

# ATTITUDE OF PATIENTS TOWARDS RUBBER DAM APPLICATION

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## ABSTRACT

**Objective:** Rubber dam is universally recognized as a compulsory adjunct in dental treatment and it constitutes a gold standard in restorative and endodontic treatment. This study was done to determine attitude of patients towards rubber dam application. **Study Design:** Cross-sectional study. **Setting:** Operative Dentistry department, Lahore Medical and Dental College, Lahore. **Period:** 13<sup>th</sup> June 2019 to 2<sup>nd</sup> November 2019 **Material and Methods:** Using the convenience sampling technique, questionnaires were distributed among 114 participants. The questionnaire contained demographic data, participant's current experience of rubber dam use, their expectation for the visit and future preference, clinical experience of the treating doctor, time taken to apply rubber dam and duration the dam was in place. **Results:** 7.9% participants had pleasant, 41.2% comfortable, 42.1% uncomfortable and 8.8% painful current experience respectively. Out of 114 participants, 49.1% expected better experience for the next visit however, 9.6% expected worse experience and 41.2% expected about the same experience. The more experienced the dentist was, better was the current experience of participants as well as better expectation for next visit. Significant association was also found between time taken to apply rubber dam and designation of operator. **Conclusion:** Our study emphasized that more the experienced the operator, less will be the time taken for rubber dam application. In addition, when the need for rubber dam application was clearly explained to the patient, acceptance for future rubber dam use was high.

**Key words:** Rubber dam, Operator experience, Current experience

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## INTRODUCTION

Rubber dam is universally recognized as a compulsory adjunct in dental treatment especially during endodontic treatment.<sup>1</sup> Rubber dam provides a clean, dry operating field, protection and retraction of soft tissues, offers greater visibility for the doctor during the treatment and protects the dentists and dental assistants from infections. Rubber dam is significant in preventing the patients from aspiration and ingestion of small instruments and irrigating solutions.<sup>2</sup> Therefore, rubber dam isolation constitutes a gold standard in restorative and endodontic treatment.<sup>3</sup>

Despite the many benefits of rubber dam isolation that are known for 150 years, till date it has not

gained the acceptance all over the world as a mandatory isolation method. Compared to other countries, use of rubber dam in Pakistan is rarely practiced among dentists and dental students.<sup>4</sup> Various reasons for not using rubber dam include difficult placement technique, insufficient training during clinical years, expensive equipment and material. Rubber dam may cause patient discomfort if incorrectly applied, this is also a hinderance for using it.<sup>5</sup> A nother reason for not using the rubber dam is the time required to place it. Average time needed for the placement of rubber dam is 4.28 min for general dental practitioners.<sup>6</sup>

Tooth isolation is considered a standard of care in any non surgical endodontic treatment according

to American Association of Endodontics in 2010.<sup>3</sup> As stated by the European Society of Endodontics quality guidelines, rubber dam should be applied for tooth isolation for root canal procedures.<sup>3</sup> In order to provide safe and high quality patient care, the dental practitioners are expected to gain essential skill in rubber dam placement.

The objective of this study was to determine the patient's attitude of their experience of rubber use in endodontic procedures at Lahore Medical and Dental College, Lahore.

## METHODOLOGY

A descriptive cross-sectional study was conducted from June to November 2019 in Lahore Medical and Dental College, following approval from ethical review committee of the college. Using the convenience sampling technique, the questionnaires were distributed among the house officers and post graduate trainees in Operative Dentistry. Patient participation was voluntary and participants were informed that they could exit the survey at any given time. Prior to the distribution of the questionnaire the purpose of study was explained to the participants. Informed consent was taken from every participant ensuring confidentiality of their data. The questionnaire contained demographic information, participant's current experience of rubber dam use, their expectation for the next rubber dam use and future preference. The survey also had details of the treating doctor containing their clinical experience, procedure carried out, time taken to apply rubber dam and duration of procedure. The sample size was calculated (with justification and references used for population size calculation) using WHO calculator. Using 95% confidence level, 5% margin of error, population proportion 50% and population size 160, the sample size was calculated as 114.

For data analysis, all data was entered in SPSS version 20.0. Frequencies were calculated for the categorical data and descriptive analysis was done for the quantitative data obtained from the

questionnaire. Analysis was confined to cross tabulations of patients' responses and associated factors using Chi-squared test was performed, p-value of 0.05 or less was significant.

