

KNOWLEDGE AND ATTITUDE OF HOUSE OFFICERS REGARDING RUBBER DAM USE

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ABSTRACT

Rubber dam is considered as a standard of care for tooth isolation during dental procedures since long. Rubber dam offers utmost protection to both, the dentist and the patient. The aim of the study was to determine the knowledge and attitude of house officers in regard to placement and usage of rubber dam, identifying the problems encountered in its use. A descriptive cross sectional study was conducted from August to September 2017 in seven dental hospitals in Rawalpindi / Islamabad. Using the convenience sampling technique the questionnaire was distributed among the house officers of all the hospitals. Data was entered and analyzed using SPSS version 22.0. The overall response rate from all the seven hospitals was 71%. A total of 220 house officers participated in the study. 90% of house officers believed that rubber dam improves vision during restorative or endodontic procedure, 83.2% thought that it improves access to the tooth, 96.8% knew that it improves isolation and 86.4% believed that the procedures performed under rubber dam are more successful in terms of their longevity and clinical standards. 51.4% of the house officers used rubber dam in restorative and endodontic procedures sometimes while 45% did not use rubber dam and only 3.6% always used rubber dam in the endodontic and restorative procedures. The major causes of not using rubber dam in clinical practice by the house officers were extra time required for the rubber dam placement, difficult placement procedure and lack of adequate training. This study shows that greater emphasis should be placed on advantages of using rubber dam in clinical dentistry and continuing education for updating knowledge about rubber dam is required.

Key Words: Attitude, dental education, house officers, knowledge, rubber dam.

INTRODUCTION

The concept of tooth isolation was first introduced 150 years ago but till date, rubber dam is considered as a standard of care for tooth isolation during dental procedures.¹ Many authorities stress upon its use and they encourage dental practitioners to adopt it in their routine practice. It is considered as an indispensable element of contemporary health care practice. Although the technique of rubber dam has been modified, adapted and taught since the advent of rubber dam, but still it is rejected by many dental practitioners.²

There are three main components to the rubber dam apparatus, the rubber dam, the frame, and the rubber dam clamps. Rubber dam is a thin square sheet, usually nitrile or latex that is held over individual teeth

or groups of teeth by appropriate rubber dam clamps over the anchor tooth.

The use of rubber dam has evolved into an advanced system which offers utmost protection to both, the dentist and the patient. Rubber dam offers the practitioner with a wide variety of advantages such as isolation of the operative area, provision of aseptic field, prevention of infection transfer, ingestion or aspiration of instruments, and materials or irrigants, as well as protection and retraction of soft tissue during operative procedures.³ Patient comfort is another advantage achieved by the use of rubber dam. More than 70% of dental practitioners recommend the use of rubber dam in restorative and endodontic procedures because of its unmet benefits.⁴ Thus rubber dam isolation represents the gold standard of care in restorative and endodontic practice.⁵ Despite all the advantages it is still not being used in several countries by dental practitioners including Pakistan. The factors limiting the use of rubber dam include time consumption, patients' rejection, high cost of product, lack of adequate training, difficult placement procedure and requirement of assistance during rubber dam placement.⁶

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In 2010 American Association of Endodontics recommended that tooth isolation is the standard of care in any non-surgical endodontic treatment.³ European Society of Endodontics quality guidelines state that root canal procedures should be carried out only when the tooth is isolated by rubber dam.² The British Society of Pediatric Dentistry recommends the use of rubber dam in order to reduce any potential risk to the patient.⁷

Dental practitioners are expected to acquire the necessary skill in placement of rubber dam in order to provide safe and high quality patient care. The advantages and absolute necessity of the rubber dam must always take precedence over convenience and expediency.⁸ Even though at undergraduate level the students undergo meticulous training regarding the placement of rubber dam during their clinical encounter with the patients but still there is lack of use of rubber dam in their general practice.

