



ISSN: 0975-833X

Available online at <http://www.journalcra.com>

International Journal of Current Research

Vol. 16, Issue, 07, pp.29161-29165, July, 2024  
DOI: <https://doi.org/10.24941/ijcr.47491.07.2024>

INTERNATIONAL JOURNAL  
OF CURRENT RESEARCH

## RESEARCH ARTICLE

### EVALUATION OF FEAR AND ACCEPTANCE OF OPTRA DAM AND ITS COMPARISON WITH CONVENTIONAL RUBBER DAM AMONG 3- 5 YEARS OLD CHILDREN: RANDOMIZED CONTROL TRIAL

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#### ARTICLE INFO

##### Article History:

Received 19<sup>th</sup> April, 2024  
Received in revised form  
15<sup>th</sup> May, 2024  
Accepted 20<sup>th</sup> June, 2024  
Published online 29<sup>th</sup> July, 2024

##### Key words:

Optradam, Rubberdam, Fear, Acceptance, Children, Isolation Technique.

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#### ABSTRACT

**Background / Introduction:** Acceptance of instruments in the oral cavity is an integral part of behaviour management and it is proportional to the final outcome of the treatment in pediatric practice. Rubber dam is proven to improve the overall productivity of the treatment. However, children are reluctant towards rubberdam due to its cumbersome procedure and additional chair side time. New isolations like Optradam representing the advanced generation of rubber have numerous advantages to be used in pediatric dentistry. **Objectives:** To evaluate and compare fear and acceptance of Optradam in restoration of ECC and its comparison with conventional rubber-dam among 3-5 year old children. **Methodology:** A split mouth technique among 21 children (3-5 years) requiring bilateral restoration of primary maxillary anterior teeth were treated under Optradam plus small (IVOCCLAR) and conventional rubberdam. Application of each isolation technique was carried out by Tell Show Do (TSD). Face Leg Activity Cry Consolability (FLACC) Scale and Chota Bheem Chutki (CBC) scale was used to assess fear and acceptance of isolation techniques. Inter group and gender wise comparison was done using unpaired t test and statistical analysis by 2- way analysis of variance (ANOVA) considered  $P < 0.05$  as statistically significant. **Results:** The test group treated under optradam showed significant lower FLACC scale (0.00233) and CBC scale (0.0000102) when compared to the control group treated under rubberdam. No statistically significant gender difference was found in FLACC scale and CBC scale. **Conclusion:** Optradam is better accepted by children and was described as less painful and cumbersome procedure. Acceptance can be a great attribute in desensitization. Therefore, preference of optradam to the conventional rubberdam would definitely improve treatment quality.

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Citation: Dr. Savitha Sathyaprasad and Dr. Rashmi S. 2024. "Evaluation of fear and acceptance of opra dam and its comparison with conventional rubber dam among 3- 5 years old children: randomized control trial". *International Journal of Current Research*, 16, (07), 29161-29165.

## INTRODUCTION

Isolation is an important precondition part of most of dental treatments to guarantee the long-term survival of any dental procedure<sup>1</sup>. In ECC, anterior mouth rehabilitation with aesthetic restorations like composites and GIC are technique sensitive procedures<sup>2</sup>. Restoration in primary teeth is difficult to achieve due to small cavity and high salivation among children which will influence long time survival of restorations<sup>3</sup>. Rubber dam plays predominant role in maintaining dry field of operation which is essential for moisture sensitive techniques, provide gingival retraction and facilitate treatment of patients with significant gag reflexes<sup>1</sup>.

