purposes of the visits included for tooth filling or extraction (40.3%), dental emergency such as dental pain (30.6%), appliances such as dentures and braces (2.8%) and other services, such as scaling (2.8%) (Table 4).

Oral health awareness of the study subjects was assessed by several questions, including their knowledge on causes and prevention of dental decay; causes, signs and treatment of gum disease and their views on the condition of their own teeth. More than 98% of the subjects knew that bacteria can cause dental decay. However, a small number of them (17.9%) thought that genetic factor plays a role in dental decay. Good oral health knowledge is also reflected in the next question of what the subjects think on how to prevent dental decay. More than 80% of the subjects said that tooth brushing and practising good oral hygiene are the two most effective ways of preventing dental decay (80.8% and 89%, respectively), followed by avoiding sweet foods (50%) and having regular dental checkups (58.9%) (Table 5).

Among the causes of gum disease, similar to dental decay, bacterial infection was again the most frequently cited cause by the subjects (89%), while 31.5% thought that genetic factor has a role in causing gum disease. Most of the subjects recognised painful gum (86.3%) and bleeding gum (84.9%) as the signs of gum disease. Lesser percentage of the subjects (27.4%) recognised teeth starting to fall out as one of the signs of gum disease. Antibiotics seem to be the treatment of choice for gum disease,

where 68.4% of the subjects thought so, compared to scaling (18.4%) and self healing (10.5%).

Sources of information on teeth cleaning included parents (64%), teachers (69.9%), reading materials (49.3%), television (32.9%) and during their dental visits (49.3%). When asked what they thought of their own teeth, almost all of the subjects (94.3%) felt that their teeth were very important asset. However, when asked of their opinion on the present condition of their teeth, only 27.4% thought that theirs were in 'good condition', 60.3% as 'average', followed by 12.3% as 'not in good condition'. Our study also found that 70.3% subjects felt they need dental treatment in the near future and out of those, 82.6% cited teeth cleaning as the needed dental treatment, followed by tooth filling (33.3%) and treatment of the gums (29%).

Figure 1 represents the mean of plaque index of the subjects, which is 0.99, with distribution skewed to the right. The calculus index was shown in Figure 2, with the mean score of 0.40. The direction of skewness is the same as in Figure 1.

Visual comparison of quality of calculus of the subjects revealed that 78% of them have mild accumulation, followed by moderate (18%) and abundant (4%) (Figure 3). The CPITN index in Figure 4 showed the scores among the subjects, with 70.3% of them have scores of 2 (Refer Table 1 for score indices). The DMFX scores show that the highest is the decayed component (D=186) followed by filled (F=86), missing (M=14) and those indicated for extraction (X=5), with total DMFX of 291 (Figure 5). The mean DMFX per subject in this study is 0.14.

DISCUSSIONS

The present study was targeted at the first year dental students by taking into consideration that they represent the young adult population who have yet to receive formal university level dental health education. Nevertheless, most of them would have received oral health education in school through the government health service system for instance.

Our questionnaire found that almost all of the subjects allegedly practise good oral hygiene habits, brushing teeth twice or more daily and using additional cleaning tools, mostly dental floss and mouthwash at least twice daily (Table 3). Majority of the subjects also indicated that they have good oral health awareness. Many of them knew that bacteria and food are the main causes of dental decay and that it can be prevented through good oral hygiene care, regular check-up and avoiding sweets. Although good number of them knew the causes and signs of gum disease, not many were aware of the treatment for the disease. This is supported by the findings that 70% of the subjects chose antibiotics as the treatment of choice for gum disease while 11% thought that the disease was self-healed (Table 5).

It is obvious that all subjects regarded their teeth as a very important asset, and majority of them felt that they need dental treatment in the near future (Table 5). Despite this perception, more than 82% of them admitted only going to the dental clinic when 'it is necessary to do so' while 6% never had been to a dental clinic before. However, our questionnaire did not pursuit the reasons so. Our findings did not come as

a surprise to us as it is generally accepted that dental visit is not a popular health-related activity for the Malaysian adults. In the Year 2000 National Oral Health Survey of Adults, in which it was reported that only about 60% of the subjects (total n = 10,891) with oral problems perceived the need to see the dentist while the rest did not. Of those who did not perceive any need for dental treatment, 26% did not want any treatment, 5% already had treatment done elsewhere and 9% reported that their oral problem had resolved by itself. Some of the reasons given for not seeking dental treatment were (i)there was no problem, (ii) the problem were not serious enough (iii) too busy to go to the clinic, and (iv) others, such as dental anxiety and cost of treatment.