The aim of the study is to determine the knowledge and attitude of house officers in regarding placement and usage of rubber dam, identifying the problems encountered in its use.

METHODOLOGY

A descriptive cross sectional study was conducted from August to September 2017 in seven dental hospitals in Rawalpindi/Islamabad following the approval from the ethical review board of Islamabad Dental Hospital. The seven dental hospitals included were Islamic International Dental Hospital, Margalla Institute of Health Sciences, Armed Forces Institute of Dentistry, Islamabad Dental Hospital, Rawal Institute of Health Sciences, Pakistan Institute of Medical Sciences and KRL Hospital. An anonymous questionnaire was used for data collection. Using the convenience sampling technique the questionnaires were distributed among the house officers from all these hospitals. The participation of house officers was voluntary. House officers from each hospital who gave consent to fill the questionnaire were included in the study. Prior to the distribution of the questionnaire the purpose of study was explained to the house officers.

The questionnaire contained first part about demographic information. The second part consisted of 14 items focusing on the knowledge and frequency of use of rubber dam by the house officers and the problems encountered by them in the placement or usage of rubber dam in their clinical practice.

Inclusion Criteria

- House officers who give consent to fill the questionnaire.

Exclusion Criteria

- Incomplete questionnaires.

Data Analysis:

For data analysis, all data was entered in Statistical Package for the Social Sciences (SPSS) version 22.0. Frequencies were calculated for the categorical data and descriptive analysis was done for the quantitative data obtained from the questionnaire.

RESULTS

The overall response rate from all the seven hospitals was 71% and all the participants filled the questionnaire without missing any data. A total of 220 house officers participated in the study. Out of these 220 house officers females were more predominating with 83.2% and males were 16.8%. The overall average age of the house officers who participated in the study was 23.49±0.95 years.

TABLE 1: KNOWLEDGE OF HOUSE OFFICERS REGARDING RUBBER DAM USE

| Statements | |
|------------|---|
| 1. | Have you performed supervised restorative procedures after placement of rubber dam on Patients at undergraduate level? |
| a) | Yes |
| b) | No |
| 2. | Have you been comprehensively taught regarding placement of rubber dam for restorative and endodontic treatment? |
| a) | Yes |
| b) | No |
| 3. | Does use of rubber dam improve vision? |
| a) | Yes |
| b) | No |
| 4. | Does use of rubber dam improve access? |
| a) | Yes |
| b) | No |
| 5. | Does use of rubber dam improve isolation? |
| a) | Yes |
| b) | No |
| 6. | Do you think procedures performed under rubber dam are more successful in terms of their longevity and clinical standards? |
| a) | Yes |
| b) | No |
| 7. | Should rubber dam be used during procedures requiring multiple X-Rays? |
| a) | Yes |
| b) | No |

TABLE 2: ATTITUDE OF HOUSE OFFICERS REGARDING RUBBER DAM USE

| Statements | |
|------------|---|
| 1. | Do you use rubber dam in pediatric patients? |
| a) | Yes |
| b) | No |
| 2. | Do you use rubber dam before starting any restorative or endodontic procedure? |
| a) | Never |
| b) | Sometimes |
| c) | Always |
| 3. | Do you ask your patients regarding latex allergy prior to the use of rubber dam? |
| a) | Yes |
| b) | No |
| 4. | Are you willing to gain knowledge about rubber dam through Continuing dental education programs and workshops? |
| a) | Yes |
| b) | No |
| 5. | In future clinical practice do you intend to use rubber dam in all restorative and endodontic procedures? |
| a) | Yes |
| b) | No |
| 6. | What other modes of isolation are you using? |
| a) | None |
| b) | Cotton Rolls |
| c) | Suction |
| d) | Cotton Rolls and Suction |
| b) | No |

