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Editorial

Actions for Tackling Dental Caries within Serum Vitamin-D Exposure Level: A Public Health Challenges in Dentistry

Saha AK

Dental caries is a common public health problem globally, affecting all ages including young children[1]. Serum vit-D level deficiency is one of the most silent culprits for the human body as well as tooth decay[2]. Vitamin-D deficiency has been associated with significant changes in dental structures. In children, it can induce enamel and dentin defects, which have been identified as risk factors for caries and the prevalence of caries in the permanent teeth and mixed dentition. Advanced caries in permanent teeth was significantly associated with children's vit-D level[3].

The United Nations high-level meeting on NCDs recognized oral disease as a major health burden sharing risk factors with other non-communicable diseases. Dental caries is still the major preventable oral disease affecting children[4]. An MICD approach and integrated methods of prevention involves early detection of caries risk by assessing etiological factors, white spot lesions, and the presence of developmental defects of enamel. This allows the clinician to intervene and change caries risk via preventive advice, including the remineralization of early lesions. In dentistry serum vit-D level is necessary to increased awareness of vit-D deficiency and its association with dental caries amongst professionals is imperative[5].

Vitamin-D dose maintain normal blood levels of calcium and phosphorus, aids in absorption of calcium, promotes bone mineralization, prevents rickets in children and osteomalacia in adults. High proportion of children below 5 years, presenting with dental caries, are deficient in vit-D is most vulnerable for dental caries due to vit-D deficiency[6].

Dental caries and vit-D inadequacy are known to affect children worldwide. Vitamin-D has a vital role in tooth formation. There is growing evidence linking suboptimal serum vit-D level in children a significant risk factor for dental caries. Obesity, age, female gender, higher latitude, season, darker skin pigmentation, sunlight protection behaviors, duration of exposure to sunlight, geographical position, pollution impairing synthesis of vit-D endogenously and low intake of food containing vit-D were important factors associated with lower serum vit-D in Bangladesh[7].

Vitamin D and dental caries is strongly associated with enamel, is important for increasing the absorption of calcium and phosphate that improve the strength of teeth and their ability to fight demineralization from bacteria[8]. Enamel is the most mineralized substance in the human body that is made up of mostly calcium and phosphate. Vitamin-D receptors are found on cells in immune system, buccal mucosa and teeth in where vit-D can bind to these receptors and increase the amount of antimicrobial proteins in your body which help to fight the bacteria that cause dental caries[9]. Dental caries and vit-D inadequacy are known to affect children worldwide which have a vital role in tooth formation. There is growing evidence linking suboptimal serum vit-D level with dental caries in children[10].

Vitamin-D deficiency can be considered a risk factor for dental caries in children. Given that dental caries and vit-D deficiency are seen as major public health issues, there is a great need to address these global concerns, and immediate action should be taken to manage those[11].

Dental caries is a common and most prevalent problem, improving vit-D status in the body, helps to reduce the risk of dental caries. Suboptimal vit-D level in children may be a significant risk factor for tooth decay, gingivitis, and tooth loss. Vitamin-D, in particular, as a promising oral health protective agent, is said to lessen the incidence of caries and periodontitis, leading to a low-precision result. In order to prevent tooth decay, which is a serious public health problem, existing structural defects in teeth (enamel and dentin hypoplasia) and to maintain oral health, the awareness of health care providers should be increased[12].

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Original Article

Comparison of Clinical Effectiveness Between Fast and Conventional Setting Polyvinyl Siloxane Impression Materials for Three Unit Fixed Prosthesis

Bithi SJ[1], Rahman MM[2], Das S[3], Sayied MJA[4], Sultana A[5], Hoque M[6], Faruque F[7]

Abstract:

Background: *The goal of making definitive impressions is to provide an accurate information for indirect restorations. Polyvinyl siloxane (PVS) impression materials have become one of the most widely used impression material in restorative dentistry. The newer fast setting PVS impression materials offer shorter chair time during impression making. However, its accuracy comparing with conventional setting PVS impression materials is needed to be assessed.*

Objective: *To compare clinical effectiveness between fast and conventional setting polyvinyl siloxane impression materials for three unit fixed prosthesis.*

Methods: *This cross sectional comparative study was conducted on 15 patients. After completion of tooth preparation two elastomeric impressions were made for each patient. One impression was made by fast setting polyvinyl siloxane impression material and another one was by conventional setting polyvinyl siloxane impression material. Both of the impressions were evaluated with the help of lactone magnifying vision loupe for the presence of void, bubble & tear. Participants were asked to rate the level of comfort which they have experienced during making of impression. Data were analyzed using Chi-square test to find the level of significance.*

Result: *Majority of the defects were found in conventional setting PVS. There was void 73.33%, bubble 66.66% and tear 13.33%. In fast setting PVS it was void 19.99%, bubble 26.66% & tear 6.67%. In conventional setting PVS, mostly occurred defect at margin was void & area beyond the margin it was bubble. Comfort was better in fast setting PVS (3.13±1.3) comparing with conventional setting PVS (5±1.36) in a scale of 1 to 10 (1 was excellent 5 to 10 was unacceptable).*

Conclusion: *Within the limitation of the study, it was concluded, fast setting PVS impression material is more defect free and comfortable than conventional setting PVS in three unit fixed prosthesis.*

Key words: *Polyvinyl siloxane, Impression materials, Three unit fixed prosthesis*

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Introduction:

The success rate of prosthetic tasks relies on several factors including dimensional accuracy, detail reproduction of impressions, and the corresponding models from which a restoration can be fabricated in the laboratory. Accurate reproduction of preparation margins in an impression is a necessary requirement for achieving good marginal quality. An accurate impression will result in precise fitting cast restorations. This is the main factor that determines the longevity of restoration[1]. Proper fabrication of prosthesis depends upon two factors i.e. materials used for making impression and techniques used to take the impression. Polyvinyl siloxane (PVS) has the best fine detail reproduction and elastic recovery of all available materials, and thus is the impression material of choice for fixed prosthodontics[2,3]. Though PVS has some manipulative variables like contamination by latex or sulfur[4,5,6].

Polyvinyl siloxane impressions have become more popular during the past decade and accounts for nearly 50% of the impressions for fixed prosthodontics. PVS is provided with a wide variety of viscosities: from very low viscosity to medium, high, and very high viscosity. Several techniques have been suggested to improve the accuracy of polyvinyl siloxanes (PVS) impressions, the most commonly used putty-wash impression techniques are putty/wash 1-step technique, putty/wash 2-step technique, and putty/wash

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2-step with polyethylene spacer[7,8,9]. Hydrophilic polyvinyl siloxane (PVS), have improved wettability, but they are only clinically acceptable under dry conditions[10]. The clinical advantage of these less-hydrophobic polyvinyl siloxane (PVS) is its facility to pour the impression. Moisture from saliva or blood can interfere with accurate impressions. Loss of detail at impression margins is caused by many factors, and moisture presence must be considered. Polyvinyl siloxane (PVS) has the best elastic recovery (over 99%) of all available impression materials, an excellent ability to reproduce detail, and is dimensionally stable, which allows multiple pours of accurate casts for several weeks. The material is moderately rigid (less than polyethers), has good tear strength, and can be more easily removed than polyether materials[11]. Polyvinyl siloxane (PVS) can be used with most disinfection protocols and may be cold sterilized without danger of distortion[12]. The fast-setting polyvinyl siloxanes (PVS) impression materials offer shorter chair time during impression making than conventional-setting PVS impression materials[13].

Fast setting polyvinyl siloxanes (PVS) has long-term dimensional stability thus pouring can done when convenient, multiple pours for easy remakes of models and provisional. Other features are high hydrophilicity for easy model pouring, easy and thorough disinfection, scan ability for easy access to the digital work flow, patient-pleasing mint flavor, clean and convenient automixing, homogeneous and void-free material, can be completely disinfected by submersion. Active self-warming for accelerated setting shortest intra-oral setting time for real time-saving, adequate working time for a stress-free procedure. Super hydrophilicity for excellent flow and finest detail reproduction, fresh material colors for easier readability, pleasant minty taste for more patient comfort, the short intra-oral setting time, combined with adequate working time, is one of the most significant application benefits. It has super hydrophilicity, and thus allows for making reliable and high-quality impressions, even under challenging moist conditions. Newer polyvinyl siloxanes (PVS) formulas include nonionic surfactants, which improve wet ability and reduce contact angles. Fast setting polyvinyl siloxanes (PVS) impression materials are available in two setting regimes with exceptionally short intra-oral setting times while adequate working times are maintained. The ideal solution for 1 or 2 unit cases is “Super Quick” materials. A working time of up to 1:15 minutes at room temperature and up to 35 seconds of intra-oral working time allow sample time for most common indication. With a working time of up to 1:00 minute intra-orally and up to 2:00 minutes at room temperature, the conventional setting materials offer more working time which is especially valuable for larger cases[14]. In this study fast setting and conventional setting impression materials were studied clinically through the subjective evaluation of definitive impressions. The purpose of this study was to evaluate and compare clinical effectiveness of two polyvinyl siloxanes (PVS) impression materials for three unit fixed prosthesis.

Method:

This cross sectional comparative study was conducted on 15 patients in the department of Prosthodontics of Bangabandhu Sheikh Mujib Medical University from October 2017 to September 2018. After obtaining clearance and approval from Institutional Review Board, patients who fulfilled the inclusion and exclusion criteria were recruited as subjects in the study.

Adult patients of both genders who are in need of three unit fixed prosthesis, either in the maxillary or mandibular arch with sound cervical area of tooth was included in the study. Grossly destructed posterior tooth, periodontally & systematically compromised patient, history of adverse reactions to impression materials, impressions for implant-supported restorations tooth preparation with finish lines located supragingivally or located ≥2.0 mm below the free gingival margins were excluded from the study.

After preparation of surrounding soft tissue of tooth, saliva control, displacement of gingival tissue by retraction cord, two master impressions were made for each participant (Total 30), one is fast set and another is conventional set with a rigid stock disposable perforated impression tray. Tray adhesive was applied and allowed to dry for 15 minutes according to the manufacturers’ instructions. The double cord technique with a dry nonimpregnated small diameter cord followed by a cord with a larger diameter was used according to the clinician’s preference. The second cord was impregnated with aluminum chloride hemostatic agent. The abutment tooth was rinsed with water to eliminate any contamination of the impression material by the hemostatic agent and to reduce epithelial tears during removal of the impregnated large-diameter cord. Once that cord was removed, the tooth was dried. The nonimpregnated, smaller diameter cord was left in the sulcus during the impression-making procedure. All heavy body impression materials were mixed and light body impression materials were syringed around the prepared tooth with single-use intraoral syringes. Once the tray was filled with the HB material, LB material was added on top of the HB, and the tray was inserted into the participant’s mouth for 2 minutes for the experimental group and 5 minutes for the control group. According to the manufacturer’s instructions minimum 5 minutes was required between impressions to allow adequate time for cord placement and adequate preparation for making the second impression. Participants were asked to rate the level of bubbles, and tears. Regarding these defects- presence, location (at margin or at areas beyond the margin) and number were observed in the impression. If there was any defect, it was determined whether it is void, bubble or tear. If defect was a large empty space or gap, it seems to be more than 2mm it considered as void. After obtaining location, number of void was determined and noted. If a sign of thin sphere of liquid or enclosing air (empty spaces) was found in the impression of the prepared tooth, it seems to be less than 2 mm it considered that bubble was present. If bubble was present then location and number was determined and noted. If the sign of the breaking off the impression material resulted in accurate reproduction of the

margin, it was determined that tear was present. If tear was present then location and number was determined and noted. Findings were collected and recorded in a predesigned data collection sheet.

Data processing and analysis:
The collected data were analyzed by using Microsoft Excel 16 (Microsoft office professional plus 16). Chi-Square Test was done to compare the defect between two materials. P value <0.05 was considered as significance of the result. Mean ± standard deviation was done to evaluate the variables of this study.

Results:
The mean age of the respondents was 40.93 years with SD±12.04. The minimum age was found 18 years and maximum age was 62 years. Male female ratio was 1:2.

Table 1: Occurrence of bubble in fast setting PVS and conventional setting PVS in impression for three unit fixed prosthesis

Area of defect	Fast setting PVS	Conventional setting PVS	t Value	P Value
At the margin	2	4	12	0.0069
At area beyond the margin	2	6	5.5	0.0315

Table 1 showing presence of bubble at the margin and area beyond the margin in fast setting PVS impression material and conventional setting PVS. Both are statistically significant p value is 0.0069 and 0.0315 respectively.

Table 2: Occurrence of void in fast setting PVS and conventional PVS setting PVS in impression for three unit fixed prosthesis

Area of defect	Fast setting PVS	Conventional setting PVS	t Value	P Value
At the margin	2	6	5.5	0.00315
At area beyond the margin	1	5	6	0.0267

Table 2 showing presence of bubble at the margin and area beyond the margin in fast setting PVS impression material and conventional setting PVS. Both are statistically significant p value is 0.00315 and 0.0267 respectively.

Table 3: Occurrence of tear in fast setting PVS and conventional PVS setting PVS in impression for three unit fixed prosthesis

Area of defect	Fast setting PVS	Conventional setting PVS	t Value	P Value
At the margin	0	1	29	0.0012
At area beyond the margin	1	1	∞	∞

Table 3 showing presence of bubble at the margin and area beyond the margin in fast setting PVS impression material and conventional setting PVS. At the margin it is statistically significant p value is 0.0012 and beyond the margin it is non-comparable.

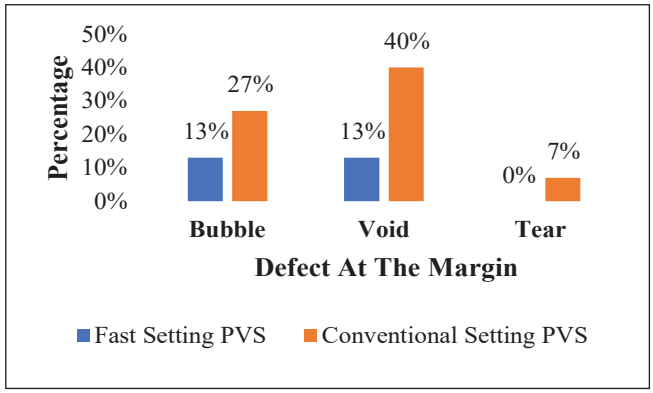

Figure 1: Occurrence of different defects in fast setting PVS and conventional setting PVS at the margin in impression of three-unit fixed prosthesis.

At the margin the commonly occurred defect was void in materials, 40% for conventional setting PVS and 13% for fast setting PVS material. The least occurred defect was tear in both materials.

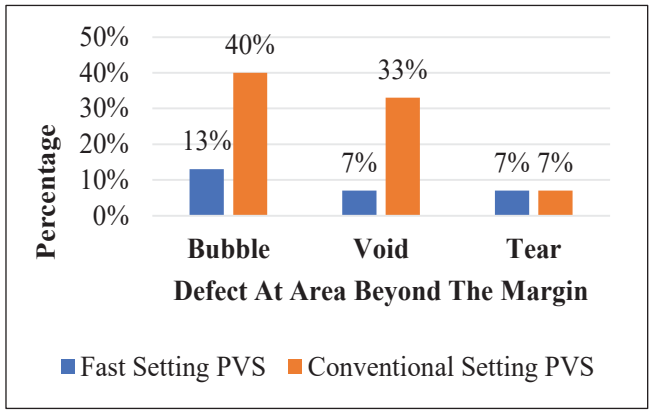

Figure 2: Occurrence of different defects in fast setting PVS and conventional setting PVS at area beyond the margin in impression of three-unit fixed prosthesis.

At the areas beyond the margin the most commonly occurred defect was bubble in materials, 40% for conventional setting PVS and 13% for fast setting PVS material. The least occurred defect was tear in both materials.

