



## Assessment of Prevalence of Using Rubber Dam for Endodontic Procedures by Local Dental Practitioners

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### KEYWORDS

Endodontic procedure, moisture control, rubber dam, RCT

### Abstract

**Background:** A common method of isolation and moisture control in restorative dentistry is the use of cotton rolls combined with aspiration by saliva ejector. An alternative method of isolation of the tooth undergoing restorative treatment is a rubber dam, an isolation method, introduced to the dental profession by Dr Sanford C Barnum on 15 March 1864. There are many advantages of using rubber dam (RD) in root canal treatment, such as improving infection control quality, safety, and therapeutic effects.

**Aim of the study:** To assess prevalence of using rubber dam for endodontic procedures by local dental practitioners.

**Materials and methods:** The study was conducted in the Department of Conservative Dentistry and Endodontics of the Dental institute. For the study, 80 private dental clinics in the district were selected. An informed consent was obtained from all the participants after informing them about the procedure and importance of the study. The questionnaires were collected a week after reaching the participant. Data obtained from the questionnaire were collected and stored.

**Results:** The age group of the participants belonged to 25 to 70 years of which most of the participants belonged to age group 30-49 years. There were 29 dentists with age <30 years, 30 with age between 30-60 years and 21 dentists with age > 60 years. 51 participating dentists were males and 29 dentists were females. 1 male dentist and 3 female dentists always used rubber dam; whereas 9 male dentists and 7 female dentists never used rubber dam.

**Conclusion:** Within the limitations of the present study, it can be concluded that majority of private practising dentists never use rubber dam in actual practice. So, there is a high need for improving the awareness among private dentist practitioners to use rubber dam to improve quality of treatment provided.

### Introduction

A common method of isolation and moisture control in restorative dentistry is the use of cotton rolls combined with aspiration by saliva ejector. This technique is widely available and low cost, but has the disadvantage that the dentist is required to replace sodden cotton rolls frequently during the treatment to keep the operative field dry. An alternative method of isolation of the tooth undergoing

restorative treatment is a rubber dam, an isolation method, introduced to the dental profession by Dr Sanford C Barnum on 15 March 1864. <sup>1</sup> There are many advantages of using rubber dam (RD) in root canal treatment, <sup>2</sup> such as improving infection control quality, safety, and therapeutic effects. <sup>3,4</sup> Therefore, it should be vigorously promoted and applied. However, the utilization rate of rubber dam for RCT is not high in clinical practice. <sup>5</sup> Quality control circle



(QCC) is a group of workers who do the same or similar work, who meet regularly to identify, analyze, and solve work-related problems. <sup>6</sup> Hence, the present study was conducted to assess prevalence of using rubber dam for endodontic procedures by local dental practitioners.

#### Materials and methods:

The study was conducted in the Department of Conservative Dentistry and Endodontics of the Dental institute. For the study, 80 private dental clinics in the district were selected. The ethical approval for the study was obtained from the ethical committee of the institute. An informed consent was obtained from all the participants after informing them about the procedure and importance of the study. A pre-framed questionnaire with closed questions (questions with answers to choose from) was selected and mailed to all the selected practitioners. Information related to year of graduation, practice type and gender of the respondents, information related to use of rubber dam in operative and endodontic procedures, information related to the dentist's attitude to the use of rubber dam and information related to dentist's reasons for using or not using rubber dam were sought in the questionnaire. The

questionnaires were collected a week after reaching the participant. Data obtained from the questionnaire were collected and stored. The statistical analysis of the data was done using SPSS version 11.0 for windows. Chi-square and Student's t-test were used for checking the significance of the data. A p-value of 0.05 and lesser was defined to be statistically significant.

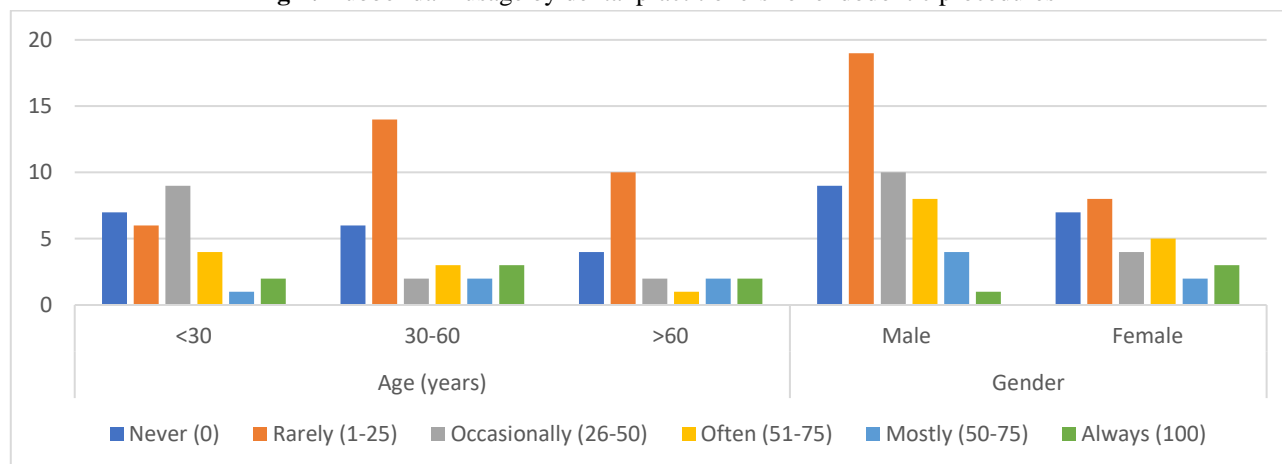
#### Results:

