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CONTENTS

Editorial

- **Evidence Based Dental Practice**
Islam MS 1-2

Original Article

- **Influence of Irrigating Solutions on the Accuracy of Electronic Apex Locator (EAL) – In Vitro Study**
Bashar AKM, Joshi R, Begum S 03-06
- **Patients' Satisfaction in Out Patient Department of a Secondary Level Government Hospital in Bangladesh**
Shahjahan MAI, Howlader SR, Chowdhury F, Yousuf A, Ahsan MM 07-10
- **Melanin Pigmentation in Oral Mucosa: A Comparison Among the Bangladeshi and the Japanese Population**
Yousuf A, Islam MS, Alam MA, Hasan MH 11-14
- **Oral Hygiene Practices Among the Tobacco Workers of Rangpur Region, Bangladesh**
Ahmad MS, Mamun MA, Islam MS, Yousuf A, Hasan MH, Ahsan MM 15-18
- **Knowledge and Practice About Oral Hygiene of School Children in Northern Region of Bangladesh**
Mamun MA, Ahmad MS, Nizami MZI, Habib MA, Yousuf A, Hasan MH 19-24

Case Report

- **Adhesive Reattachment of Tooth Fragment**
Bashar AKM, Nahar K, Begum S 25-28

The Reviewers of articles in this issue 29

Information to Authors 30-31

Evidence Based Dental Practice

Islam MS

Dental practitioners requires to update their knowledge and expertise for provide the patients the best possible dental care with latest treatment modality. A large number of dental products and treatment modalities are launching every day, which keep the dental practitioners difficult to be aware of all the update. For keeping the dental practitioners in update, many track has been approached, one of which is Evidence-Based Practice (EBP). Evidence Based Practice is termed as an approach to emphasize the findings and the best uses of research evidence, clinical experience and priority of patients' choice that helps to make a good decision for better health care. Evidence-based dental practice (EBDP) is a way to dental care for sound thinking about integration of clinically relevant scientific evidence, which relates the patient's condition and history, with the practitioners' skill and patients' requirement and choice.

The daily practice in dentistry may present many challenges. As healthcare providers, it is important that dental practitioners offer the best possible care for their patients. This demands a sound educational base and a good source of contemporary best evidence to support their treatment recommendations. For its successful application, certain skills should be achieved, with the aim of Evidence-Based Dentistry (EBD) will provide updated information for the clinician and improved treatment for the patient. In modern world, concern has been increasing about the EBDP. The evidence based dentistry provides dental practitioner the opportunity to apply relevant research findings for care of patients. EBDP brings into a group for searching the best evidence, critical evaluation of the evidence, and correlation of the evidence with the practitioner's experience and expertise. So, dental practitioners have to knowledge about the certainties of scientific evidence for the best clinical decision making.

The requirement of valid and current information for solving daily problem clinical practice is increasing. EBD correlates between clinical research and practical dentistry, and provides dental practitioners with powerful tools to evaluate and apply research results. The evidenced based practice is already well conceived in medicine. The evidence based practice has been recognized as main factor of high-quality health care. Bio-medical publications are the source of information about evidence based medicine. In dentistry, the evidence-based practice is at a relatively young stage. EBDP is less established but rapidly

developing. The American Dental Association has conceived the effort to include evidence based practice in dentistry. It is critically significant to measure what points will affect dentists' ability to improve clinical practices based on evidence. Implementation of evidence from research into dental practice is essential for making practical relevance the concept of EBD to the practitioners.

EBDP is the current best approach to provide interventions that are scientific, safe, efficient and cost effective. This is as because through improvements in dental practitioners' skills and knowledge, and coordination between patients and dentist for justification of clinical management. EBD coordinate the research outcome with clinical skill and patients' choice. Evidence-based dental practice finds out the problems, and makes clinical decisions based on evidence. Evidence based dentistry moves clinicians to go forward to identify things the profession globally accepts.

The objectives of the evidence-based practice are furnishing the patient care with up-to-date treatment modality which is safe, effective and efficient found in current research. These are done by asking evidence-based questions; searching the best evidence; evaluating and applying this information in the clinical practice.

In regular dental practice, emphasis is given on the practitioner's knowledge and experience, accepted standards, and the opinion of experts and peers. Evidence-based practice presupposes that dentist conversant with the current literature, and is competent to evaluate it. So, dentists should read the scientific literature in clinical research, and they could critically appraise the literature.

The concept of EBD can become practically relevant to the dentistry by application of evidence from research into clinical practice. Although considerable resources are spent on clinical research, little attention has been paid to the implementation of research evidence into clinical care. Although, dental practitioners' concept about evidence based practice is poor, they opined for evidence based practice, and are aware about it. The main obstacles for evidence based practice are shortage of time, knowledge and financial matters.

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Influence of Irrigating Solutions on the Accuracy of Electronic Apex Locator (EAL) – In Vitro Study

Bashar AKM,¹ Joshi R,² Begum S³

ABSTRACT:

Background: Locating the appropriate apical position as the apical limit of the working length during root canal treatment always has been a challenge in clinical endodontics. **Objectives:** The present study was planned and carried out with the aim of evaluating the influencing of irrigating solutions while estimating working length of root canal during root canal treatment. **Materials and Methods:** A total of thirty (30) extracted human mandibular and maxillary anterior teeth were selected as study specimen. Actual canal length in all the thirty teeth was first determined by introducing fine endodontic file until its tip was just visible through apical foramen in dry condition and confirmed by viewing them under the magnifying glass at 16x magnification. Then electronic apex locator (EAL) was used to determine tooth length in all the selected thirty teeth in presence of electro-conductive irrigating solutions- normal saline (NaCl) and Sodium Hypochlorite (NaOCl) consecutively. Electronically measured canal lengths in presence of different irrigating solutions were compared with the actual canal length as well as with each other. **Results:** NaCl gave 100% accuracy within $\pm 0.5\text{mm}$ clinically acceptable range of error whereas NaOCl found to be accurate in 83.3% cases. When a clinically acceptable range of $\pm 1\text{mm}$ was considered, accuracy of working length measurement by electronic method in presence of NaOCl found to be increased upto 96.67%. Over all absolute error (difference with the actual length) obtained by EAL in presence of normal saline were lower than sodium hypochlorite to the actual length measured and there was a statistically significant difference between these two. **Conclusion:** In the light of the present study it can be concluded that electro-conductivity of the irrigating solutions has got some influence on working length measurement by EAL. But within a clinically acceptable range ($\pm 0.5\text{mm}$ to $\pm 1\text{mm}$), working length measured by electronic apex locator even in presence of electro-conductive irrigants can be effectively used for methodical root canal treatment procedure.

Key words: Working length, Electronic Apex Locator (EAL), Electro-conductivity, Irrigating solution

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Introduction:

Locating the appropriate apical position as the apical limit of the working length during root canal treatment always has been a challenge in clinical endodontics. The requirements of an ideal method for determining working length include rapid location of the apical constrictions, easy measurement even when the relationship between the apical constrictors and radiographic apex is unusual, rapid periodic monitoring, conformation of clinician comfort, minimal radiation to the patient, ease of use in special patients such as those with severe gag reflex or with reduced mouth opening, usefulness in pregnant patient and cost effectiveness.¹ Electronic apex locator, that attempts to measure the length of the root canal using a variety of electronic principles has been claimed to fulfill most of these criteria. But Huang demonstrated that the moisture content of the root canal was one of the essential factors influencing the accuracy of electronic root canal measuring device.² So the present study was planned and carried out

with the aim of evaluating the evaluating the influencing of irrigating solutions while estimating working length of root canal during root canal treatment.

Materials and Methods:

This case control in vitro study was conducted in the Faculty of Dentistry, Department of Conservative Dentistry & Endodontics, Bangabandhu Sheikh Mujib Medical University. A total of 30 extracted human mandibular and maxillary anterior teeth having single root canal (Type-I), as determined clinically and radiographically, were selected as study specimens. All the selected specimens were used to determine tooth length consecutively in presence of electro-conductive irrigating solutions i.e. normal saline (0.9% NaCl) and sodium hypochlorite (5.25% NaOCl)

Specimen preparation: Following prophylactic cleaning and access cavity preparation, the canal orifices were located by an endodontic explorer. Any residual pulp tissue was

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removed from the root canal with a barbed broach. Canal orifice was enlarged with # 2 and # 3 Gates-Glidden drills in a contra-angled micromotor handpiece for proper ingress of irrigating solutions into the canal. Any irregularities, if present on incisal edge of the tooth was then trimmed by straight fissure bur to have the univocal reference point.

Actual canal length measurement: The actual canal length was measured one by one in all the thirty teeth by introducing a fine endodontic file (no.15 K-file) carefully into the canal in dry condition until its tip was just visible through apical foramen. Presence of the tip of the K-file at the apical foramen was confirmed by viewing them under the magnifying glass at 16x magnification.³ The rubber stopper was adjusted to the level chosen as reference point for root canal measurement and the file was withdrawn. Distance from the stopper to the file tip was measured with an Endodontic Gauge having 0.5 mm accuracy measurement. The measurements canal length of all teeth obtained in dry condition under magnification were considered as the 'actual canal length' of those teeth to which all other measurements were compared.

Measurement by electronic apex locator: A plastic box of 7x2 cm was selected so that the prepared teeth can be fitted into them in standing position. Alginate was mixed with 0.9% sodium chloride which acts as a conducting gel simulating the periodontium. The teeth were inserted in plastic box one by one and waited until set. The alginate base then removed from plastic box and cut in to suitable cubical shapes as convenient. In the same manner, all the teeth were mounted in the alginate bases separately. When not in use the models were wrapped with the damped cotton and refrigerated (between 35 and 38 degrees F). The teeth with alginate bases were kept in a moist environment throughout the study period.

During electronic measurement by electronic apex locator (Foramtron D10, Parkell Electronic Division, Farmingdale, New York, USA), the cord with labial clip of the EAL was inserted into the alginate base. The other cord of electronic apex locator with a hook was latched into endodontic file (no.15 K-file). It was ensured that the hook of the EAL was in proper contact with the file.

a) **Measurement in presence of Normal saline (0.9% NaCl):** Normal saline (0.9% NaCl) was injected by 3-ml disposable syringe in all the 30 teeth consecutively, one after another. Irrigating solution overflowed to the pulp chambers was soaked with small cotton ball. An endodontic (ISO 15 K) file being latched by apex locator's one hook while the labial clip remained attached in the alginate base; was slowly inserted into the wet canal. In EAL, as the instrument moved apically into the canal, the graphical display indicated the distance from the tip of the file to the apical constriction. Starting with green lights, the light switch

to yellow which mean to be close to the apical area. When the tracking light flashed to red that labeled in the display meter as 'apex', the manufacturer's claim the tip of the instrument remains at the apical foramen. Thus during the procedure when the red light in the apex locator blinked, the rubber stopper in the endodontic file was adjusted to the univocal reference point; the file was taken out and measured as the canal length in presence of normal saline. Each measurement was repeated three times and the mean value was computed.