Table 4: Comparison of the defects presents in fast setting PVS and conventional setting PVS in impression for three unit fixed prosthesis

Defects	Fast setting PVS	Conventional setting PVS	F value	P value
Tear	1 (6.67%)	2 (13.33%)	.3704	.5428
Void	3 (19.99%)	11 (73.33%)	8.5717	.0034
Bubble	4 (26.66%)	10 (66.66%)	4.8214	.0281

Chi-square test was done to compare the defects between fast setting PVS and conventional setting PVS impressions. There was statistically significant difference in presence of voids and bubbles in impression materials.

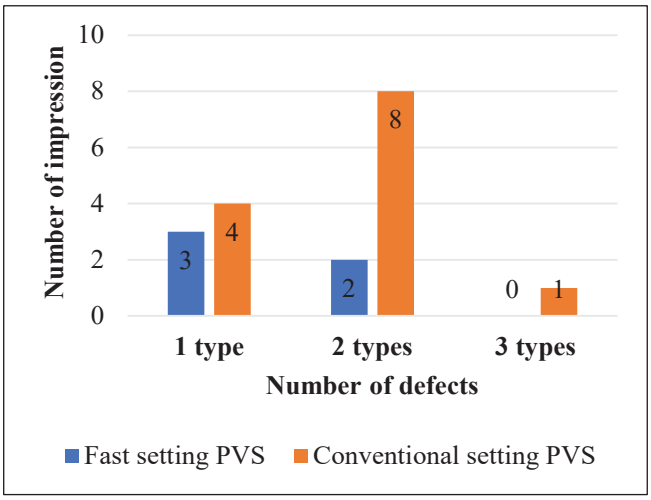

Figure 3: Frequency distribution of impression by number of defects.

Bar chart showing that defects (Void, bubble, tear) was found in 13 impressions (n=15) taken by conventional setting PVS, among them 4 had 1 type of defect, 8 had 2 types of defects, 1 had 3 types of defects. While in fast setting PVS, there was defects (Void, bubble, tear) in 6 impressions (n=15), among them 3 had 1 type of defect, 2 had 2 types of defects, none had 3 types of defects.

Table 5: Comparison of participant rating of comfort between impression materials

Characteristic	N	Experimental Mean (±SD)	Control Mean (±SD)	Difference Mean	t-statistic	P	95% CI
Comfort	15	3.13(1.3)	5(1.36)	1.87	3.85	.0006	.88 to 2.87

Discussions:

In this study 40% of impression made by fast setting polyvinyl siloxane impression materials had void, bubble and tear defects. In conventional setting polyvinyl siloxane impression materials it was 87%. In fast setting PVS 27% of total impressions had bubble, 20% had void and 6.67% had tear. In conventional setting PVS 67% had bubble, 73% had void, and 13% had tear (table-4). All defects were evaluated in two location- at the margin and at area beyond the margin (figure-1 & 2).

In both areas mostly occurred defect was bubble (27%) in fast setting PVS and void (73%) in conventional setting PVS (table-4). At the margin mostly occurred defect was void (53%) (figure-1) and beyond the margin mostly occurred defect was bubble (53%) (figure-2).

Void was frequently occurred defect in conventional setting PVS (73%) and in fast setting PVS it was 20%. In case of bubbles, it most frequently occurred in conventional PVS (67%) and in fast setting PVS it was 27%. Tears was mostly occurred in conventional setting PVS (13%) and in fast setting PVS it was 7%. Least occurred defect for both impression materials was tear and there was no tear at the margin in fast setting PVS (figure-1).

In consideration of location of the defects; For bubble in both areas (at the margin and at area beyond the margin) fast setting PVS had similar occurance (13%). At area beyond the margin bubble mostly occurred in conventional setting PVS (40%). Void was mostly present at the margin for both materials- In conventional setting PVS 40% and In fast setting PVS 13%. There was no tears at the margin in fast setting PVS and area beyond the margin it was same (7%) for both materials.

Chi-square test was done to compare the defects present in fast setting PVS and conventional setting PVS. As per result there was significant statistical difference in presence of void (p-value 0.0034) and bubble (0.0281) (table-4).

The mean±SD of comfort of the experimental group (3.13±1.3) was rated slightly better than that of the control group (5.0 ±1.36; P=.0006) (table-5) which is similar to Dogan et al 2015[13]. Level of comfort and acceptance of patients during the impression procedure may affect the handling and quality of the definitive impression. Almost all impressions had some defects whatever materials are used for making impression. Voids and bubbles were more frequently occurred defects and tears were less frequently occurred defect (table-4).

The fast setting PVS impression group had a shorter setting time. Although the fast setting PVS impression materials demonstrated adequate quality of detail reproduction, moisture control and soft tissue health which are still important for an adequate impression[15]. The results of this clinical study demonstrate that both fast setting PVS group and conventional setting PVS groups performed adequately. Of a total of 30 abutment teeth impressed in this study, none were clinically rated as unacceptable. The quality of both the fast setting PVS and the conventional setting PVS evaluated in this study by the clinical evaluator demonstrated adequate impression surface quality and adequate stone die surfaces. During the syringing of the LB material into the gingival sulcus, air was entrapped and it was a common reason for the voids in critical areas of impressed surfaces. Voids may be exacerbated by saliva contamination of the syringed material. The results of this clinical study are in accordance with those of other studies[8,9,12,13], which demonstrated that the evaluation of the dental definitive cast might be more clinically relevant than the evaluation of the impression.

Conclusion:

Void and bubble formation is less in fast setting PVS impression material than conventional setting PVS impression material. Fast setting PVS impression material was more comfortable to responders than conventional setting PVS impression material

Recommendation:

Within the limitations of this study, it is strongly recommended that further research and long-term follow up investigations are necessary to elicit the best clinical outcome.

Limitations:

Blinding to impression material was not possible as there was

difference of color. Stock trays might provide an increased risk of void formation on the surface of the impression when compared with custom trays. Additionally, the small sample size may not be adequate to demonstrate significant difference in the materials.

Illustration:

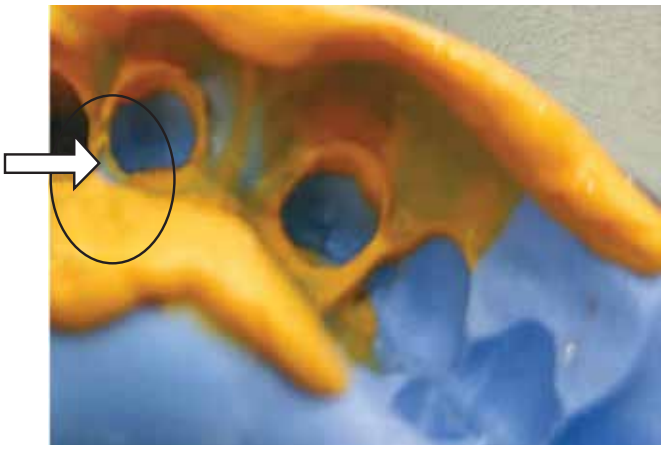

Illustration-1: Void in conventional setting polyvinyl siloxane

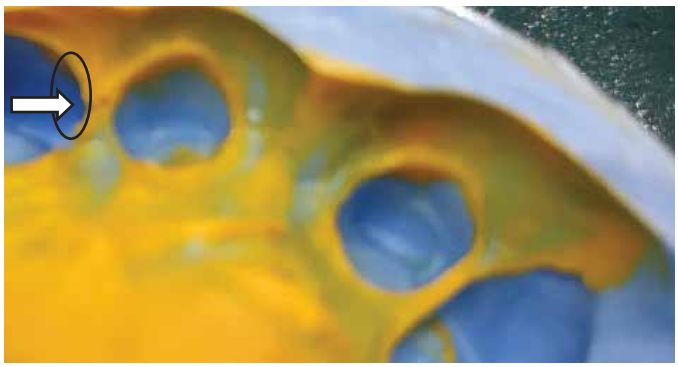

Illustration-2: Bubble in conventional setting polyvinyl siloxane

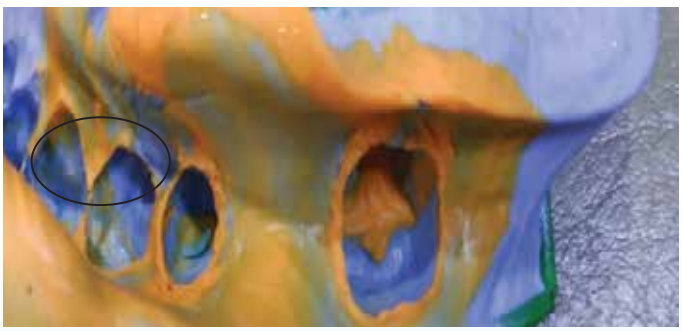

Illustration-3: Tear in conventional setting PVS

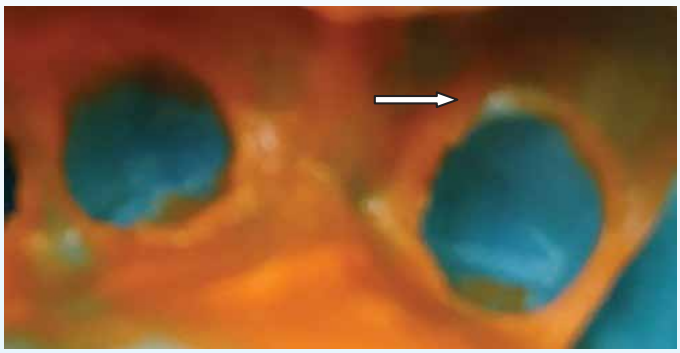

Illustration-4: Void in fast setting polyvinyl siloxane

Illustration-5: Bubble in fast setting polyvinyl siloxane

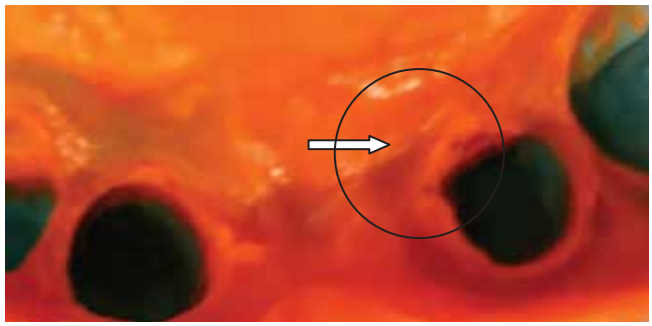

Illustration-6: Tear in fast setting polyvinyl siloxane

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Original Article

Infection Control Pattern of Dental Clinics in a Selected City

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Abstract: *The purpose of the study was to collect information to assess the level of infection control practice and to identify the method of infection control that is sterilization in the dental clinics in a selected city for further research and evaluation of the treatment quality. The study was carried out from January 2012 to June 2012 among 25 dental clinics in Rangpur city for 6 months period.*

Results: *Among the respondents (16%) said draping sheet was supplied by the authority, while 84% were not supplied. Distribution of respondents by wearing theater shoes in the clinic were (96%) whereas (4%) didn't wear and 52% of the patients wear theater shoes in the clinic where as 48% didn't wear it. Among the respondents 8% said plastic syringe were used in the clinic while 92% didn't use. Dental surgeons of 72% (18) of the total clinics used to wear disposable hand gloves where 28% didn't wear, 52% (13) of the dental surgeons used to wear apron where 48% didn't. Among the clinics gloves were available in 92% for the service providers and 68% apron were available for the service providers. 24% of the respondents used dettol to wash the floor, where as 76% used savlon. Among all the operative room 8% used separate container to deposit sharp and other waste and 92% didn't use (96%) of the clinics used chlorohexidine with cetrimide (savlon), and 4% (1) used chlorohexidine with alchohol (hibisol). Among all the clinics 24% used sterilized cotton and 76% didn't and 64% used sterilized gauge (96%) of the clinics had availability of disinfectants. Only (4%) of the clinics had all the available sterilization methods (96%) of the clinics had availability of surface disinfectent. Only (8%) of the clinics had all the available instruments sterilizer.*

Key words: *Infection control, Sterilization, Disinfectants*

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Introduction:

Both the dental professionals and their patients are at the risk of cross infection with a variety of microorganisms present in the blood, saliva and other body secretions that can be prevented through infection control procedures and "Universal Precautions" in the dental office and the dental laboratory. With the assertion of the Center for Disease Control [CDC, USA] and the World Health Organization on emergence of infections as a global threat, published reports indicate concern regarding infection of several dental patients with Hepatitis B virus by and acquired immunodeficiency syndrome. Dental disease is a major public health problem in Bangladesh. It has been shown by a survey done in collaboration with National Health Services and World Health Organization that 82-95% of 12-19 year old had gingival diseases and periodontal diseases ranked 20th in the world. So, increasing number of patients has to consult dental professional for their dental problems. Also patients are becoming more sophisticated in their scrutinizing of the dental and medical professions' approach to asepsis. So, infection control as well sterilization in dental practice now demands more attention and perfection. To prevent the transfer of bacteria from one patient to another via blood or saliva attached to tools used in dentistry[1]. This study was designed to assess the sterilization facilities and practices by the dental surgeons in some private clinics of Rangpur city.

Today's busy dental practices face a serious challenge: to maintain or increase productivity while ensuring that patient safety remains a top priority. At times, these may seem like incompatible goals. Advances in dental processing equipment, however, have empowered practices to develop safer processes while realizing efficiencies and ultimately, saving money.

In Bangladesh approximately 8000 dental surgeons serving in the dental health of almost 16 crore people. Among them near about 40 dental surgeon serving at the different dental clinics in Rangpur city. Dental patients can be exposed to different pathogens including Hepatitis B, Hepatitis C, cytomegalovirus, herpes simplex virus, HIV staphylococci, streptococci and others that can infect the oral cavity and respiratory tract, the organism can be transmitted during dental treatment through (1) direct contact with blood, oral fluids, or other patient materials. (2) indirect contact with

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the contaminated object. (3) Contact of conjunctivas, nasal or oral mucosa with droplets containing microorganism generated from an infected person. (4) Inhalation of airborne microorganism that can remain suspended in the air for long period. Patients, dental surgeons and auxiliaries of all groups are within the risk at every moment when they are in the dental clinics. While some of the risks are inevitable, others are risk that exists in many instances is that of transferring infection from one individual to another[2].

Present study aims at exploring the pattern of sterilization practice among the dental surgeon of Rangpur city to control or prevention of infection. Which can unveil the present scenario of potential cross infection risk existing in dental care procedure. The finding of the study will help the professional to know the base line practice and to take initiative for the up gradation in their sterilization pattern. Another potential important implication of study finding is, the utilization of the information in policy planning by the policy maker.

Methodology:

The study was a cross sectional type of descriptive study. It was carried out from January 2012 to June 2012 among 25 dental clinics in Rangpur city for 6 months period. Study population was the dental surgeons and stuffs of the dental clinics. Structured questionnaire and check list were used as research tool. Data were collected through interview and observation. Then the tabulation sheet was prepared after proper checking, verifying and editing as per specific objective and key variables. Analysis of data was finally done with Statistical Package for Social Science (SPSS 17) program on the basis of different variables. Table were made on available data and statistical procedure were applied in analyzing the data where felt exactly.

Results:

Among the respondents (16%) said draping sheet was supplied by the authority, while 84% were not supplied. Distribution of respondents by wearing theater shoes in the clinic were 96% where as 4% didn't wear and 52% of the patients wear theater shoes in the clinic where as 48% didn't wear it. Among the respondents 8% said plastic syringe were used in the clinic while 92% didn't use, dental surgeons of 72%(18) of the total clinics used to wear disposable hand gloves where 28% didn't wear, 52%(13) of the dental surgeons used to wear apron where 48% didn't. Among the clinics gloves were available in 92% for the service providers and 68% apron were available for the service providers. 24% of the respondents used dettol to wash the floor, where as 76% used savlon. Among all the operative room 8% used separate container to deposit sharp and other waste and 92% didn't use. 96% of the clinics used chlorohexidine with cetrimide (savlon), and 4%(1) used chlorohexidine with alchohol (hibisol). Among all the clinics 24% used sterilized cotton and 76% didn't and 64% used sterilized gauge. 96% of the clinics had availability of disinfectants. Only 4% of the clinics had all the available sterilization methods.