Table 1 and 2 shows the questions asked to assess the knowledge and attitude of house officers regarding rubber dam use respectively. As per exploring the knowledge and attitude of the house officers towards following the protocol of using rubber dam in their clinical practice, it was shown that 51.4% used rubber dam in restorative and endodontic procedures sometimes while 45% do not use rubber dam and only 3.6% always used rubber dam in the respective procedures. 59.1% of them had placed the rubber dam at undergraduate level under supervision. 67.3% of them thought that they have been comprehensively taught about using rubber dam for restorative and endodontics procedures. However, only 15.5% used rubber dam on pediatric patients. Fig

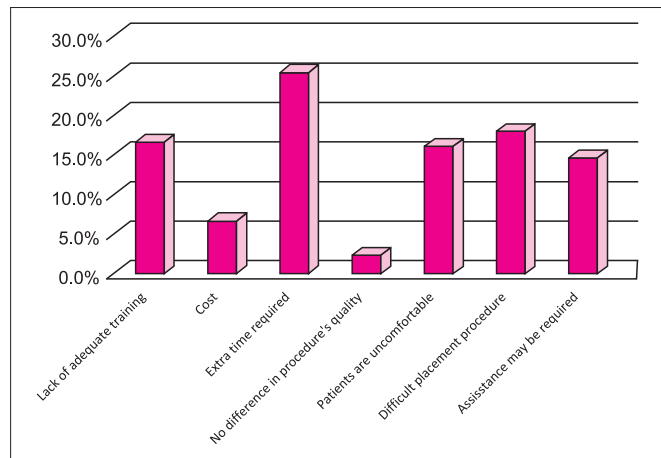


Fig 1: Problems encountered by house officers during rubber dam placement

1 shows frequency of major causes of not using rubber dam by the house officers in their practice. Most of the house officers thought that rubber dam improves vision, access, isolation and longevity and clinical standards of the procedures. 67.7% of house officers intended to use rubber dam in future but 32.3% have no intention of using it in the future. However 86.4% of them were willing to gain knowledge about rubber dam through continuing dental education programs and workshops. Other modes of isolation used by these house officers were cotton rolls alone or cotton rolls with suction.

DISCUSSION

Enhancing our clinical expertise and practice through the scientific evidence is essential so that one can provide the highest quality of care to the patients. Every procedure in dentistry has its own different protocols which need to be followed in order to provide a safe and contamination free services to the patients as it is their foremost right. In both, endodontic and restorative procedures, proper isolation is very essential prerequisite for its long term success. Rubber dam is determined as a gold standard for providing tooth isolation during endodontic and restorative treatment.

In the current study assessing the knowledge and attitude of the house officers regarding the use of rubber dam it was found that 90% of house officers believed that rubber dam improves vision during restorative or endodontic procedure, 83.2% thought that it improves access to the tooth, 96.8% knew that it improves isolation and 86.4% believed that the procedures performed under rubber dam are more successful in terms of their longevity and clinical standards. This shows that house officers do have a sound understanding of the importance of rubber dam in clinical practice. In the survey by Lynch and McConnell, only 42% of dentists felt that rubber dam use had a moderate to strong effect on the quality of restorative dentistry, whereas 38% felt it had little or no effect.⁹

As stated by the house officers, 67.3% had been comprehensively taught regarding placement of rubber dam for restorative and endodontic treatment in their respective colleges and 59.1% had performed supervised restorative procedures after placement of rubber dam on patients at undergraduate level. These results are in accordance with the results stated by Sudanese dentists as 69% of them received training in rubber dam use during undergraduate period.¹⁰ This clearly indicates that at an undergraduate level the use of rubber dam should be comprehensively taught and there should be increased emphasis on supervising the restorative and endodontic procedures with rubber dam.