If the file tip penetrated the apex, orange tracking light illuminated which meant beyond the foramen so the file slightly withdrawn until it reached to the targeted length. In this way, the canal length measurement of all the specimens in presence of normal saline (0.9% NaCl) was taken and noted down in data sheets. To avoid desiccation the teeth containing alginate bases were kept refrigerated until next irrigant used.

b) **Measurement in presence of Sodium Hypochlorite (5.25% NaOCl):** all the 30 teeth were thoroughly flushed out with distilled water three times and dried with 15 no. paper points. Now sodium hypochlorite was injected by 3-ml disposable syringe in all the 30 teeth consecutively, one after another and the same procedure was maintained for taking electronic length measurement in presence of 5.25% sodium hypochlorite (NaOCl) consecutively.

Results:

The present study was undertaken on 30 teeth to evaluate the influence of different irrigants on the accuracy of electronic apex locator in estimating length of root canal.

Measurements taken under magnification (16X) in dry mode were considered as the actual length of the teeth with which all other measurements were compared. Measurements of EAL were taken in presence of some irrigants like NaCl, and NaOCl.

Discussion:

Table I. Tooth length measurement in different mode (n=30).

Measurement	Tooth length measurement in mm	
	Mean ±SD	Mode
Under magnification in dry condition (Actual canal length)	20.09±1.627	18.3 (23.3, 17.3)
NaCl	20.06±1.63	19.0 (23.6, 17.3)
NaOCl	19.96±1.68	19.9 (23.8, 17.1)

Figures in the parentheses denote the maximum and minimum value. n= total no. of teeth

Table II. Distribution of teeth in different accuracy ranges when electronic length was compared with the actual length. (n=30).

#Accuracy range in mm (difference in the electronic tooth length comparing to actual length)	Measurement mode		p-value
	Sodium chloride no. (%)	Sodium hypochlorite no. (%)	
-0.5 - 0.0	11 (36.7)	09 (30.0)	0.000***
0.01 - 0.5	19 (63.3)	16 (53.3)	
0.51 - 1.0	0 (0.0)	4 (13.3)	
> 1	0(0.0)	1(3.0)	

Data was analyzed using Chi-square (χ^2)***= P < 0.001 was considered as significance

Difference in the error length compared with actual canal length (measured under magnification) were calculated and distributed in different range. The difference from -0.5 to 00 were placed on that range and similarly all were distributed. Here the lowest difference was -0.5mm and highest were >1 mm.

In terms of accuracy within - 0.5 – 0.0 mm of actual canal length, NaCl had the accuracy of 11 teeth which was 36.7%; and NaOCl had 9 teeth with the accuracy of 30.0%. Similarly all other teeth were distributed in different ranges up to >1.

Table III. Absolute error of tooth length measurement (n = 30).

Measuring Mode*	Absolute error between Actual canal length and EAL lengths (mm)	p-value
Sodium chloride	0.15 ± 0.02	0.000***
Sodium hypochlorite	0.32 ± 0.05	

Data were analyzed using ANOVA statistics and presented as mean ± SEM ***= P < 0.001 was considered as significance.

Table III demonstrates that absolute error in measuring the tooth length using EAL. The data show that the mean absolute error was the lower while using NaCl (0.15 ± 0.02) and higher when NaOCl was used as irrigant (0.32 ± 0.05 mm). The different working modes were significantly different in terms of measuring actual canal length and each mode of EAL (P < 0.001).

Table IV. mean difference in absolute error

Comparison Variables	Mean difference in absolute error (mm) of tooth length	p-value
Dry mode vs. Sodium chloride	-0.057	0.259 ^{NS}
Dry mode vs. Sodium hypochlorite	-0.235	0.000***
Sodium chloride vs. Sodium hypochlorite	-0.178	0.009***

***= P < 0.001 was considered as significance. NS = non significant value.

Post Hoc Games-Howell test reveals that the mean difference in absolute error between dry mode and NaCl was negligible (p = 0.259). However, the mean differences between dry mode and NaOCl and NaCl and NaOCl were statistically significant (p = 0.001 and p = 0.009).

Clinically for determination of working length for preparation and obturation of root canal, most manufacturers of modern EALs in their reports suggested to subtract 0.5 mm from the length of the file at the point

when the device suggested the 0.0 reading or display apex.⁴ Hence many of the studies used an error range of ±0.5 mm to assess the accuracy of the EALs.^{5,6} Measurements attained within ±0.5 mm tolerance were considered to be highly accurate. Considering this standard of clinically acceptable tolerance range of ±0.5 mm, when compared with actual canal length measured under magnification in dry mode, the accuracy of the EAL in present study was 100% in presence of normal saline (0.9% NaCl) whereas in presence of sodium hypochlorite (NaOCl) the accuracy of EAL was found to be 83.3%. Other vitro studies⁷⁻¹¹ carried out by different types of the frequency dependant EALs while considering ±0.5 mm tolerance showed an accuracy range of 90-100%. However, some other follow strict rule of the error tolerance and deny the consideration of ±0.5 mm tolerance¹². Dunlop et al¹³ concluded that consideration should be given to using -0.5 to 0.0 mm as the most clinically ideal error tolerance range. If this is to be taken in consideration, then only 11(36.7%) out of 30 teeth showed accuracy when measurement was taken in presence of 0.9% NaCl and only 09 (30.0%) out of 30 teeth found accurate with the actual canal length when measurement was taken in presence of NaOCl. However, many of the root canals do not always end with an apical constriction, a well-delineated minor or major apical diameter, or an apical foramen within the base of the cemental cone. With a lack of such demarcations, an error tolerance up to ±1.0 mm to the foramen is deemed to the clinically acceptable range of tolerance as suggested by Keller et al & Shahbahang, et al.^{14,15} So, if a clinically acceptable range of ±1.0 mm is taken in consideration, electronically measured length in present study even in presence of NaOCl found 96.67% (29 teeth out of 30) accurate.

Pilot and Pitts¹⁶ reported in his study of electrical properties of different irrigants concluded that NaCl was electroconductive. The result of the study demonstrated that the mean difference in absolute error between dry mode and NaCl was insignificant. The EAL uses two frequencies and enables tooth length measurements in the presence of

electrical conductive media in the root canals¹⁷. Soujanya et al.¹ conducted an in vitro study showed no statically significant difference among the mean difference errors between dry mode and NaCl and Kaufman et al.¹² considered NaCl as reliable solution for electronic measurements.

In the study result, the mean difference in absolute error between NaCl with NaOCl is statically significant as it showed difference of their absolute error was high when significant level was taken 0.05 and NaOCl gave the highest percentage error. Although sodium hypochlorite gave the highest percentage of error, the wide use of this irrigant solution cannot be avoided in endodontic therapy and has superiority action and acceptance (Ingle et al. 2002)¹⁸.

Conclusion:

In the light of the finding of the study it can be concluded that electro-conductivity of irrigating solution used in root canal preparation may influence the working length measurement by EAL. But within a clinically acceptable range, working length measured by electronic apex locator even in presence of electro-conductive irrigants can be effectively used for methodical root canal treatment procedure. Clinician can frequently use normal saline as an irrigating solution during root canal preparation using EAL. Strong irrigant like sodium hypochloride can also be safely used when a clinically acceptable tolerance range of ± 1 mm is considered.

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Patients' Satisfaction in Out Patient Department of a Secondary Level Government Hospital in Bangladesh

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Abstract

Background: Patient satisfaction with care is a reflection of the overall experience of an individual receiving treatment in a given environment during a specific time period, measured by self – report. Patient satisfaction with care has become a worldwide concern in virtually every health care specialty. **Objective:** To assess the patient's satisfaction about provided services in outpatient department of secondary level government hospital in Bangladesh. **Methods:** A descriptive cross-sectional study was conducted in outpatient department (OPD) of a secondary level government hospital (200 Bedded Hospital in Narayanganj), Bangladesh. 120 Patients (aged 15) were selected purposively as study sample. The study was conducted with a questionnaire based on the patient's satisfaction regarding reception, registration, behavior of service providers, treatment and advice provided by doctors, diagnostic facilities, explore medicines supply and to find out the socio-economic and demographic characteristics of patients. **Results:** Maximum, [109(90.84%)] of respondents satisfied regarding registration and ticket delivery. Majority, [96 (80.00%)] of respondents satisfied about cleanliness of the outpatient department. Maximum, [107(89.17%)] of respondents were waiting before treatment less than 1 hour. Majority, [68(56.67%)] of respondents stated that behavior of the support staff were satisfactory. **Conclusion:** Outpatient department of secondary level government hospital providing health services were consistent with patient's expectations to a large extent and most of patients satisfied with the overall health services.

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Key words: Patient's Satisfaction, Out Patient Department, Secondary Level Hospital, Bangladesh.

Introduction:

Patient satisfaction is an important issue in the context of health care provision and utilization. In the most obvious sense, it is important to know why patient like or dislike a particular service offered to them.¹ In context of our country, patient's expectation is very limited; easy accessibility, affordability and availability of health services, human behavior and attitude of doctor, nurse and other health care providers'. Quality of care is an effective health care to improve the health status and satisfaction of a population, within the resource which society and individual have chosen to spend for that care. In 1993 quality has been defined as the application of all necessary services of modern scientific medicine to the need of all people.²

Health care involve interaction between doctor and his patient. This interaction is divisible into two domains. One is that of technical performance, application of medical knowledge and technology in a manner that maximizes its

benefit and minimizes its risks taking account of the preferences of patient. The other domain is the management of personal relationship with the patient in a manner that conforms to ethical requirements, social conventions and the legitimate exceptions and needs of the patient³. Patient satisfaction has still another role in quality assessment. It can be regarded as the patient's judgment on the quality or the goodness of care. The patient's assessment of quality expressed as satisfaction and dissatisfaction. The measurement of satisfaction is therefore an important research tool for administration and planning⁴.

The quality of medical care is effective to improve the health status and satisfaction of population, within the resources which society and individual have chosen to spend for that care.⁵ People who are satisfied with care are more likely to complete a course of treatment; potentially improving their overall outcomes over those of people who do not return for prescribe care.⁶ There has been a growing

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dissatisfaction with the existing health care facilities and clear demand for better health care. So the assessment of patient's satisfaction will reveal the quality of an ongoing hospital. It is an important tool for health system research. This helps decision makers and program managers with information so that they can adopt more rational decision to lead the program health complex along the road to success.

Methods:

A descriptive cross-sectional study was conducted with the major objective to find out patients satisfaction in outpatient department (OPD) of a secondary level government hospital, 200 Bedded Hospital in Narayanganj, Bangladesh. The study was conducted in the period from mid-January to mid June 2009. One hundred and twenty patients, age ranged highest through 15 years, 67(55.83%) male and 53(44.17%) female, attending in outpatient department were selected purposively as the study sample. To avoid inconsistency and bias the study excluded seriously ill patients. The study was conducted with a questionnaire based on the patient's satisfaction regarding reception, registration, behavior of service providers, treatment and advice provided by doctors; diagnostic facilities; explore medicines supply. The socio-economic and demographic characteristics of patients also recorded (table I). Ethical clearance were obtained and informed consents were obtained from all eligible respondents before the interview were conducted. Obtained data were analyzed and processed manually by using scientific calculator. Satisfaction of patient is measured by Likert's scale & categorized into highly satisfied, satisfied, no opinion, dissatisfied and highly dissatisfied group.

