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Estimation and evaluation of dentists knowledge and awareness about rubber dam usages in pediatric dental procedures: an original research study

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Abstract

Background and Aim: Rubber dam is considered as an ideal device for tooth isolation. Nevertheless, its usage is reported to be low. Rubber dam also facilitates retraction of soft tissues such as the tongue, lips and cheeks during dental treatments. In addition they also prevent aspiration of fine instruments, provide a dry operating field and allow treatment of patients with sensitive gag reflexes. The sole aim of this study was to evaluate the current knowledge and awareness about rubber dam usage among general dental practitioner in Ghaziabad, India.

Materials & Methods: This study was totally executed on a cross sectional ideology wherein authors used questionnaire. Firstly, a total of 200 private dental practitioners of Ghaziabad, India were filtered and contacted for the study. However after considering some vital points, this number was finally come down to 100. Authors had performed the study by close ended questionnaire. The questionnaire had questions about the existing knowledge and awareness about usage of rubber dam in target clinicians. Results 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. 65 practitioners think that usage of rubber dam must be mandatorily used in pediatric patients. Only 22 practitioners use rubber dam during composite restorations in pediatric patients. 91 practitioners think that UG dental curriculum is inadequate regarding rubber dam. 85 practitioners think that rubber dam makes radiograph taking procedure difficult in pediatric patients.

Conclusion: Within the limitations of the study authors concluded that dentist's knowledge and awareness regarding rubber dam usage was at moderate levels.

Keywords: rubber dam, awareness, knowledge

Introduction

As we all know that Rubber dam has been available to the dental profession for over 150 years. During this time, the use of rubber dam has been perfected, universally taught and recommended by professional organizations [1]. Unfortunately, it's consistent use has been rejected by many in the profession. 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 [2-5]. It has many advantages as it improves visibility, prevents contamination from saliva, reflects the soft tissues, improves longetivity of the restoration, prevents trauma to soft tissues and also prevents ingestion of clamps, crowns, endodontic files. With dental dam placed, the aspiration or swallowing of debris and foreign objects is decreased. Patients experience a feeling of separation from restorative procedures and are more comfortable and relaxed. Furthermore, properly placed dental dam eliminates the common visual obstructions encountered during operative procedures (the cheeks, lips and tongue) [6-8]. Operative field access and visibilities are vastly improved. Also, properly placed dental dam provides a clearly defined operative field, allowing the dental team to work with greater efficiency. Therefore, the aim of this study was to evaluate the current knowledge and awareness about rubber dam usage among general dental practitioner in Ghaziabad, India.

Materials & Methods

The present study was outlined to evaluate the existing knowledge and awareness about rubber dam usage in different pediatric dental procedures. It was planned to complete this study on a cross sectional and questionnaire model. In this study, we have studied total 100 private dental practitioners of Ghaziabad, India. At first we find that there were total 200 dentists practicing in various regions of Ghaziabad. Out of which, 35 clinicians have not provided us consent to participate in the study, rest remaining was 165. Further exploration of the factors revealed that that 65 of them not responded to our questionnaire professionally because of miscellaneous reasons. Consequently final sample included in the study was total 100 the general dental practitioners of Ghaziabad, India. Authors have analyzed questionnaire response data of 100 practicing

dentists efficiently. 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. During the preparation of questions we have ensured to focus on the pediatric usage of rubber dam. We had delivered this questionnaire to the participating dentists at their clinics. We have determined to complete this study on questionnaire basis as they are tremendously useful in exploring complete information about personal and group perceptions and opinions. Additionally, questionnaire studies also offer a wide range of data with enhanced intelligibility and clearness. 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 significance 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 ($p< 0.05$).

Statistical Analysis and Results

All responses those obtained from questionnaire work out 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 61 and females were 39. Total 13 practitioners were belonging to age group >74 years. 25 practitioners were belonging to the age range of 35-44 years. 15 practitioners were belonging to the age range of 45-54 years. P value was significant in group I of age range 35-44 years. Questionnaire responses revealed significant outcomes wherein p value was also found to be significant (Table 2). 65 practitioners think that usage of rubber dam must be mandatorily used in pediatric patients. Only 22 practitioners use rubber dam during composite restorations in pediatric patients. 91 practitioners think that UG dental curriculum is inadequate regarding rubber dam. 85 practitioners think that rubber dam makes radiograph taking procedure difficult in pediatric patients. 50 practitioners think that most of the pediatric patients do not like the rubber dam. 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
35-44	14	11	25 [25 %]	0.01*
45-54	8	7	15 [15 %]	0.60
55-64	18	6	24 [24 %]	0.06
65-74	13	10	23 [23 %]	0.90
>74	8	5	13 [13 %]	0.08
Total	61	39	100%	*Significant

