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Patients' Attitude towards Rubber Dam-A Questionnaire Study

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Abstract

Aim: Patients 'safety and convenience of working in dry operating field is the pre-requisite of any dental procedures. Rubber dam isolation has always proven clinically to be the best till date. The reasons for not usage of rubber dam are placement difficulty, time consumption, patient's rejection, lack or insufficient training. Hence this study records patients' opinion and preference regarding their experience of rubber dam use during their next visit.

Materials and Methods: A questionnaire study containing 10 questions which was then circulated among 121 patients who consented to participate in this study. The patients answered the questionnaire during their second appointment.

Results: Almost 84% patients preferred its use and considered it was being placed for their benefit. More male patients preferred its use (84.3%) compared to female patients (81.1%). A significant difference (p=0.000) is seen patients' preference in 21-30 years category and mean time taken among the procedures showed significant difference (p=0.027) with maximum time taken for Root canal procedure of 7.72 minutes.

Conclusion: Patients are generally not aversive towards rubber dam. Hence frequent use for all the procedures increases the acceptance of rubber dam.

Clinical Significance: According to recent research, dentists are most exposed to coronavirus disease (COVID-19) among healthcare professionals. The use of rubber-dams in dentistry is an effective method to prevent cross-infection, as it allows the aerosol to disperse into the air without being infected.

Keywords: Rubber Dam; Questionnaire; Root Canal; Patients' Attitude

Introduction

The oral cavity poses many challenges from the constraining effect of tongue and cheeks to other obstacles of visualization and isolation, such as saliva and blood while operating. The so-called "moisture control" is an essential part of any procedure, direct or indirect.

The need to work under dry conditions has been recognized for centuries and the idea of using a sheet of rubber to isolate the tooth dates almost 150 years! The introduction of this notion is attributed to Sanford Christie Barnum, who in 1864 demonstrated for the first time the advantages of isolating the tooth with a rubber sheet. Further, to keep the rubber in place was solved by S.S White with introduction of rubber dam punch in 1882 and Dr. Delous Palmer with metal clamps which could be used for different teeth [1].

Good practice guidelines, such as the European Society of Endodontology, recommend that a rubber dam is always used to isolate the tooth undergoing root canal treatment. From a medico-legal standpoint, dental defence agencies

recommend the use of rubber dam when performing root canal treatments or treatment involving the use of potentially harmful agents such as phosphoric acid [2]. The COVID-19 pandemic has increased interest in the use of rubber dam as a highly effective infection control barrier along with high evacuation.

Use of Rubber dam confers the following advantage:

1. The patient is protected from the ingestion or the aspiration of small instruments, dental fragments, solutions or irritant substances.
2. To operate in a clean field.
3. Retraction and protection of the soft tissues.
4. Better visibility in the working area.
5. The dentists and dental assistants are protected against infections which can be transmitted by the patient's saliva.
6. The patients are more comfortable, as they do not feel that their mouth is invaded by hands, instruments and liquids.
7. Efficiency is increased. The rubber dam minimizes patient conversation during treatment and the need for frequent rinsing

Despite these advantages, RD isolation during treatment is still not adopted in dental practice in many countries. The major barriers of using RD include: challenging placement techniques, time consuming (from a dentist's point of view) and cost of equipment and materials. In addition, patient discomfort and rejection have been proposed as barriers for using RDs.

Hence, this study aims

- To record patients' opinion regarding their experience of rubber dam use in an objective manner.
- To evaluate the influence of some personal and clinical factors on patients' opinion.

Materials and Methods

A total of 121 patients requiring dental treatment were randomly selected for the study. The patient was explained the reason for placing the rubber dam prior to treatment. In addition, patients were assured that their decision to complete the survey would not affect the dental service they would receive in the future. Upon consenting to participate in the study, patients were asked to answer questionnaire containing 10 questions in their second appointment.

Questions to be filled by patient

- SUBJECT NUMBER:
- AGE:
- GENDER:
- Was the rubber dam used for dental treatment previously?

