

KNOWLEDGE, ATTITUDE AND PERCEPTION OF DENTAL FRATERNITY TOWARDS PRACTICE OF RUBBER DAM

¹ANUM TANWIR

²MUHAMMAD AMIN

³ZIAULLAH CHOUDHRY

⁴FARAH NAZ

ABSTRACT

Rubber dam isolates operating field and makes treatment less invasive and safer for the patient. The aim of this study was to evaluate knowledge, attitude and practice of using rubber dam among different strata of dental fraternity. This cross sectional survey was conducted at Dental section, Dow International Medical College; DUHS from November 2014 till may 2015. Four hundred questionnaires were distributed amongst dental students, house officers and postgraduate trainee. General practitioners and retired dentist were excluded from the study. Three hundred and seventy four questionnaires were returned with over all response rate of 93.5%. Data was analyzed by using SPSS version 20. Statistically there was a significant association between knowledge and designation ($p=0.031$). Dentist showed positive attitude towards rubber dam application ($p=0.00$). It is concluded that dentists have significant knowledge about rubber dam use, but general reluctance towards it require change in the attitude by improvising regular practice.

Key Words: Rubber dam, Practice, KAP.

INTRODUCTION

Since the advent of rubber dam in 1864, its technique has been modified, adapted, taught and rejected by many dental professionals.¹ With more emphasis towards using aseptic technique, the use of rubber dam is now considered mandatory. Operative dentistry and endodontic are the two major areas where rubber dam is specifically used.¹⁻⁷ European Society of Endodontics quality guidelines state that RCT procedures should be carried out only when the tooth is isolated by dental dam.⁸

Rubber dam acts as a shield to salivary contamination, aspirating instruments and chemical. It retracts, provide clear and more focused vision for the dentist. It reduces patient anxiety and conversations. Hence increasing treatment quality, efficacy and decreasing

discomfort time.²⁻⁵ In America and Turkey, they have very strict law against malpractice in dentistry, which prohibit dentist deviation from standard of care.⁹ General dentists are supposed to work with same protocol for endodontic and operative procedures as a specialist does.¹⁰

In universities, use of rubber dam starts from the very first interaction with the patient. More emphasis are on the advantage and importance of rubber dam rather than on its practical use.^{8,11} As a young dentists or new graduate, they find rubber dam important but large number of components and time consuming factor makes it a complicated and a complex procedure.⁶ During early stages, they develop skills without using rubber dam and continue with malpractice.

Although in spite of wide range of its functions, rubber dam is mostly overlooked by general dentist. Many studies have been conducted and reported.¹² In North America, a study showed that rubber dam was not routinely used even for root canal treatment. In UK, frequency of rubber dam use was very low.^{13,14} The rationale of this study was to gauge the opinions of the dental practitioners regarding the different aspects of rubber dam usage.

METHODOLOGY

This cross-sectional survey was conducted in the dental section of Dow International Medical College. Data was collected from November 2014 to May 2015. Total sample size was calculated using cross sectional

¹ Dr Anum Tanwir, BDS, MDS (Trainee), MDS Resident, Department of Operative Dentistry, Dental Section, DIMC
Email: anum.tanwir@gmail.com Cell: 0322-2357967

Correspondence: Dr Anum Tanwir, 14/1 Zulfiqar Street 10, Off Khayaban-e-Qasim, DHA, Phase-8, Karachi

² Dr Mohammad Amin, BDS, FCPS (Operative Dentistry), Assistant Professor, Department of Operative Dentistry, Dental Section, DIMC Email: dr_mohdamin@yahoo.com Cell: 0321-2195215

³ Dr Ziaullah Choudhry, BDS, MSc (Prosthodontics), Assistant Professor, Department of Prosthodontics, Dental section, DIMC Email: choudhryziaullah@gmail.com Cell: 0300-8291131

⁴ Dr Farah Naz, BDS, FCPS (Operative Dentistry), Associate Professor, Department of Operative Dentistry, Dental Section, DIMC Email: farah.biyabani@duhs.edu.pk Cell: 0300-2345434

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(1 – sample proportion) study formula with 95% confidence interval, 80% power of the test. Five percent prevalence of using rubber dam during amalgam restoration. The total sample size calculated was 222.

The sample included Dow International Dental College BDS final year students, house officers and post graduation trainees. General practitioners and retired dentist were excluded from the study. All the study participants fitting the inclusion criteria were requested to fill the form. Prior to sample collection pilot study was conducted to examine the validity and reliability of the questionnaire. During the preparation of the questionnaire, the study by Tanalp et al was taken as the main reference with some modifications.¹⁵ The questionnaire consisted of three components. First knowledge, included questions regarding importance of practical use of rubber dam. Second attitude and the third part included questions regarding practitioner personal experience towards its practical use. The questionnaire consisted of Likert scale with five options, starting from strongly agree to strongly disagree. Questions were closed ended, in which two were open ended questions for which the frequent response were coded. Data from the completed questionnaires were entered and then statistically analyzed through SPSS version 20.0. Frequencies and cross-tabulations were performed and recorded. Chi-square test was used for the comparison of qualitative data. Result were evaluated at significance level of $p < 0.05$.

RESULTS

Four hundred questionnaires were distributed among candidates who participated in the study. Out of which 374 questionnaires were completed and returned with an overall response rate of 93.5%. Altogether there were 31.6% male and 68.4% female dentists. Among them 25.1% were final year students, 45.5% house officers and 29.4% post graduates. Statistically there was significant association of designation with the knowledge ($P=0.031$) and attitude ($P=0.000$) of rubber dam as shown in Table 1 and 2. In general, 73.8% of the dentists agreed that they asked about latex allergy before applying rubber dam. Majority of dentists agreed to use rubber dam for various dental procedures as per shown in the Table 3.

Greater part of the sample agreed that isolation cannot be achieved without using rubber dam (75.1%) while 72.8% agreed treatment performed with rubber dam has better success rates. As far as practicing quadrant dentistry 44.1% disagreed on using multiple teeth isolation technique. 40.6% regularly use dental floss to ties clamps before the placement of rubber dam.

Considering the difficult aspect, 40.9% believed that it is difficult to apply rubber dam, and it consisted of too many components (53.2%). Plus 49.2% thought that assistance is required during its application. (Fig 2) Majority (76.4%) thought rubber dam usage posed difficulty in taking radiographs. 53.6% agreed it extends the treatment time while 61.2% shared their opinion

that patient does not like rubber dam. The main benefit of using rubber dam is concluded as improved visibility (40.4%) and better isolation (22.7%) while main reason that prevents dentist from using rubber dam is insufficient training (32.9%) and cost (30.5%).

On asking what would they do if patient refuses to have rubber dam on, majority of dentist replied that they will use other means of isolation (62.3%). Whilst 23% do treatment without rubber dam and 14.2% shared their view on counseling the patient. Only 0.5% would refer case to the specialist. Regarding the knowledge of dental fraternity towards the use of rubber dam, 55.1% dentists had positive opinion on making it compulso-

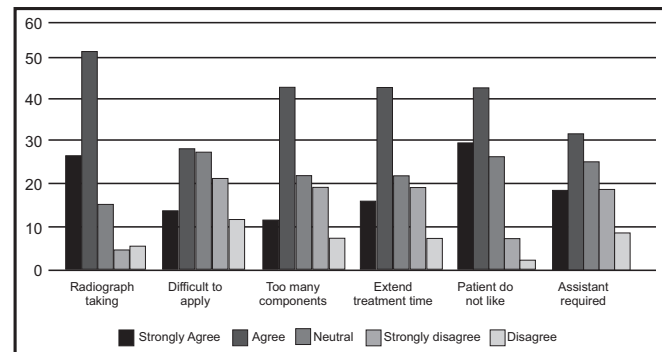


Fig 1: Difficult aspect of rubber use

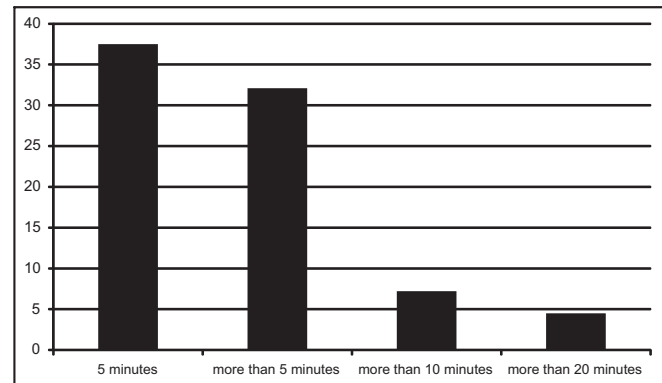


Fig 2: Time taken to place rubber dam without any assistance

TABLE 1: ASSOCIATION OF KNOWLEDGE WITH DESIGNATION

Designation	Knowledge		Total	Chi-square
	Strongly agree	Agree		
Final year	(31) 33.0%	(63) 67.0%	(94) 100.0%	P=0.031
House officer	(50) 29.4%	(120) 70.6%	(170) 100.0%	
Post graduate	(49) 44.5%	(61) 55.5%	(110) 100.0%	
Total	(130) 34.8%	(244) 65.2%	(374) 100.0%	

TABLE 2: ASSOCIATION OF ATTITUDE WITH DESIGNATION

Designation	Attitude			Total	Chi-square
	Agree	Neutral	Disagree		
Final year	(37) 39.4%	(52) 55.3%	(5) 5.3%	(94) 100.0%	P=0.00
House officer	(36) 21.2%	(112) 65.9%	(22) 12.9%	(170) 100.0%	
Post graduate	(10) 9.1%	(91) 82.7%	(9) 8.2%	(110) 100.0%	
Total	(83) 22.2%	(255) 68.2%	(36) 9.6%	(374) 100.0%	