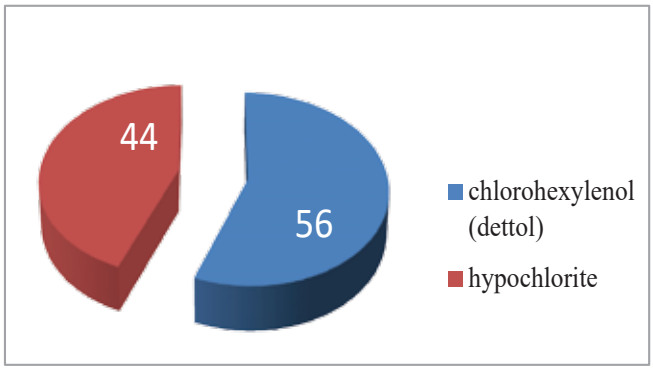

Figure 1: Distribution of the respondents by use of disinfectant 56%(14) of the instruments were sterilized by using chlorohexylenol (dettol), and 44%(11) of the instruments were sterilized by using hypochlorite.

Table 1: Distribution of Respondents by using of separate disposal container

Use of separate disposal container	Frequency	Percentage
Yes	02	8
No	23	92
Total	25	100

Table 1 shows among all the operative room 8%(2) used separate container to deposit sharp and other waste and 92%(23) didn't use separate container.

Table 2: Distribution of respondents by using plastic syringe, disposable hand gloves and wearing apron

Respondents used	Plastic syringe		Disposable hand gloves		Wearing of apron	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Yes	02	8	18	72	13	52
No	23	92	07	28	12	48
Total	25	100	25	100	25	100

Table 2 shows among the respondents 8%(2) said plastic syringe were used in the clinic while 92%(23) said plastic syringe were not used, dental surgeon of 72%(18) of the clinic wears disposable hand gloves where 28%(7) didn't wear it, dental surgeon of 52%(13) of the clinic wears apron where 48%(12) didn't wear it.

Table 3: Distribution of respondents by using of sterilized cotton and gauge

Respondent used	Sterilized cotton		Sterilized gauge	
	Frequency	Percentage	Frequency	Percentage
Yes	06	24	16	64
No	19	76	09	36
Total	25	100	25	100

Table 3 shows among all the clinics 24%(6) used sterilized cotton and 76%(19) didn't and 64%(16) used sterilized gauge while 36%(9) didn't use.

Table 4: Distribution of respondents having available disinfectants

Disinfectant	Frequency	Percentage
Present	24	96
Absent	01	4
Total	25	100

Table 4 reveals that 96%(24) of the clinics had availability of disinfectants and 4%(1) didn't have availability of disinfectant.

Table 5: Distribution of respondents by having available instrument sterilizer

Instrument sterilizer	Frequency	Percentage
Present	02	8
Absent	23	92
Total	25	100

Table 5 shows that 8%(2) of the clinics had availability of instruments sterilizer and 92%(23) didn't have instruments sterilizer.

Discussion:

This cross sectional descriptive study on "Infection Control Pattern of Dental Clinics in a Selected City", A total of 25 dental clinics from where data were collected regarding how they practicing sterilization.

All most one fifth 24% of the respondents used dettol to wash the floor, where as 76% used savlon. Very few 16% of the respondents said that draping sheet was supplied by the authority. Many of them 84% of the service provider were immunized against Hepatitis B virus where as 16% were not immunized. None of the respondents screened the patient for infectious disease. The findings of the study in this regard is not consistent with a similar study conducted by Elliott M et al. on, Sterilisation patterns in dental practices in Singapore[3]. Geographical distance time variation and cultural context may be the reason behind this dissimilarity. None of the respondents have special training on sterilization. The entire respondent said that they used to monitor the sterilization procedure regularly. Only 8% respondent were found using separate container to deposit sharp and other waste and 92% didn't use separate container.

All most all 96% of the service provider wear theater shoes in the clinic and 52% of the patients wear theater shoes in the clinic. Among all the respondents only 8% said disposable syringe were used in their clinic, dental surgeon of 72% of the clinic were using disposable hand gloves, none of the dental surgeon used double gloves while using sharp instruments. The scenario is almost similar in the other countries of the region. A study on 100 respondents was conducted where the dental practices were well equipped to precede the steam sterilization, but 33% dentists don't know the available cycles in their autoclaves. Only 35% of them made sterilization process protocols[4]. But this study reveals that all hand pieces are sterilized by autoclave. Compulsory cleaning of instrument after use was practiced by cent percent clinic under study.

Dental surgeon of 52% of the clinic wears apron. Most of them 96%(24) of the respondents clean instruments after use. All most cent percent 96% of the clinics used chlorohexidine with cetrimide (savlon), and only 4%(1) used chlorohexidine with alchohol (hibisol). Among all the clinics 24% used sterilized cotton and 64% used sterilized gauge. Among all 96% of the clinics had availability of disinfectants. Very negligible 4% of the clinics had availability of sterilization methods. About one tenth 8% of the clinics had availability of instruments sterilizer. Among the clinics 92% gloves were available for the service providers and 68% apron were available for the service providers. In more than half respondents 56% of the instruments were sterilized by using chlorohexylenol (dettol), and 44% of the instruments were sterilized by using hypochlorite. Among the respondents 52% used hypocloride, 40% used savlon and only 8% used other chemicals.

Conclusion:

In this cross sectional study conducted on "Infection Control Pattern of Dental Clinics in a selected city" it was found that, most of the respondents are male and very few are female. The length of experience of most of respondent is between 1-5 years. Among the respondents large number of them treats 6-10 patients every day and average of them treat 10-15 patients. Only one had 3 chairs in the clinic.

All most one fifth of the respondents used dettol to wash the floor, where as some used savlon. Many of the service providers were immunized against Hepatitis B virus. The entire respondent said that they used to monitor the sterilization procedure regularly. All most all of the service provider used theater shoes in the clinic. Dental surgeon of the clinic were using disposable hand gloves. Among the dental surgeons half of them wear apron in the clinic. Most of the respondents clean instruments after us. All most cent percent of the clinics used chlorohexidine with cetrimide (savlon), and cent percent of the respondent's sterile reamers, files and bars with chemical and all the metallic instrument by boiling. Most of them of the clinics had availability of disinfectants. Near about all were found to clean the operatory surface after use. All most all of the clinics had availability of surface disinfected. None of the respondents screened the patient for infectious disease. None of the respondents have special training on sterilization. Only two respondents were found using separate container to deposit sharp and other waste.

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Original Article

Study on Association of Periodontal Disease with Diabetes Mellitus in Northern Region of Bangladesh

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Abstract:

Introduction: *Prevalence of the periodontal disease varies in different region of the world and a higher prevalence and severity of periodontal disease in Bangladesh. Periodontal diseases are chronic infectious diseases that results in the inflammation of specialized tissues that surround and support the teeth. It can lead to a progressive loss of connective tissue attachment and alveolar bone. This tissue destruction in characterized by the formation of periodontal pockets that act as reservoirs for bacterial colonization for dentogingival environment.*

Aim: *The present study was to clinically evaluate the relationship of diabetes mellitus with periodontal diseases along with various parameters.*

Materials and methods: *One hundred patients with diabetes mellitus were examined. A through oral examination was carried out and relevant history was recorded for all the patient.*

Conclusion: *It can be concluded that poorer the glycemic control and longer the duration of diabetes, the greater will be the prevalence and severity of periodontal disease.*

Key words: *Glycemic control, Tooth mobility, Periodontal disease*

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Introduction:

Diabetes is one of the four major types of non communicable diseases (NCDs) that make the largest contribution to morbidity and mortality world wide[1]. According to WHO World Health Day 2016 the prevalence of diabetes is increasing in Bangladesh in both urban and rural areas. It increases healthcare use and expenditure and imposes a huge economic burden on the healthcare systems. The International Diabetes Federation estimated 7.1 million people with diabetes in Bangladesh and almost an equal number with undetected diabetes. This number is estimated to double by 2025[2]. During 90s, the country has a relatively low diabetes affected population. According to the International Diabetes Federation, the prevalence will be 13% by 2030[2].

A study revealed that in Bangladesh despite receiving treatment in a specialized center, participents offten had mis-conceptions about medication used. This leads to cause delay in seeking treatment, resulting in long term ill health, the family & society at large[3].

Diabetes Mellitus (DM) is a metabolic disorder characterized by the presence of chronic hyperglycemia accompanied to greater or lesser extent by alterations to carbohydrate, protein, and lipid metabolisms. DM has become a global epidemic, the complications of which significantly impact on the quality of life and longevity of the sufferers, as well as healthcare costs. Patients with diabetes present impaired function of polymorph nuclear leukocytes (leukocyte adhesion, chemo taxis, and phagocytes), impaired bactericidal activity, altered response to exposure to antigens, and alteration to the function of T lymphocytes[3]. Many studies have shown a clear link between chronic inflammation and the development of type-II diabetes mellitus (DM2)[4,5].

Both diabetes mellitus type-I (DM1) and type-II diabetes (DM2) present numerous possible long term complications. Epidemiological studies indicate that the severity of diabetic complications is generally proportional to the degree and duration of hyperglycemia[4]. Among the oral manifestations related to DM described are: dry mouth, tooth decay, periodontal disease and gingivitis, oral candidiacies, burning mouth syndrome (BMS), taste disorders, rhino cerebral zygomycosis (mucormycosis), aspergillus's, oral lichen planes, geographic tongue and fissured tongue, delayed wound healing, and increased incidence of infection, salivary dysfunction, altered taste and other neurosensory disorders, impaired tooth eruption, and benign parotid hypertrophy.

Objectives:

The study was undertaken in diabetic patient with the following objectives 1. To find out prevalence and severity of periodontal disease. 2. To assess the relationship between

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diabetes mellitus and periodontol disease 3. To find out the relationship between duration of diabetes and prevalence and severity of periodontal disease. 4. To find out the effect of glycemic status of diabetes on tooth mobility.

Material and methods:

This descriptive study was carried out in Rangpur Dental College in periodontology department for six month from January 2019 to June 2019. A total 100 patients were diagnosed as having diabetes mellitus. The patient were diagnosed purposively as having diabetes mellitus and were under treatment data was collected. A care full oral examination was carried out with the help of mouth mirror and periodontal prob. Determination of blood glucose levels in all the patients, after an overnight fasting and one and half hour after meal. Data was collected through structured questionair & checklist. Data were analyzed, checked and verified and after completion of data collection it is again checked and edited manually and verified before result completion. Ramfords S.P. The Periodontal Disease Index (PDI)[6] having components for plaque, calculus and disease severity and Miller's Mobility Index were recorded for each patient. The inclusion criteria were:

1. Diabetes mellitus diagnosed for at least one year or more.
2. Not having any other systemic diseases.
3. Not having and history of diabetic complications like neuropathy, nephropathy, retinopathy etc.
4. Not using drugs such as phenytoin, nephidipine etc.
5. Not undergone any periodontal treatment since last one year.
6. Willingness to participate in the study.

Ethical consideration:

Inform verbal and written consent was taken from each respondent. A complete assurance was given that all information keeps confidentially, their participation and contribution was acknowledge with due respects. Informed consent was documented properly. Each respondent was interviewed separately and their privacy and confidentiality was maintained strictly.

Result:

Out of the 100 patient 15.4% of patients had insulin dependent mellitus and 84.61% had non insulin dependent diabetes mellitus. The collected data was analysed stafiscally. Karl person corellation coefficient analysis was used to investigate the relationships between prevalence and severity of periodental disease and various other factors such as age, sex, glycemic status and duration of diabetes mellitus.

Out of 100 patients 50% were male and 50% were female. The age range of the patients was 35 to 55 or above. The patients were classified in to three groups as shown in table-1.

Prevalence and severity of periodental disease and the effect of patients age and sex on it:

Analysis of the data showed that the prevalence of periodental disease in diabetes patients was 89.5% (gingivitis ± is 30% and periodontitis 59.5%) and partial edentulous was 5.6% and remaining 5.9% patients were periodontally healthy (Fig 1). The prevalence of periodontal disease was almost equal in both the sex male and female, gingivitis, 28.1% in male and 26.4% in female (Fig 2) periodontitis 59.4% in male and 59.5% in female (Fig 3) mean periodontal disease index score was 3.52±1.96. It was lowest in groups 1 and highest in group 3 (Table 2) Pearson analysis indicated statistically significant ($p< 0.01$) correlation of age but not the sex, with the prevelance and severity of periodontal disease.

Plaque and calculus index

The mean plaque and calculus index scores were 1.22±0.55 and 1.27±01.60 respectively. There was a significant correlation ($p<0.01$) of plaque and calculus index with severity, but not with the prevelance of periodontal disease.

Duraton of diabetes mellitus

The mean duraton of diabetes mellitus was 7.99± 4.63 year (table 3). It was 3.06±1.81. when periodontal disease index score was 1, and 12.79±3.42. When the maximum score was 6. The duration of diabetes mellitus was statistically correllated ($p<0.01$) with prevelance and severity of periodontal disease.

Glycemic status of diabetes mellitus

The mean fasting blood glucose was 122.00±34.56, where as the mean periodontal blood glucose level was 212.36±61.09. In healthy periodontium group, it was 76.24±3.2 and 117.16±4.2 and was found tobe maximum in generalized periodontitis group i.e 146.73±55.9 and 247.66±56.16, respectively (Fig 4). It was observed that blood glucose levels were 98.7±19.63 and 154±39.5. When periodontal disease index score was 1 and 173.5±29.3 and 287.04±38.6, when score was, maximum of 6 (Table 4). Thus the glycemic status was significantly ($p<0.01$) related to the prevalence and severity of periodontal disease.

Miller's Mobility Index:

Fourty patient (40%) and total 140 teeth exhibited pathological tooth mobility. Out of these 40, 12 and 8 teeth exhibited Grade I, II, III mobility. No mobility was found in the age group I. At the level significance $p<0.01$, there was a statistically significant corrclation of tooth mobility with glylemic status of diabetis.

Missing teeth:

Out of the 100 patients, 5 patient had few tooth, rest are partially edentulous 17 patient (17%) had lost their teeth before the diagnosis of diabetes mellitus, while rest 83(83%) lost their teeth after the diagnosis of diabetes mellitus.

Three was a statistically significant correlation between the number of missing teeth and age for the patient, duration of diabetes mellitus and prevalence and severity of periodontal disease.

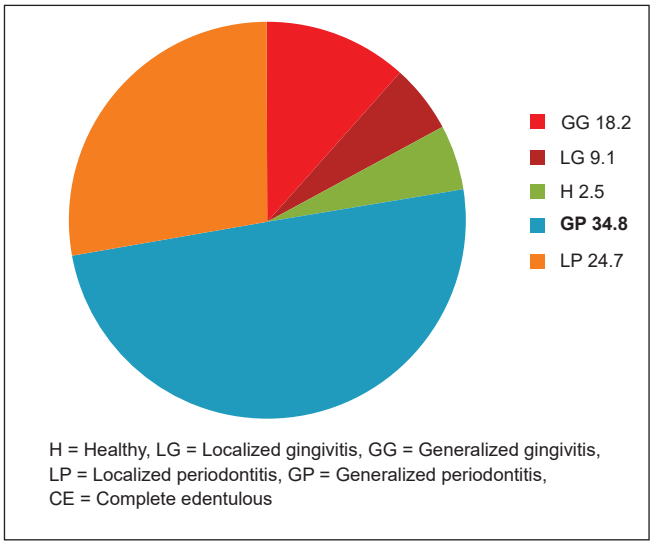

Figure 1: Pie diagram showing periodontal status of diabetes mellitus patients percentage. It shows that prevalence of periodontal disease is highest among others periodontal disease.