Yes_____ No_____

- If yes, who has placed it?

Same dentist as today _____ Different dentist_____

- How was your experience of treatment under rubber dam today, as compared to your previous one?

Better____ Worse_____ About the same_____

- Did the dentist explain why the rubber dam was being placed?

Yes_____ No_____

- Was the explanation clear to you?

Yes_____ No_____

- Did you feel that it was being placed

For your benefit_____ The dentist's benefit_____ or both_____

- How was your experience with rubber dam?

Pleasant_____Comfortable_____Uncomfortable_____ Painful_____

- Would you prefer treatment under rubber dam the next time you visit a dental clinic?

Yes_____No_____

- Are you allergic to Latex?

Yes_____ No_____

Questions to be filled by dentist

PROCEDURE: _____

TIME TAKEN: _____

DURATION: _____

Results

Gender

Among 121 patients who participated voluntarily in the study, 47 were male patients (38.8%) and 74(61.2%) were female patients. But Chi-square test showed no statistically significant difference among the gender with more male patients preferring its use (84.3%) compared to female patients (81.1%) Table 1 which is different from the study conducted by Stewardson, et al. [3] where the greatest percentage of female patients positively preferred its use. But this difference cannot be considered significant as there is unequal number of male and female patients' participation in the present study.

Question	Option	Male Frequency	Percentage	Female Frequency	Percentage	p Value
Was the rubber dam used for dental treatment previously?	No	15	31.9	20	27	0.816
	Yes	32	68.1	54	73	
	Total	47	100	74	100	
If yes, who has placed it?	Same dentist as today	24	75	42	77.8	0.796
	Different dentist	8	25	12	22.2	
	Total	32	100	54	100	
How was your experience of treatment under rubber dam today, as compared to your previous one?	Better	31	93.9	47	83.9	0.079
	Worse	1	3	0	0	
	About the same	1	3	9	16.1	
	Total	33	100	56	100	
Did the dentist explain why the rubber dam was being placed?	No	1	2.1	9	12.2	0.087
	Yes	46	97.9	65	87.8	
	Total	47	100	74	100	
Was the explanation clear to you?	No	4	8.5	17	23	0.05
	Yes	43	91.5	57	77	
	Total	47	100	74	100	
Did you feel that it was being placed	For your benefit	35	74.5	40	54.1	0.074
	The dentist's benefit	5	10.6	12	16.2	
	Both	7	14.9	22	29.7	
	Total	47	100	74	100	
How was your experience with rubber dam?	Pleasant	13	27.7	9	12.2	0.098
	Comfortable	30	63.8	57	77	
	Uncomfortable	4	8.5	8	10.8	
	Total	47	100	74	100	
Would you prefer treatment under rubber dam the next time you visit a dental clinic?	No	19	15.7	14	18.9	0.307
	Yes	102	84.3	60	81.1	
	Total	121	100	74	100	
Are you allergic to Latex?	No	46	97.9	72	97.3	0.843
	Yes	1	2.1	2	2.7	
	Total	47	100	74	100	

Table 1: Test done: Chi Square test/ Fisher's exact test.

Age

Respondents were grouped under 3 categories, a) 20 years and below, b) 21-30 years and c) over 30 years. Maximum subjects were falling into category b (53%). The Chi-square test revealed a significant difference (p=0.006) in Rubber dam usage with maximum in 21-30 years category and felt it was being placed for their benefit (p=0.000) with maximum patients preferring it to be used during their next visit (p=0.018) (Table 2).