The first year dental students were found to have a considerably acceptable oral health status. The mean DMFX is 0.14, much less than reported caries experience of the same age group, which was 8.8 to 4.4 from the year 1974 to 2000 (National Oral Health Survey of Adults, 2000). As for the periodontal status, although most of the subjects had high scores of 2 and a small percentage of score 3, these subjects only exhibit signs of gingivitis i.e. inflamed gums without attachment or bone loss observed. Meanwhile, the percentage of subjects needing simple oral hygiene instructions and scaling for treatment is 93.2 (Figure 4). This is slightly higher compared to 82.6% in year 1990 and 78.8% in year 2000 National Oral Health Survey for the same age group.

The other important finding that we found in our study was the role of parents, teachers and mass media in educating students on oral health care. Our subjects reportedly learnt how to clean their teeth mostly through their teachers and parents, and but much lesser through dental staffs, reading and mass media. Our findings agree with the suggestion that schools provide the most suitable environment to promote health education programmes (Spivak et al. 2004; Farsi et al. 2003) and suggest the need to inculcate better dental health education among university students as one of the strategies to improve oral health care in the country. We also feel that these can be achieved through appropriate training, good relationship and co-operation between many parties.

CONCLUSION

The oral health awareness and status of the studied subjects are acceptably good. However, there are still some areas that need to be improved in terms of awareness and attitude on oral health care. It is suggested that further study should be conducted to see any changes in their awareness, behaviour and status of the oral health after they have received formal tertiary level dental education in the faculty of dentistry.

ACKNOWLEDGEMENTS

We would like to thank the dental surgery assistants, Atikah Abdul Kadir and Wan Normawati Wan Hassan from the Department of Periodontology, Faculty of Dentistry, Universiti Kebangsaan Malaysia for their help throughout the clinical examinations.

REFERENCES

Ainamo, J., Barmes, D., Beagne, G., Cutress, T., Martin, J. & Sardo-Infirri, J. 1982. Development of the World Health (WHO) Community Periodontal Index of Treatment Needs (CPITN). *Int. Dental J.* 32: 281-291.

Al-Ansari, J., Honkala, E. & Honkala S. 2003. Oral health knowledge and behaviour among male health sciences college students in Kuwait. *BMC Oral Health* 3:2.

Albandar, J. M. & Rams, T. E. 2002. Global epidemiology of periodontal diseases: An overview. *Periodontol. 2000*. 29: 7-10.

Al-Wahadni, A. M., Al-Omiri, M. K. & Kawamura, M. 2004. Differences in self-reported oral health behaviour between dental students and dental technology/dental hygiene students in Jordan. *J. Oral Sci*. 46:191-197.

Dofka, C. M. 2000. *Dental terminology*. Delmar Publishers, Canada: Thomson Learning.

El-Qaderi, S.S. & Taani, D.Q. 2004. Oral health knowledge and dental health practices among schoolchildren in Jerash district/Jordan. *Int. J. Dent. Hygiene* 2:78-85.

Farsi, J. M. A., Farghaly, M. M. & Farsi, N. 2004. Oral health knowledge, attitude and behaviour among Saudi school students in Jeddah city. *J. Dent.* 32: 47-53.

Greene, J.C. & Vermillion, J.R. 1964. The simplified oral hygiene index. *J. Am. Dent. Assoc.* 68: 7-13.

Oral Health Division, Ministry of Health Malaysia. 2000. *National Oral Health Survey of Adults.*

Petersen, P.E. 2003. The World Oral Health Report 2003: continuous improvement of oral health in the 21st century – the approach of the WHO Global Oral Health Programme. *Community Dent. Oral Epidemiol.* 31 (Suppl. 1): 3-24.

Schuller, A. A., Willumsen, T. & Holst, D. 2003. Are there differences in oral health and oral health behaviour between individuals with high and low dental fear? *Community Dent. Oral Epidemiol.* 31: 116-21.

Shah, N. & Sundaram, K.S. 2004. Impact of socio-demographic variables, oral hygiene practices, oral habits and diet on dental caries experience of Indian elderly: a community-based study. *Gerodontol.* 21: 43-50.