For the study, we mailed 80 questionnaires to private dental clinics in the district. The age group of the participants belonged to 25 to 70 years of which most of the participants belonged to age group 30-49 years. There were 29 dentists with age <30 years, 30 with age between 30-60 years and 21 dentists with age > 60 years. 51 participating dentists were males and 29 dentists were females. The results showed that 1 male dentists and 3 female dentists always used rubber dam; whereas 9 male dentists and 7 female dentists never used rubber dam. The highest frequency of dentists was seen in group who rarely use rubber dam to perform endodontic procedures on the teeth. On comparing the results, it was found to be statistically significant.

**Table 1:** Rubber dam usage by dental practitioners for endodontic procedures

Rubber dam used for endodontic procedures	Age (years)			Gender	
	<30	30-60	>60	Male	Female
Never (0)	7	6	4	9	7
Rarely (1-25)	6	14	10	19	8
Occasionally (26-50)	9	2	2	10	4
Often (51-75)	4	3	1	8	5
Mostly (50-75)	1	2	2	4	2
Always (100)	2	3	2	1	3
<b>Total</b>	<b>29</b>	<b>30</b>	<b>21</b>	<b>51</b>	<b>29</b>

**Fig 1:** Rubber dam usage by dental practitioners for endodontic procedures





## Discussion:

The use of rubber dam by private dental practitioners is very low as indicated by our study. The use of rubber dam during endodontic procedures has a number of benefits like infection control, patient safety and mediological concerns but due to some factors most of the practitioners prefer to treat the patient without rubber dam. This might be possible because most of the participants think that they can get proper isolation for a procedure with cotton rolls only and do not need rubber dam. Our study results were statistically significant and were compared with previous studies from the literature. G S et al determined the prevalence and frequency of rubber dam usage for endodontic procedures among general practitioners, specialized practitioners, undergraduate final year students and Endodontists in the state of Odisha, India. A pre-piloted questionnaire was distributed among 737 subjects. Dentists and final year students were surveyed in relation to their prevalence of rubber dam usage. Overall response rate was 71%. While about 94% of the subjects knew the use of rubber dam, 30% have used it for root canal cases and 23% use them for all cases of root canal treatment. Use of rubber dam was 15.4% in paediatric patients and 34.4% in adult patients. 68% of subjects received knowledge about rubber dam usage in undergraduate school. 75% felt that rubber dam should be compulsory before endodontic treatment & 90% were willing to gain knowledge through training and continuing dental education programs. They concluded that whilst rubber dam is used frequently for root canal treatment than operative treatment, in the present survey there is a low prevalence of its usage during endodontic therapy. This presents quality issues, as well as medico-legal and safety concerns for the professional and patients alike. Zou H et al investigated the frequency and influencing factors of rubber dam usage for endodontic procedures among general dentistry practitioners and specialized practitioners (endodontist) in Tianjin. Methods. Three hundred questionnaires were distributed among practitioners from 3 different types of medical institutions in Tianjin. Data were collected and analysed using Chi-square tests. There were 63.3% of respondents who have used rubber dam (response rate 82.7%, valid response rate 76.3%). However, only 0.4% and 3.1% of them recognized using rubber dam "every time" during caries direct restoration and root canal therapy, respectively. There was no significant difference in rubber dam usage between male and female practitioners. Among the respondents, practitioners with working experience between 5 and 10 years showed the highest usage rate (76.3%), while practitioners working more than 20 years