## RESULTS

114 questionnaires were completed with a response rate of 100%. 69 (60.5%) participants were female and 45 (39.5%) were male. Age of the respondents ranged from 12 to 50 years with mean age of  $28.77 \pm 9.25$ . The mean time taken to apply rubber dam was  $12.97 \pm 10.33$  minutes. The mean duration of rubber dam use for endodontic procedures was  $12.19 \pm 7.81$  minutes.

57 participants (50%) had previous experience of rubber dam use for endodontic procedures whereas the other half did not. Participants current experience of rubber dam use was categorized as following: (i) pleasant= 9(7.9%), (ii) comfortable= 47 (41.2%), (iii) uncomfortable= 48(42.1%) and (iv) painful= 10(8.8%), respectively. The reason for rubber dam use was clearly explained, 98 participants (86%) understood the rationale whereas 16 (14%) did not.

57 participants (50%) preferred rubber dam for the next visit whereas 57 did not.

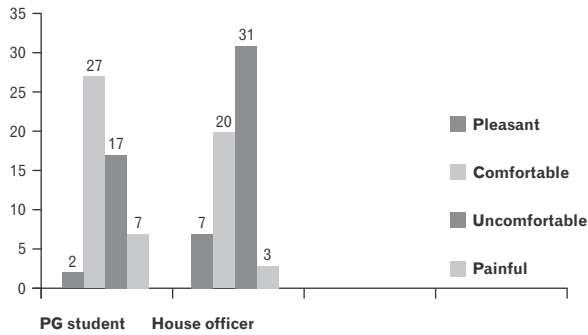
Out of 114 participants, 56 (49.1%) expected better experience for the next visit however, 11 (9.6%) expected worse experience and 47 (41.2%) expected about the same experience.

Table No. 1 shows frequency of designation of operators

Table 1: Frequency of designation of operators		
Designation of Operator	Frequency	% Age
PG student	53	46.5
House officer	61	53.5
Total	114	100

Out of 114 participants, rubber dam was applied during the following procedures: 27(23.7%) were applied for access preparation, 37 (32.5%) for canal preparation and 50(43.9%) for obturation

and restoration.



**Figure 1: Designation of operator and the current experience of rubber dam**

Chi-square showed statistical significance ( $p=0.029$ ) between the designation of operator and the current experience of rubber dam.

Table No. 2 shows relation between current experience of participant and time taken to apply the rubber dam.

Time taken to apply	Current experience				Total
	pleasant	comfortable	uncomfortable	painful	
<5mins	2	9	3	2	16
5-10mins	3	18	25	3	49
11-20 mins	1	15	13	4	33
>21mins	0	5	10	1	16
Total	6	47	51	10	114

Chi-square showed no statistically significant association between the current experience of participant and time taken to apply rubber dam.

Among 45 male participants, 18 expected better, 8 worse and 19 about the same experience for the next visit. Among 69 female participants, 38 expected better, 3 worse and 28 expected about the same experience for the next visit. Chi-square showed statistical significance ( $p=0.041$ ) between the gender of participants and the expectation of participant for the next visit.

Table No.3 shows expectation for next visit and current experience of participant

**Table 3: Cross tab of expectation for next visit and current experience of participant**

Current Experience	Expectation for next visit			Total
	Better	Worse	About the same	
Pleasant	9	0	0	9
Comfortable	30	3	14	47
Uncomfortable	15	6	27	48
Painful	2	2	6	10
Total	56	11	47	114

Chi-square showed statistical significance ( $p=0.001$ ) between current experience of participant and expectation for next visit.

Table No. 4 shows frequency of time taken to apply rubber dam.

Time taken to apply Rubber dam	Frequency	% Age
<5mins	16	14
5-10mins	49	43
11.20mins	33	28.9
>21mins	16	14
Total	114	100

Table No.5 shows time taken to apply rubber dam and designation of operator.

Designation	Time taken to apply				Total
	<5mins	5-10mins	11-20mins	>21mins	
PG student	14	21	13	5	53
House officer	2	28	20	11	61
Total	16	49	33	16	114

Chi-square showed statistical significance ( $p=0.004$ ) between time taken to apply rubber dam and designation of operator.