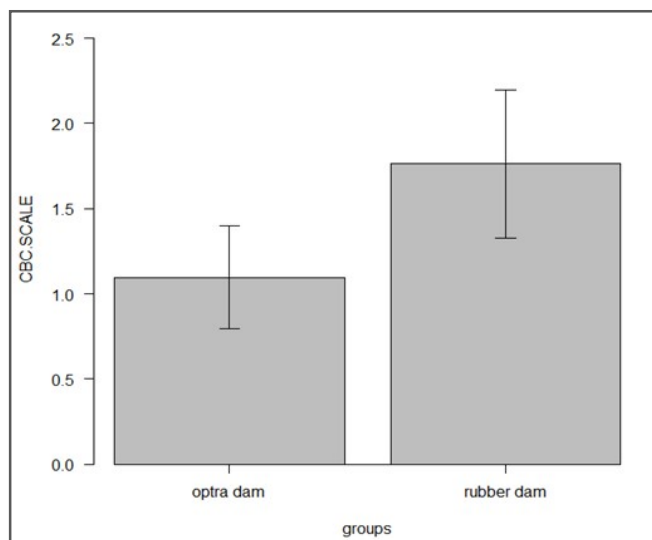
McKay published a study on the feeling of the patient after the treatment stating the acceptance of rubber dam mainly depends on children's' varying levels of physical, intellectual, emotional, and social development<sup>2</sup>. Hence, it's a challenge for the Pediatric dentists to manage duration of treatment as well as to meet the psychological needs of their young patients while maintaining appropriate infection control practices. Even though Rubber dam is helpful in protecting field of operation it is less accepted by the children due to aroma of latex, larger frames and bulky clamps. Children was less cooperative as additional time is taken to apply the rubber dam<sup>4</sup>. Alongside, due to difficulty and longtime placement of rubber dam many doctors gave up the use of the rubber dam on the baby teeth<sup>4,5</sup>. Therefore, Newer advancement in rubber dam techniques have been modified for better acceptance and cooperation from patients and to decrease the duration of the procedure.

Of various advancements Optra dam is one such technique. Optra dam represents the advanced generation of rubber dams<sup>6</sup>. It has coupled benefits of a lip and cheek retractor with optimum isolation of a rubber dam. The anatomical shape provides comparatively larger treatment field. The inner-ring design help inserting more easily in the patient's mouth without the need for clamps. The soft flexible material allows patients to stretch and close mouth combined with comfort throughout the procedure and complete isolation of both arches can be achieved at the same time. Thus, it is completely different from conventional rubber dams with simplified frame work. This can reduce the time for placement and better acceptance from children. Therefore, the need for the study is to evaluate and compare fear and acceptance of Optra dam and its comparison with among 3- 5 years old children.

## METHODOLOGY

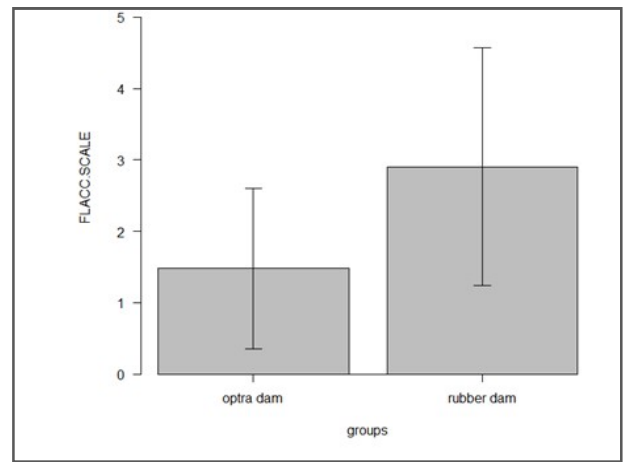
A total of 21 children of 3-5 years of age from the study population, was selected based on the inclusion criteria and exclusion criteria.  $N = 2(sd)^2(z_{1-\alpha/2} + z_{\beta})^2 / (d)^2$  where, SD = standard deviation- 12.3,  $z_{1-\alpha/2} = 1.96$  at 95% confidence interval,  $z_{\beta} = 0.84$  at 80% power,  $d =$  mean difference – 11.04. substituting the values, we get = 19.47. Hence sample size obtained is 21. Parent’s informed written consent was obtained. Flip of coin was used to divide study sample randomly into control and test group for split mouth technique. Flip of coin result-head was considered as control group tail consider as test group.

**1. Group I (Test Group):** Application of Optra dam was carried out by TSD technique. Tooth of interest is marked on Optra dam and hole is made with rubber dam punch. Inner ring was stretched out and Optra dam was placed inside the mouth (Fig 1).



**Graph 1. Comparison of CBC scale between optra dam and rubberdam**

**2. Group II (control Group):** Application of rubber dam was carried out by TSD technique. Tooth of interest is marked on the sheet with the help of template. A hole is made with rubber dam punch. Clamp of suitable size is selected and sheet was pulled onto the clamp and placed onto the teeth. Rubber dam was stabilised by pulling the outer ends of the sheet onto the young’s frame (Fig 2).



**Graph 2. Comparison of FLACC scale between optra dam and rubberdam**

FLACC Scale was recorded during the placement and removal of isolation systems. CBC scale was obtained from the children. Patient was recalled after 1 week. Following the same steps, restorative procedure on the contralateral side was performed with alternative isolation technique. Scores obtained was tabulated and a statistical analyzed using the SPSS software. The mean and the standard deviation was calculated for each variable. And analysis of the data between groups was carried out by 2- way analysis of variance (ANOVA).  $P < 0.05$  was considered as statistically significant.