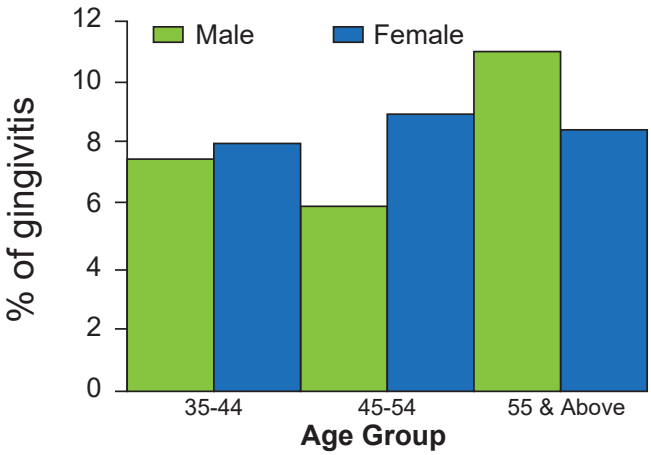

Figure 2: Prevalence of gingivitis according to age and sex shows that periodontal disease was almost equal in both sex.

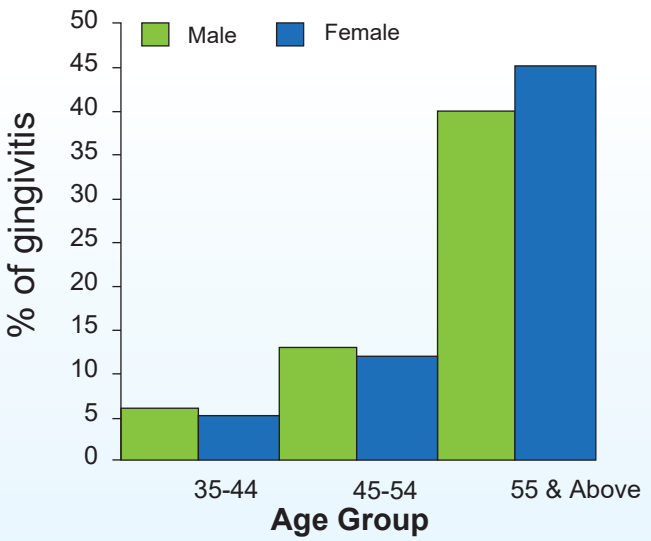

Figure 3: Prevalance of periodontitis according to age and sex shows periodontal disease rate is higher in older patient then younger group.

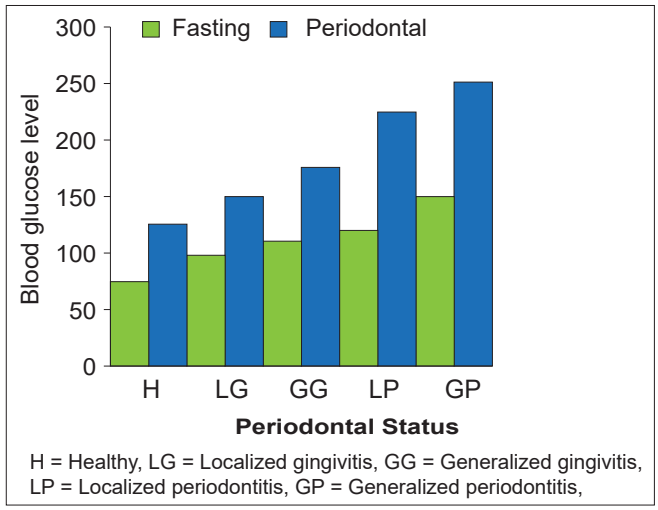

Figure 4: Mean blood glucose level (mg%) and periodontal status shows that higher the blood glucose level poorer the periodontal condition.

Table 1: Distribution of patient according to age and sex **(n=100)**

Group	Age Group	No of Patient	Percentage
Male			
Group -I	35-44	3	1.5%
Group -II	45-54	9	4.5%
Group -III	55 and above	38	19%
Female			
Group -I	35-44	2	1%
Group -II	45-54	5	2.5%
Group -III	55 and above	43	21.5%

Table-1 shows distribution of 100 patients according to age and sex with number of them with percentage.

Table 2: Severity of periodontal disease according to age group **(n=100)**

Age Group	Mean SD	Frequency %
35-44	3.24±1.42	5%
45-54	3.18±1.91	14%
55 and above	4.01±1.91	81%

Table-2 shows periodontal disease is lowest in group-I and highest in group-III so periodontal disease is correlated with age not sex

Table 3: Mean duration of diabetes mellitus and periodontal status in years **(n=100)**

Periodontal Status	Mean duration of diabetes mellitus (SD)
Healthy	2.76±1.16
Localized gingivitis	3.23±1.72
Generalized gingivitis	4.78±2.35
Localized periodontitis	8.85±3.22
Generalized periodontitis	9.42±4.34

Tabel-3 shows the prevalence and severity of periodontal disease is more in patient having long time diabetes mellitus.

Table 4: Mean blood glucose level (mg %) and periodontal disease index (n=100)

Periodontal disease index score	Fasting	Periodontal
0	102.25+27.86	180.82+56.30
1	98.70219.63	154.01439.59
2	101.45+30.40	159.02+44.23
3	105.21413.77	178.87+31.07
4	116.70421.28	222.32+47.26
5	126.32425.21	225.20+49.03
6	173.524+29.30	287.04+38.65
Total population	122.00+34.56	212.36+61.09

Table-4 shows periodontal disease is related with glycemic status of patient, higher the blood glucose level the severity of periodontal disease is more.

Discussion:

The mechanism of diabetes correlation with periodontitis primarily involves vascular changes, neutrophilic dysfunction, impaired collagen synthesis and genetic predisposition. It is known that diabetes induces vascular changes in all tissues, including capillaries of periodontal structures[2]. Gingival capillaries undergo basal membrane thickening, however, other pathologic changes such as membrane disruption, intro membranous presence of collagen and edematous endothelium may also be observed. These changes have been postulated to impair leukocyte migration, immune factor activities and thus contributing to progression of periodontitis and tooth loss by disordered microcirculation in diabetes .

There's is a strong relationship existing between diabetes and periodontics. Diabetes is considered to be a risk factor for periodontal diseases. Gingivitis often progresses disease does affect those individuals who do not have diabetes, but diabetics are especially prone to developing these conditions due to sugar imbalances in the body that promote bacteria growth into periodontites if left untreated slow circulation of the blood, decreased immune system the decrease in white blood cells results in reduced ability to fight off infectious bacteria, high glucose levels connected to diabetes are in the blood and saliva. the bacteria leading to periodontal disease thrive and multiply on sugar, smoking and xerostomia contributes to the relationship between periodontal diseases and diabetes. Several studies have reported that periodontal therapy results in improved glycemic control in some individuals with diabetes[4]. Diabetes mellitus affects negatively the periodontal health leading to gingivitis, periodontitis and tooth loss[5].

Conclusion:

Prevention is better than cure. So it is necessary for every one of us to maintain the blood sugar level so that diabetes can be prevented. Good health is integral to general health. It is always necessary to pay attention to diabetes mellitus. Diabetes affects many major organs like heart, blood vessels, nerves, eyes and kidney. It is a must to take care of our body and treat it right so that it can be good to us in return.

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Original Article

Oral Health Seeking Behavior and Practice Among Underprivileged Adult Population in a Selected Area of Dhaka City, Bangladesh

Ara U[1], Yesmin A[2], Hossain SM[3], Banu B[4], Haque MR[5]

Abstract: *This cross sectional study was design to evaluate the oral health seeking behaviour and practice among underprivileged adult population in a selected area of Dhaka city. The sample size was 212 underprivileged adult people, aged between 18-67 years residing in a community at Khilkhet area in Dhaka district of Bangladesh. Data were collected by face to face interview method. Of them 45.3% brushed their teeth with toothbrush and toothpaste, 48% brushed their teeth twice a day, 65% of respondents cleaned their tongue, 42% had habit of smoking or used tobacco daily. Study also found that among the respondents 25% visited to dentist in their life time; of them 65.4% visited 1-2 times in their life-time and 26.9% last visited to dentist more than 2 years before. About 67.3% went to dentist because of emergency (tooth/mouth pain). Study explored that 23% received dental treatment, among them 54.2% of the respondents received tooth extraction. The study also revealed that 43.4% of the respondents had dental caries followed by 34.9% had plaque, 33% had calculus, 15.6% bad breath, and 13.2% tooth mobility. The overall oral health seeking behaviour and practice of underprivileged adult population were found below standard and lower rate of utilization of dental services were also identified. Awareness is to be created to reach the highest attainable condition.*

Key words**:** *Oral health seeking behaviour, Underprivileged, Adult population*

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Introduction:

Oral health is fundamental to overall health and quality of life[1]. It is essential to the quality of life as it affects people physically and psychologically and influences how they grow, look, speak, chew, taste food as well as their feelings of social wellbeing[2]. Bangladesh a developing country faces many challenges in rendering oral health needs. In Bangladesh among all 40% of population are enlisted in slum[3]. According to World Health Organization (WHO), oral health is a state of being free from chronic mouth and facial pain, oral and throat cancer, oral sores, birth defects, such as cleft lip and palate, periodontal (gum) disease, tooth decay and tooth loss and other diseases and disorders that affect the oral cavity[4]. Socioeconomic status is just as strong a predictor of oral health as it has been in most other aspects of wellness. The poor carry a disproportionate burden of tooth decay, dental pain, and overall lower levels of oral health. The problems surrounding access to oral health care must be identified and correctly framed before progress can be made in delivering more widespread, easier access to quality dental care[5].

In developing countries the challenges to provision of primary oral health care are particularly high because of shortage of dental manpower[6]. Considering these facts in mind the present study was carried out to determine oral health seeking behaviour and practice among underprivileged adult population in a selected area of Dhaka city in Bangladesh. The findings provided an understanding of the thought process, knowledge and views of the population towards oral health condition in the underprivileged population in Dhaka. Maintenance of good oral hygiene can help to prevent most of this oral disease. Consequently, it may be help in improving their oral health and at a higher level, enhance the oral health policy.

Methodology:

This descriptive type of cross sectional study including oral examination was done on 212 adult people at Khilkhet area in Dhaka city from September 2017 to December 2017 to evaluate the oral health seeking behaviour and practice. Non probability purposive sampling technique was used for selecting samples. Data were collected by face to face interview in house hold settings with consent on a semi structured and pretested questionnaire. For oral examination mirror, probe, tongue retractor and torch were used under a professional dental surgeon. The objective was assessed by knowledge on oral problems, oral hygiene and oral care related variables and preventive measure taken by the respondents. Sociodemographic variable also assesses. Data analysis was done using SPSS.

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Results:

Table 1: Distribution of respondents by socio-demographic characteristics (n=212)

Variables		Frequency	Percent
Age in years	18-27	76	35.8
	28-37	72	34
	38-47	40	18.9
	48-57	15	7.1
	58-67	9	4.2
Total		**212**	**100**
Mean = 32.63 ± 11.120			
Monthly family income BDT	1000-10000	77	36.3
	10001-20000	117	55.2
	20001-30000	18	8.5
Total		**212**	**100**
Mean = 14382.08 ± 6112.706			
Educational qualification	Illiterate	93	44
	Primary	67	32
	Secondary	41	19
	Higher secondary	7	3
	Graduate	4	2
Total		**212**	**100**

Table 1 shows that most of the respondent's age were within 18-37 years with mean age 32.63 ± 11.120 years. And more than half of the respondents had monthly income within 10000- 20000 BDT. This table also explores that maximum of them were not highly educated, only 2% of them were graduate.

Table 2: Distribution of the respondents by knowledge on different oral diseases (n=212)

Knowledge about oral diseases	Answer	Frequency	Percent
Dental caries	Yes	121	86.4
Gum disease	Yes	115	82.1
Bad breath	Yes	25	17.9
Mouth sores	Yes	52	37.1
Tooth erosion	Yes	7	5
Tooth sensitivity	Yes	40	28.6
Dental trauma	Yes	6	4.3

Multiple responses

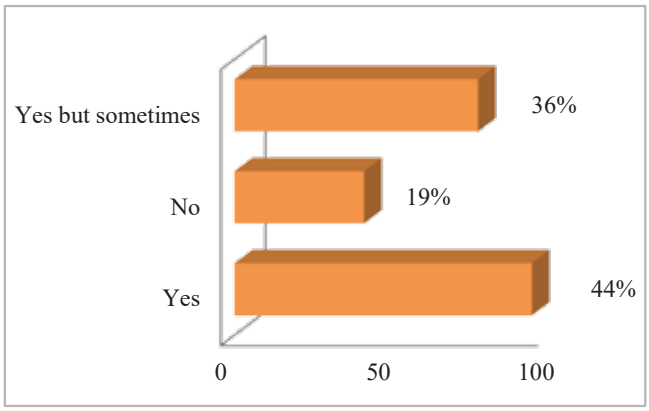

Figure-1: Distribution of the respondents by washing mouth after eating/drinking sweetens food/drink (n=212)

Table 3: Distribution of the respondent's by oral hygiene and care related variables (n=212)

Variables		Frequency	Percent
Using toothbrush	Yes	131	62
	No	81	38
	Total	**212**	**100**
Materials used for tooth cleaning	Toothbrush & toothpaste	96	45.3
	Toothbrush & toothpowder	37	17.5
	Finger & toothpaste/toothpowder	20	9.4
	Neemstick/Datun	3	1.4
	Finger & ash	56	26.4
	Total	**212**	**100**
Duration of tooth brushing	Less than 1 minute	2	1.5
	1 minute	14	10.7
	2 minutes	25	19.1
	3-4 minutes	27	20.6
	5 minutes or more	63	48.1
	Total	**131**	**100**
Toothbrush using length	1-3 months	83	63.4
	4-6 months	17	13
	1-2 year	1	0.8
	When the toothbrush loses it bristles	30	22.9
	Total	**131**	**100**
Using other cleaning aids	Tooth pick	111	96.5
	Dental floss	2	1.7
	Mouthwash	2	1.7
	Total	**115**	**100**
Ever visit to dentist	Yes	52	25
	No	160	75
	Total	**212**	**100**
Frequency of visited a dentist in life	1-2 times	34	65.4
	3-4 times	13	25
	More than 4 times	5	9.6
	Total	**52**	**100**
Reason for last dental visit	Emergency (tooth/mouth pain)	35	67.3
	Regular check-up/cleaning	5	9.6
	Dental treatment	11	21.2
	Others	1	1.9
	Total	**52**	**100**

Table-3 finds that 62% of the respondents used toothbrush, 45.3% used toothpaste, and only 2% used dental floss as cleaning aids. Among them 25% visited to dentist in their lifetime. Those who visited to dentist, of them 67.3% visited for emergency or pain.

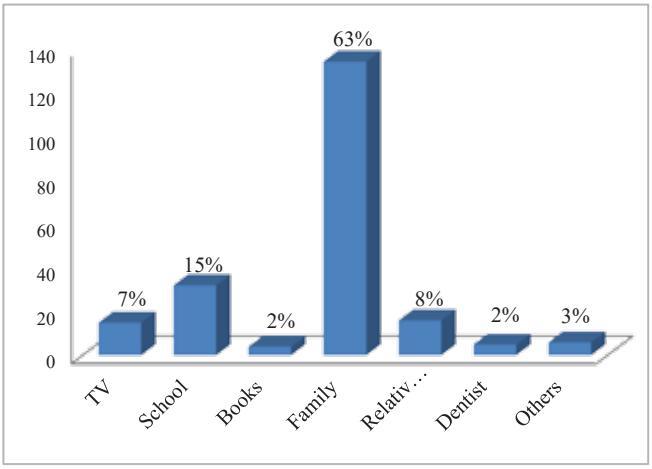

Figure-2: Distribution of the respondent by source of information about oral health (n=212)

Discussion:

Study found that majority of the respondents 66% had knowledge about oral health diseases the result are not matches to a study conducted by Azadeh S, found that lack of oral health related knowledge in all age groups and both genders[7].