TABLE 3: PRACTICE OF RUBBER DAM

Question	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
Pedodontics	9.6	7.5	15.8	42.8	24.3
Adults	38.2	26.2	11.2	2.1	22.2
Restorative procedure	20.9	33.2	27.0	9.1	9.4
Eases restoration stage of root canal treated tooth	22.5	33.4	15.5	27.0	1.6
Crown/bridges/inlay/onlay	1.9	46.3	28.3	17.6	5.9
Success rate	38.8	34.0	21.1	4.5	1.6
Isolation	35.3	39.8	16.3	5.9	2.7
Excessive tooth structure loss	10.4	12.8	35.0	25.4	16.0

ry, while 71.9% had satisfactory education. Majority (77.6%) dentists showed willingness to gain knowledge and attend workshops regarding rubber dam.

DISCUSSION

Current research concluded positive outcome regarding the knowledge and attitude towards the practice of rubber dam. Majority of dentists willing to use rubber dam and were following the standard protocol. Present study showed comparable results with other international studies.^{2,9,11,13} In spite of the known benefits of rubber dam in infection control and patient safety, the practice of rubber dam by dental practitioners was found lower then what was expected.

In the current study the highest response percentage to using rubber dam in pedodontics was recorded in the “disagree” category. It is hard to deal with a pediatric patient and with complexity in the application of rubber dam, rate of rubber dam application is low. Soldani F et al conducted a study which emphasized the importance of using rubber dam in pediatric dentistry.¹⁶ They also reported the common reasons for not using rubber dam on patient who are non co-operative, anxious, with learning disability and dental fears.

Results of the present study reveal that during restorative procedure most of the dentists prefer using rubber dam because it eases the restorative phase. This opinion is supported by Berglund et al who discovered that during the removal and replacement of amalgam filling use of rubber dam reduces the mercury plasma level.¹⁷ Other studies recognize that rubber dam simpli-

fies the operative procedure as it reduces the chances of swallowing or aspiration of residual amalgam, resin, wedges, pins and burs during operative treatment and endodontic files during endodontic.¹⁶

In the present study the greater part of the practitioner agreed on the fact that rubber dam increases the success rate of a root canal treatment. This opinion is supported by Van Nieuwenhysen et al.¹⁸ They found that the outcomes of the retreatment cases were significantly better in those cases which were isolated with rubber dam. Abbott et al evaluated 100 patients, who complained of continuing pain after commencement of root canal treatment.¹⁹ Lack of use of rubber dam in 87% of the cases was recorded as the major factor for failure followed by periapical infection.¹⁹

While assessing the question of difficulty in placing rubber dam, current study revealed that too many components and lack of assistance makes it difficult to use (Fig 1). Patient discomfort was noted as the lowest concern. Abraham et al and Iwatani et al concluded that patient discomfort and cost is the main problem faced by the dentist while placing the dam.^{20,21} Whereas a study by Stewardson et al revealed that patients actually preferred to have the rubber dam placed during procedure.²²

Rubber dam has been extensively researched on and universally advocated technique for standard of care. Majority of the dentists have been trained in its placement yet they do not employ it when they begin their clinical practice.²³ This shows that the insufficient use of rubber dam is not because of lack of training but

as a result of less emphasis on the motivation of using rubber dam in practice of modern dentistry.²⁴ Similar result are extracted from the current study, they had satisfactory education and training regarding rubber dam and were willing to gain further knowledge through CME courses and/or workshops. The ability to place a rubber dam successfully and efficiently comes with experience which in turn comes with regular use. Hence, the limited utilization may be due to lack of proficiency rather than lack of knowledge or insufficient training.

Limitations of this study include that, Firstly this is a single centre study. Secondly, other means of isolation are not considered in the study. It is recommended that continuing dental education and workshops be conducted and the new graduate should be followed-up after 5 years to see if they are practicing according to updated guidelines of standard of care. Quality assurance programs should be developed to review and re-evaluate dentist after the training era.

CONCLUSION

Rubber dam provides excellent isolation and increases the success rate of treatment. Local practitioners have satisfactory knowledge regarding use and placement of rubber dam. There still exists an overall general reluctance towards placement of rubber dam amongst dentists. Therefore, considerable efforts are still required for future integration of this tool.

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CONTRIBUTION BY AUTHORS

1 Anum Tanwir:	Manuscript writing ,data collection.
2 Mohammad Amin:	Title selection, designed planed analysis.
3 Ziaullah Choudhry:	Literature review/reference.
4 Farah Naz:	Critical revision/discussion.