Question	Option	Less than 20 Frequency	Percentage	21-30 Frequency	Percentage	More than 31 Frequency	Percentage	p Value
Was the rubber dam used for dental treatment previously?	No	8	50	11	16.9	16	40	0.006
	Yes	8	50	54	83.1	24	60	
	Total	16	100	65	100	40	100	
If yes, who has placed it?	Same dentist as today	7	87.5	42	77.8	17	70.8	0.6
	Different dentist	1	12.5	12	22.2	7	29.2	
	Total	8	100	54	100	24	100	
How was your experience of treatment under rubber dam today, as compared to your previous one?	Better	7	87.5	47	85.5	24	92.3	0.891
	Worse	0	0	1	1.8	0	0	
	About the same	1	12.5	7	12.7	2	7.7	
	Total	8	100	55	100	26	100	
Did the dentist explain why the rubber dam was being placed?	No	1	6.3	8	12.3	1	2.5	0.198
	Yes	15	93.8	57	87.7	39	97.5	
	Total	16	100	65	100	40	100	
Was the explanation clear to you?	No	3	18.8	17	26.2	1	2.5	0.008
	Yes	13	81.3	48	73.8	39	97.5	
	Total	16	100	65	100	40	100	
Did you feel that it was being placed	For your benefit	7	43.8	33	50.8	35	87.5	0
	The dentist's benefit	1	6.3	16	24.6	0	0	
	Both	8	50	16	24.6	5	12.5	
	Total	16	100	65	100	40	100	
How was your experience with rubber dam?	Pleasant	1	6.3	9	13.8	12	30	0.071
	Comfortable	13	81.3	47	72.3	27	67.5	
	Uncomfortable	2	12.5	9	13.8	1	2.5	
	Total	16	100	65	100	40	100	

Would you prefer treatment under rubber dam the next time you visit a dental clinic?	No	4	25	14	21.5	1	2.5	0.018
	Yes	12	75	51	78.5	39	97.5	
	Total	16	100	65	100	40	100	
Are you allergic to Latex?	No	15	93.8	65	100	38	95	0.162
	Yes	1	6.3	0	0	2	5	
	Total	16	100	65	100	40	100	

Table 2: Respondents were grouped under 3 categories.

Time Taken

The mean time taken by dentists was 7.40 minutes. The Independent Samples Kruskal Wallis test showed significant difference (p=0.027) in Rubber dam placement with maximum time taken for Root canal procedure of 7.72 minutes (Table 3). But Chi square test revealed no statistical difference between mean application times for each of the three preferred categories which is similar to the study conducted by Stewardson, et al. [3] (Table 4).

	Procedure	Mean	Std. Deviation	p-Value
Time taken	RCT	7.72	2.376	0.027
	Restoration	5.94	2.487	
	Indirect Restoration	7.18	2.651	
Duration	RCT	33.2	22.217	0.075
	Restoration	26.8	9.176	
	Indirect Restoration	42.7	31.181	

Table 3: Independent Samples Kruskal Wallis Test.

Question	Option	RCT		Restorations		Indirect Restorations		p Value
		n	%	n	%	n	%	
Was the rubber dam used for dental treatment previously?	No	24	27.6	6	35.3	5	29.4	0.813
	Yes	63	72.4	11	64.7	12	70.6	
	Total	87	100	17	100	17	100	
If yes, who has placed it?	Same dentist as today	46	73	10	90.9	10	83.3	0.364
	Different dentist	17	27	1	9.1	2	16.7	
	Total	63	100	11	100	12	100	
How was your experience of treatment under rubber dam today, as compared to your previous one?	Better	55	84.6	12	100	11	91.7	0.644
	Worse	1	1.5	0	0	0	0	
	About the same	9	13.8	0	0	1	8.3	
	Total	65	100	12	100	12	100	