This study showed that 45.3% of the respondents used toothbrush and toothpaste. Study also revealed that 48% of the respondents brush their teeth twice a day. These findings are little bit greater to a study conducted by Mutara L.N, found that failure to brush teeth and lack of utilization of toothpastes. Findings reported that 75% of the respondents never visited a dentist and 25% visited a dentist. Among them 54.2% of the respondents received tooth extraction, followed by 31.2% received scaling, 25% radiography, 18.8% clinical examination, 12.5% filling, etc. These results are different to a study conducted by Sonata V, found that 78% of the elderly received fillings, 50% endodontics, 48% extractions, 21% radiography and 10% of the subjects indicated they had received scaling or cleaning, and 6% polishing[8].

Conclusion:

The underprivileged population represents a high risk group concerning oral health. Though they has a significantly higher degree of dental needs as well as a lower rate of utilization of dental services compared to the general population. So, they could be benefited enormously from dental public health programs. Ultimately, the main objective is to improve the overall oral health of the underprivileged adult population. Good oral health is a right for all people. A healthy mouth would allow more societal acceptance and would reduce the physical revulsion and aversion frequently suffered by this group. Hopefully, the present study will help encourage local public health authorities and policy makers to develop a dental program for this population in Bangladesh.

Recommendations:

- Awareness is to be created to reach the highest attainable condition.
- Provide them updated guidance in oral self care and motivate to practice it.
- Educate the population on the benefits of regularly visiting a dentist, not just when a problem arises.
- Mass media can be used to disseminate preventive oral health information.

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Original Article

Tooth Brushing Habit and their Relation with Dental Caries Among Pediatric Patients of Different Socio Economic Status Attending Dental Unit, Rajshahi Medical College

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Abstract:

Dental caries is a multifactorial disease and the children are easily affected by it due to improper oral hygiene maintenance. Proper tooth brushing greatly reduces the incidence of dental caries in different socio-economic status. The objective of the study was to determine how tooth brushing habit affect the incidence of dental caries. Data were collected with a pretested structured interview schedule from 370 participants and their parents from October 2017 to November 2018 attending Dental Unit, Rajshahi Medical College. Oral examination was done by dental mirror and probe under sufficient light to find out the dental caries among the children 68.11% participants brushed teeth once a day before breakfast in the morning of them 66.49% participants had dental caries. Also multiple carious tooth was found highest (40%) among this group.

***Key words**: Dental caries, Tooth brushing habit, Oral hygiene*

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Introduction:

Dental caries is one of the main oral diseases in childhood and adolescence. It causes complications that lead to costly and time consuming treatment[1]. Nature has provided us teeth to perform the function of cutting, grinding and admixing food with saliva[2]. Teeth are not only helpful for taking food but also they are necessary for speaking and beautification. The beauty of the face is much more dependable on alignment of teeth and their brightness. It is strange that the hardest tissue of the body enamel, which is disintegrated in the oral environment. Caries implies slow disintegration that may affect any of the biological hard tissue as a result of bacterial action. This action may affect bone causing 'bone caries'. Usually such disintegration affects enamel, dentin and cementum (the tooth). That is why the term 'dental caries' is most common.

Numerous studies carried out in different countries over the world have shown that the application of preventive measures and improvement of social environment considerably reduce dental caries rates[3]. Dental caries caused pain, discomfort, and costly treatment procedures are the main factors associated with stress and unpleasant experiences among children and adults[4]. Epidemiological studies have demonstrated that dental caries rates can be successfully controlled by the improvement of oral hygiene status[5]. Family, specially parental attitude and knowledge toward the importance of oral hygiene, plays a major role in the preservation of healthy teeth. Parental skills and attitudes toward oral hygiene may have an impact oral hygiene habits and the prevalence of oral diseases[6]. Poor health literacy is associated with proper perceptions of health, decreased utilization of services and proper understanding of verbal and written instructions of self-care[7,8].

Materials & methods:

Study type: Cross sectional

Study place: Pediatric Department, Dental Unit, Rajshahi Medical College & Hospital, Rajshahi, Bangladesh.

Study period: October 2017 to November 2018.

Study population: Children of both male and female of different socio-economic status aged 5 to 12 years attending Dept. of Pediatric Dentistry, Dental Unit, Rajshahi Medical College & Hospital, Rajshahi, Bangladesh.

Sample size: 370

Inclusion criteria: All the patients aged 5 to 12 years of both sex attending Pediatric Dentistry Department, Dental Unit, Rajshahi Medical College & Hospital, Rajshahi, Bangladesh.

Exclusion criteria:

1. Age <5 years and >12 years.

2. Parents not willing to enroll their children in this study.

Instruments of the research: The present study utilized two main instruments. (a) Detailed socio-demographic data and medical history through structured questionnaires. (b) Clinical examination.

Methodology: A cross sectional study using a self structured questionnaires related to demographic variables, educational level, oral hygiene maintenance, food habits,

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caries status, knowledge about dental caries and their prevention and clinical examination of the oral cavity were conducted among participants using dental mirror, probe and proper light source.

A preformed question paper was given to the participants or their parents to facilitate the interviews. Both verbal and written consent were taken from them. It was assured that all information and records would be kept confidential and the procedure would be used only for research purpose. The interview lasted for about 10 to 15 minutes. Immediately after interview the dental checkup of each child was done with a dental mirror, dental probe and torch light or dental lamp for the detection of dental caries.

Results:

Table 1: Frequency of tooth brushing among the participants of different socio-economic status (n=370)

Socio-economic status	Frequency of tooth brushing				
	Regular (310)			Irregular(60)	
	Once	Twice	More than twice	Once	Twice
Low (166)	122 (32.97%)	26 (7.03%)	00 (0%)	09 (2.43%)	09 (2.43%)
Medium (113)	68 (18.38%)	26 (7.03%)	02 (0.54%)	03 (0.81%)	14 (3.78%)
High (91)	46 (12.43%)	18 (4.86%)	02 (0.54%)	01(0.27%)	24 (6.49%)
Total (370)	236 (63.78%)	70 (18.92%)	04 (1.08%)	13 (3.51%)	47 (2.70%)

Table 1 shows among 370 participants the number of regular tooth brushing habit was found to be 310 (83.78%) and that of irregular tooth brushing was 60 (16.22%).

Table 2: Distribution of participants from different socio-economic status based on the time of tooth brushing (n=370)

Time of tooth brushing habit	Socio-economic status			
	Low	Medium	High	Total
Before breakfast	136 (36.76%)	62 (16.76%)	54 (14.59%)	252 (68.11%)
Before bedtime	03 (0.81%)	11 (2.97%)	07 (1.89%)	21 (5.68%)
Before bedtime & before breakfast	27 (7.30%)	37 (10%)	29 (7.84%)	93 (25.14%)
After breakfast	00 (0%)	1 (0.27%)	00 (0%)	01 (0.27%)
After breakfast & before bedtime	00 (0%)	02 (0.54%)	01 (0.27%)	03 (0.81%)

Table 2 shows most of the participants 68.11% were found to brush their teeth before breakfast, whereas very few participants 0.81% brushed teeth before bedtime and after breakfast.

Table 3: Relationship of dental caries with tooth brushing habit among participants of different socio-economic status (n=370)

Time of tooth brushing	Total number of participants (%)	Caries involvement among participants of different socio-economic status			
		Low	Medium	High	Total (%)
Before breakfast	252 (68.11%)	134 (36.22%)	60 (16.22%)	52 (14.05%)	246 (66.49%)
Before bedtime	21 (5.68%)	01 (0.27%)	02 (0.54%)	04 (1.08%)	07 (1.89%)
Before bedtime & before breakfast	93 (25.14%)	02 (0.54%)	06 (1.62%)	12 (3.24%)	20 (5.40%)
After breakfast	01(0.27%)	00 (0%)	01 (0.27%)	00 (0%)	01 (0.27%)
After breakfast & before bedtime	03 (0.81%)	00 (0%)	00 (0%)	00 (0%)	00 (0%)
Total	**370 (100%)**	**137 (37.03%)**	**69 (18.65%)**	**68 (18.38%)**	**274 (74.05%)**

Table 3 shows 246(66.49%) Participants had dental caries who brushed their teeth before breakfast and 20 (5.40%) participants had dental caries who brushed teeth before bed time and before breakfast.

Table 4: Number of tooth involved by dental caries in relation with time of tooth brushing among participants (n=370)

Time of tooth brushing habit	Caries involvement				
	Single	Double	Triple	Multiple	Total (%)
Before breakfast	02 (0.54%)	66 (17.84%)	30 (8.11%)	148 (40%)	246 (66.49%)
Before bedtime	06 (1.62%)	01 (0.27%)	00 (0%)	00 (0%)	07 (1.89%)
Before bedtime & before breakfast	17 (4.59%)	02 (0.54%)	01 (0.27%)	00 (0%)	20 (5.40%)
After breakfast	01 (0.27%)	00 (0%)	00 (0%)	00 (0%)	01 (0.27%)
After breakfast & before bedtime	00 (0%)	00 (0%)	00 (0%)	00 (0%)	00 (0%)
Total (370)	**26 (7.02%)**	**69 (18.65%)**	**31 (8.38%)**	**148 (40%)**	**274 (74.05%)**

Discussion:

Time is a caries producing factor because if food particle remains within tooth structure for a longer period the chance of having dental caries increases if tooth not cleaned properly and timely. At night during sleeping time salivary secretion decreases, so cariogenic bacteria produces lactic acid from food particle that causes dental caries. So, it is very important to clean teeth before going to bed and after breakfast for preventing dental caries. It was reported[9] that the majority of the study population aged between 4-12 years 76.60% cleaned their teeth in the morning whereas only 23.40% of them clean teeth in the morning and at night before going to bed. In the present study similar results were also observed that 68.11% participants cleaned teeth before breakfast in the morning. In the present study only 0.81% participants regularly brushed their teeth before bed time at night and after breakfast in the morning which was lower than 23.40%[9]. This low percentage of participants in the present study might be due to the lack of awareness about the timing and frequency of tooth brushing among the children and also among their parents.

Out of 370 participants, 310(83.78%) participants were found to be regular tooth cleaner. Among them 63.78% brushed their teeth once a day which was higher than 52.13%[9]. This difference may be due to lack of proper knowledge of parents about oral health. Among study population in the present study, 18.92% participants regularly brushed teeth twice a day which was similar to that of 24.17%[9].

Frequency of tooth brushing especially in the morning after breakfast and before going to bed after dinner has a great impact on the causation of dental caries. In the present study about 68.11% participants were found cleaning teeth before breakfast in the morning. Among them multiple carious teeth were found in 40% participants. Only 0.81% participants were found brushing teeth before bed time and after breakfast of them all participants had sound teeth. This indicates that those who brushed teeth twice daily preferably in the morning after breakfast and at night before going to bed after dinner are less sufferers than those who brush their teeth once daily. This observation was similar where it was reported[10] that 7.1% patients were affected by one tooth and 21.4% patients were affected by more than four teeth who brushed once daily, whereas 33% patients were affected by one tooth and only 4.5% respondents affected by more than four teeth who brush twice daily. This indicates that those who brush twice daily are less sufferers than those who brush once daily.

Conclusion:

The World Health Organization (WHO) evaluates the influence of various risk factors on health and pays great attention to monitoring of oral health status and its worsening because these factors can lead to be worse quality of life and overall health[11]. The lack of awareness, illiteracy, food habit, improper practice of oral hygiene etc are the contributory factors for dental caries especially among children. Children's teeth should be brushed before going to bed at night and in the morning after breakfast for getting the best benefits of tooth brushing. Parents should advise their children not to eat between meals specially carbohydrate food. Correct method and frequency of brushing teeth should be followed. Proper dental treatment is very expensive and not available for all kind of people in our society. But elimination of contributory factors are possible even in low socio-economic society by taking preventive measures like maintenance of regular oral hygiene.

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Original Article

A Survey on Dental Problems and Awareness Level on Dental Health Care Among the Patients Attending at OPD, Dental Unit, Dhaka National Medical College

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Abstract: *To maintain dental health, finding out common problems, proper treatment and awareness regarding dental health is a basic concern of a human. The main purpose of this study is to find the pattern of common dental problems pattern and enhance their knowledge of the people to ensure dental health. To conduct this study a survey was performed on patients of department of Periodontology and Oral Pathology, Dental Unit, Dhaka National Medical College, Dhaka, Bangladesh. The study was done from February 2019 to June 2019. From the study different dental problems, causes of problems were noticed as well as daily habits of patients have come to be noticed. This was a cross sectional study conducted among 200 patients, among them 55% patients were male and 45% patients were female; both were from infant to old. In this study most common dental problems were gingivitis (48%) and dental caries (42%). The causes of dental problems are found mainly brushing once a day (61%) and improper brushing (26%). From the study, some common awareness were noticed among patients like toothpaste brand change habit, brushing habit, dental flossing habit, patients scaling habit, regular doctor visiting habit etc. Good dental health is essential to improve individual overall health & well being. The burden of dental problems is very high in Bangladesh and yet hugely unrecognized area. We urge to take this information & use it for program planning & advocating for the health of patients.*

Key words*: Dental health, Dental caries, Oral health, Oral hygiene*

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Introduction:

Dental health is a fundamental component to general health, well-being, and quality of life. Dental health enables an individual to speak, eat and socialize. Dental health implies being free of chronic orofacial pain and the absence of mouth diseases such as dental caries (tooth decay), periodontal disease (gum disease)[1].

The burden of dental disease affects children, adults and the elderly, disrupts life and causes considerable suffering, discomfort, embarrassment, and economic hardship. Dental caries generally is under control in most high income countries, much of the disease still remains untreated in populations of low and middle income countries. In rich and in poor countries, the greatest burden of dental diseases lies on the disadvantaged and poor population groups, e.g. people of low education, low income, unemployed, or elderly and disabled people[2].

Over the past 20 years, a marked decline in the prevalence of dental diseases has been observed in several Western industrialized countries. Improved dental health is seen in the systematic decline in dental caries and a continually growing number of caries free individuals. This is described to population based preventive programmes with effective use of fluoride, improved participation in dental health programmes, changes in oral hygiene and sugar intake habits[3]. On the other hand, in many developing countries an increase in dental caries has resulted from unhealthy dietary habits, poor dental hygiene habits, limited use of fluoride and near to the ground use of dental health services, if available. In addition, urbanization and adoption of Western lifestyles observed in many developing countries and the absence of public prevention programmes have caused a rapid increase in dental caries[4].

