Research Article

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Comprehensive Evaluation of Dentists Knowledge and Awareness Towards Rubber Dam Usages in Different Pediatric Dental Procedures: An Original Research Study

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ABSTRACT

Background: Rubber dam is one of the ideal measures for tooth isolation. Rubber dam readily offers an infection control barrier during the pedodontic procedures by effectively checking the bacterial contamination. The sole aim of this study was to evaluate the current knowledge and awareness about rubber dam usage among general dental practitioner in Bahadurgarh, India.

Materials & Methods: This study was totally accomplished on a cross sectional ideology wherein authors employed questionnaire. Initially, a total of 200 private dental practitioners of Bahadurgarh, India were selected and contacted for the study. However, after considering some essential points, this number was finally come down to 100. Authors executed the study by close ended questionnaire having questions about the existing knowledge and awareness about usage of rubber dam. Outcomes were tabulated and data was analyzed statistically to estimate the instantaneous knowledge and awareness level.

Results: Statistical analysis was done using statistical software 'Statistical Package for the Social Sciences (SPSS)'. The recorded data was subjected to suitable statistical tests to obtain p values, mean, standard deviation, standard error an 95% CI. $P \leq 0.05$ was considered as statistically significant. Only 19 practitioners use rubber dam during composite restorations in pediatric patients. 91 practitioners think that UG dental curriculum is inadequate regarding rubber dam. 89 practitioners think that rubber dam makes radiograph taking procedure difficult in pediatric patients. 55 practitioners think that most of the pediatric patients do not like the rubber dam.

Conclusion: Within the limitations of the study authors concluded that dentist's knowledge and awareness regarding rubber dam usage was at moderate levels. As rubber dam is an effective tool in most of the oral restorative/pediatric procedures, regular educational events and technical demonstrations should be planned to update the existing knowledge of clinicians.

Keywords: Rubber dam, Awareness, Knowledge.

INTRODUCTION

As we all know that usage of rubber dam is imperative particularly during endodontic/pediatric procedures. Literature has well evidenced that rubber dam has long been used in the dentistry for its many helpful advantages in pediatric dental procedures. Rubber dam offers the clinicians with a wide variety of advantages like isolation of the working area, maintenance of

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aseptic area, enhancing infection control, checking accidental ingestion or aspiration of dental equipments, as well as retraction of gingiva.[1-3] Fear and anxiety are the main dilemmas for any dentists treating pediatric patient. Fear and anxiety are recurrent feelings which influence the child's behavior and play an important role in pain perception. Rubber dam reduces these clinical issues and offers excellent avenues of infection control during oral procedures by chiefly diminishing bacterial infection of any dental preparations including root canal.[4-5] Rubber dam also effectively reduces the diffusion of any infectious agents between the patient and operator. Rubber dam also shields any accidental ingestion of dental materials, into the patient's oropharynx by simply acting like a barrier in the operating area. Because of these noticeable advantages, most of dental colleges teach the usage of rubber dam mandatorily for procedures in pediatric dentistry and endodontics.[6-9] In spite of its wide range of functions, rubber dam is often overlooked by dental practitioners. Literature is full of studies that have shown that rubber dam is not routinely used even for root canal treatments, where tiny equipments and extremely harmful agents are being used. Good practice guidelines, such as the American academy of pediatric dentistry, recommend that rubber dam should always be used to isolate the tooth undergoing root canal treatment.[10-12] Nevertheless, its usage is reported to be low. The disincentive to the use of rubber dam is mainly due to its time consuming nature during its application, patient's discomfort, cost of equipment and materials and its difficulty in use. Therefore, the aim of this study was to evaluate the current knowledge and awareness about rubber dam usage among general dental practitioner in Bahadurgarh, India.