Did the dentist explain why the rubber dam was being placed?	No	7	8	1	5.9	2	11.8	816
	Yes	80	92	16	94.1	15	88.2	
	Total	87	100	17	100	17	100	
Was the explanation clear to you?	No	16	18.4	3	17.6	2	11.8	0.804
	Yes	71	81.6	14	82.4	15	88.2	
	Total	87	100	17	100	17	100	
Did you feel that it was being placed	For your benefit	51	58.6	12	70.6	12	70.6	0.582
	The dentist's benefit	13	14.9	3	17.6	1	5.9	
	Both	23	26.4	2	11.8	4	23.5	
	Total	87	100	17	100	17	100	
How was your experience with rubber dam?	Pleasant	17	19.5	2	11.8	3	17.6	0.409
	Comfortable	59	67.8	15	88.2	13	76.5	
	Uncomfortable	11	12.6	0	0	1	5.9	
	Total	87	100	17	100	17	100	
Would you prefer treatment under rubber dam the next time you visit a dental clinic?	No	15	17.2	1	5.9	3	17.6	0.486
	Yes	72	82.8	16	94.1	14	82.4	
	Total	87	100	17	100	17	100	
Are you allergic to Latex?	No	85	97.7	16	94.1	17	100	0.533
	Yes	2	2.3	1	5.9	0	0	
	Total	87	100	17	100	17	100	

Table 4: Restorations and indirect Restorations.

Discussion

This questionnaire study evaluates the opinion of patients regarding their experience with rubber dam. It is clear that only a small percentage 15.7% amongst either patient group surveyed did not wish to have RD used for subsequent appointments. Whilst this shows that there are patients who do not like RD (4%), as has been asserted, it also demonstrates that the majority are not negative towards RD and indeed many like it and want it to be used.

Most males (84.3%) preferred its use compared to female patients' (81.1%) with more patients finding it comfortable and considered it was being placed for their benefit.

Among the age groups, category b age 21-30 years patients, preferred its use and considered it was placed for their benefit. No patients who reported a positive experience of RD use were against its use in future.

About the procedure, maximum rubber dam placement was for root canal procedure. Most of the patients found it comfortable and preferred its use in the next visit. It would appear that there are few factors related to the patients or the procedure that may be used to predict a patients' preference for or against RD. The experience of the dentist and by inference their level of skill does influence the patient's opinion. The best way to improve patient acceptance of RD is for clinicians to use it frequently and thereby become proficient. They should also be aware of patients' concerns.

No clear association could be established between most of the factors assessed and either the patients' judgement of the experience of rubber dam use, or their preference for its use in future.

The limitation of this study was certain factors were not standardized like gender and number of subjects considered for different procedures. Hence further studies should consider these factors. Nevertheless, this study added further proof that patients' overall, have no objection towards the placing of a Rubber dam.

Conclusion

Within the limitations of the current study, it can be concluded that patients are generally not aversive towards rubber dam. Hence frequent use for all the procedures increases the acceptance of rubber dam.

Clinical Significance

The use of rubber dam has several clinical implications on the choice of treatment procedure, patient-safety and treatment outcome.

Root canal irrigants like NaOCl is considered the main irrigant of choice because of its unique capacity to dissolve organic tissue. However, it is a potential irritant and has an unpleasant taste and odour. Therefore, irrigation with NaOCl should be accompanied by isolation of the operating field with a well-fitting rubber dam [4-7].

The importance of the safety afforded by rubber dam is highlighted by the list of endodontic instruments that have been swallowed.

A study conducted by Falacho, et al. [8] demonstrated that intraoral relative humidity has a significant effect on bond strength values to enamel. Without adequate rubber dam isolation, the performance of dental adhesives is compromised, thus potentially compromising the longevity of restorations and with long-term consequences on our patient's oral health [10-23].

Various factors intend the use of rubber dam application in day-to-day practice. Hence this study adds to it proving that patients' attitude towards rubber dam is positive and hence should be mandated for every procedure.