Result:

Respondents attending in out-patient-department, 51 (42.50%) respondents were satisfied on overall service regarding health care, 26 (21.66%) respondents were highly satisfied, 35 (29.17%) respondents were dissatisfied and rest 8 (6.66%) of respondents opinion was highly dissatisfied (figure-1).

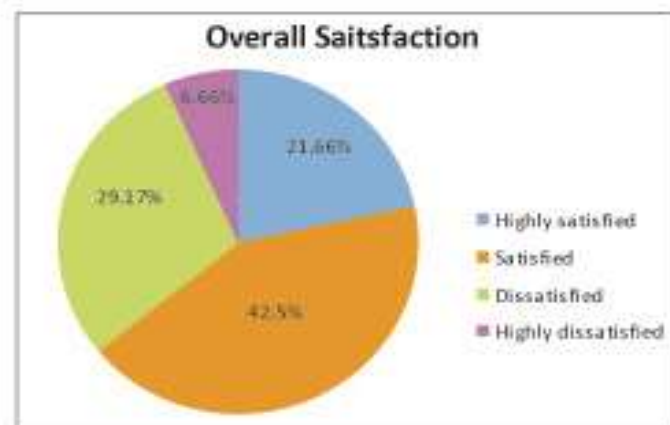


Table I: Distribution of the respondents by socio-economic and demographic characteristics. (n=120)

Characteristics	n	%	
Age (Group in years)	15-19	17	14.16
	20-24	28	23.34
	25-29	30	25.00
	30-34	20	16.66
	35-39	16	13.33
	40-44	5	4.17
	≥45	4	3.34
Gender	Male	67	55.83
	Female	53	44.17
Marital Status	Married	77	64.17
	Unmarried	43	35.83
Religion	Muslim	106	88.33
	Non-Muslim	14	11.67
Occupation	Occupation Service Holder	20	16.66
	Business	23	19.16
	Farmer	15	12.50
	Others	62	51.68
Education	No formal education	31	25.83
	Primary	39	32.50
	Secondary	32	26.70
	S.S.C	13	10.84
	H.S.C and above	5	4.13
Monthly Income (In Taka)	3000/-	43	35.84
	3001/- 5000/-	37	30.38
	5001/- 8000/-	25	22.83
	8001/- 10000/-	11	9.17
	>10000/-	4	3.33

Among the respondents, the majority of them, 30(25.00%) were between the age group of 25-29, 67(55.83%) were male, 77(64.17%) were married, 106(88.33%) were muslim, 20(16.66%) were service holder, 23(19.16%) were business man, 15(12.50%) were farmer, 62(51.68%) were in others occupation, 31(25.83%) belongs to no formal education group, the number of primary education were 39 (32.50%) secondary were 32 (26.70%), S.S.C 13(10.84%), H.S.C and above 5(4.13%), 43 (35.84%) had monthly income taka 3000/- and below, only 4 (4.33%) respondents had income above 10,000/- (table-I).

Maximum, 117(97.50%) of respondents stated that did not face any problem on reception. Maximum, 109(90.84%) of respondents were satisfied regarding registration and ticket delivery. Majority, 96 (80.00%) of respondents were satisfied and 24 (20.00%) are dissatisfied about cleanliness of the outpatient department. Maximum, 107(89.17%) of respondents were waiting before treatment less than 1 hour and 10 (8.33%) respondents were waiting before treatment 1 – 2 hours. Majority, 68(56.67%) of respondents stated that behavior of the support staff were satisfactory (table-II).

Maximum respondents [69 (57.50%)] stated that doctors were attentive to their complain about problem and 9

Table II: Distribution of respondents opinion regarding satisfaction on Hospital environment and administration (n=120)

Parameter	n	%
On reception		
Satisfied	117	97.50
Dissatisfied	3	2.50
Total	120	100.00
Regarding registration & ticket delivery		
Satisfied	109	90.84
Dissatisfied	11	9.16
Total	120	100.00
About cleanliness		
Satisfied	96	80.00
Dissatisfied	24	20.00
Total	120	100.00
Waiting time before treatment (in hour)		
< 1	107	89.17
1 - 2	10	8.33
>2	3	2.50
Total	120	100.00
Regarding support staff's behavior		
Satisfied	68	56.67
Dissatisfied	52	43.33
Total	120	100.00
Treatment given by doctors		
Only hearing the complains	48	40.00
Examining with privacy	40	33.34
Examining without privacy	32	26.66
Total	120	100.00

(7.50%) respondents stated that doctors were not attentive to their complain. Forty eight (40%) respondents received treatment only hearing the complaints by doctors 40(33.34%) received treatment both hearing and physical examining with adequate privacy and 32 (26.66%) without privacy. Maximum (55.00%) respondents stated that advice given by doctor about drug administration and rest of the respondents did not. Majority (42.50%) of respondents were satisfied with doctors' behavior and 32 (26.66%) respondents were dissatisfied with behavior of the doctor. Only 20 (16.66%) respondents obtained all drugs and 62 (51.67) got few items from outpatient department. Most [78(65.00%)] of the respondents not required diagnostic facilities 42 (35.00%) required (table III).

Discussion:

The evaluation of quality of health services by assessing patient's satisfaction is a regular practice of an ongoing health care program. An attempt has been made to assess the patient's perception and satisfaction on doctor's and other service provider's attitude, and service and availability of services by interviewing patient. Age was a factor which was found to be associated. Elderly patient reported higher levels of satisfaction than younger ones. In this study, it is shown that (table-1) the maximum respondents were in 25-29 years. Charles et al.⁷ found that older patients, in general,

have found to express more satisfaction than their younger counterparts. However, the differences across the age group appeared not to be wide in this study. Another study by Kabir⁸ found 50% literate, and reflects that most of the patient visiting Govt. health facilities are literate. Illiterate person can express their perception on the human behavior of providers but literate patient's expectation is high or reasonable. Family income influenced both expectation and availing the health care service. So it also affects the satisfaction of respondent.

Time was an important factor to the patient. In this study was found that out of 120 respondents, 107(89.17%) had the waiting time less than one hour. Usually poor patient come to the outpatient department to solve their health related problems. So they do not want to spend much time for their treatment purpose. Hossain⁹ also reported that long time was a major cause of dissatisfaction.

Regarding behavior of support staffs during duty hour in the outpatient department, 56.67% reported that support staffs behavior were satisfactory for the patient in the outpatient department during duty hours and performed their function. Khaleda (1996)¹⁰ reported that doctor's behavior was good

Table III: Distribution of respondents opinion regarding treatment facilities (n=120)

Parameter	n	%
Doctor's attention on hearing clients complain		
Attentive	69	57.50
Partial attentive	42	35.00
In attentiveness	9	7.50
Total		
Treatment given by doctors		
Only hearing the complains	48	40.00
Examining with privacy	40	33.34
Examining without privacy	32	26.66
Total	120	100.00
Satisfaction regarding advice about drug administration by doctor		
Yes	66	55.00
No	54	45.00
Total	120	100.00
Behavior & management of the doctor		
Highly Satisfied	30	25.00
Satisfied	51	42.50
Dissatisfied	32	26.66
Highly dissatisfied	7	5.84
Total	120	100.00
Obtaining drugs		
All	20	16.66
Few items	62	51.67
None	38	31.67
Diagnostic facilities		
Required and Get facilities	9	7.50
Required but not get facilities	33	27.50
Not required diagnostic facilities	78	65.00
Total	120	100.00

as per 50.56% and 7.78% stated as bad in her study on Dhaka Medical College Hospital. About nurses behavior majority responded delivered highly positive comments but they did not score satisfactory result in the nursing care. This reflects that there were communication problems between nurses and clients, lack of supervision and because nursing students performed their training most of the time. When compared with the present study, it indicates doctors and nurse's behavior and service had improved

Conclusion:

Outpatient department of secondary level government hospital providing health services were consistent with patient's expectations to a large extent and most of patients satisfied with the overall health services provided by the secondary level government hospital. Like other developing countries the socio-economic status of our people is low. Usually poor patient comes to the outpatient department to get free drugs and other facilities.

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Melanin Pigmentation in Oral Mucosa: A Comparison Among the Bangladeshi and the Japanese Population

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Abstract:

Background: Melanosis of oral mucosa is observed in a large number of individuals who evidence no pathosis upon examination. It is also to be found are melanin of the oral tissues which result from various pathologic conditions of both local and systemic causes. Melanin is widely distributed in the soft tissue such as skin, mucosa, and nervous system and uveal tract and the meninges but not normally present within bone. **Objectives:** The purpose of the study was to compare the oral melanosis among the Bangladeshi and the Japanese population. **Materials and Methods:** The study was conducted in the Department of Oral Surgery of Dhaka Dental College Hospital and others dental clinics in Dhaka, Bangladesh, and the Department of Oral Pathology, Tokyo Medical & Dental University Hospital, Japan. Two hundred and twenty one Bangladeshi and 64 Japanese patients of both sexes, and age ranged from 09 to 73 years, having oral pigmentation were selected purposively. Participant having any systemic complicating factors, were excluded from the study. The patients were divided in to two groups according to their nationality. Participants were examined clinically and histologically for melanin pigmentation of oral mucosa. **Results:** The study found, the Japanese population was in about same in affected by melanin and non-melanin pigmentation. In Bangladeshi population, melanin pigmentation were more (83.71%) than non-melanin pigmentation. The grade I lesion was more by 2/3rd in the Bangladeshi population than that of the Japanese population, and grade III lesion were doubled in the Bangladeshi in compared to the Oral melanin pigmentation is more common in the Japanese population than Bangladeshi and other geographic race.

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Key words: Oral Melanin Pigmentation, Oral Mucosa, Oral Cavity, Site and Intensity of Lesion.