The principal causes to poor dental health are shared by those responsible for chronic diseases; first of all, these factors are related to poor diet, tobacco use, excessive use of alcohol and physical inactivity[4]. Joint action of communities, professionals and individuals aimed at reducing the impact of sugar consumption and emphasizing the beneficial impact of fluoride can prevent dental caries and tobacco intervention and proper oral hygiene can help prevention of periodontal disease[5]. A study was done in London among 1072 patients to determine their knowledge

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on correlation between smoking and periodontal disease. This study highlights a general lack of awareness between smoking and periodontal diseases with only 6% of respondents knowing of this link. Seven percent of respondents that were aware stated that smoking had a negative impact on periodontal health but were unable to state how[5] some factors found responsible for dental caries in patients attending Out Patient Department (OPD) of Periodontology and Oral Pathology, Dental Unit, Dhaka National Medical College Dhaka in 2002. Ignorance, illiteracy, low family income, inadequate practice of oral hygiene, consumptions of sweeteners are found major contributory factors for dental caries[7]. To determine the oral hygiene practices, periodontal status and bad mouth breath (BMB) among the children age between 5 to 15 years of four selected primary school at Fultola and Juri Upazilla of Moulovibazar District, a study was done among 250 students and found that bad mouth breath is a cause of concern among children associated significant factors were gum bleeding. Most of the respondents reported to be brushing on daily basis mainly at morning 76.8% and two times 23.2% and this may be one of the factors for high prevalence of poor oral hygiene as depicted by the presence of plaque, calculus, caries, gingival bleeding and BMB in this study population. The similar type of finding was found in a study at Tanzania within the study population, the factors significantly associated to BMB were gum bleeding and gingival plaque enhanced by tooth caries[8]. Knowledge on oral hygiene and oral health status among the secondary school students by Dental Unit, Rangpur Medical College Hospital, Rangpur, Bangladesh found that majority of students had an adequate level of knowledge on oral health but low level of oral health practices. Age had no influence on the level of oral health knowledge and practices of students[9]. The level of awareness and dental health knowledge in diabetic patients is good in Soudi Arabia. About the attitude and practice of the diabetic patients towards oral health, the overall oral hygiene measures in diabetic patients were found to be good in this study. Most of the patients consult the dentist, brush their teeth at least once daily and regularly visit the dentist at least once a year for check up[10].

Dental care is the maintenance of healthy teeth and may refer to:

- Oral hygiene, the practice of keeping the mouth and teeth clean in order to prevent dental disorders
- Dentistry, the professional care of teeth, including professional oral hygiene and dental surgery
- Dental surgery, any of a number of medical procedures that involve artificially modifying dentition; in other words, surgery of the teeth and jaw bones[11].

Another approach of dental care is dental health promotion among people. Dental health promotion focuses on individual behaviour, the socioeconomic status and environmental factors. Underlying determinants that can also impact dental health, including non milk extrinsic sugars consumption, alcohol consumption and smoking behavior.

Community participation is a key factor in dental health promotion. Inter sectoral collaboration is where relevant agencies and sectors are involved in partnership to identify key dental health issues and to implement new methods to improve dental health.

The World Health Organisation has agreed on a health promotion approach as the foundation for dental health improvement strategies and policies for the population. Dental health promotion is based on the principles of the framework, Ottawa Charter. There are five areas of action outlined to achieve dental health promotion; building health public policy, creating supportive environment, strengthening community action, developing personal skills, reorienting healthcare services[12]. Dental problems are important public health problems owing to the prevalence, socio-economic aspect, expensive treatment and lack of awareness. Though dental diseases are rarely life threatening, they do have an impact on the quality of life. Adequate information on pattern of dental diseases and to take necessary preventive program to fight against the dental problems is a burning issue in health sectors.

Arising from the forementioned, it was apparent that the precise burden of dental diseases in Bangladesh was largely unknown. The data from this survey will thus be an indication of mass awareness of dental problems. The aim of this survey is to investigate the burden of dental diseases, common patterns of dental problems & their determinants, knowledge of people about proper dental care and dental health related quality of life.

Methodology:

This is a observational cross sectional study which is based on the evaluation of the information collected from the Department of Periodontology and Oral Pathology, Dental Unit, Dhaka National Medical College, Dhaka. To perform this study a survey was conducted among the patients who were facing any types of dental problems. Patients were not too much conscious and cooperative to ask them any question. For this reason method was designed to collect diagnostic reports and prescriptions of the patients. This study was conducted around 5 months (February 15, 2019 to June 15, 2019) collection period, 100 patients information were collected from Department of Orthodontics & Dentofacial Orthopaedics of Dhaka Dental College & Hospital, Dhaka. Dentists who were specialist in dental problems were also asked for queries. Finally 100 patients who have the complete information were selected for analysis.

This was absolutely essential for the purpose of obtaining information that actually represented the real scenario. Among 200 patients, 55% are male and 45% are female and they were in various age groups. Some confidential information was collected orally and some were collected by observation. Here all data was collected from the hospital, direct interview of patients and dentists. The patients were randomly selected from Dhaka Dental College & Hospital. Questionnaires were developed based on the study of

different journal papers to study perception and behavior of the respondents about dental problems. The data collected and gathered through the interview was examined for the number of parameters such as personal information, disease information and symptoms. Data analysis was done by using MS-Excel 2007.

Results:

Table-1: Demographic presentations of patients (n=200)

Area	No. of patients (%)
Rural	31%
Urban	37%
Small city	32%
Total	100%

It was seen that among 200 patients, 31% patients are living in rural area, 37% patients living in urban area and 32% patients living in small city as presented at table-1.

Table-2: Age distribution of respondents (n=200)

Age	No. of patients (%)
Infant	2%
Adolescent	11%
Adult	31%
Old age	56%
Total	100%

It was seen that among 200 patients, 2% were infant, 11% adolescent 31% adult and 56% old age as presented at table-2.

Table-3: Gender distribution of respondents (n=200)

Gender	No. of patients (%)
Male	55%
Female	45%
Total	100%

It was seen that among 200 patients, 55% were male and 45% were female as presented at table-3.

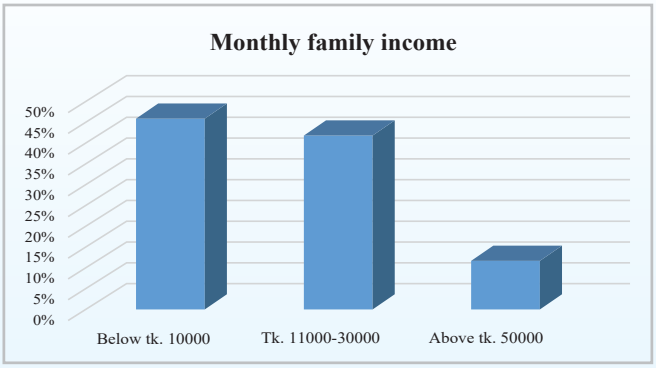

Figure 1: Graphical representation of patients' monthly family income.

From the study, it was seen that among 200 patients, their family income were 46% below tk10000, 42% within the range tk11000-30000, 12% above tk50000 as presented at figure-1.

Table-4: Distribution of reason that caused diseases (n=200)

Causes	No. of patients (%)
Improper brushing	26%
Food habit	13%
Brushing once a day	61%
Total	**100%**

It was seen that 26% of diseases caused due to improper brushing, 13% for food habit and 61% for brushing once a day as presented at table-4.

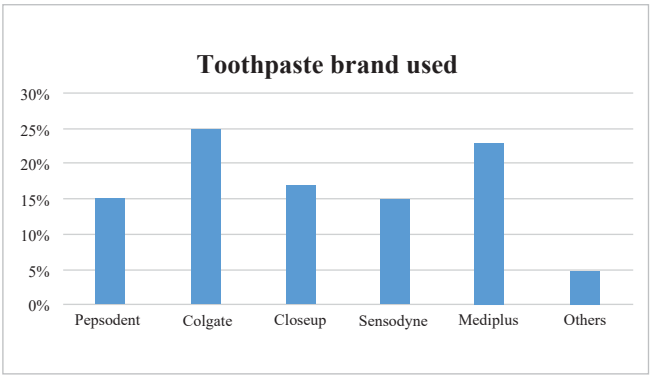

Figure 2: Graphical representation of toothpaste brand used.

It was seen that among 200 patients, 15% of patients used Pepsodent, 25% Colgate, 17% Closeup, 15% Sensodyne, 23% Mediplus and 5% others as presented at figure-2.

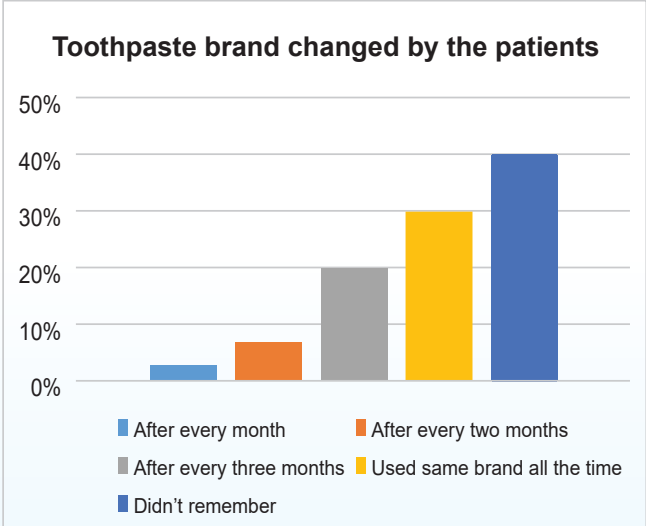

Figure 3: Graphical representation of changing of toothpaste brand.

From changed their toothpaste brand as presented at the study, it was seen that among 200 patients, 3% figure-3 of patients changed their toothpaste brand after every month, 7% after every two months, 20% after every months, 30% used same brand all the time and 40% didn't remember when they changed their toothpaste brand as presented at figure-3.

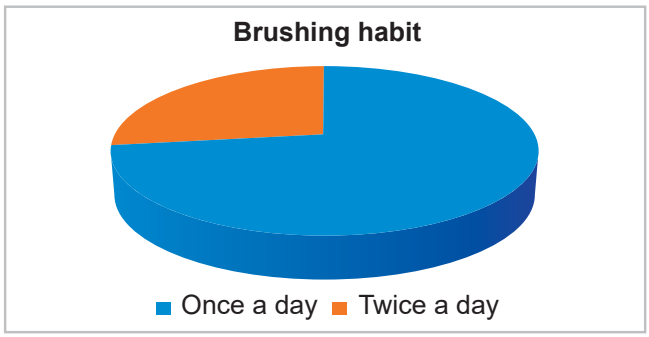

Figure 4: Graphical representation of brushing habit

It was seen that after every three months, 30% used same brand all among 200 patients, 73% brushed once a day and the time and 40% didn't remember when they 27% brushed twice a day as presented at figure-4.

Table 5: Dental flossing habit

Flossing habit	No. of patients (%)
Once a day	0
2-3 times in a week	3
Once in a month	11
Never	86
Total	100

It was seen that among 200 patients, 0% did flossing once a day, 3% 2-3 times in a week, 11% once in a month and 86% never did flossing as presented at table-5.

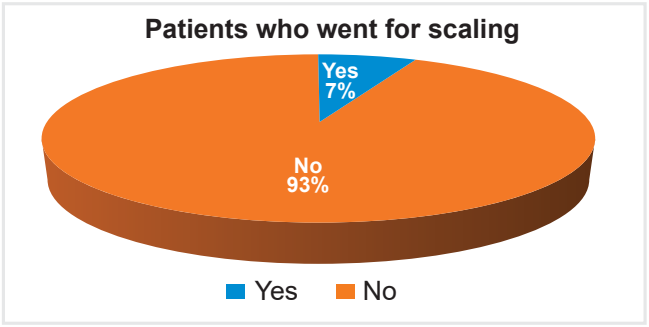

Figure 5: Graphical representation of patients who went scaling

It was seen that among 200 patients, 7% patient said they went for scaling and 93% said they did not go for scaling as presented at figure-5.

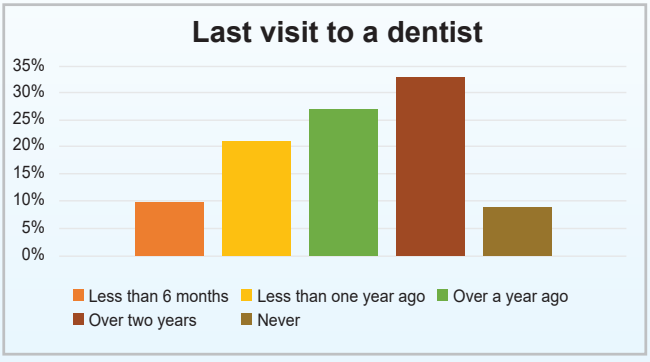

Figure 6: Graphical representation of patients' last visit to a dentist

From the study, it was seen that among 200 patients, 10% of them visited dentist less than 6 months ago, 21%less than one year ago, 27% over a year ago, over two years ago and 9% never visited a dentist as presented at figure-6.

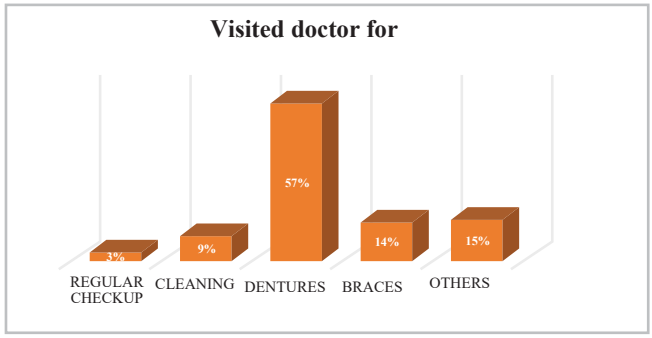

Figure 7: Graphical representation for patients' visit to doctor

From the study, it was seen that among 200 patients, 3% of them visited for regular check up, 9% for cleaning, 57% for tooth or gum problems, 14% for dentures, 2% for braces and 15% for other problems as presented at figure-7.

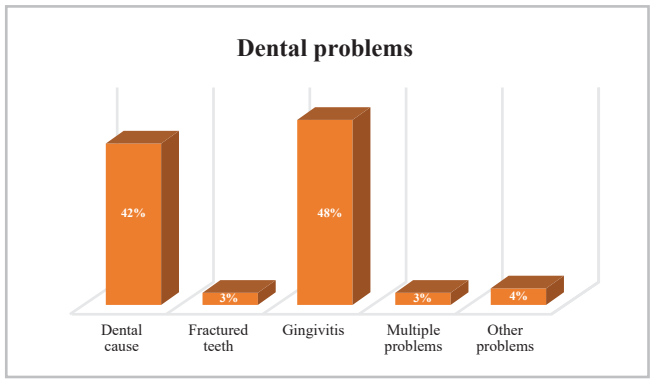

Figure 8: Graphical representation of dental problems.

From the study, it was seen that among 200 patients, 42% of them had dental caries, 3% had fractured teeth, 48% had gingivitis, 3% had multiple problems, and 4% had other problems as presented at figure-8.

Discussion:

This study assessed the level of dental awareness and dental hygiene practices of the patients. The cross sectional study design took into consideration accessibility to the target group.

In this study, it was seen that among 200 patients, 31% patients were living in rural area, 37% patients living in urban area and 32% patients living in small city as presented (Table-1).

Among all the patients, 2% were infant, 11% were adolescent, 31% were adult and 56% were old age presented (Table-2).

Among 200 patients 55% of them were male and 45% of them were female respondents presented (Table-3).

Various questions were asked regarding the knowledge on oral health, such as cleaning of teeth, food habit, how often they visited dentist etc.

Majority of the patients (61%) believed that the manifestation was due to brushing teeth once a day, while (26%) said that it was due to improper brushing and had no awareness about healthy teeth (Table-4). Gingivitis was the most common dental problem encountered at 48%. Other dental problems found in 42% suffering from dental caries, 3% had fractured teeth, 3% had multiple problems and 4% had other problems as presented in (figure-8).

This study showed that approximately 9% of the patients never visited a dentist, 10% visited less than 6 months ago, 21% visited less than one year ago, 27% visited over a year ago and 33% visited over 2 years ago (figure-6).

When respondents were asked about the habit of brushing their teeth, 73% of them brushed once a day and 27% of them brushed twice a day (figure-4).