MATERIALS & METHODS

The present study was planned to estimate the current knowledge and awareness about rubber dam usage in different pediatric dental procedures. It was proposed to complete this study on a cross sectional and questionnaire model. Authors analyzed total 100 private dental practitioners of Bahadurgarh, India. At first we noticed that there were total 200 dentists practicing in different vicinities of Bahadurgarh. Out of which, 31 clinicians have not provided us consent to participate in the study, rest remaining was 169. On further examination we noticed that 69 of them not responded to our questionnaire efficiently because of miscellaneous reasons. Therefore final sample included in the study was total 100 the general dental practitioners of Bahadurgarh, India. Authors have analyzed questionnaire response data of 100 practicing dentists professionally. We had also pre-framed the questions of rubber dam knowledge and awareness in a questionnaire format. It was an exclusive close ended questionnaire containing 8 items. While preparing these questions we have ensured to focus on the pediatric usage of rubber dam. Authors had provided this questionnaire to the participating clinicians at their clinics/hospital. We have decided to execute this study on questionnaire basis since they are extremely useful in exploring complete information about personal and group perceptions and opinions. Furthermore, questionnaire studies also provide a wide range of data with enhanced transparency and clarity. The privacy policy and legal rights of the participants were completely ensured. Informed consent was obtained from the respondents those were voluntarily ready for participation. The importance of this study was explained in detail to all general dental practitioners. Results thus obtained was tabulated and subjected to basic statistical analysis. P value less than 0.05 was considered significant ($p< 0.05$).

RESULTS

Outcomes those obtained from questionnaire exercise were sent for statistical analysis using statistical software Statistical Package for the Social Sciences version 21 (IBM Inc., Armonk, New York, USA). The resulting data was subjected to suitable statistical tests to obtain p values, mean, standard deviation, chi- square test, standard error and 95% CI. Table 1 and Graph 1 showed that out of 100 practitioners, males were 60 and females were 40. Total 11 practitioners were belonging to age group >65 years. 19 practitioners were belonging to the age range of 41-50 years. 23 practitioners were belonging to the age range of 31-40 years and 61-65 years. P value was significant in group III of age range 51-60 years. Questionnaire responses revealed significant outcomes wherein p value was also found to be significant (Table 2). 69 practitioners think that usage of rubber dam must

be mandatorily used in pediatric patients. Only 19 practitioners use rubber dam during composite restorations in pediatric patients. 91 practitioners think that UG dental curriculum is inadequate regarding rubber dam. 89 practitioners think that rubber dam makes radiograph taking procedure difficult in pediatric patients. 55 practitioners think that most of the pediatric patients do not like the rubber dam. 49 practitioners that pedodontic therapies performed using the rubber dam are more successful than those performed without using it. Table 3 shows basic statistical description with level of significance evaluation using Pearson Chi-Square Test for all 8 studied questions. Question no 3,4 and 5 showed significant levels ($p<0.05$ significant).

Table 1: Age & gender wise distribution of practitioners.

Age Group (Yrs)	Male	Female	Total %	P value
31-40	13	10	23 [23 %]	0.07
41-50	9	10	19 [19 %]	0.50
51-60	17	7	24 [24 %]	0.01*
61-65	14	9	23 [23 %]	0.80
>65	7	4	11 [11 %]	0.09
Total	60	40	100%	*Significant

***p<0.05 significant**

Table 2: Questionnaire estimation and evaluation with related statistical correlations.

Questionnaire	Variables	Responses of Practitioners [Yes]	Responses of Practitioners [No]	p Value
1	Do you know about usage of rubber dam?	75	25	0.010*
2	Do you think it must be mandatorily used in pediatric patients	69	31	
3	Do you use rubber dam during composite restorations in pediatric patients?	19	81	
4	Do you think that UG dental curriculum is inadequate regarding rubber dam?	91	9	
5	Do you think that rubber dam makes radiograph taking procedure difficult in pediatric patients	89	11	
6	Do you think that rubber dam is difficult to apply in pediatric patients	61	39	
7	Do you think that most of the pediatric patients do not like the rubber dam	55	45	
8	Do you think that pedodontic therapies performed using the rubber dam are more successful than those performed without using it	49	51	