## RESULTS

The sample comprised of 21 children (13 male, 08 females) with a mean percentage of 61.90% males and 39.10% female children aged between 3 years and 5 years. On gender comparison, there was no statistically significant difference was found with FLACC scale and CBC scale ( $P > 0.05$ ) (Table 1 &3). On intergroup comparison, FLACC scale showed  $2.90 \pm 1.67$  among rubberdam and  $1.47 \pm 1.12$  among optradam with a statistically significant difference of 0.00233 (Table 2) On intergroup comparison, CBC scale showed  $1.76 \pm 0.43$  among rubberdam and  $1.09 \pm 0.30$  among optradam with a highly statistically significant difference of 0.00000102 (Table 2).

**Table 1. Gender distribution among study participants**

Parameter	Frequency	Percentage
Gender – Male	13	61.90%
Female	08	39.10%

**Table 2. Inter group comparison between FLACC Scale and CBC Scale using unpaired t test**

Groups	Number of subjects	Rubber dam	Optra dam	P value
FLACC SCALE	21	$2.90 \pm 1.67$	$1.47 \pm 1.12$	0.00233
CBC SCALE	21	$1.76 \pm 0.43$	$1.09 \pm 0.30$	0.00000102

$P < 0.05$  was considered as statistically significant.

**Table 3. Gender wise response to FLACC scale and rubber dam using unpaired t test**

Groups	Males	Females	P value
FLACC Scale With Rubber Dam	$2.53 \pm 1.85$	$2.75 \pm 2.05$	0.81
CBC Scale With Rubber Dam	$1.61 \pm 0.50$	$1.75 \pm 0.46$	0.549
FLACC Scale With Optra Dam	$1.76 \pm 1.01$	$1.37 \pm 1.30$	0.446
CBC Scale With Optra Dam	$1.15 \pm 0.37$	$1.12 \pm 0.35$	0.863

$P < 0.05$  was considered as statistically significant



Fig. 1. Optradam



Fig 4. CBC scale



YOUNGS FRAME AND RUBBER DAM



OPTRADAM

Fig. 4. Isolation techniques used in the study



Fig 2. Conventional rubberdam

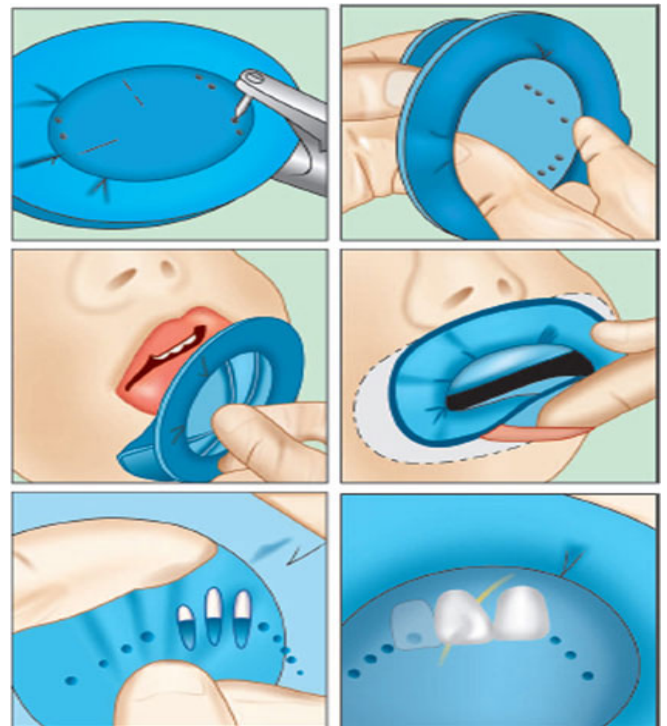


Figure 5. Placemnt of optradam

FLACC Scale <sup>2</sup>		0	1	2
1	Face	No particular expression or smile.	Occasional grimace or frown, withdrawn, disinterested.	Frequent to constant frown, clenched jaw, quivering chin.
2	Legs	Normal position or relaxed.	Uneasy, restless, tense.	Kicking, or legs drawn up.
3	Activity	Lying quietly, normal position, moves easily.	Squirming, shifting back and forth, tense.	Arched, rigid or jerking.
4	Cry	No crying (awake or asleep).	Moans or whimpers; occasional complaint.	Crying steadily, screams or sobs, frequent complaints.
5	Consolability	Content, relaxed.	Reassured by occasional touching, hugging or being talked to, distractible.	Difficult to console or comfort.