Surprisingly 45% of the house officers never used rubber dam while 51.4% sometimes use rubber dam for restorative and endodontic procedures and only 3.6% always use rubber dam. This discrepancy can be attributed to the inconsistency between the quality and quantity of the patients done with rubber dam use at an undergraduate level. It is a fact that private or public teaching hospitals cater a large population on daily basis for restorative and endodontic procedures which tends to compromise the selection of standard protocols for a particular procedure by the students at undergraduate level. Thus they are not motivated enough to follow the standard protocols and they continue to do so in the years after their graduation. A study stated a clear discrepancy between the expected learning outcomes in higher dental education and attitude of general dental practitioners before and after graduation.¹¹ A study done on current endodontic practice of dental practitioners in Turkey indicated that more than 70% of them never used rubber dam during endodontic treatment, whereas 1.5% replied that they always used it.¹² A survey study on Saudi general dental practitioners and endodontists revealed that endodontists who used rubber dam (84.8%) were significantly greater than that of general dental practitioners (21.6 %).¹

House officers enlisted certain factors which hinder the use of rubber dam in clinical practice. Most common of them were extra time required for the rubber dam placement 25.5%, difficult placement procedure 18% and lack of adequate training 16.6%. Basically lack of adequate training at their undergraduate level and lack of motivation by the seniors to use rubber dam resulted in extra time required for its placement and difficult placement procedure. The extra time required is more than compensated by better working conditions offered by the rubber dam. Insufficient knowledge and training were attributed as main causes of not applying rubber dam by dentists in Odisha.⁸ The factors responsible for underutilization of rubber dam by dentists of southern Nigeria include cost, lack of training, availability, and acceptance.¹³ Saudi and Sudanese dentists reported unavailability of the rubber dam to be a major factor for not using rubber dam in practice.^{1,10} Endodontists,

general practitioners and undergraduate final year students in Tirgu-Mures, Romania stated time consuming procedure and discomfort for the patient to be the causes of its underutilization.¹⁴ A study conducted in Dental section, Dow International Medical College reported that too many components and lack of assistance makes rubber dam difficult to use.²

Only 15.5% of the house officers in the current study were using rubber dam in pediatric patients as handling children is more difficult while placing rubber dam. It indicates that the students are not trained appropriately at undergraduate level, hence lacking in their clinical expertise when they graduate. Similarly a study done in Odisha stated low percentage of use of rubber dam in pediatric patients.⁸

Instead of using rubber dam most of the house officers were using cotton rolls alone (45.5%) or cotton rolls along with suction (35.9%) in order to provide isolation during restorative and endodontic procedures, hence compromising the clinical standards and longevity. 40.5% of Sudanese dentists and 69.25 % of dentists in another study used cotton roll and saliva ejector as the methods of isolation in dental operative procedure.^{1,10} In other studies in addition to cotton rolls or gauze, some general dental practitioners claimed that other isolation techniques such as Isolite are able to enhance visibility, reduce the risk of damage of porcelain surfaces, minimize the risk of perforation and can be useful in young patients with incompletely erupted teeth.^{11,15}

The willingness of the house officers to gain knowledge about rubber dam through continuing dental education programs and workshops showed a positive attitude. Although 32.3% of house officers do not intend to use rubber dam in future but 67.7% do intend to use it in future. A study quoted that 90% of the study population of dentists were willing to gain knowledge through training and continuing dental education programs.⁸

The dentist's positive attitude and enhanced experience have been shown to play the major role in increasing the level of rubber dam acceptance. Moreover, the principle of non-maleficence would dictate that safety should always be the primary concerns of a dentist when starting a patient for any dental treatment making rubber dam an important safety tool.

CONCLUSION

This study reaffirms the need for educational methods to be formulated to overcome the discrepancy between the well adoption of rubber dam during undergraduate training and the low frequency of usage after graduation. For quality assurance workshops and continuing dental education programs should be developed to enforce and enhance the use of rubber dam.

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| 1 Hassan Rasheed: | Principal author, Introduction, data collection, and discussion writing. |
| 2 Saima Azam: | Proof reading and result compilation. |
| 3 Beenish Qureshi: | Proof reading, methodology and questionnaire construction. |