showed the lowest (53.2%). The endodontists gained the highest and the most frequent usage rate and the best rubber dam technique mastering skills. Practitioners working in those stomatological departments of general hospitals showed the lowest rubber dam usage rate. They concluded that the prevalence of rubber dam usage in Tianjin city is still low. The practitioner's gender, years of professional experience, general or specialized field, and the type of dental setting they work for are the factors that need to be considered during making policy and executing training. Madarati AA et al conducted a survey study aimed at investigating the frequency of rubber dam use during root canal treatment, identifying influencing factors for not using it by Saudi general dental practitioners (GDPs) and endodontists. After obtaining an ethical approval, two pilot studies were conducted on staff members at Taibah University College of Dentistry and a group of GDPs. A final online survey was constructed comprising 17 close-ended questions divided into six categories: demographics, endodontic practice, rubber dam use, alternative isolation methods, reasons for not using rubber dam, and measures and policies that increase its usage. The survey was emailed to 375 GDPs randomly selected from the dental register and all endodontists (n = 53) working in the western province, Saudi Arabia. The proportion of endodontists who used rubber dam (84.8 %) was significantly greater than that of GDPs (21.6 %). Significantly the highest proportion (40.5 %) did not use rubber dam because of unavailability at working place. Most rubber dam none-users (69.25 %) used a combination of other isolation means. The highest proportion of those who used rubber dam were working in the governmental sector (54.3 %). Among rubber dam users, the greatest proportion graduated from Saudi Arabia (57.8 %) compared to those graduated from Egypt (34.3 %) and Syria (22.4 %). There was a significant correlation between the patterns of rubber dam use during undergraduate training and its usage after graduation. The highest proportion of participants (48.1 %) reported better undergraduate education as the most important factor that would increase rubber dam use in dental practice. They concluded that using of rubber dam was not common in Saudi general dental practice. Dentists must follow the recommended standards of care. Place of work and patterns of using rubber dam during undergraduate study were the most influencing factors. Madarati A et al investigated preferences and experiences of patients using dental-dam (DD) isolation during root canal treatment (RCT) and explored influencing factors among the residents of Madinah Munnawara, Saudi Arabia. Following an ethical



approval and a pilot study, a self-administrated questionnaire was distributed to 305 patients attending endodontic clinics at the Taibah University College of Dentistry (TUCOD) over six months. Patients voluntarily participated in the study after understanding the methodologies and signing a consent form. They were asked to fill out a questionnaire on their experiences and preferences in placing the DD during RCT. The response rate was 91%. There was no significant correlation between patients' preferences and their race, age and gender. The majority of participants (74.3%) would prefer to use a DD in their next session. This preference negatively correlated with the time required to place a DD and the duration of the current visit. While most of those who would prefer to use a DD in their next visit were pleased with how it was placed in the current session (76.6%), most of those who would not do so (66.7%) were uncomfortable. Overall, the highest proportion of participants (40.2%) reported that prevention of instrument swallowing was the most important advantage of DD isolation. They concluded that DD isolation for RCT is generally well accepted by patients regardless of their country of origin, gender, education and awareness of its advantages.

## Conclusion:

Within the limitations of the present study, it can be concluded that majority of private practising dentists never use rubber dam in actual practice. So, there is a high need for improving the awareness among private dentist practitioners to use rubber dam to improve quality of treatment provided.

## References:

- [1] Elderton RJ. A modern approach to use of rubber dam. 1. Dental Practitioner and Dental Record 1971;21(6):187-93.
- [2] Ahmad I. A. Rubber dam usage for endodontic treatment: a review. International Endodontic Journal. 2009;42(11):963–972. doi: 10.1111/j.1365-2591.2009.01623.x.
- [3] Wang Y., Li C., Yuan H., et al. Rubber dam isolation for restorative treatment in dental patients. Cochrane Database of Systematic Reviews. 2016;9, article CD009858 doi: 10.1002/14651858.CD009858.pub2.
- [4] Keys W., Carson S. J. Rubber dam may increase the survival time of dental restorations. Evidence-Based Dentistry. 2017;18(1):19–20. doi: 10.1038/sj.ebd.6401221.
- [5] Zheng J. J., Yang X., Zhang S., Ge L. H. The situation of treatment of pulpitis in primary dentition among some dentists in China. Journal of Modern Stomatology. 2017;31(3):144–146.
- [6] Tingfang L. Review of QCC of Chinese Hospital. Journal of Chinese Research Hospitals. 2015;2(4):24–29. doi: 10.19450/j.cnki.jcrh.2015.04.006.
- [7] G S, Jena A, Maity AB, Panda PK. Prevalence of Rubber Dam Usage during Endodontic Procedure: A Questionnaire Survey. J Clin Diagn Res. 2014;8(6):ZC01-ZC3. doi:10.7860/JCDR/2014/9011.4425
- [8] Zou H, Li Y, Lian X, Yan Y, Dai X, Wang G. Frequency and Influencing Factors of Rubber Dam Usage in Tianjin: A Questionnaire Survey. Int J Dent. 2016;2016:7383212. doi: 10.1155/2016/7383212. Epub 2016 Jul 31. PMID: 27555870; PMCID: PMC4983387.
- [9] Madarati AA. Why dentists don't use rubber dam during endodontics and how to promote its usage?. BMC Oral Health. 2016;16:24. Published 2016 Feb 25. doi:10.1186/s12903-016-0175-2
- [10] Madarati A, Abid S, Tamimi F, et al. Dental-Dam for Infection Control and Patient Safety during Clinical Endodontic Treatment: Preferences of Dental Patients. Int J Environ Res Public Health. 2018;15(9):2012. Published 2018 Sep 14. doi:10.3390/ijerph15092012