References

1. Castellucci A (1990) Tooth isolation: the rubber dam. Endodontics 1: 226-227.
2. Lynch CD, McConnell RJ (2007) Attitudes and use of rubber dam by Irish general dental practitioners. Int Endo J 40(6): 427-432.
3. Stewardson DA, McHugh ES (2002) Patients' attitudes to rubber dam. Int Endod J 35(10): 812-819.
4. Madarati A, Abid S, Tamimi F, Ezzi A, Sammani A, et al. (2018) Dental-dam for infection control and patient safety during clinical endodontic treatment: preferences of dental patients. IJERPH 15(9): 2012.
5. Murthy BS, George JV, Vedavathi B (2011) Patients' Attitude to Rubber Dam: A Short-term Study. WJD 2(2): 167-168.
6. Ahmed HM, Cohen S, Lévy G, Steier L, Bukiet F (2014) Rubber dam application in endodontic practice: an update on critical educational and ethical dilemmas. Aust Dent J 59(4): 457-463.
7. Madarati AA (2016) Why dentists don't use rubber dam during endodontics and how to promote its usage? BMC oral health 16(1): 1-10.
8. Falacho RI, Melo EA, Marques JA, Ramos JC, Guerra F, et al. (2023) Clinical in-situ evaluation of the effect of rubber dam isolation on bond strength to enamel. J Esthet Restor Dent 35(1): 48-55.
9. Kapitan M, Hodacova L, Jagelska J, Kaplan J, Ivancakova R, et al. (2015) The attitude of C zech dental patients to the use of rubber dam. Health expectations 18(5): 1282-1290.
10. Tanalp J, Kayataş M, Başer Can ED, Kayahan MB, Timur T (2014) Evaluation of senior dental students' general attitude towards the use of rubber dam: a survey among two dental schools. The Scientific World Journal pp: 290101.
11. Hill EE, Rubel BS (2008) Do dental educators need to improve their approach to teaching rubber dam use?. J Dent Educ 72(10): 1177-1181.
12. Abdulrab S, Al-Maweri S, Doumani M, Mourshed B, Alaizari N (2016) Rubber dam: Attitudes and practices of senior dental students in Saudi Arabia. IOSR J Dent Med Sci 15(2): 79-83.
13. Shashirekha G, Jena A, Maity AB, Panda PK (2014) Prevalence of rubber dam usage during endodontic procedure: a questionnaire survey. Journal of clinical and diagnostic research 8(6): ZC01.
14. Udoye CI, Jafarzadeh H (2010) Rubber dam use among a subpopulation of Nigerian dentists. J Oral Sci 52(2): 245-249.
15. Bhuva B, San Chong B, Patel S (2008) Rubber dam in clinical practice. ENDO 2(2).
16. Alqarni MA, Mathew VB, Alsalhi IY, Alasmari AS, Alqisi AY, et al. (2019) Rubber dam isolation in clinical adhesive dentistry: the prevalence and assessment of associated radiolucencies. JDRR 6(4): 97.
17. Sanghvi AM, Nagda RJ, Raju PJ (2018) A cross-sectional study on frequency of rubber dam usage among dentists practicing in Maharashtra, India. Saudi Endod J 8(1): 39.
18. Ali SN, Al-Mohaimeed BA (2015) The attitude of undergraduate dental students toward the use of rubber dam in College of dentistry, Qassim University. Int J Adv Res 3(11): 1480-1485.
19. Koshy SA, Chandler NP (2002) Use of rubber dam and its association with other endodontic procedures. N Z Dent

J 98(431): 12-16.

20. Lin PY, Huang SH, Chang HJ, Chi LY (2014) The effect of rubber dam usage on the survival rate of teeth receiving initial root canal treatment: a nationwide population-based study. J Endod 40(11): 1733-1737.

21. Abuzenada BM (2021) Attitude of dental students towards the rubber dam use in operative dentistry. J Pharm Bioallied Sci 13(S1): S637.

22. Maslamani M, Mitra AK (2018) Factors associated with patients' satisfaction of rubber dam use during root canal treatment. IJDR 29(2): 144.

23. Al-Abdulwahhab B, Al-Thabit H, Al-Harthi A, Shamina R, Al-Taher R, et al. (2013) The attitudes of dental interns to the use of the rubber dam and obstacles to its use. Indian J Dent 4(4): 179-783.