## DISCUSSION

Rubber dam is considered as the best isolation method for restorative and endodontic procedures in dentistry. Regardless of its known advantages, rubber dam use is not a popular method of field isolation among new house officers and experienced general dentists. In the



18<sup>th</sup> century, rubber dam sheets were used for isolating operating fields, still it appears unconvincing that even after two centuries, majority of dentists are skeptical about the benefits of rubber dam isolating method, the most likely reason being constraint of time.<sup>7</sup> Majority of dental schools worldwide teach the use of rubber dam in pre-clinical years and expect student proficiency till final year. Rubber dam is more frequently used by newly graduate dentists as compared to old one in practice. The more experienced dentists assume that they can easily control operative field from saliva contamination and other hazards, the results of which were obtained in a survey done by Koshy et al.<sup>15</sup>

This survey assessed the attitude of patients towards rubber dam. According to the survey, 50% of patients preferred rubber dam use for next visit. This was in accordance to the results found by Stewardson et al, in which they stated that 70% of patients preferred the use of rubber dam for their next visit.<sup>8</sup> In our study, significant association was found between the explanation given to patient about rubber dam and their preference for future use. Some factors that are related to patient or procedure may be used to predict the patient's preference for the subsequent use of rubber dam. Operator's experience and skill have an influence on patient's attitude towards rubber dam use.<sup>8</sup> The more skilled the operator, the more acceptance by the patients.<sup>8-10</sup> This was in accordance to our study in which the more experienced the operator was, the better was the experience of rubber dam use.

Kapitan et al stated that patients who showed higher level of comfort during the use of rubber dam often preferred it for the future dental treatments, this was in accordance to this study. 77% of the Czech dental patients had a comfortable experience whereas 86% patients showed preference to future use of rubber dam.<sup>12</sup> No patient who gave a positive experience of rubber dam was against its use in future visits. Stewardson et al stated that patient's opinion of

their experience was influenced by the increased duration of rubber dam application.<sup>8</sup> In our study, 49.1% patients who showed comfortable current experience of rubber dam, expected better experience for the next visit. 75.8% patients in Riyadh and 69.1% patients in Croatian study, preferred rubber dam application for future dental procedures when a more experienced operator applied the dam.<sup>9,13</sup> Maslamani et al stated that 61% patients showed preference of rubber dam use for future dental visits which was significantly associated with patient acceptance and the comfort during the current session.<sup>14</sup>

In this study, a positive association was found between the attitude of patients and the explanation given to them by operator. This was in agreement to a study by Orafi et al which was done in Libya in which they found that 87.9% and 65.6% of patients who were treated by specialists and general dental practitioners respectively, both sufficiently explained the reason for rubber dam use. Hence there was positive correlation between the attitudes of patients towards the use of rubber dam and the explanation given to them.<sup>6</sup> The operator should clearly communicate to the patient about rubber dam advantages as it has an influence on patient's acceptance.

As discussed previously, patient's preferences were influenced by the clinical experience of the dentist. In our survey significant association was found between the current experience of patient and the experience of operator. The most viable reason may be that more the experienced operator, less time would be required to apply rubber dam. Thus, the best way to improve patient's acceptance of rubber dam is for the operators to use it frequently and thereby become proficient. Patient's experience can be enhanced by using careful technique, specifically by ensuring adequate use of local anesthesia, efficient saliva ejectors and careful placement of clamps. For some patients, limiting the duration of rubber dam application and use can also improve their acceptance. By adopting a positive

approach to rubber dam, the dentist may produce a positive attitude in the patient.

There were certain limitations of this study including an unequal distribution of experienced personnel. As well the reason for uncomfortable and painful experience of rubber dam use were not probed.

## CONCLUSION

This study emphasized that more experienced the operator, less will be the time taken for rubber dam application. In addition, the study demonstrated when the need for rubber dam application was clearly explained to the patient, acceptance for future rubber dam use was high. The educational system should emphasize on the importance of rubber dam and reasons for its use, while ensuring efficiency in its placement. Skills can be improved by using continued professional education which is considered to be the means of improving quality of care.

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**AUTHORSHIP AND CONTRIBUTION DECLARATION**

Sr. #	Author's Full Name	Contribution to the paper	Author's Signature
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2	Anam Fayyaz Bashir	1.Conception of idea, acquisition, analysis and interpretation of data for the work 2.Drafting of the work or revising it critically for important intellectual content 3.Final approval of the version to be published 4.Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved	
3	Saima Razzaq Khan	1.Conception of idea 2.Revising it critically for important intellectual content 3.Final approval of the version to be published 4.Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved	