

**RUBBER DAM- IT'S PRESENT AND FUTURE USE AMONG DENTAL STUDENTS****SARANIYA PACKIRI\*<sup>1</sup> AND DEEPA GURUNATHAN<sup>1</sup>**<sup>1</sup> *Department of Pediatric and Preventive Dentistry, Saveetha Dental College, Chennai India.***ABSTRACT**

Introduction: Rubber dam is universally acknowledged as a mandatory adjunct particularly during endodontic treatment. It offers many advantages, despite that it is still being ignored. Even though students undergo meticulous training in placement of rubber dam during their undergraduate training, there is still disincentive use of rubber dam in general practice, the reason for this is not entirely clear. Aim: The aim of this study was to evaluate the general attitude of third year, final year dental students and interns towards rubber dam usage in patients. Materials and methods: Pre validated closed ended questionnaire was distributed among third year, final year dental students and interns. Obtained data were entered into an electronic database and statistical analysis was done using SPSS v20. Results: Out of the 130 questionnaire distributed, 107 were returned, and 23 students were not willing to participate in this study. 37.4% believe it's a helpful tool and use rubber dam in clinic. 45.8% students felt that patient's do not like it, thereby resulting in its disincentive use in future dental practice (26.2%). Conclusion: Even though dental students receive a satisfactory education about rubber dam, further emphasis should be placed on complications and mishap arising by not using it in private practice. Within the limitations of this study, it can be deduced that perceptions of dental students on rubber dam usage must be improved and strategies must be developed to implement it and improve the quality of dental treatment.

**KEYWORDS:** Rubber dam, Dental students, Attitude, Endodontics**SARANIYA PACKIRI**

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## INTRODUCTON

In the year 1864, 15<sup>th</sup> March S.C.Barnum introduced 'Rubber Leaf' for isolation of the tooth during restoration, <sup>1</sup>together with G.A. Bowman, he introduced the rubber dam clamp forceps in 1873, <sup>2</sup> which has currently advanced to a system that offers utmost protection to both the patient and dentist. In 2010, American Association of Endodontists, stated that, tooth isolation using the dental dam is the standard of care, it is integral and essential for any non surgical endodontic treatment. <sup>3</sup> Despite, being advocated as standard of care by many well established organisations such as European society of Endodontology, American academy of paediatric dentistry, British society of paediatric dentistry; it is still not being followed by many general practioners. The major advantage of a rubber dam is isolation of teeth, prevention of cross infection and protection of soft tissues and oropharynx. Rubber dam is mandatory for endodontic, operative and fixed prosthodontic procedure, which requires isolation of teeth for better visualisation by providing a dry field. Rubber dam plays a major role in preventing cross infection, as it brings a significant reduction in microbial content of aerosols produced during dental treatment. These aerosols can act as a source airborne transmission of infectious diseases like measles, tuberculosis, SARS.<sup>4, 5, 6</sup> It also helps in retraction and protection of soft tissues and reduces trauma of soft tissues by manual manipulation, prevention of ingestion of caustic substances such as sodium hypochlorite, so rubber dam plays an important role in selection of root canal irrigant during endodontic treatment.<sup>7, 8, 9</sup> It also prevents aspiration of cements and sharp instruments, thereby protecting the oropharynx. This helps in protecting the dentist from litigation in terms of medico legal cases. <sup>10</sup> It is of great assistance in treating patients with a gag reflex. In spite of its many advantages it is still neglected by many dental practitioners, Ireland in 1962 summed this up as, "It is contradictory, that a technique that is universally accepted and advocated by recognized authorities is often ignored by routine dental practitioners" and considering the present scenario, it is still true. <sup>11</sup> 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. Even though students undergo meticulous training in placement of rubber dam during their encounter with patients, there is still disincentive use of rubber dam in general practice, the reason for this is not entirely clear. Therefore the aim of my study was to evaluate the knowledge, attitude and practice of dental undergraduates towards the use of rubber dam in Saveetha Dental College.

## MATERIALS AND METHODS

A pilot study was conducted using closed ended pre validated questionnaire, which comprised of 24 questions. This was distributed to 130 dental students (third year, final year and interns) of Saveetha Dental

College. Ethical approval was obtained from the institutional review board (SRB/STPG15/40). Information sought included

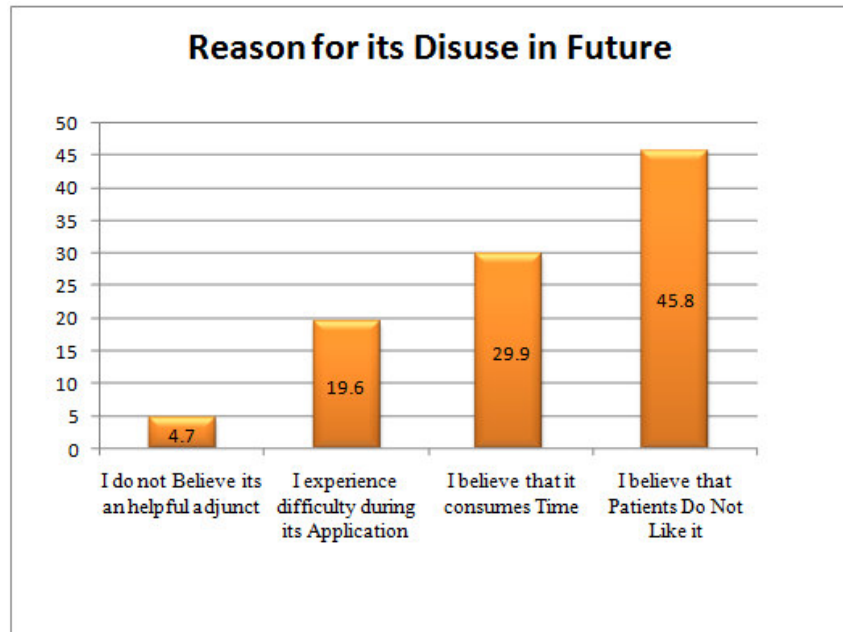
- Students knowledge about rubber dam usage and its application during dental procedure
- The general attitude of the dental students towards rubber dam usage and their point of view about patient's acceptance on rubber dam use
- Whether they intend to use rubber dam in their future practice and the reasons for its disuse

The students were given an opportunity to decline participating in the survey and the completed questionnaires were returned anonymously. The data collected was entered in an electronic database SPSS version 20 and statistical analysis, (descriptive statistics and Chi square test) was done to interpret the results.

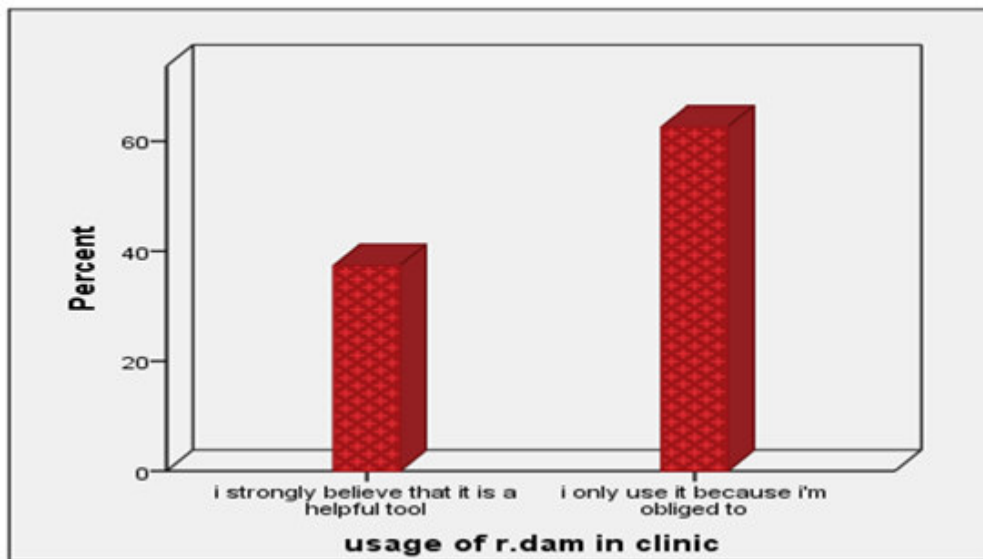
## RESULTS

Out of the 130 questionnaire distributed, 107 students participated and 23 students were not willing to participate in this study. Out of the 107 respondents 19.6% were males and 80.4% were females. Based on the year of study 17.8% were third year students, 33.6% were final year students and 48.6% were interns. Regarding student's knowledge towards the use of rubber dam, 78.5%students agreed that they have been given adequate and satisfactory education about rubber dam and its application. In terms of greatest advantage of using rubber dam, provision of isolation of tooth and having an aseptic operating field was top ranked benefit (74.8%). Even though isolation of the teeth was considered as the greatest benefit of rubber dam, more than half of the participants (50.5%) felt that isolation of teeth can be obtained even if it is not used. A total of 86% students considered that rubber dam application was more necessary while working in the mandibular region and majority of students felt that assistance was required during its application (62.6%). Most students agreed the use of rubber dam made the restoration procedure easy and treatments performed with rubber dam were more successful than treatments performed without it (71%). One half of the participants felt that rubber dam makes the root canal procedure easy, whereas other half disagreed. Many students agreed that rubber dam was difficult to apply and taking radiographs while using it was difficult (97.2%).A majority of 93.5% students felt that duration of treatment extended while using rubber dam.97.2% students had an opinion that patients do not like the use of rubber dam and this was one of their major reason for not planning to use it in future practice (45.8%). [See, Graph I] The other reason for its discentive in future is that they do not believe it's a helpful adjunct (47%). Even though 37.4%students believe that rubber dam is a useful adjunct, a majority of 62.6% students believed that they used rubber dam in college as they were obliged to. [See, Graph II] The selection of clamp and its adaptation was the major cause for its difficulty in application (58.9%).

**Graph I**  
**Reason for its disuse in future**



**Graph II**  
**Reason for using Rubber Dam in Clinic**



High number of students agreed that they ask the patient whether about latex allergy before using it (78.5%). More than 50% of students agreed that they always use rubber dam during amalgam and composite restoration. 77.6% students shared a opinion that they don't use rubber dam during endodontic treatment of tooth with minimal structure. Following graduation only 16.8% students intend to use rubber dam during root canal treatment. There was significant between year of study and usage of rubber dam in clinic with a 'p' value

of 0.023. [See, Table I] With increase in year students tend to believe that it is not a helpful adjunct and only use in college because they are obliged to. Likewise, there was a significant association between year of study and reason for not using it following graduation, with a 'p' value of 0.026. [See, Table II] This shows a trend that students do not like to use in private practice in spite of its various advantage and its recommendation by well established organisations.

**Table I**  
**Correlation between the year of study and reason for usage of rubber dam in clinic**

Year of study	Usage of rubber dam in clinic		Significance
	I believe it is a helpful adjunct	I use it because I'm obliged to	
Third year	27.5%	11.9%	P=0.023
Fourth year	40%	29.9%	
Intern	32.5%	58.2%	

**Table II**  
**Correlation between the year of study and the reason for not using it in future practice**

Year of study	Reason for not using it in future				Significance
	I do not believe it is a helpful adjunct	I experience difficulty during application	I believe it consumes time	I believe that patients do not like it	
Third year	20%	33.3%	3.1%	22.4%	P=0.026
Fourth year	80%	42.9%	40.6%	26.5%	
Intern		23.8%	56.2%	51%	

## DISCUSSION

Dental colleges play an important role in sculpting the dental students who are fit for providing quality care of the patients, but with the growing number of colleges and student population the quality of teaching is declining which in turn has a negative impact on the quality of dental care provided to the patients during their general practice which leads to certain mishaps. This study was mainly aimed at knowing students attitudes towards use of rubber dam in their future practice which helps in. Even though students undergo meticulous training in placement of rubber dam during their undergraduate training, there is still disincentive use of rubber dam in general practice, the reason for this is not entirely clear. It is a known fact that college give a special emphasis on rubber dam application ever since student's first encounter with patient but what really matters is whether they will adopt to use it in future practice. Based on the findings, it is evident that students apply rubber dam for all endodontic procedures and about 59.34% students use rubber dam during operative procedures in college. Following graduation, only 18.74% students tend to use during endodontic procedure and 36.41% students tend to use it during operative procedure, which is similar to an earlier conducted British survey, where 93% of dentists in British dental association never or seldom use rubber dam during operative procedure and 82% never or seldom use during endodontic procedure.<sup>12</sup> A similar response was also reported by Mala et al, where 62% of respondents reported that the use of rubber dam decrease in their independent practice would decrease.<sup>13</sup> Studies from international literature indicate that use of rubber dam in general practice is limited. 45.8% students believed that patients do not like rubber dam and it is the main reason for not using it in general practice, this finding was similar to study by Mala et al but it is in contrast to a study conducted by Gergely 1989, Stewardson & Mc Hugh 2002 where rubber dam application is an accepted element of dental care by patients, they also indicated that the experience and skill of the dentist influence patient attitude towards the use of rubber dam. Whitworth et al stated that the patient's dislike towards rubber dam is more strongly related to dentist's attitude.<sup>13, 14, 15, 16</sup> Dentist's skill regarding utilization of rubber dam can be gained through frequent usage. The other reasons for not using it in general practice is difficulty in use, insufficient training, cost and low fees for treatment (Marshall & Page 1990).<sup>12</sup> Hill & Rubel determined that most common cause for not using rubber dam was in convenience and that it is unnecessary.<sup>17</sup> This can be overcome by teaching the students about the complications arising

from lack of rubber dam usage and aftermath. 77.6% students found it difficult to use rubber dam in teeth with minimal structure, this can be overcome with the use of split dam technique. A majority of 97.2% students reported that taking radiograph using rubber dam makes the procedure difficult. But removal of rubber dam during this procedure is not accepted as this step is usually done by placing instrument in the root canal and mishaps can occur and intervention cannot be done. Hence, radiograph should be taken with rubber dam in place during endodontic procedure, this skill can be improved with practice. 78.5% ask their patient about latex allergy prior to its use which is higher when compared to the study reported by Jale Tanlap et al but still enough stress must be placed about the possibility of latex allergy during its application considering some cases that has been published.<sup>18, 19, 20</sup> Rubber dam usage can offer protection to practitioners from medico legal cases and improve quality of treatment. It is evident that practitioners use rubber dam during endodontic and operative procedure in college but during private practice its use will decrease as it is evident from our study that only 37.4% students believe that it is a helpful adjunct whereas a majority of 62.6% students use rubber dam in college as they are obliged to. These findings coincide with the survey done by Jale Tanlap et al 2014, Whitworth et al 2000, Jenkins et al 2001.<sup>16, 18, 21</sup> Rubber dam is also advocated in fixed prosthodontics for isolation of tooth, but sometimes it can interfere with adhesion and care should be taken while using with polysiloxane as rubber dam contain sulphide compounds. In a study conducted by Mala et al it was found that private practitioners do not give importance to the quality of the treatment resulting in poor treatment outcome, this outlines a deeper problem whether there is a change in attitude between academic and private dental practice.<sup>13</sup> The highest percentage of rubber dam use was seen among American dental practitioners, this was reported in a survey done by Whitten et al.<sup>22</sup> This might be attributed to strict malpractice law adopted by USA. Thus implementation of malpractice law can be influential in quality of dental treatment that has been provided. With recent advances, new isolation device such as Isolite has been found to be more effective and satisfactory to the patients, which was proved by a study conducted by Alharakey MS et al.<sup>23</sup> It is evident that dental students show interests during the initial period, when they are first introduced to rubber dam, but as years proceed, their interest gradually declines, this is mainly due to time consumption and difficulty in clamp adaptation and student's misconception thought of patient's not liking it. This was emphasized by Mala et al<sup>13</sup> in terms of reevaluating students answer after 5 year elapse to see whether their initial enthusiasm remained. Dental

colleges play an important role in bringing up future dentists so they should implement strategies that will make the students regard that rubber dam is a useful adjunct during dental procedure, which makes the procedure easy. This study must be conducted on a larger scale including both students and general practitioners to know about their attitude in rubber dam usage.

## CONCLUSION

Within the limitation of this study it can be concluded that students cannot be blamed for their lack of interest in rubber dam usage, the colleges should give further emphasis on advantages of rubber dam and the mishaps that occur by not using it. There is a general

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reluctance regarding use of rubber dam in private practice and can be considered as a universal problem that requires further attention.

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## CONFLICT OF INTEREST

All the authors declare that there is no conflict of interest.