Introduction:

Pigmentation is a discoloration of the skin and mucosa that interfere with esthetics. Pigmentation is mostly caused by five primary pigments including melanin, melanoid, oxyhemoglobin, hemoglobin, and carotene.¹ The oral mucosal color is affected by degree of keratinization, epithelial thickness, vascular circulation, and the melanin pigment. Melanin pigmentation is one of the most common form of oral mucosal pigmentation. Several local and systemic factors including physiological or racial pigmentation, smokers melanosis, pigmented nevus, melanotic macula, Addison disease, Peutz-Jeghers syndrome, HIV infection and drugs such as minocycline and anti-malarial drugs cause melanin pigmentation.² Oral pigmentation has been associated with a variety of endogenous and exogenous etiologic factors.^{3,4}

Melanosis of oral mucosa is observed in a large number of individuals who evidence no pathosis upon examination. It is also to be found are melanin of the oral tissues which result from various pathologic conditions of both local and

systemic causes. Melanin is widely distributed in the soft tissue such as skin, mucosa, and nervous system and uveal tract and the meninges but not normally present within bone. The melanocytes are located in the basal layer of the epidermis in close contact to multiple keratinocytes through their dendritic extensions forming an epidermal melanin. Presence of melanin pigmentation of the oral mucosa has unfavorable effects on esthetics. Furthermore, considering the fact that melanin pigmentation may be a clinical manifestation of systemic diseases and drugs usage, this sign is very important in the differential diagnosis of this conditions.⁵

Researcher have shown that the maximum frequency of oral pigmentation is detected in the Europeans and the Asian population,⁶ and in the Indians are minimum frequency.^{7,8} Epidemiologic studies provide important information for acquire of knowledge about oral disease in a specific population, but the results of previous studies have rarely been published worldwide about oral melanin

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pigmentation.^{9,10} Epidemiologic studies of the oral health status of the general population in Bangladesh provided a paucity of information about oral mucosal lesions.¹¹⁻¹⁴ The purpose of the study was to compare the oral melanosis among the Bangladeshi and the Japanese population.

Materials and methods:

The study was conducted in the Department of Oral Surgery of Dhaka Dental College Hospital and others dental clinics in (Dhaka,) Bangladesh and the Department of Oral Pathology, Tokyo Medical & Dental University Hospital, Tokyo, Japan. Two hundred and twenty one (221) Bangladeshi and Sixty four (64) Japanese patients of both sexes, and age ranged from 09 to 73 years, having oral pigmentation were selected purposively. Participant having any systemic complicating factors, were excluded from the study. The patients were divided in to two groups according to their nationality. Participants were examined clinically for melanin pigmentation of oral mucosa. The intensity of pigmentation was classified according to the scale used by Unsal et al.¹⁵ with minor modification. Degree I: slight melanin pigmentation in one or more localized area. Degree II: moderate melanin pigmentation that converges to in short continuous ribbon. Degree III: heavy melanin pigmentation with extensive area that converges to in long continuous ribbons. Biopsy was performed to confirm the presence of melanin pigment. Biopsy specimens were embedded in paraffin after fixation with 10% formalin, sectioned in 4µm thickness. They were stained with hematoxylin and eosin for histopathological study. Melanin was visualized by staining with the Masson-Fontana silver reduction method. The sections were bleached to exclude the hemosiderin or exogenous pigmentation.

Results:

The study revealed that in 3rd to 5th decade peoples were more affected by oral pigmentation; among them the Bangladeshi population were more affected compared to the Japanese population. Maximum (37.5%) Japanese participants were in 5th and 6th decade. Only 3.15% were upto 10 years old and 9.37% were above 70 years. Most (29.86%) Bangladeshi were in 4th decade, remarkable number (24.43%) participant also were in 5th decade, there was no Bangladeshi participant below 10 years, and only 1.81% participant were above 70 years (table I). The present study showed that male and female in the Japanese population were near about same in affected by oral pigmentation. In the Bangladeshi population, male (81.90%) were more affected by oral pigmentation than female (table II).

The study found, the Japanese population were in about same in affected by melanin and non-melanin pigmentation.

In Bangladeshi population, melanin pigmentation were more (83.71%) than non-melanin pigmentation (table III). The present study reported that, in the Japanese population, maximum (37.5%) lesion were in lip, next (29.17%) were in tongue and in palate were the least (3.15%). In the Bangladeshi population, maximum (55.67%) lesions were in gingiva, next (23.98%) in buccal mucosa and there was no lesion in angle of the mouth (table IV). The present study found that, about half of the lesions were grade I in the Japanese population where as in the Bangladeshi population were grade I lesion was 2/3rd. Grade II lesion were same in both the Japanese and the Bangladeshi population. Grade III lesions were near about double in the Bangladesh than that of the Japanese population (table V).

Table I: Distribution of patients according to age group

Age group (years)	Japanese n (%)	Bangladeshi n (%)
0-10	2(3.15)	0(0)
11-20	3(4.69)	6(2.71)
21-30	15(23.44)	57(25.79)
31-40	9(14.06)	66(29.86)
41-50	12(18.75)	54(24.43)
51-60	12(18.75)	31(14.3)
61-70	5(7.81)	3(1.38)
>71	6(9.37)	4(1.81)
Total	64 (100)	221 (100)

Table II: Distribution of patients according to sex

Sex	Japanese n (%)	Bangladeshi n (%)
Male	34(53.12)	181(81.90)
Female	30(46.88)	40(18.10)
Total	64 (100)	221 (100)

Table III: Distribution of patients according to type of lesion

Type of Lesion	Japanese n (%)	Bangladeshi n (%)
Melanin	34(53.12)	185(83.71)
Non-melanin	30(46.88)	36(16.29)
Total	64 (100)	221 (100)

Table IV: Distribution of patients according to site of lesion

Site of Lesion	Japanese n (%)	Bangladeshi n (%)
Lip	24(37.5)	25(11.31)
Gingiva	16(25)	123(55.67)
Buccal Mucosa	12(18.75)	53(23.98)
Tongue	22(29.17)	5(2.26)
Angle of Mouth	3(4.69)	0(0)
Palate	2(3.15)	15(6.88)
Total	64 (100)	221 (100)

Table V: Distribution of patients according to intensity of lesion

Intensity of Lesion	Japanese n(%)	Bangladeshi n(%)
Grade I	34(53.12)	147(66.51)
Grade II	12(18.75)	41(18.55)
Grade III	18(28.12)	33(14.93)
Total	64 (100)	221 (100)

Discussion:

The article insite the information regarding variation of oral melanin pigmentation according to geographical variation among the Bangladeshi and the Japanese population. Melanin pigmentation is usually seen in the oral mucous membranes of various population; its incidence & concentration generally vary with the skin coloring.^{16,17} It has been reported that melanin pigmentation is very often occurred in the Balkan, Latin, & Near Eastern peoples, in the colored races, & to a lesser degree in the Northern Europeans groups.¹⁸ However, there are little reports on melanin pigmentation to compare among the Japanese and the Bangladeshi population.

Authors¹⁹⁻²¹ reported that oral melanin pigmentation is commonly higher level in East Asian and Indian population. Oral melanin pigmentation is more common in the Japanese population than other groups. In the Japanese oral melanin pigmentation is account for 11-12.4%. Lweis⁵ also reported that oral melanin pigmentations appear to be higher among Japanese people than among other populations. The present study findings correlate with these studies. The study found, the Japanese population were in about same in affected by melanin and non-melanin pigmentation. In Bangladeshi population, melanin pigmentation were more (83.71%) than non-melanin pigmentation (table III).

According to Lweis,⁵ Melanin pigmented lesions presenting in the oral mucosa are more common on the anterior labial gingiva and the anterior aspect of the hard palate. In this study, lip and tongue is the more common site of oral pigmentation in the Japanese population, and palate was the rare site. In the Bangladeshi population, gingival and buccal mucosa was the more common site for melanin pigmentation, and angle of the mouth were the rare site as shown in table IV. As shown in table V, the grade I lesion was more by 2/3rd in the Bangladeshi population than that of the Japanese, and grade III lesion were doubled in the Bangladeshi in compared to the Japanese.

Conclusion:

The present study findings can conclude oral melanin pigmentation is commonly higher level in East Asian and Indian population. Oral melanin pigmentation is more common in the Japanese population than Bangladeshi and other geographic race.

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Oral Hygiene Practices Among the Tobacco Workers of Rangpur Region, Bangladesh

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Abstract:

Background: Oral health is a vital part of general health and is a valuable asset of every individual. It is an important public health problem owing to the prevalence, socio-expensive treatment and lack of awareness. Oral health has a direct impact on general health. Majority of people living in rural area have limited access to essential oral health care due to geographic and economic barrier. It is important to understand the oral hygiene practice of the tobacco worker of Rangpur district. This is necessary for planning and providing effective dental health care services. **Objectives:** The study was performed to assess the oral hygiene practices among the tobacco workers in Rangpur region of Bangladesh. **Materials and Methods:** A cross sectional study was carried out among 117 tobacco workers (60.70% male and 39.70% female; age ranged from 20 to 70 years) in Rangpur district. Respondents were interviewed through a structured questionnaire regarding demographic details, habits and oral hygiene practices. **Results:** It is revealed that most (95.70%) workers brush their teeth regularly, among them 42.7% brush their teeth one time and 53% brush two times in a day, 97.4% brush their teeth at morning after woke up. **Conclusion:** In order to prevent oral disease and promote oral health the national health authorities should give priority to community oriented oral health care and essential care should be offered according to the primary health care concept.

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Key words: Oral hygiene practices, tobacco workers.

Introduction:

Oral health is a vital part of general health and is a valuable asset of every individual. Oral diseases are one of the most common of non-communicable diseases affecting varied population. It is an important public health problem owing to the prevalence, socio-expensive treatment and lack of awareness.¹ Oral health has a direct impact on general health and conversely general health influences oral health. Though oral and dental diseases rarely impact on the quality of life. Oral health report of the studies carried out, over past 40 years revealed contrasting disease trend, depending upon country population group and socio economic condition.²

Rangpur is the largest tobacco producing area in Bangladesh. According to Bangladesh Institute of Labour Studies there are about 10.4 million workers are engaged in tobacco industries in which many women and children involved in tobacco processing. Profits from the sale of tobacco products are not evenly distributed among those involved in the work. Much of the economic gain from tobacco remains in the hands of a powerful few, while a vast number of workers remain desperately poor. The manufacture of tobacco is highly labour oriented and these are processed manually. Tobacco workers engage in various processes of manufacturing - viz., in making bidi, tobacco processing, zadda and gul processing and labour related transport etc.

Majority of people living in rural areas have limited access to essential oral health care due to geographic and economic barrier.³ Various previous studies suggested that cigarette smoking and tobacco habits co-existing in a significant proportion of male adolescent will have major implication on oral diseases.⁴ Oral health as an essential aspect of general health can be defined as "a standard of health of the oral and related tissues which enables an individual to eat, speak, and socialize without active disease, discomfort or embarrassment and which contributes to general well-being".⁵

Oral health knowledge is considered to be an essential prerequisite for health-related practices. It is important to understand the oral hygiene practice and oral health status both male and female of the tobacco worker in Rangpur district. This is necessary for planning and providing effective dental health care services. Although using a toothbrush significantly improves the level of adequacy of oral hygiene, there are many other contributing factors,⁶⁻⁹ such as dental flossing and mouth rinsing etc.

As a developing country like Bangladesh the prevalence of different dental diseases is not fully explored and documented. Some national and international survey and research are conducted previously on the oral hygiene practices and their presentation. The effects of the various

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etiologic agents responsible for oral occupational disease depend on their specific chemical, physical and bacterial nature, their physical state, and their mode of entry. A majority of studies regarding factory employees were conducted abroad with very few studies from Asia. Until now, there are no reports regarding the oral health status of factory employees in Rangpur, Bangladesh. The study was done to assess the oral hygiene practices among the tobacco workers in Rangpur district, Bangladesh.