Silness, J. & Löe, H. 1964. Periodontal disease in pregnancy.II. Correlation between oral hygiene and periodontal condition. *Acta Odontol. Scand.* 22: 121-135

Spivak, K., Hayes, C. & Maguire, J.H. 2004. Caries prevalence, oral health behaviour, attitudes in children residing in radiation-contaminated and –noncontaminated towns in Ukraine. *Community Dent. Oral Epidemiol*. 32:1-9.

Tada, A. & Hanada, N. 2004. Sexual differences in oral health behaviour and factors associated with oral health behaviour in Japanese young adults. *Public Health* 118: 104-109.

Zhu, L., Petersen, P.E., Wang, H.Y., Bian, J.Y. & Zhang, B.X. 2003. Oral health knowledge, attitudes and behaviour of children and adolescents in China. *Int. Dent. J*. 53: 289-298.

Zamirah Hj. Zainal Abidin
Department of Clinical Oral Biology
Shahida Mohd Said
Department of Periodontology
Irma Shida Abu Samah
Mohd Yufi Ariandi Mohd Yusoff
Faculty of Dentistry
Universiti Kebangsaan Malaysia
Jalan Raja Muda Abdul Aziz
50300 Kuala Lumpur.

TABLE 1. The distribution of subjects according to gender and ethnicity. Figures in parentheses indicate percentage of the total subjects studied.

		Ethnicity			
		Malay	Chinese	Others	Total
Gender	Male	9 (12.3)	2 (2.7)	1(1.4)	12 (16.4)
	Female	59 (80.8)	2 (2.7)	0 (0)	61 (83.6)
Total		68 (93.2)	4 (5.5)	1(1.4)	N=73 (100)

TABLE 2. Description of scores for Plaque, Calculus and CPITN indices.

	Score				
Index	**0**	**1**	**2**	**3**	**4**
Plaque	No plaque	A film of plaque adhering to the free gingival margin & adjacent area of the tooth. The plaque may only be recognised by running a probe across the tooth surface, not visible to the naked aye.	Moderate accumulation of plaque within the gingival pocket, on the gingival margin and/or adjacent tooth surface, which can be seen by the naked eye.	Abundance of plaque within the gingival pocket and/or on the gingival margin and adjacent tooth surface.	-
Calculus	No calculus `	Supragingival calculus covering not more than 1/3 of the exposed tooth surface being examined.	Supragingival calculus covering more than 1/3 but not more than 2/3 the exposed tooth surface, or the presence of individual flecks of subgingival calculus around the cervical portion of the tooth.	Supragingival calculus covering more than 2/3 of exposed tooth surface, or a continuous heavy bank of subgingival calculus around the cervical portion of the the tooth.	-
CPITN	Healthy periodontium	Bleeding observed	Calculus sub and supragingival detected on probing.	Pocket between 3.5 to 5 mm	Pocket >5mm

Note: Only the first part of the CPITN index was used for this study.

TABLE 3. Frequency distribution of the subjects on questions regarding oral health behaviour.

Questions	% of subjects (no.) (n=73)
Daily toothbrushing frequency	
Once	2.7 (2)
Twice	46.6 (34)
More than twice	50.7 (37)
Supplemental cleaning tools	
Floss	47.1(35)
Mouthwash	44.3 (32)
Toothpicks	12.9 (9)
Other tools	1.3 (1)
Frequency of using supplemental tools	
Once/day	33.8 (25)
Occasionally	43.1(31)
After every meal	6.2(4)
Objective of teeth cleaning	
Prevent tooth decay	38.4 (28)
Prevent gum disease	37.0 (27)
Prevent bad breath	6.8 (5)
Routine	37.0 (27)
Frequency of sweets consumption	
Daily	9.5 (7)
Several times a week	48.6 (35)
Once a week	33.8 (25)
Once a month	14.9 (11)
Never	1.3 (1)

TABLE 4. Frequency distribution of the subjects on questions regarding dental service utilisation.