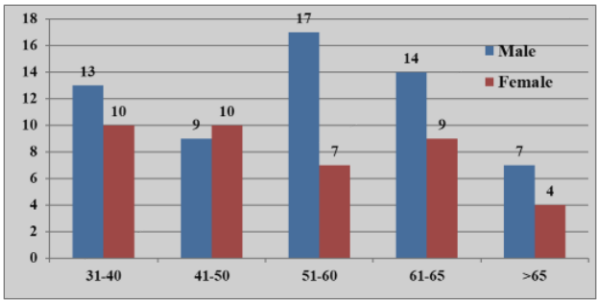
***p<0.05 significant**

Table 3: Basic statistical description with level of significance evaluation using pearson chi-square test.

Question No.	Mean	Std. Deviation	Std. Error	95% CI	Pearson Chi-Square Value	df	Level of Significance (p value)
1	2.53	0.475	0.050	2.57	2.374	1.0	0.436
2	2.67	1.246	0.360	1.96	2.957	1.0	0.020
3	2.76	1.845	0.560	1.96	2.634	1.0	0.010*
4	2.29	0.745	0.085	1.96	1.856	2.0	0.001*
5	3.96	1.294	0.035	1.96	2.435	2.0	0.000*
6	2.19	0.957	0.089	1.82	2.857	1.0	0.655
7	2.49	1.758	0.050	1.95	1.846	2.0	0.867
8	2.38	0.284	0.080	2.18	2.543	1.0	0.757

***p<0.05 significant**

Graph 1: Age & gender wise distribution of practitioners.



DISCUSSION

The quality of every restoration in dentistry primarily depends on the isolation of the operating field as most of the dental materials are hydrophobic in nature. Rubber dam usage has been considered as the gold standard of the operating field. The use of rubber dam in the treatment of children is limited appreciably by the children's poor cooperation. More than half of the regular rubber dam users do not use it when treating children.[13-16] Importance of rubber dam is even increased in pediatric dentistry. Risk of soft tissue damage is increased in pediatric patients due to sudden movement of children. Rubber dam provides additional benefits as an adjunct to behavior management and can act as a tool to limit talking during treatment. Barriers for the use of rubber dam apparently include lack of experience, underestimation of its benefits and a lack of motivation.[17-19] Another reason is that the amount of time required to place rubber dam is often overestimated. Furthermore, dentists are often concerned that patients will not tolerate rubber dam. If instructed properly, most patients tolerate rubber dam very well; many of them even find treatment with rubber dam more comfortable and bearable. It is widely believed that the application of rubber dam is difficult and time consuming and that patient's noncompliance is also a problem.[20-22] Patients discomfort, insufficient time and training, and cost are frequently cited as reasons for the limited use of rubber dam. Various studies performed over the last few years have demonstrated that patients are generally not adverse to the use of rubber dam during dental treatment, but many actually prefer to have it being placed. Furthermore, there is evidence that treatments can be performed more quickly once the rubber dam has been applied. Majority in the present study reported that they did not use rubber dam, which may be related to a lack of proficiency in the technique. Attitude of dentists might be another factor which can be associated with the under usage of rubber dam. Abraham SB et al aimed to assess the use of rubber dam by private practitioners in the United Arab Emirates (UAE) for operative and pedodontic procedures and to assess

dentist's attitude towards the use of rubber dam.[23] They concluded that dentists practicing in the UAE were trained in the use of rubber dam but only few of them use it in their dental practice. Our study aimed to evaluate the current knowledge and awareness about rubber dam usage among general dental practitioner wherein authors found it at moderate levels.

CONCLUSION

Within the limitations of the study authors concluded that studied dentist's knowledge and awareness regarding rubber dam usage was at moderate levels. As rubber dam is an effective tool in most of the oral restorative/pediatric procedures, regular educational events and technical demonstrations should be planned to update the existing knowledge of clinicians. The outcomes of this study must be considered as suggestive for assuming clinical results of such critical situations. Nevertheless, we expect some other large scale studies to be conducted that could further set certain authentic norms in this prospective.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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