Materials and Methods:

A cross sectional study was conducted among 117 tobacco worker in factories in Rangpur district over the period of three months from July to December 2013. The sample was collected by purposive sampling technique. In order to collect the data a structured questionnaire and a checklist was prepared at the beginning of the study considering all objects and variables of the study. It was then pre-tested on some tobacco workers in Rangpur. After making necessary alternations and corrections, a final questionnaire was developed. Data was collected on the basis of socio economic status, knowledge about dental problems, oral hygiene practices and oral hygiene index by the researchers by face to face interview. Data analysis was done using statistical Package for Social science or SPSS 15 for Windows and Microsoft Excel.

Results:

In this study, among 117 workers it was found that 60.70% respondents were male and 39.7 % were female. About half (51.4%) of workers were in the old aged group of 41-70 and only 5.1% were young aged, and most of the workers (69.2%) live in village. This study found that most (80.4%) workers by tin-shaded, and 19.6 % were paka (brick-made) and half-paka; 28.2% workers house has single room, and rest 39.4% workers house has more than two rooms. Though the workers are live very compactly there are 38.5% have less than 4 members and 61.5% have more than 4 family members. More than half (53.8%) of the workers were illiterate and 35.9% were class-VIII pass. It is found that 61.5% workers use hygienic ring toilet and 25.6 % use open toilet. For usable water, most (93.2%) of the respondents use deep tube-well water and only 1.7% use supply water (table I).

In this study, it is found that most (95.7%) workers brush regularly; 42.70% brush once and 53% twice a day. Most of the workers about 97.4% brush at morning after wake up and only 19.7 % are brush at morning after breakfast. It is also found that, 20.5% workers use tooth brush and tooth powder for brushing, 28.2% use tooth brush and tooth paste. In this study, it is found that 93.2 % use tooth peak and 3.4% use thread for interdental cleaning (table II).

It is found that, 18.8 % workers are work in making bidi have Oral Hygiene Index 3.1-6+ that is poor, 21.3% are involved in Tobacco Processing have Oral Hygiene Index 3.1-6+, 6.8% worker are work in zadda and gul processing Oral Hygiene Index 3.1-6+, 18.8% of labour related workers have Oral Hygiene Index 3.1-6+ (table III).

Table I: Socio economic status of tobacco workers (n=117)

Parameters	N	%
Sex		
Male	71	60.7
Female	46	39.3
Age group		
10-20 years	6	5.1
21-30 years	25	21.4
31-40 years	27	23.1
41-50 years	31	26.5
51-60 years	22	18.8
61-70 years	6	5.1
Residence		
Town	6	5.1
Village	81	69.2
Sub-town	30	25.6
Workers home made by		
Tin	69	59.0
Paka	10	8.5
Half paka	13	11.1
Chala	25	21.4
Number of rooms in workers house		
1,50	33	28.2
2	38	32.5
3	23	19.7
4+	23	19.7
Members in workers family		
1-4	45	38.5
5-8	59	50.4
9+	13	11.1
Education of the workers		
Illiterate	63	53.8
Primary	26	22.2
Class-VIII	16	13.7
S.S.C	8	6.8
H.S.C	1	0.9
Others	3	2.6
Hygiene facilities toilet		
Hygiene ring toilet	72	61.5
Open place	30	25.6
Others	15	12.8
Hygiene ring toilet	72	61.5
Hygienic facilities water		
Deep tube well	109	93.2
Deep water	6	5.1
Supply water	2	1.7

Discussion:

This was a cross sectional study conducted in tobacco factories in Rangpur district, Bangladesh to assess the patterns of oral hygiene practices among the tobacco workers. The tobacco industry occupies a prominent place in rural development in terms of its capacity to offer potential employment opportunities to a large number of people. For the tobacco industry Rangpur is one of the major hubs in Bangladesh. It is estimated that around one

Table II: Oral hygiene practiced by the tobacco workers (n=117)

	N	%
Regular brushing		
Yes	112	95.7
No	5	4.3
No. of time brushing in a day		
One time	50	42.7
Two times	62	53.0
Three times	2	1.7
Five times	3	2.6
Brushing schedule		
Morning after woke up	114	97.4
After lunch	15	12.8
Morning after breakfast	23	19.7
After taking every meal	3	2.6
Before every work prayer	3	2.6
After noon tiffin	8	6.8
After dinner	20	17.1
Components for tooth brushing		
Tooth brush & tooth powder	24	20.5
Tooth brush and tooth paste	33	28.2
Coal	22	18.8
Gul	4	3.4
Nim stick	3	2.6
Meswak	4	3.4
Ash	10	8.5
Tooth powder and finger	17	14.5
How you clean food that attached within two teeth		
Thread	4	3.4
Tooth peak	109	93.2
Tooth brush	2	1.7
Stick	2	1.7

million workers mostly woman and children are employed in tobacco processing. A large proportion of the workers are living below the poverty line, with an in enviable living condition and health status. The use and manufacture of tobacco products are progressively increasing in Bangladesh. It has been known for many decades that tobacco industry is the leading preventable cause of ill health especially oral health. Tobacco workers are working in an unhygienic environment in their working place and they are suffering from various oral diseases. Continuous inhalation of tobacco dust and passive smoking also creates oral diseases of tobacco workers.

In this study, it is found that 60.70% respondents are male and 39.7 % were female. About half (51.4%) of workers are in the old aged group of 41-70 and only 5.1% are young aged. Khatun et al.¹⁰ reported workers in tobacco industry are mostly (95%) female, and age of the workers was 26-35 years in the largest group, according to Bangladesh Institute of Labor more than millions of workers are engaged in tobacco industries and most of them were women and children.¹¹

It is found, most of the workers about 69.2 % are live in village. Current study found that most (80.4%) workers'

Table III: Oral hygiene index in relation to work category (n=117)

	Oral Hygiene Index			
	0-1	1.3-3	3.1-6	6+
Making bidi	2	4	18	4
Tobacco processing	2	6	15	10
Zadda processing	0	0	3	0
Gul processing	0	1	3	2
Administrative work	1	4	9	1
Labour	5	7	14	6

home are made by tin and chala, 28.2% workers house has single room, and rest 39.4% workers house has more than two rooms. Though the workers are live very compactly there are 38.5% have 1-4 members and 61.5% have more than 4 family members. It is found that 93.2 % worker use deep tube well for their water and only 1.7% use supply water (table I). Rahman (2008)¹¹ found that most of the workers houses are huts made of bamboo, wooden boards or plastic. They always use kancha or open or hanging latrine and kancha drains for their toileting. So, it creates health hazards some time throughout the year or in continuous form, because of environmental pollution.

Moreover a large number of tobacco workers live in overcrowded and unhealthy environment where basic services and utilities are either absent or grossly inadequate. Along with continuous inhalation of tobacco dust, unhygienic and overcrowding working and living environment without basic services and utilities makes them more vulnerable to suffer from various oral and systemic diseases. Due to illiteracy they have less confidence as well as scope to work anywhere. Once they enter do not want to leave due to better payment and once they get the opportunity to earn from this sector, though hazardous, they do not usually want to switch over. Unawareness of diseases comes naturally with illiteracy and affects the practice of oral hygiene.^{10,12,13}

In our study, it is found that almost (95.7%) workers brush regularly; and 53% twice a day. Most of the workers about 97.4% brush at morning after woke up and 19.7 % are brushing morning after breakfast. It is found that, 20.5% workers use tooth brush and tooth powder for brushing, 28.2% use tooth brush and tooth paste. In our observations, it is found that 93.2 % use tooth peak and 3.4% use thread for clean food debris for interdental cleaning (table II). These findings are comparable with the study results of Vanishree et al.¹⁴ they showed that more number of illiterates were using indigenous aids for brushing their teeth; it was observed that more number of literates used tooth paste and powder than illiterates, who used more indigenous materials like charcoal, salt and tobacco. Out of 426, 343 subjects were brushing once in a day and 83 were brushing twice or more than twice a day. It can be seen that the number of people brushing twice or more than twice a day increased as level of education increased.

Our data indicate better oral hygiene practice by tobacco

workers in comparison with other workers. Jitender et al.¹⁵ reported oral hygiene of the workers of stone mine in Jodhpur, India, was very poor. No worker used a toothbrush and toothpaste to clean their teeth; 43.1% of the workers occasionally cleaned their teeth using indigenous aids (neem or babool stick, ash, clove oil, or salt).

Conclusion:

The present study showed that the levels of oral disease knowledge and attitudes were low. Poor quality of life in terms of experience of pain and discomfort from teeth was common in interviewed; however, due to limited access to dental care most people remained underserved. Dental visits were infrequent and mostly carried out for emergency care. The multivariate analyses of dental caries experience revealed the existence of socio-behavioural determinants of oral health; dental caries and pain are currently somewhat higher among the privileged population groups.

In addition, in order to prevent oral disease and promote oral health the national health authorities should give priority to community-oriented oral health care and essential care should be offered according to the primary health care concept. Hence appropriate public health actions at various levels need to be taken like health education and health promotion is of utmost important to curtail the disease in this population.

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Knowledge and Practice About Oral Hygiene of School Children in Northern Region of Bangladesh

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Abstract

Background: Oral health and overall health and well being are inextricable connected. It is important to know the knowledge and practice about oral hygiene among the school children of northern region of Bangladesh, Rangpur for planning and providing effective dental care services. **Objectives:** To assess the knowledge and practice on oral hygiene among primary school student in Rangpur, Bangladesh. **Materials and Methods:** This cross sectional study was done among the 124 students of primary school. Purposively selected 124 primary school student were interviewed through a structured questionnaire followed by through checklist. **Results:** It is found that 54.8% students are known about tooth problem. About half of the students (50.80%) said food impaction and micro-organism are the reason for tooth cavity. It is found that 64.5% said regular tooth brushing can save us from gum bleeding. It is revealed that 82.7% students eat fruits regularly, and 83.9% believe that milk and vegetables are the essential food for teeth and 90.3% believe that sweet is harmful for teeth. In maintenance of oral hygiene, 98.4% brushing regularly, of them 67.7% brushing twice daily, 89.5% brushing morning after get up, and 75% use tooth brush and paste. **Conclusion:** The present survey showed that the levels of oral disease knowledge and attitudes were low. The school may serve an effective platform for promotion of oral health in relation to children as well as families.

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Key words: Oral health, knowledge, practice, school children

Introduction:

Apart from some developmental and structural defects, human teeth may suffer from decay and are lost eventually if proper care and precautionary measures are not employed in due time.¹ Oral diseases affect the most basic human need: the ability to eat and drink, swallow, maintain proper nutrition, smile and communicate. Oral health and overall health and well being are inextricable connected. The lips, tongue, gingival (gum), oral mucosa and salivary glands can all signal clinical disease elsewhere in the body. Periodontal diseases are now being investigated as potential risk factors for the development of systemic disease. For instance, accumulating evidence now points to a possible link between periodontal diseases and the incidence of premature, low-birth weight babies, cardiovascular disease and pulmonary disease. Oral diseases affect not only the health of the oral cavity and associated craniofacial structures, but can be detrimental to the overall health and well-being of individuals.²

Poor oral health and tooth loss have a profound effect on general health, quality of life, and can lead to poor dietary habits. Although the patterns of dental disease are gradually changing, knowledge and practice on oral hygiene are the

most important to reduce the frequency of the patients attending to the dental hospitals. It is an established fact that in primary school students occupy a significant position in future life. They will play role model for the society and opinion leaders of the future in their field.