The results of this study showed that about 57% of the respondents reported that they would only visit the dentist when they have tooth or gum problem. Whereby 3% were for regular checkup, 14% of them for dentures, 2% for braces and 15% for others (figure-7). Results showed that 0% did flossing once a day, 3% 2-3 times in a week, 11% once in a month and 86% never did flossing as presented (Table-5).

From the study, it was seen that among 100 patients, 7% patient said they went for scaling and 93% said they did not go for scaling as presented (figure-5).

This could be due to low socioeconomic factor or lack of proper knowledge on brushing aids. Major portion of the patients had monthly family income below tk10000 (46%), within the range tk11000-30000 (42%) and above tk50000 (12%) presented (figure-1).

Figure-2 revealed that all participants brushed their teeth with Pepsodent 15%, Colgate 25%, Closeup 17%, Sensodyne 15%, Mediplus 23% and others 5%.

Their habit of changing toothpaste brand might also affected their dental health. The study said that 3% of the patient changed toothpaste brand after every month, 7% after every two months, 20% after every three months, 30% of them used the same brand all the time and 40% couldn't remember when they changed their toothpaste brands (figure-3). Results showed that in all of studied variables, male and female had slight variations. This study presented a comprehensive overview of the dental health behavior, knowledge and attitude among the people of Bangladesh. People are not truly aware of dental health. Results of this study showed that oral hygiene habits, oral health knowledge level among the people of Bangladesh is poor and needs to be improved.

Conclusion:

The present survey showed that the levels of dental health care 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 analysis of dental caries experience revealed the existence of socio-behavioral determinants of dental health.

Gingivitis and dental caries are currently some what higher among the nonprivileged population groups. Government should take necessary steps against these problems and create dental awareness among the people of Bangladesh.

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Original Article

Nurses Role on Patient Safety in the Ward at a Tertiary Level Public Hospital in Chittagong City

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Abstract:

Aim: *Patient safety is an essential and vital component of quality nursing care. A variety of stakeholders (society in general, patients, individual nurses, nursing educators, administrators, and researchers, physicians, governments and legislative bodies, professional associations, and accrediting agencies) are responsible for ensuring that patient care is safely delivered and that no harm occurs to patients.*

Methods: *The study was conducted in Chittagong Medical College & Hospital January 2016 to December 2016. Among the nurses of the hospital 120 sample was selected purposively. Data was collected by face to face interview with the help of a structured questionnaire and check list. Data analyses was done with SPSS Version 21 and descriptive statistics was used for all variables.*

Results: *Maximum respondents 55% were female, 35.83% were in age group 31 to 40 years old and 82.7% were married. Respondents gave more positive opinion 77.7% on practice for safety of high alert medication. 71.7% respondent's have knowledge on personal protective equipments, 50.8% used soap water for hand washing and only 19.17% used alcohol based formulation, 47.5% wash their hand after touching patients & 15% wash their hand before & after touching patient, only 9.16% wash their hand before touching patients.*

Conclusion: *To improve the situation of patient safety practice among the nurses should be developed patient safety protocol and maintain to prevent avoidable harm to the patient. The regular training program should be arranged regularly on patient safety.*

Key words: *Nurses role on patient's safety, Facilities like risk patient care*

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Introduction:

Nurses play a central role in direct patient care and safety surveillance at the point of care. This role suggests a need for consensus on a core set of measures that can be used to monitor safe practices and guide resource allocation decisions that affect patient outcomes in a health system. (UK Essays, 2018 Nursing Essays Nurse Patient Safety). Patient safety is defined as, "freedom from accidental injury due to medical care, or medical errors". And medical error is defined as the failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim. Errors can include problems in practice, products, procedures and systems (Institute of Medicine 1999).

Patient's safety has always been the heart of healthcare practice and nursing through the history of medicine. However, all through the world occasional non-deliberate accidental harm occurs to patients looking for care. Such unfavorable incidents can occur at all levels of healthcare whether clinical or managerial, curative or preventive, and in general healthcare, or private. It may occur at any stage of management (radiology, laboratory, operating room, ward, or ICU) (WHO report, 2006). Patient safety programs should include at least three areas of focus: culture change, process change, and process measurement. Changing culture is a new watch word in patient safety (Frankel A et al. 2003). Recent studies assessed the safety culture in different types of healthcare organizations and hospital safety culture has been linked to patient safety (Zohar D et al. 2007). Assessment of current safety culture in a healthcare organization is the first step to identify the most problematic areas for improvement, since healthcare staff knowledge, attitudes and pattern of behaviors are critical in the promotion of the workplace climate needed to secure an organizational culture of safety (Shojania KG et al. 2002).

For instance; a report claimed that the risk of health care associated infection in developing countries is up to 20

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times higher than in developed countries (The Medical News 2007). Estimates show that in developed countries as many as one in hospital care (Tsion Assefa *et* al.2012). Occasionally when people receive health care, errors associated with care may result in a serious harm such as death, disability or additional prolonged treatment. Among other activities to address patient safety, it is the note worthy that by end of June 2007, 44 countries, including Bangladesh, Bhutan, India, and Thailand from the WHO South East Asian (SEA) region, have signed the pledge to address healthcare association infections. Additionally, the first regional patients' safety workshop on "Clean Care is Safer Care" was also organized successfully to share experiences among SEA countries during 20-22 June 2007 in Bangkok, Thailand (S Peerapakorn 2007).

The role of the nurses is pivotal in the healthcare system. We consider them the backbone of health service. Nurses are the health care professionals with whom patients have the most contact, and nurses bear a critical responsibility in identifying, addressing and representing the needs and interests of patients. They provide care, treatment, and services in a variety of settings and critical to the provision of safe high quality care. Nurses' actions or lack there of can have a direct and immediate impact on the safety and quality of care provided by a health care organization. Professor Didier Pittet, Lead of the first Global Patient Safety Challenge 'Clean Care is Safer Care', observed that HAI is a major patient safety priority across the world. It is estimated that at any given time, over 1.4 million people worldwide are suffering from infections acquired in hospital. Between 5-10% of patients admitted to hospitals in industrialized countries acquire one or more infections and 15 to 40% of those admitted to critical care are affected. It is therefore fitting that the World Alliance for Patient Safety has selected HAI as the topic for its first Global Patient Safety Challenge (WHO 2007).

General objective:

To assess nurses role on patients' safety in the ward a tertiary level hospital in Chittagong City.

Specific objectives:

1) To identify the risk during patient care delivery in the study ward
2) To assess the nurses activities in the study ward for safety measures
3) To find out socio-demographic characteristics of study population

Materials and methods:

Study design: The study was descriptive type of cross sectional in nature.

Study place: The place of the study was National Institute of Preventive and Social Medicine (NIPSOM).

Study site: The study was conducted in Chittagong Medical College and Hospital which is the tertiary level hospital in Chittagong.

Study period: January 2016 to December 2016.

Study population: Population of this study includes nurses in medical & surgical ward of Chittagong Medical College & Hospital.

Sample size: Sample size was taken purposively 120. Because calculated minimum sample 384 were not attained with in the stipulated time frame of study.

Sampling technique: Purposive sampling technique is use for data collection.

Study tools: The study tools include questionnaire.

Data collection procedure: After taking the permission from the authority, explain the purpose of the study to the respondents and collect the data from the sample through face to face interview administer questionnaire.

Data processing and analysis:

After collection of data, checked, verified, coded and edited. The data entry was started immediately after completion of data collection. Data processing and analyses were done using SPSS (Statistical Package for Social Sciences) version 21. Data were analyzed according to the objectives of the study. Descriptive statistics was used for all variables. Values were expressed as frequencies and percentage.

Results:

Figure 1: Distribution of respondents according to sex (n=120)

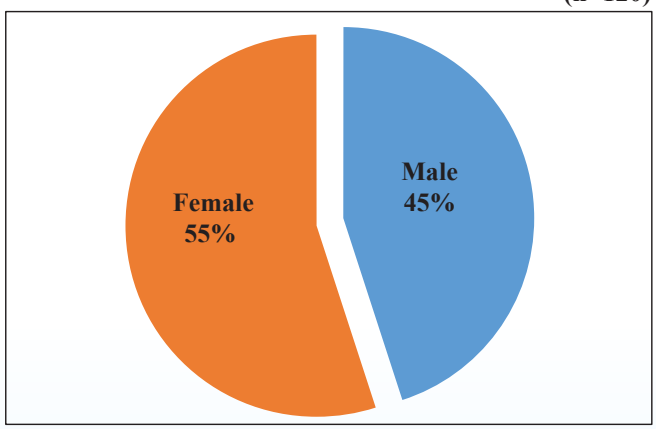

Figure-1 shows that among 120 respondents there were 55% females and 45% male.

Table 1: Distribution of the respondent according to practice of safety of high alert medication (n=120)

Way of taking measure for safety of high alert medication	Frequency	Percentage
I don't know	27	22.5
Yes, I know	93	77.5
Total	120	100.0

Table 1 shows that 77.5% of the respondents have practice on safety of high alert medication and 22.5% have no practice on safety of high alert medication.

Figure 2: Distribution of patients by age

(n=120)

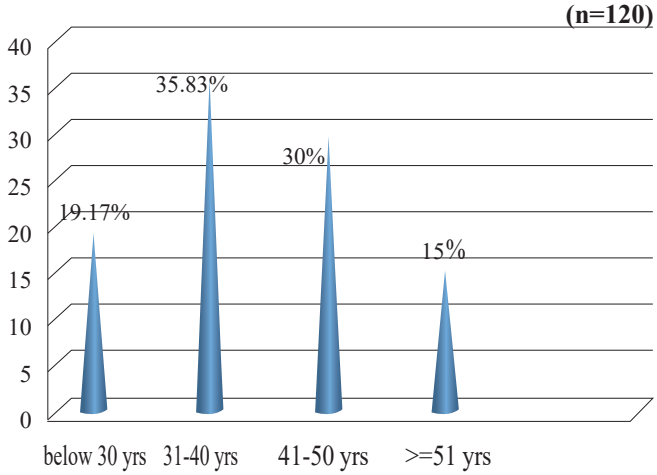

Figure-2 shows that 35.83% were 31 to 40 years old, 30% were 41 to 50 years old, 19.17% were above 50 years old and 15% was below 30 years old.

Figure 3: Distribution of respondents according to religion

(n=120)

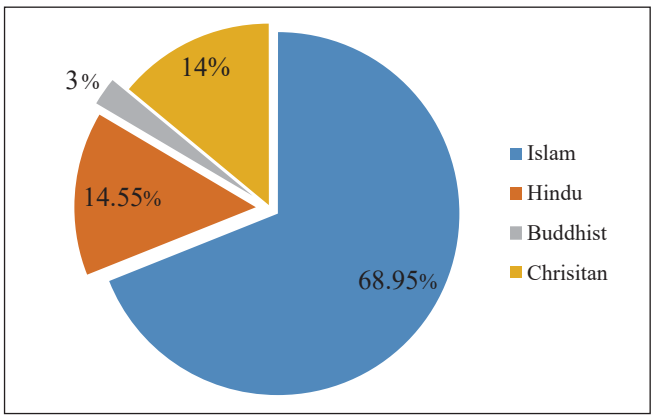

Figure-3 shows that about 68.95% of the respondents are Islam, 14.55% are Hindu, 14% Christian and 3% are Buddhist.

Table 2: Distribution of the respondent according to their knowledge on personal protective equipment

(n=120)

Knowledge on personal protective equipment	Frequency	Percentage
Yes	86	71.7
No	34	28.3
Total	120	100.0

Table 2 shows that 71.7% of respondents have knowledge on personal protective equipment and 28.3% have no knowledge.

Figure 4: Distribution of the respondent by marital status

(n=120)

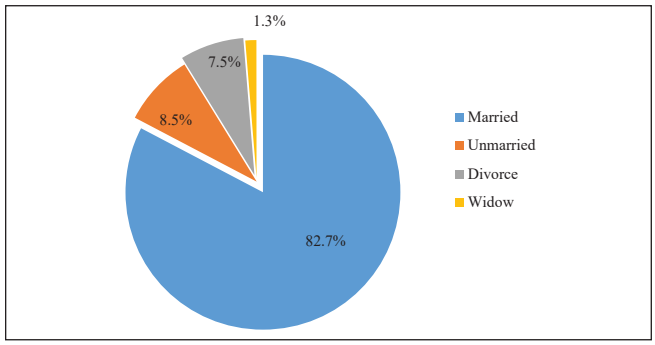

Figure-4 shows that about 82.7% of the respondents are married, 8.5% are unmarried, 7.5% are divorced and 1.3% is widow.

Table 3: Distribution of the respondent according to their opinion on practice of personal protective equipment

(n=120)

practice of personal protective equipment	Frequency	Percentage
Yes	41	34.17
No	79	65.83
Total	120	100

Table 3 shows that 34.17% of respondents have practice on personal protective equipment and 65.83% have no practice.

Figure 5: Distribution of respondent by employment designation

(n=120)

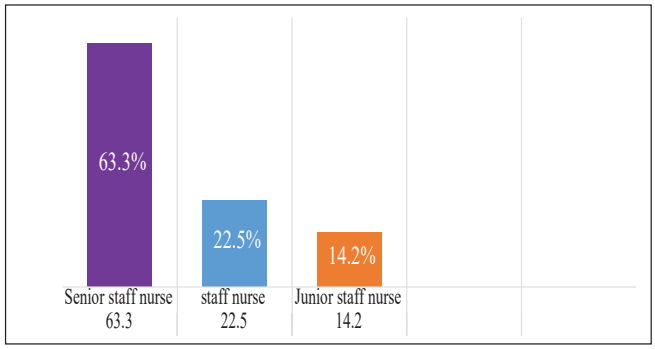

Figure-5 shows that 63.3% were senior staff nurse, 22.5% were staff nurse and 14.2% were junior staff nurse.

Table 4: Opinion of the respondents regarding practice of hand washing procedure

(n=120)

Hand washing procedure	Frequency	Percentage
Water	15	12.5
Soap water	61	50.8
Alcohol based formulation	23	19.17
Soap water & Alcohol based formulation	21	17.5
Total	120	100

Table 4 shows that 50.8% respondents use soap water for hand washing, 19.17% use alcohol based formulation, 17.5% use soap water & alcohol based formulation and rest 12.5% use only water.

Table 5: Opinion of the respondent regarding time of hand washing practice (n=120)

Time of hand washing practice	Frequency	Percentage
Before touching patient	11	9.16
After touching patient	57	47.5
Before and after patient & touching inanimate object	34	28.33
Before touching patient & after touching patient	18	15
Total	120	100.0

Table 5 shows that among 120 respondents 47.5% are washing their hand after touching patient, 28.33% are before and after patient & touching inanimate object, 15% are before touching patient & after touching patient and 9.16% are before touching patient.

Discussion:

This cross sectional study was conducted among the nurses in Chittagong Medical College & Hospital to identify patient safety practices, 120 respondents were selected from the hospital. From this study it was evident that maximum respondents (55%) were female (figure-1), 35.83% were in age group 31 to 40 years old (figure-2), 68.95% of the respondents were Islam religion (figure-3), 82.7% were married (figure-4), 63.3% were senior staff nurse (figure-5). Which was compared with the study of La Shonda Leigh Bare, 2004 where 93% were female, had an average age of 43 years old, and had an average of 16 years' experience in nursing job and the nurses' educational levels were varied 23% had a diploma, 23% had an associate's degree, 43% had a bachelor's degree, and 10% had a graduate.

In this study more than three fourth (77.7%) (table-1) of the respondents were aware about safety of high alert medication. The fourth report from the patient safety observatory details that 60,000 medication incidents were reported to the NPSA via the National Reporting System (NRLS) between January 2005 and June 2006. The report reviews 92 of these medication incidents in details, 38 of which resulted in death (National Patient Safety Agency, July 2007).