Questions	% of subjects (no.) (n=73)
Frequency of dental visits	
Never	5.6 (4)
When necessary	81.9 (60)
Yearly	12.5 (9)
Last dental visit	
Less than 6 months ago	43.8 (32)
6-12 months ago	16.5 (12)
More than 12 months ago	39.7 (29)
Purpose of last dental visit	
Check up/cleaning	79.2 (58)
Filling/extraction	40.3 (29)
Dental emergency	30.6 (22)
Denture/appliance	2.8 (2)
Scaling/others	2.8 (2)

TABLE 5. Frequency distribution of the subjects on questions regarding oral health awareness.

Questions	% of subjects (no.) (n=73)
Causes of dental decay	
Bacteria	98.6 (72)
Calculus	57.5 (42)
Food	75.3 (55)
Systemic disease	39.7 (29)
Smoking	47.9 (35)
Genetic factor	17.8 (13)
How to prevent dental decay	
Good oral hygiene	89.0 (65)
Toothbrushing	80.8 (59)
Regular dental check-up	58.9 (43)
Avoid sweets	50.5 (37)
Causes of gum disease	
Bacteria	89.0 (65)
Calculus	56.2 (41)
Food	58.9 (43)
Systemic disease	48.6 (35)
Smoking	42.5 (31)
Genetic factor	31.5 (23)
Signs of gum disease	
Teeth fall out	27.4 (20)
Painful gum	86.3 (63)
Bleeding gum	84.9 (62)
How to treat gum disease	
Antibiotic	72.2 (53)
Self-heal	11.1 (8)
Scaling	19.4 (14)

You learn to clean your teeth mainly from	
Teachers	69.9 (51)
Parents	64.4 (47)
Dental clinic/nurses	49.3 (36)
Reading	49.3 (36)
TV	32.9 (24)
Importance of your teeth	
Very important	94.3 (69)
Important	5.7 (4)
General condition of your teeth	
Good	27.4 (20)
Average	60.3 (44)
Not good	12.3 (9)
Need any dental treatment in near future?	
Yes	70.3 (51)
Do not need treatment	5.7 (4)
Don't know	24.3 (18)
If needed, what kind of treatment?	
Teeth cleaning	82.6 (60)
Tooth filling	33.3 (24)
Gum treatment	29.0 (21)
Tooth extraction	8.7 (6)

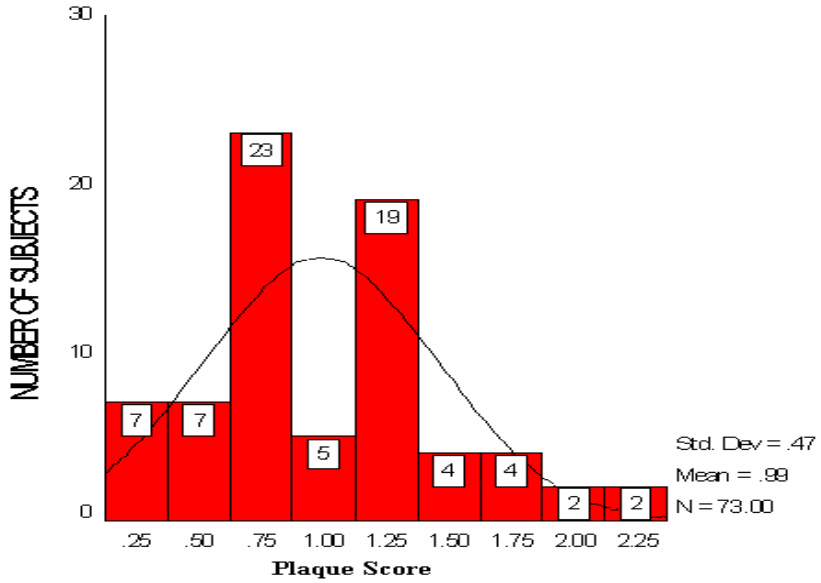

FIGURE 1. Histogram of the plaque index score of the subjects. The number of subjects for each score is indicated on top of the bar.