Oral disease is still one of the most prevalent diseases in different parts of the world. Many studies conducted in Western countries have reported a general decline in dental disease prevalence.³ In contrast, several studies in Saudi Arabia have reported very high dental diseases prevalence in school children⁴⁻⁷. It has been observed that optimal gingival and periodontal health is related to good oral hygiene. Studies done by Alexander (1970)⁸ and Horowitz (1980)⁹ have shown a positive correlation between oral hygiene and gingival/periodontal disease. Similarly, a correlation has also been reported between oral hygiene and dental caries.^{10,11}

Therefore, it would be interesting to determine the knowledge and practices of oral hygiene among school student. It is important to know the knowledge and practice about oral hygiene among the school children of northern

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region of Bangladesh, Rangpur for planning and providing effective dental care services. The study was done with a view to assess the knowledge and practice on oral hygiene among primary school student in Rangpur, Bangladesh.

Methodology:

A descriptive cross sectional study was carried out in primary school at Rangpur in November 2013 to January 2014. One hundred and twenty four, 61 male and 63 female, age ranged from 8 years to 11 years, students were selected purposively as study sample. A structured questionnaire (both Bengali and English version) considering all objectives of the study was used in data collection. Data were collected through face to face interview of the students, and by oral examination. Dental examination of the students and interview of them were done after taking verbal consent of the class teachers. Data were collected on the basis of age, sex, knowledge about dental problem, maintenance of oral hygiene tools, knowledge of prevention of dental disease and school dental health education and, Oral Hygiene Index, Periodontal Index, Mobility Index, Plaque Index, Gingival Index. Materials used for oral examination were dental caries probe, dental mirror, cotton, antiseptic solution. The students dental examination were carried out with torch light on normal chair. Pointed end of the caries probe was gently pressed over the black marks if any on the tooth surface to identify carious teeth. Tip of the periodontal probe was introduced into the selected gingival margin to score the gingival condition. The data were checked before leaving the interview area and necessary correction were made at the spot.

Statistical Analysis: SPSS software package (version 17) was used to analyze the data. Descriptive statistics were used for all variables. Values were expressed as percentage.

Results:

In this study it is found that maximum (82.7%) students eat fruits regularly. Most (83.9%) of the students, believe that milk and vegetables are the essential food for teeth and majority (90.3%) believe that sweet is harmful for teeth. In this study it is found that many (63.7%) eat biscuit/cake, and 64.5% drink water and 8.1% drink soda water in between their two meals (table I).

In this study it is found that, 43.5% students reported that there are program about health in their school and 72.6% answered that their teacher tell about oral and dental health. Most (95.2%) of said that their teacher tell about healthy food, and about teeth brushing (table II).

It is found that, most (56.6%) are bad odor may occur because of not taking proper oral and dental care. There are found 73.4% not brushing regularly, and 20.2% think eating excessive sweetened food is the reason for oral and dental

Table I: Distribution of respondents according to food habit (n=124)

Parameter	Frequency	Percent
Are you eat fruits regularly		
Yes	102	82.3
No	22	17.7
Which food is essential for teeth		
Milk	55	44.4
Rice	16	12.9
Vegetables	49	39.5
Bread	4	3.2
Which food is harmful for teeth		
Rice	4	3.2
Sweet	112	90.3
Bread	4	3.2
Milk	4	3.2
Which tiffin you take in between two meals		
Fresh food	26	21.0
Biscuit/cake	79	63.7
Chips	4	3.2
Candy/chocolate	15	12.1
Which drink you take in between two meals		
Soda water	10	8.1
Sweet water	21	16.9
Tea/coffee	13	10.5
Water	80	64.5
Total	124	100.0

Table II: Distribution of respondents according to school dental health education (n=124)

Parameter	Frequency	Percent
Have any program about health in your school?		
Yes	54	43.5
No	70	56.5
Does your teacher tell about oral and dental health?		
Yes	90	72.6
No	34	27.4
Does your teacher tell about healthy food?		
Yes	118	95.2
No	6	4.8
Does your teacher tell use paste for tooth brushing?		
Yes	90	72.6
No	34	27.4
Does your teacher tell about the ideal process of brushing?		
Yes	48	38.7
No	76	61.3
Does your teacher tell to go dentist for every six month?		
Yes	41	33.1
No	83	66.9
Does your teacher advice to use flouride tooth paste?		
Yes	2	1.6
No	14	11.3

Table III: Distribution of respondents according to dental health education (n=124)

Parameter	Frequency	%
From which person you learn from dental care?		
Dentist	27	21.8
Parents	80	64.5
Teacher	11	8.9
Friends	3	2.4
Television	3	2.4
Which problems may occur for not taking proper oral and dental care?		
Bad odor	70	56.5
Tooth pain	38	30.6
Early tooth loss	5	4.0
Tooth and gingival disease	11	8.9
What is the reason do you think for oral and dental disease?		
Not brushing regularly	91	73.4
Eating excessive sweetened food	25	20.2
Not eating nutrient food	4	3.2
Not regularly visit with dentist	3	2.4
Others	1	0.8
What we should do for oral and dental health?		
Regularly and properly clean teeth and mouth cavity	101	81.5
Eat balance and nutrition food	5	4.0
Regular visit to dentist	10	8.1
Avoid harmful food for teeth and cavity	5	4.0
Eat fresh fruite	3	2.4
Do you talk about oral and dental health with your classmate?		
Yes	68	54.8
No	56	45.2
If yes, why talking?		
Teach others as you know	30	24.2
Learn from others as you not know	21	16.9
Increase teeth and oral cavity related awareness	12	9.7
Make discussion for amusement	7	5.6

Table IV: Distribution of respondents according oral hygiene practice (n=124)

Parameter	Frequency	Percent
Do you brush regularly?		
Yes	122	98.4
No	2	1.6
How many times you brush daily?		
1 time	32	25.8
Two times	84	67.7
Three times	8	6.5
When do you brush?		
Morning after get up	111	89.5
Morning after breakfast	12	9.7
Before bed	48	38.7
After lunch	11	8.9
After noon snacks	3	2.4
After dinner	39	31.5
What element you use for brushing?		
Brush and powder	29	23.4
Coal and finger	2	1.6
Brush and paste	93	75.0

Table V: Oral Hygiene Index, Plaque Index, Gingival Index in terms of age group and sex.

Age Group	Parameter of Index	Index Value	Sex	
			M	F
8-9 Years	Oral Hygiene Index	0	1	0
		0.1-1.0	3	4
		1.1-2.0	6	10
		2.1-3.0	1	4
		3.1-4.0	2	1
		4.1-5.0	1	3
	5+	0	1	
	Plaque Index	0	4	9
		0.01-0.10	4	4
		0.11- 0.20	5	9
		.21-.40	1	1
		0.025	0	1
0.031		0	1	
Gingival Index	0.04	1	0	
	0.0625	0	1	
	0.083	0	1	
	0.095	0	1	
	0	0	1	
	0.1-1.0	5	3	
10-11 Years	Oral Hygiene Index	1.1-2.0	9	10
		2.1-3.0	7	8
		3.1-4.0	5	6
		4.1-5.0	4	1
		5+	7	5
		0	9	14
	Plaque Index	0.01-0.10	8	6
		0.11- 0.20	15	12
		.21-.40	4	1
		.40+	1	1
		0.01042	0	1
		0.02	1	0
Gingival Index	0.03	1	0	
	0.05	0	1	
	0.12	0	2	
	0.25	0	1	

diseases, and 81.5% response positively to clean teeth and oral cavity regularly and properly. In this study it is found that 54.8% students talking about oral and dental health with their classmate and among them 24.2% teach others as they know and 16.9% learn from others as they not know and 9.7% increase teeth and oral cavity related awareness (table III). In our study it is found that, most (98.4%) answered they are brushing regularly and of them 67.7% brushing twice daily, and 89.5% brush morning after get up, and 75% reported that they use brush and paste (table IV).

In this study, 31.5% female and 21.6% male student with age group 8-9 have found good and fair Oral Hygiene

Index. On the other hand 10.5% female and 5.8% student with age group 8-9 have found poor Oral Hygiene Index. In comparison with 10-11 age group student 38.6% female and 41.1% male student with have found good and fair Oral Hygiene Index. On the other hand 21% female and 35.3% male student found poor Oral Hygienic Index. Similarly, 24.5% female and 19.6% male student with age group 8-9 have found Plaque Index good. On the other hand 35% female and 54.8% male student with age group 10-11 have found Plaque Index good. In the context of Gingival Index male and female in the age group 8-9 and 10-11 found normal gingiva (table IV).

Discussion:

This study has provided an interesting insight into knowledge and practice about oral hygiene among school children in Rangpur, the northern region of Bangladesh. The results will be utilized in motivating the students to improve their oral health behaviors and practices in the study areas. These results will also serve as base-line data for the future comparisons because; the literature has not reported any study conducted among school children in Rangpur. Al Dossai et al. (2001)¹² and Wyne et al. (2002)⁶ have suggested to organize school based preventive programs which will impart awareness and knowledge about oral health. As a developing country like Bangladesh the prevalence of different oral and dental diseases is not fully explored and documented but the pattern of dental disease has been changing with the implementation of different preventive programs and different professional's experts practices.

A large number of students were eating carbohydrate containing food and consuming sugary products. It is a matter of serious concern that majority of the students were unaware of the harmful effects of sweets, soft drinks, sweetened milk and confectionaries. A study¹³ of oral health knowledge of schools children showed that most (88.4%) of the students had adequate level of knowledge on causes, prevention and signs of dental diseases and 79.1% had adequate knowledge, and effects of sugary consumption on dental diseases.

Begum,¹⁴ in her review article on oral health education in Bangladesh showed that the knowledge of oral health education is an important aspect of our daily life. It has a great role for the community, Bangladesh is a developing country and most of the people are very poor and illiterate. About 95% people live in the rural areas; most of the people are victim of different oral diseases, health education is beyond their knowledge. She identified that the major oral health education problem in our country are illiteracy, lack of motivation, financial problem, inadequate dental surgeon, dietary and other habits and administrative problem. Xenith and Islam¹⁵ has reported that most (97.5%) of the children

are taught tooth brushing from their parents and rest of the respondents taught tooth brushing from others. Similar result found in the study by Mia et al.¹⁶ Parents, teachers and others personnels and media are important factors to motivate the children to maintain oral hygiene.