*p<0.05 significant

Table 2: Questionnaire Estimation and Evaluation with Related Statistical Correlations

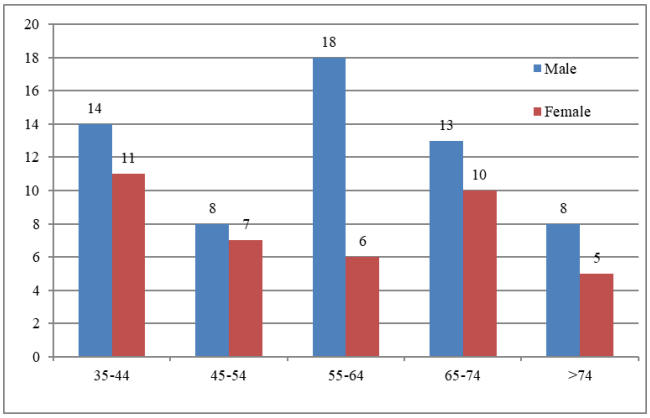
Questionnaire	Variables	Responses of Practitioners [Yes]	Responses of Practitioners [No]	p Value
1	Have you ever heard about usage of rubber dam?	71	29	0.010*
2	Do you think rubber dam must be made mandatory for pediatric patients	65	35	
3	Are you using rubber dam during composite restorations in kids?	22	78	
4	Do you believe that UG dental curriculum is inadequate regarding rubber dam?	91	9	
5	Do you believe that rubber dam makes radiograph taking procedure difficult in pediatric patients	85	15	
6	Do you believe that rubber dam is complicated to apply in pediatric patients	59	41	
7	Do you think that most of the pediatric patients do not like the rubber dam	50	50	
8	Do you think that pedodontic therapies performed using the rubber dam are more successful than those performed without using it	51	49	

*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	2.54	0.546	0.546	2.57	2.374	1.0	0.544
2	2.72	1.765	0.576	1.96	2.957	1.0	0.787
3	2.45	1.254	0.560	1.96	2.634	1.0	0.020*
4	2.89	0.569	0.766	1.96	1.856	2.0	0.000*
5	3.43	1.945	0.099	1.96	2.435	2.0	0.001*
6	2.76	0.546	0.056	1.82	2.857	1.0	0.566
7	2.37	1.758	0.080	1.95	1.846	2.0	0.987
8	2.38	0.778	0.080	2.18	2.543	1.0	0.456

*p<0.05 significant



Graph 1: Age & Gender wise Distribution of Practitioners

Discussion

Isolation of teeth undergoing root-canal treatments (RCTs) using a rubber dam (RD) was introduced by Sanford Barnum in 1864 and has been the most common isolation method. A RD provides a clean aseptic operating field, as it isolates the tooth from oral and salivary contamination. Therefore, the outcome of RCTs performed under RD isolation is expected to be better [9-12]. At that time, keeping the rubber in place around the tooth was problematic, but things soon improved a few years later, when in 1882 SS White introduced a rubber dam punch similar to that used still now. Goldffein *et al*. found previous study concluded that using RD during prefabricated post placement provided a higher success rate for root canal treatment. They stressed that RD use should be a standard of care during restorative procedures. Many dental restorative materials are adversely affected by saliva [13-17]. Because properly placed dental dam promotes a moisture-free, uncontaminated working environment, these materials are permitted the luxury of setting under optimum conditions. The quality of the resulting restorations or procedures is undeniably superior to those performed without dental dam utilization. Additionally, the oral cavity is the prime source of microbial contamination during dental procedures, either through direct contact from high speed instruments. Properly placed dental dam acts as an effective barrier between the oral cavity and the operative field. Because of these noticeable advantages, most of dental colleges teach the usage of rubber dam mandatorily for procedures in pediatric dentistry and endodontics. 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 [18-21]. 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. Nevertheless, the use of a dental dam during implant placement offers enhanced isolation of the surgical site, reduced ingress of oral fluids and microorganisms to the surgical site, as well as reduced chance of aspiration and swallowing of dental instruments [22-23]. Our study aimed evaluates the current knowledge and awareness about rubber dam usage among general dental practitioner in Ghaziabad, wherein authors have noticed only moderate responds.

Conclusion

This study was aimed to evaluate the current knowledge and awareness about rubber dam usage among general dental practitioner in Ghaziabad. Within the limitations of the study, authors concluded that studied dentist's knowledge and awareness regarding rubber dam usage was at moderate levels. Because the rubber dam is a valuable means of isolation in pediatric procedures, periodic educational programs and demonstrations must be organized so as to update the existing knowledge of clinicians. The results of this study should be taken as suggestive for presuming prognosis of such critical situations.

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Statement of conflict of interest

In the opinion of the author, there was no conflict of interests.

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