In this study among 120 respondents, 71.7% of respondents have knowledge on personal protective equipment (table-2) and 34.17% of respondents have practice on personal protective equipment (table-3). This is compared with the study of Melo et al., 2006 who investigated nurses in one hospital in Goiania, Brazil, and found that 75.6% understood the standard precautions as protective measures.

In this study among 120 respondents, 50.8% respondents use soap water for hand washing, 19.17% use alcohol based formulation, 17.5% use soap water & alcohol based formulation and rest 12.5% use only water (table-4). And 47.5% were washed their hand after touching patient & 15% were wash their hand both before and after touching patient (table-5). The study of Leodoro J. Labrague et al., 2012 where showed that hand hygiene is recommended before and after contact with a patient 96.6%, while half of the respondents reported that it is recommended before or after contact with a patient.

Conclusion:

Patient safety is the corner stone of high-quality health care. Much of the work defining patient safety and practices that prevent harm have focused on negative outcomes of care such as mortality and morbidity. Nurses are critical to the surveillance and coordination that reduce such adverse outcomes. Among the nurses different measure taken for patient safety was satisfactory but a large number of population does not practice. Raises awareness about patient safety within Bangladesh offer numerous challenges as a result of reduced resources related to socio-economics, infrastructure and human resources. However it is possible to achieve substantial progress even within such challenging circumstances though programme and training lead by trained and empowered professional.

Recommendations:

Following recommendations to improve the situations of patient safety practice among the nurses:

1. Patient safety protocol should develop and maintain to prevent avoidable harm to the patient.
2. Hospital should have a system that all clinical care provider practice wearing protective measure like apron, musk, head cap, gloves for safety of patient and mostly for themselves. They should maintain sterilization and other sector properly to minimize the health care associated infection.
3. Authority should take care of arranging regular training on patient safety for the involve personnel in health care. They should focus more on provision of science of safety.

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Review Article

Retainer in Orthodontics

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Abstract:
Orthodontic retention is defined as maintaining teeth in optimal aesthetic and functional position after treatment. Despite the necessity of retention phase and the factors influencing the stability of the teeth after orthodontic treatment was discussed by the orthodontist for a long time, it is accepted that a retention phase is essential for stability of orthodontic treatment results nowadays. Therefore, the application of a suitable retention method is important both for prevention of relapse after orthodontic treatment and for increasing patient satisfaction. Removable appliances had been used for many years for retention purposes. Later, fixed retainers were introduced to prevent relapse as having a number of advantages, such as better aesthetics, no need for patient cooperation, effectiveness, and suitability for lifelong retention. However, their need for precise bonding technique, fragility and tendency to cause periodontal problems by weakening oral hygiene are some of their disadvantages.

Key words: *Orthodontic retention, Tooth stability, Relapse, Removable retainer, Fixed retainer*

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Introduction:
Malocclusion is not a disease by itself, it is a morphological deviation from normal growth and development which might be or might not be associated with any pathological condition[1].
Orthodontic treatment is recommended for all classes of malocclusion, in order to restore normal functions, improve jaws relation, and achieve the required aesthetic goals[1]. Besides achieving patient's goals, be it functional or esthetics, treatment result have to be retained for its long term success[1].

A phase of retention is normally required to prevent the inherent tendency of the teeth to return to their original position[2]. Stability can only be achieved if the forces derived from the periodontal and gingival tissues, the orofacial soft tissues, the occlusal forces and post treatment facial growth are in equilibrium. Keeping in mind the importance of retention in orthodontic treatment, various types of retainers i.e. fixed or removable are given after completion of orthodontic treatment[1].

During formulation of treatment plan, type of retention depending on the correction achieved by orthodontic treatment should also be documented beforehand[2]. There are certain conditions like high placed canine, anterior cross bites and posterior cross bites with proper axial inclination required limited or no retention. Class-I non extraction cases and condition like, maximum retention corrected deep bite, all first premolar extraction[2]. Hellman gave nine theorems of retention whose principles should be followed while executing orthodontic treatment and after the completion of active treatment i.e. in retention phase[2].

There are various types of retainers used in orthodontics and these are broadly classified into:
1. Removable retainer
2. Fixed retainer

Removable retainers:
The removable retainers provide adequate retention for intra-arch stability and are useful as retainers in patients in where growth is remaining and are compliant.

Various types of removable retainer are[3]:
1. Hawley's retainer and its modification
2. Clip-on retainer/spring aligner
3. Wrap around retainer
4. Kesling tooth positioner
5. Clear retainer

Hawley's Retainer
The most common removable retainer is the Hawley retainer, designed in the 1920's by E H Hawley. It incorporates clasps on molar teeth and has a characteristic outer bow with adjustment loops, from canine to canine[4]. There is an acrylic coverage of the palate, which automatically provides a potential bite plane effect to retain overbite correction and rigid enough to maintain palatal expan-

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sion achieved during orthodontic treatment[4]. (Fig. 1a) Mechanical retention can be a problem in patients with short clinical crowns or exfoliated deciduous teeth[4].

The clasp locations for a Hawley retainer must be selected carefully, since clasp wires crossing the occlusal table can disrupt rather than retain the tooth relationships, established during the treatment. Circumferential clasps on the terminal molar may be preferred over the more effective Adams clasp if the occlusion is tight[4].

When first premolars have been extracted, standard design of Hawley retainer cannot keep the extraction space closed, rather it tends to open up the extraction space as wires of labial bow extends distal to canines, tending to act like a wedge at an extraction site. A common modifications of the Hawley retainer for use in such cases can be-

1. Labial bow soldered to the bridge of Adams clasps on the first molars, so that the action of the bow helps to hold the extraction space closed[4].
2. Using long labial bow extending from 2nd premolar to 2nd premolar on the other side[4].
3. Wrap the labial bow around the entire arch, till the first molars and using circumferential clasps on second molars for retention[4]. (Fig. 1d)
4. Fitted labial bow: A 22 gauge SS wire of appropriate length is taken and adapted according to the contour of the individual teeth at the level of the junction of the middle and incisal thirds, staring from the central incisors progressing towards the junction of middle and distal thirds of the labial surface of the canine[4]. At this point the free ends of the wires are bent at 90 degrees towards the apex and the further construction is carried out in a similar way as in case of a short labial bow. Used to retract anteriors when the space is present distal to canine[4]. (Fig. 1d)
5. To bring the labial wire from the baseplate between the lateral incisor and canine and to bend or solder a wire extension distally to control the canines. (Fig. 1b)

Figure-1: (a) Hawley retainer, (b) Hawley with soldered labial bow, (c) Hawley with long labial bow, (d) Hawley with fitted labial bow

Figure 2: Clip on retainer

Clip on retainer

A second major type of removable retainer is a clip-on retainer (C3-3 clip or 4-4 clip)[4]. It consist of acrylic bar (usually wire reinforced) along the labial and lingual surfaces of the teeth[4].

This retainer though quite esthetic is often less comfortable than a Hawley retainer. It is used to control alignment of anterior teeth or preferred in mandibular arch when mandibular teeth were well aligned and prior to treatment, retention of these teeth is unnecessary and undercuts lingual to molars make too difficult to extend retainer posteriorly[4] (Figure 2). It is generally used in cases with anterior spacing and can also be used to realign mandibular incisor if mild crowding develop after the treatment.

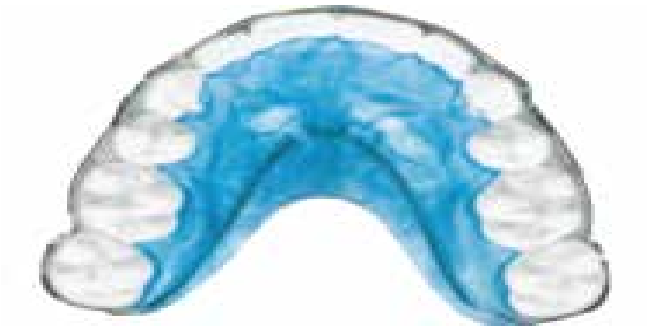

Figure 3: Begg's modified Wraparound retainer

Wraparound retainer

Original Wraparound retainer was popularized by P. R. Begg. It consists of a labial wire that extends till the last erupted molar and curves around it to get embedded in acrylic that spans the palate[5]. There is no cross over wire between the canine and premolar there by eliminating the risk of extraction space opening up[5]. The original design was modified by placing a single arrowhead in distal undercut of last tooth both first and second molar can be incorporated in the retainer to improve retention of the appliance[6]. (Figure 3)

Both these type of Wraparound retainer have following advantage:

1. Overcomes the limitation of Hawley type retainers with Adam's clasps or labial wire crossing the occlusion that create interference or can open that up to the extraction space[4].

2. Better retention than the conventional appliance.

Kesling tooth positioner

The tooth positioner was described by H.D. Kesling in 1945. It is made of a thermoplastic rubber like material that spans the inter-occlusal space and covers the clinical crowns of the upper and lower teeth and a small portion of the gingiva. The tooth positioner needs no activation at regular interval and is durable. The drawbacks include difficulty in speech and risk of TMJ problems[7].

Figure 4: Clear retainer

Clear retainer

Clear retainer/invisible retainer are also a type of removable retainer made with varying thickness of preformed thermoplastic sheets[8]. They are considered as invisible retainer that can be made by Biostar or Vacuum Pressure machines using thermo form sheets. (Essix retainer, thermoplastic retainer, or vacuum-formed retainer) were the first thermoplastic clear retainers introduced in 1993 by Dr. John Sheridan[8].

As these retainers are made entirely of transparent plastic, which makes them less noticeable and more esthetic than the traditional wire retainers, they are easily accepted by the patients. These retainers also act as positioners and gently guide the teeth into proper position and can correct tooth discrepancies. They can serve as temporary bridge for missing anterior teeth. They also act as a night guard for subjects who have the habit of bruxism and also have a bite plane like effect. The delivery of these retainers require less chair side time. They encourage good dental hygiene as patients can take out their retainer and brush or floss their teeth.

However clear retainer has certain disadvantages like they demand good patient compliance, interfere with settling of occlusion, and can be lost due to its transparency.

There is certain contraindication to use of clear retainers like swollen interproximal tissue, severe pretreatment dental rotations, in cases where arch expansion has been done or inpatient with anterior open bite.

Several modifications of clear retainer have been given like

1. Clear retainer with bite plane bite plane is added in anterior region
2. Clear retainer with a crown or denture teeth for missing teeth
3. Osamu active retainer for correction of mild relapse

This retainer consists of two superimposed layers. The inner layer, made of 1.5mm ethylene vinyl acetate copolymer adapts to the interproximal areas and covers the palatal and lingual aspects of the teeth[8]. The outer layer, made of 0.75mm hard elastic polycarbonate, covers the occlusal aspects of the teeth and makes the retainer elastic and stable. The Osamu active retainer is inexpensive, simple to make and it can correct individual tooth positions while maintaining close adaptation to the remaining teeth[8].

Fixed retainers

A fixed retainer typically consists of a passively bonded wire to the lingual side of the teeth in maxillary and mandibular incisor region. The complete analysis of patients bite must be taken. Orthodontists prescribe fixed retainers, especially in cases where stability is questionable and long term retention is required[4]. As fixed retainer are easily acceptable by the patients and their popularity has increased in recent times. Initially, for fixed retainer rigid wire was used that did not provide physiologic tooth movement. However, now a days we use flexible wires like multistranded or ligature were twisted together as fixed retainer[4].

Types of fixed retainers

Based on type of attachment to teeth

1. Banded retainer canine were banded to fix the retainer that was esthetically unacceptable.
2. Bonded lingual retainer bonded on the lingual aspect for maintaining anterior tooth position relatively independence's of patient's cooperation.
3. Band and spur retainer used in cases where a single tooth has been orthodontically treated for rotation, correction or labiolingual displacement. The tooth that has been moved is banded and spurs are soldered on to the bands so as to overlap the adjacent teeth.
4. 4-4 Crozat retainer 4-4 Crozat appliance has cribs on the first bicuspids, recurved double lapping lingual finger springs and a labial bow. It combines may of the advantages of other types of retainers and offers firm retention, because of its clasping mechanism. It prevents good labiolingual control of anterior teeth to maintain or restore arch form in the lower or upper arch and is a flexible retainer. It also provides adequate oral hygiene being removable. The major disadvantages of the appliance is being that must be fabricated at a quality laboratory, not making it cost effective and can break easily[9].

Based on the material used

1. First generation fixed retainer: These are 0.025-0.036 inch blue elgiloy or stainless steel round wires. These are bonded only to lingual surfaces of canines, and loops are bended at each end to increase retention.
2. Second generation fixed retainer: These are 0.032 inch triple-stranded wires and can be bonded to lingual surfaces of all anterior teeth. These multi-stranded

wires substituted plain wires as they have higher elasticity that allows physiological movement of the teeth.

3. Third generation fixed retainer: These are 0.032 inch stainless steel or 0.030 inch gold coated plain wires. Their ends are sandblasted with aluminum oxide to increase mechanic retention. They are bonded to canines only.
4. Recent advancement includes resin fiberglass bonded retainers with introduction of resin forced fiberglass composites, Michael developed these retainers. The main advantages arethat they are rigid and impervious. The patients appreciate the tooth colored material and the comfort that is provided by smoothening of the margins with rubber abrasive points or wheels. Retainer sections can easily be recontoured, removed or repaired in the mouth. As no metal wires are used, additional material can be applied to the teeth or the fiberglass or both[10].

Figure 5: Bonded canine to canine

Based on extensions of lingual retainer

1. Canine to canine retainer– These are commonly used in lower anterior region. Canine are banded and a thick wire is contoured over the lingual aspects and soldered to the canine bands[11].
   The bands predispose to poor oral hygiene and are unaesthetic, hence not preformed now a days. Bonded canine to canine retainer overcome this limitation and are used commonly. These are used in non extraction cases or in mandibular incisor extraction cases[11] (Figure 5).
2. Bonded premolar to premolar retainer- These are commonly used in extraction cases, where extraction of first premolar had been planned[11] (Figure 6).

Figure 6: Bonded premolar to premolar

3. Banded molar to molar retainer: The molar to molar mandibular retainer is made by the heavy gauge wire soldered on the molar bands. It allows the mandibular canines and molars to settle naturally and maintain the arch[12].

Bonded fixed retainer

Indications

Zachrisson listed the following indications for clinical use of flexible wire retainer[11]:

1. Closed median diastema
2. Spaced anterior teeth
3. Adult cases with potential post orthodontic tooth migration
4. Accidental loss of maxillary incisors requiring closure- and retention of large anterior space
5. Spacing reopening, after mandibular incisor extractions
6. Severely rotated maxillary incisors or severe pretreatment crowding
7. Palatally impacted canines
8. Planned increase in mandibular, inter canine width.

Advantages

1. Invisible, are well tolerated by patients
2. Virtually compliance free
3. No damage to the teeth and to the hard and soft tissues adjacent to the wire.

Disadvantages

1. Time consuming
2. Technique sensitive
3. Difficult to maintain, encouraging plaque and calculus accumulation.

Conclusion:

This article suggest indication, limitation and precaution takes with various types of retainers used in orthodontics be it removable or fixed. The selection of appropriate means for providing retention should state from day one of orthodontic treatment planning for attaining optimal result post treatment that lasts for life time.

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REVIEWERS OF ARTICLES IN THIS ISSUE

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INFORMATION TO AUTHORS

The *Rangpur Dental College Journal* agrees to accept manuscript prepared in accordance with the 'Uniform Requirements Submitted to the Biomedical Journals' published in the New England Journal of Medicine 1991; 324: 424-8.

Aims and scope: Rangpur Dental College publishes half-yearly journal based in clinical and laboratory study. It features the best clinical and laboratory based study on various disciplines of medical and dental science to provide a place for medical and dental professionals to relate experiences which will help others to render better patient care.

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Information provided in the manuscript is important and likely to be of interest to an international readership.

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
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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:

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- Each table should have a tittle 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.
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