It was observed in this study that majority of the students had appropriate brushing habits. In a study by Xenith and Islam,¹⁵ it is found that most of the children brushed their teeth every day and twice daily at age of 5 to 10 years, and maximum children brushed their teeth at morning and night. Age is an important factor for maintaining oral hygiene, as increasing the age children can realize the importances of care of teeth. Khan¹⁷ conducted a study on 3-12 years old 646 children in Swat, Pakistan and found border line significant in relationship of age and oral hygiene maintainence. These results support our study findings and similar reports are found in another study by Tak¹⁸ and Juan¹⁹.

The study by Xenith and Islam¹⁵ found 92.4% children clean their teeth with tooth brush and tooth paste. This result is supported by Mia et al.¹⁶ who found most of the respondents use tooth brush and pest to clean their teeth. The results differ from another study by Sarwar et al.²⁰ who found that 33.2% were using tooth brush and 12% were using tooth paste; and rest of the respondents clean teeth using finger, branch of teeth, and ash, tooth powder and charcoal. These differences between might be due to as they conducted the study in rural area.

This was worth nothing that a great majority of the students were using tooth brush to clean their teeth whereas very few students were using miswak. Several studies have reported on the usefulness of miswak for dental health^{21,22}. Therefore, it would be beneficial to use a combination of brush and miswak for optimum oral health. Most importantly, the use of miswak has been encouraged through the religious and cultural hygiene guidelines and traditions. The increased use of dental floss could also be attributed to increased awareness about oral health and also to increased number of restored teeth, which sometime makes it compulsory to clean the interproximal areas with dental floss. The results are in agreement with the study by Al-Zahrani et al. (2004)²³.

It has been established that a poor oral health negatively affects the rest of the body (Sheiham, 2005).²⁴ Oral diseases are among the most common chronic diseases in the world, and are more common in developing countries than in industrial countries. This is due to poor oral hygiene, inadequate dental health care, lack of dental programs and policies, economic stagnation, and a shortage of dental personnel.^{24,25} Oral hygiene is poorer, and gingivitis is more common in all age groups in developing countries compared to industrial countries²⁶. Gingivitis arises from

accumulation of dental plaque and the signs are red and swollen gum with bleeding, especially when brushing the teeth. If not treated it might lead to periodontitis.²⁷

For both children and adults of western industrialized countries significant improvements in oral health status are now noted, with factors to be considered such as changing patterns of sugar consumption, improved oral hygiene, effective use of fluorides, changing lifestyles, standards of living, establishment of school based preventive programs, and effective use of oral health services.²⁸ In developing countries, changing living conditions due to urbanization and adoption of western lifestyles are often considered potential risk factors for the incidence of dental caries and recent population data show that the prevalence of dental caries is related to socioeconomic factors in developing countries as for developed countries.²⁹

Conclusion

The present survey showed that the levels of oral disease knowledge and attitudes were low. As parents and school teachers are important informants in oral health of the students involvement should be considered in planning oral health education for teacher as well as students. The school may serve an effective platform for promotion of oral health in relation to children as well as families. Poor quality of life in terms of experience of pain and discomfort from teeth was common in interviewed; however, due to limited access to dental care most people remained underserved. Dental visits were infrequent and mostly carried out for emergency care.

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Adhesive Reattachment of Tooth Fragment

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Abstract:

Recent developments in restorative materials, placement techniques, preparation design, and adhesive protocols allow clinicians to predictably restore fractured teeth. Using a minimally invasive approach, treatment of the maxillary anterior region can be effortlessly completed within a single appointment. If the original tooth fragment is retained following fracture, the natural tooth structures can be reattached using adhesive protocols to ensure reliable strength, durability, and aesthetics. This article discusses the adhesive reattachment of a tooth fragment to a fractured incisor using a conservative preparation technique.

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Key words: Adhesive reattachment, Tooth fragment.

Introduction:

Coronal fractures of the anterior teeth are a common form of dental trauma that mainly affects the maxillary incisors because of their position in the arch.^{1,2} Factors that influence the management of coronal tooth fractures include the site of fracture, size of fractured fragments, periodontal status, pulpal involvement, root maturation, biological width invasion, occlusion and time. One of the options for managing coronal tooth fractures especially when there is minimal or no violation of the biological width, and the fractured fragment is retained, is the 'reattachment' of the dental fragment.

The concept of 'reattachment' began in 1964 when Chosak and Eidelman used a cast post and conventional cement to reattach an anterior crown segment.³ Recent developments in restorative materials, placement techniques and adhesive protocols allow reattachment using resin based composites. Tannery was the first to use acid etch technique for the reattachment of fractured tooth fragment.⁴ Subsequently, Starkey and Simonson have reported similar cases.⁵⁻⁶

Tooth fragment reattachment techniques⁷⁻¹³ represent an important step in the science and art of restoring fractured anterior teeth and present some advantages⁵ over the restoration obtained with a composite resin system: (1) better esthetics, because they make it possible to restore the former tooth shape and coloring; (2) long-lasting esthetics, because a minimum of composite resin remains exposed at the facial area, along with the fact that the enamel of the tooth fragment will exhibit, as time goes by, smoothness and brightness identical to the remnant coronal enamel; (3) improved function, because the anterior guide will be

maintained on dental structure, causing an amount of incisal wear equal to that of adjacent teeth; such would not be the case if a composite resin restoration were employed; (4) a positive emotional and social response from the patient to the preservation of natural tooth structure; it is well known that some patients present a marked change of mood when their anterior teeth are restored by different systems; and (5) generally faster and less complicated techniques, because no more than a few minutes are necessary for reattachment.

This article reports on a coronal tooth fracture cases that were successfully treated using tooth fragment reattachment.

Case Report:

A 13-year-old girl presented 6 hours following traumatic fracture of the maxillary left central incisor (Figure 1). The fractured portion of the tooth was recovered and carried by the patient in dry condition. Because fractured portion of the tooth was found contaminated with dust, It was washed with sodium hypochlorite (5.25%) solution for a minute; after then stored in sterile water to prevent discoloration and or infractions from dehydration.

Clinical and radiographic examination revealed evidence of shallow pulpal exposure (Figure 2), but no mobility, root fracture, or soft tissue damage, and completed root formation. Examination of the tooth fragment revealed no fragmentation of the edges (Figure 3). A clinical trial in, when the fractured portion was repositioned on the fractured tooth; showed no discernible disruption or defect at the cavosurface margin of the fracture site. Now the

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fragment was placed in a 0.12% chlorhexidine solution for disinfection.

An infiltration anesthesia was administered at the vestibule against the fractured tooth; Cvek pulpotomy was done (Figure 4). The fractured segment was then removed from the chlorhexidine solution. A small portion of the internal dentin surface from the fracture tooth fragment was removed to accommodate resin cement placement, with care taken to preserve the peripheral margin (Figure 5). No additional tooth preparation was carried out. The fragment and tooth were subsequently cleaned with a 2% chlorhexidine solution, rinsed, and lightly air dried. The enamel margin of the fractured tooth and fractured fragment were etched for 15 seconds with phosphoric acid, rinsed for 5 seconds, lightly air thinned to avoid desiccation. A hydrophilic adhesive agent (Prime & Bond NT, Dentsply/Caulk, Milford, DE) was applied to the dentin and enamel each for 20 seconds with a disposable brush. Using continuous motion, the excess adhesive was removed with a dry microbrush applicator and cured with LED light for 10 seconds. Dual-cured resin cement (Calibra, Dentsply/Caulk, Milford, DE) was injected onto the internal surface of the fragment. An adhesive applicator tip was used to seat the fractured tooth fragment firmly in place, and the excess resin cement was removed. It was imperative to leave some residual cement at the margins to prevent voids and to compensate for polymerization shrinkage. Now the biological restoration was polymerized from all aspects (ie, facial, incisal, and lingual, proximal) for 40 seconds each. Once the resin cement was polymerized, the residual excess cement at the restorative margin was finished with a series of finishing burs (Figure 6).

Patient was discharged with an instruction of contact dental office immediately if there is any pain or observation of any color change. Otherwise a periodic follow-up schedule was



Fig.1: Preoperative figure showing fractured upper right central incisor.



Fig. 2: Showing shallow pulpal exposure during clinical examination.



Fig.3: Showing fractured tooth fragment with no fragmentation of the edges during clinical examination.

fixed up after 1 ½ months, 6 months, and 12 months, then once yearly. A 1 ½ months follow up showed a normal vitality test response (mild awareness of cold sensation but no pain), no change in color on the treated tooth and good retention. Finally until this day, a 3 years follow up revealed good retention of the fragment as well no-color change and a normal Vitality test response (mild awareness of cold sensation but no pain).

Discussion:

In the present case, an ultraconservative approach was adopted and the fractured fragments were reattached without the use of post for retention, unlike many previously reported cases. However, Anterior tooth fragments have since been reattached using composite, interlocking mini-pins, and light-cured resins.¹⁴ In the following years, various techniques have been described for the reattachment of the original tooth fragment using acid-etch bonding, various tooth preparation techniques, and light- and chemically cured composite resin.⁶ No significant



Fig.4: showing Cvek pulpotomy carried out in fractured upper right central incisor.

differences have been noted, however, in the fracture resistance of teeth prepared with a 45° external circumferential bevel with no mechanical preparation for creation of a "biological restoration."¹⁵⁻¹⁷

The following re-attachment strategies have been advocated for re-attaching a tooth fragment¹⁸ : a) Placement of a circumferential bevel, b) Placement of an external chamfer at the fracture line after bonding, c) Use of a V-shaped enamel notch, d) Placement of an internal groove, e) Leaving a superficial over contour of restorative. Reis and Colleagues have shown that a simple reattachment with no further preparation of fragment or tooth was able to restore only 37.1% of the intact tooth's fracture resistance whereas buccal Chamfer removed 60.6% of the intact tooth's fracture resistance.¹⁸

The present case reveals 3 years retention of the fragment whereas Anderson et al reported 25% retention of fragments



Fig.5: Showing preparation of the fractured tooth fragment. Small portion of the internal dentin surface from the fracture tooth fragment was removed to accommodate resin cement placement.



Fig. 6: Post operative figure showing reattached fractured fragment in upper right central incisor. Natural aesthetics could be preserved.

for 7 years and noted that this technique is especially useful for young patients needing apexogenesis or in mixed dentition age where delaying prosthetic restoration of tooth is required until eruption and tooth position have stabilized.¹⁹ The patient of the present case was 13 years old while on very first visit.

There is, however, no synthetic restorative material yet that can replicate the aesthetic characteristics or color stability of the natural tooth structure.²⁰ Composite resins do not have hydroxyapatite crystals, dentin tubules, or enamel rods, these newer formulations possess secondary optical properties such as translucency, opacity, opalescence, iridescence, fluorescence, and surface gloss. Therefore, another aesthetic and minimally invasive restorative alternative for the fractured anterior tooth is the reattachment of natural tooth fragment.²⁰ In the present case the fracture fragment after reattachment shows a mild bleaching effect which may be due to the washing with 5.25% Sodium Hypochlorite solution to remove contamination.