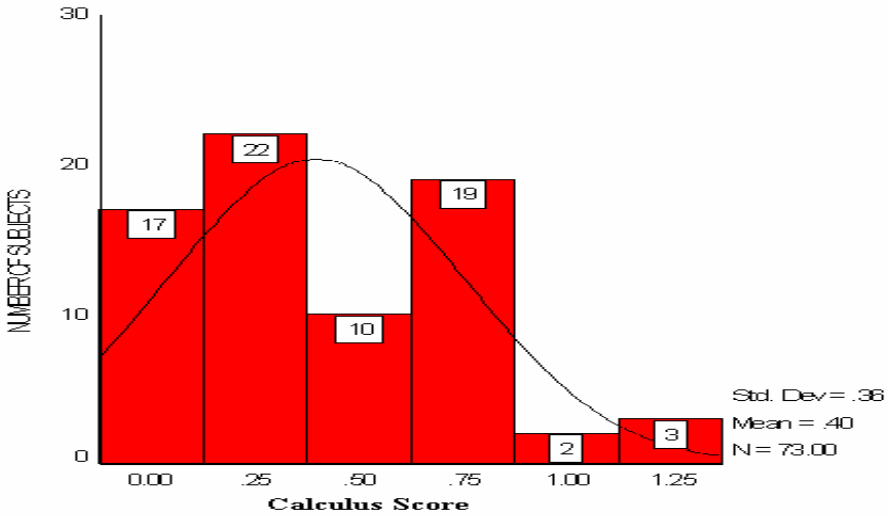

FIGURE 2. Histogram of the calculus index score of the subjects. The number of subjects for each score is indicated on top of the bar.

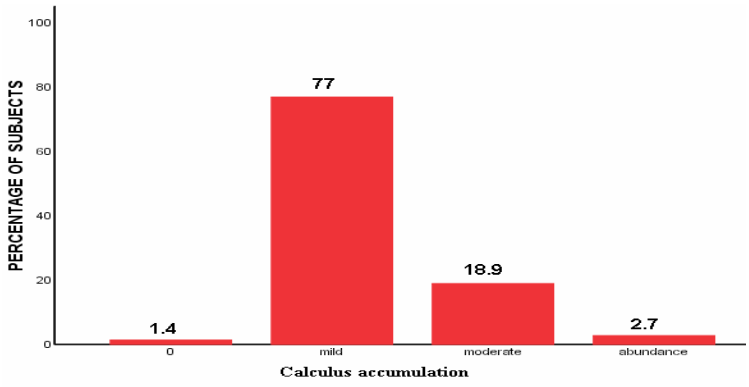

FIGURE 3. Bar chart showing the severity of calculus accumulation among the subjects.

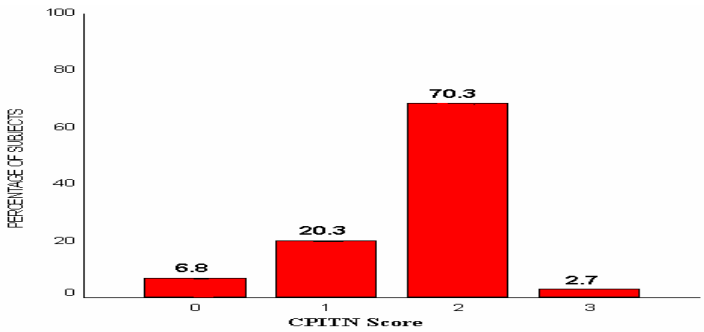

FIGURE 4. Bar chart showing the CPITN scores among the subjects. (0 = no calculus accumulation)

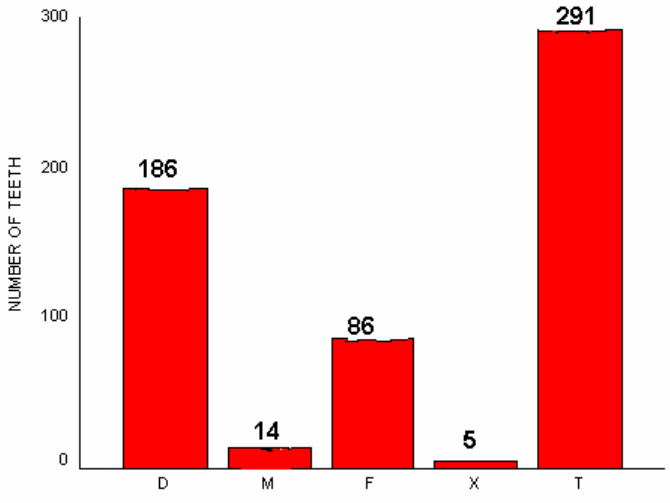

FIGURE 5. Bar chart of the DMFX(T) index recorded among the subjects.(D=decayed, M=missing, F=filled, X=teeth indicated for extraction, T=sum of index)