However, the prognosis of the treatment depends on firm attachment of the fragment to the tooth, with impervious margins, strong bonding between the two segments and the tooth preparation. Reattachment technique have been described in demanding clinical situations, as in a case report by Simonsen where incisor fragment was reattached and tooth subsequently subjected to orthodontic treatment without difficulty.⁶

Conclusion:

It could be concluded that tooth fragment reattachment is a viable technique that speed and simplify treatment, restore esthetics and improve long term success rate, hence should be considered when treating patients with coronal fractures of the anterior teeth.

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Management of mandibular 2nd molar tooth with single root canal –A case report

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ABSTRACT

In this study, we report a case of one root canal in a mandibular second Molar that was endodontically treated. The possibility of one root canal in mandibular second molar is quite small; however, it must be taken into account in clinical and radiographic evaluation during endodontic treatment. Often, their presence is noticed only after commencement of root canal treatment.

Key words:

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Introduction:

A clear understanding of the root canal anatomy of the human dentition and its variations is a prerequisite for successful conventional endodontic procedures. The anatomical complexities of root canal anatomy have been highlighted in the literature, and the need for the clinician to understand the probable aberrations have been emphasized (1, 2, 3, 4).¹ Usually the factors that make a root canal treatment unsuccessful and failures are incomplete instrumentation of root canals, improper cleaning and poor filling of the canals.²

The mandibular second molar most commonly has two roots, One mesial and one distal. Most commonly the tooth has two smaller canals in the mesial root and one large canal large canal in the distal root.³ There may be many variations in the canal configurations such as a single mesial canal, two distal canals or as is the case which will be presented today, there may be only one fuse root with a large single canal.

Patients of Asian descent have different percentages of canal configurations than those of Caucasian and African population⁴. The purpose of this paper is to report the canal configuration of the mandibular molar teeth and especially the incidence of single root canal in mandibular molar and its management.

Case Report 1

A healthy 30- yrs-old female Mrs. , Ella Mitra hailing from Uttara, Dhaka to the Dept. , of conservative Dentistry and Endodontics with the complaint of pain in the lower right jaw. The pain was sharp in nature. On clinical examination

caries was found on the distoocclusal surface of the lower left 2nd molar. Based on clinical and radiographic findings, my diagnosis was chronic pulpitis. Endodontic access cavity was prepared and a large canal located centrally on the pulpal floor was observed after removal of the pulp. The single canal orifice was visible. After negotiation, pulp was removed with three 30# barbed broach by twisting and withdrawing. Canal was irrigated with 2.25% sodium hypochlorite for stemming of blood. The working length measuring X-Ray was taken with #40 K file. Apical third of the canal was prepared unto # 80 K file by watch winding technique. Middle & coronal third was prepared with large # H file by circumferential filing technique. Final finishing and preparation of the middle and coronal third of the canal

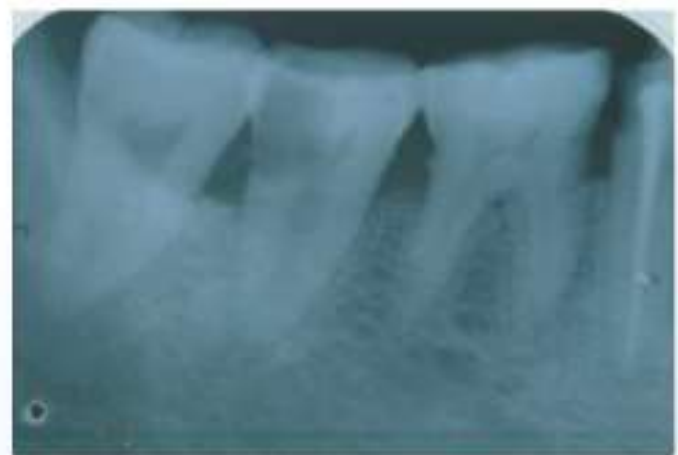


Fig- 1 : (a) Preoperative radiograph

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Fig. 2: Working length measuring radiograph

was done with large no. of K File with withdrawal motion. Every sequential filing was followed by irrigation with NaOCl & recapitulation. For obturation ZnO eugenol was smeared to the canal then apical third was obturate by Master apical cone no. #80 and lateral condensation technique. A radiograph was taken to see the obturation status. The patient was advised for 3, 6 and 1 year follow up visits.



Fig. 3: Post operative radiograph

Discussion

Mandibular 2nd molar has 2 roots, 13.33% mesial roots had one canal and one foramen that is type one canal configuration. 87.67% had two canals of which 66.67% fused to form one foramen, that is type 2 canal configurations. 20% exited through two separate foramen, that is type 3 canal configuration⁵. The distal roots had 95% one canal with one foramen, which is type 1 canal configuration¹. In a study by Weine et al.¹, 96% of second molars had two roots. In the distal root, type 2 canal configuration was very dominant. Type 2 and type 3 systems are also possible though rare⁵. Three separate roots may be found but only rarely.

When the mandibular molar has only a single root, the following variations may be seen. 1. One single large canal,

2. Two canals that merge or remain separate, 3. The 'C' shaped canal². (Founded in single rooted tooth with a kidney shaped root.)

Recent studies have highlighted the tendency for mandibular to have fused roots in 35%-52% of the Chinese patients³.

A review of clinical patients Indicated an 8% occurrence of C- shaped canal at Washington University. Investigators in Japan and China a 31.5% incidence of C shaped canals⁶.

Examination of the pulp chamber floor can reveal clues to the location of orifices and to the type of canal system⁷. If only one canal is present, it is located in the center of the pulpal floor. If only one orifice is found and it is not in the center of the root another orifices probably exists and the clinician should search for it on the opposite side. The closer the canals, the greater the chance of having two canals, that may join at some point in the body of the root⁸. Mandibular 2nd molar also may have only a single root with several variants: one single, large canal; two canals that merge or remain separated or C shaped canal.^{9,10}

Though the single canal in 2nd molar or may be present in 1st molar, care should be taken during access cavity preparation and exploration of the canal.⁸ The possibility of the presence of single canal should be in mind to minimize over searching and over cutting or even gouging or perforation.

Single large Root canal can be prepared by scraping the root canal wall by circumferential filling with large No. H or K file. GG Drill can be used to shape coronal and middle third of the canal. The ideal obturation technique is thermoplasticized GP obturation technique. Vertical GP obturation technique and lateral GP condensation technique can also be used.

Conclusion:

The variable canal configuration from 4 canals, 3, 2 to one large canals those may be presented as type-I to type -IV should be the headache of the clinician for endodontic treatment procedure from endodontic access cavity to obturation. Clinician must be awarded(!) about the single canal as perforation may be occurred during searching for more canals.

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Preparation:

1. Manuscript should be written in English and typed on one side of A4 (290 x 210cm) size white paper.
2. Double spacing should be used throughout.

3. Margin should be 5 cm for the header and 2.5 cm for the remainder.
4. Style should be that of modified Vancouver.
5. Each of the following section should begin on separate page:
 - Title page
 - Summary/abstract
 - Text
 - Acknowledgement
 - References
 - Tables and legends.
6. Pages should be numbered consecutively at the upper right hand corner of each page beginning with the title page.

Title Page: The title page should contain:

- Title of the article (should be concise, informative and self-explanatory).
- Name of each author with highest academic degree
- Name of the department and institute where the work was carried out
- Name and address of the author to whom correspondence regarding manuscript to be made
- Name and address of the author to whom request for reprint should be addressed

Summary/Abstract: The summary/abstract of the manuscript-

- Should be informative
- Should be limited to less than 250 words.
- Should be suitable for use by abstracting journals and include data on the problem, materials and method, results and conclusion.
- Should emphasize mainly on new and important aspects of the study
- Should contain only approved abbreviations

Introduction: The introduction will acquaint the readers with the problem and it should include:

- Nature and purpose of the study
- Rationale of the study/observation
- Strictly pertinent references
- Brief review of the subject excepting data and conclusion

Materials and Methods: This section of the study should be very clear and describe:

- The selection criteria of the study population including controls (if any).

- The methods and the apparatus used in the research.
- The procedure of the study in such a detail so that other worker can reproduce the results.
- Previously published methods (if applicable) with appropriate citations.

Results: The findings of the research should be described here and it should be:

- Presented in logical sequence in the text, tables and illustrations.
- Described without comment.
- Supplemented by concise textual description of the data presented in tables and figures where it is necessary.

Tables: During preparation of tables following principles should be followed:

- Tables should be simple, self-explanatory and supplement, not duplicate the text.
- Each table should have a title and typed in double space in separate sheet.
- They should be numbered consecutively with roman numerical in order of text. Page number should be in the upper right corner.
- If abbreviations are to be used, they should be explained in footnotes.

Illustrations: Only those illustrations that clarify and increase the understanding of the text should be used and:

- All illustrations must be numbered and cited in the text.
- Print photograph of each illustration should be submitted.
- Figure number, title of manuscript, name of corresponding author and arrow indicating the top should be typed on a sticky label and affixed on the back of each illustration.
- Original drawings, graphs, charts and lettering should be prepared on an illustration board or high-grade white drawing paper by an experienced medical illustrator.

Figures and photographs: The figures and photographs:

- Should be used only where data can not be expressed in any other form.
- Should be unmounted glossy print in sharp focus, 12.7 x 17.3 cms in size.
- Should bear number, title of manuscript, name of corresponding author and arrow indicating the top on a sticky label and affixed on the back of each illustration.

Legend: The legend-

- Must be typed in a separate sheet of paper.
- Photomicrographs should indicate the magnification, internal scale and the method of staining.

Units:

- All scientific units should be expressed in System International (SI) units.
- All drugs should be mentioned in their generic form. The commercial name may however be used within brackets.

Discussion: The discussion section should reflect:

- The authors' comment on the results and to relate them to those of other authors.
- The relevance to experimental research or clinical practice.
- Well founded arguments.

References: This section of the manuscript-

- Should be numbered consecutively in the order in which they are mentioned in the text.
- Should be identified in the text by superscript in Arabic numerical.
- Should use the form of references adopted by US National Library of Medicine and used in Index Medicus.

Acknowledgements: Individuals, organizations or bodies may be acknowledged in the article and may include:

- Name (or a list) of funding bodies.
- Name of the organization(s) and individual(s) with their consent.

Manuscript submission: Manuscript should be submitted to the Editor or via e-mail: rdejournal@gmail.com and must be accompanied by a covering letter and following inclusions:

- A statement regarding the type of article being submitted.
- A statement that the work has not been published or submitted for publication elsewhere.
- A statement of financial or other relationships that might lead to a conflict of interests.
- A statement that the manuscript has been read, approved and signed by all authors.
- A letter from the head of the institution where the work has been carried out stating that the work has been carried out in that institute and there is no objection to its publication in this journal.
- If the article is a whole or part of the dissertation or thesis submitted for diploma/degree, it should be mentioned in detail and in this case the name of the investigator and guide must be specifically mentioned.
- Submissions must be in triplicates with three sets of illustrations. The article must be additionally submitted in CD.

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