Fig 3. FLACC scale

## DISCUSSION

In pediatric scope, simpler and less burdensome isolation system is required for the better acceptance by pediatric patients which directly influence on the cooperative level of the child. Our study intended to evaluate the objective and subjective pain perception correlating to fear and acceptance of optradam vs conventional rubber dam among 3–5-year-old children. Inter group comparison was made among children treated under optradam and conventional rubber.

FLACC scale was used as an external evaluator to measure pain perception during placement of isolation systems and our results found out that there is a statistical significant difference among children treated under opradam than the conventional rubberdam (0.00233). Our study also compared the subjective parameter of recording fear using CBC scale. It is the simplest and easiest to record as children are familiar with the cartoon characters used in the scale and therefore can relate to it which is a part of constructive animism quoted by Piagets theory<sup>14</sup>. Our results showed that there was highly statistically significant difference (0.00000102) found after the placement of opradam compared with conventional rubberdam. These results indicates that reduced pain perception was observed more among children treated under opradam than conventional rubberdam. Our study endorses that the above-mentioned results are due to the facts of discomfort associated with RDI components, which may impinge on the gingiva, buccal mucosa, and tongue, causing discomfort and irritation for more pain perception among children treated under rubberdam<sup>6</sup>. On the other hand, opradam was one shot placement without any need for the clamps, was more stable in place and didn't require any adjustments making patient feel more relaxed and comfortable. These reasons coincide with the study done by Rahif E. Mattar et al 2021<sup>8</sup>. Attributed to the facts of longer duration needed to place rubber dam, more cooperation was required from the child and more visibility of bulky rubberdam clamps made children expressed more fear and less compliance while placing conventional rubberdam which is in accordance with the study done by as stated Tania Vanh e et al, 2021 children<sup>11</sup>. Additionally, in few of the cases rubberdam clamp placement required application of topical anesthesia, which made the patient dislike more due to the taste of topical anesthesia. These results are parallel with the study done among dental students by Toanfoeng Tham et al.<sup>16</sup> In the current study, Gender wise response to FLACC scale and CBC scale were compared between rubber dam and opradam. This is to evaluate whether gender difference has any influence on pain perception and acceptance of the two-isolation system and our study results found out that there was no statistically significant gender wise response of FLACC scale to rubber dam (0.81) and opradam (0.446) and CBC Scale for Rubber Dam (0.549) and CBC (0.863). This is in accordance with the study done by Leal et al, stating that age is a critical factor in determining the fear than the gender itself and younger children were more fearful to rubber dam than older children<sup>9</sup>. According to McHugh preference for rubber dam is influenced by age, with an increased acceptance with increasing age of patients. This indicates that younger children have less accepted the rubberdam<sup>10</sup>. Thus, there is a scope of finding alternatives to conventional rubberdam for better compliance by children. This is a new kind of study conducted to compare opradam and conventional rubberdam among children indicating that opradam yields better acceptance among 3–5-year-old children. This study contributes to the future scope of pediatric dentistry in appraising the opradam fulfilling the demands of children thus increasing their acceptance will result in preference of use of opradam by pediatric dentist.

**Limitations of the study:** More participants to be studied for further investigations including objective parameters of recording fear like pulse oximeter and questionnaire to find out the accurate reasons for better acceptance of Opradam than rubber-dam. Acceptance of Opradam during endodontic treatment for long duration to be further studied.

## CONCLUSION

Under the limitations of this study, Opradam is better accepted by children and it was described as less painful placement and less cumbersome procedure. This is the new kind of study done to evaluate fear of pediatric patients towards opradam vs rubberdam. Acceptance can be a great attribute in desensitization. Therefore, preference of opradam to conventional rubberdam would definitely improve treatment quality.

**Conflict of interest:** No conflict of interest

**Funding statement:** No funding

**Abbreviations:**

**CBC-** Chota Bheem Chutki Scale

**FLACC:** Face Leg Activity Cry Consolability

**ECC:** Early childhood Caries

**GIC:** Glass Ionomer Cement

**TSD:** Tell Show Do

**RDI:** Rubber Dam Isolation

## REFERENCES

1. Ballal NV, Khandeelwal D, Saraswathi MV. 2013. Rubber dam in endodontics: An overview of recent advances. *Int J Clin Dent.*, Nov 1;4:391-0.
2. McKay A, Farman M, Rodd H, Zaitoun H. Pediatric dental patients' attitudes to rubber dam. *Journal of Clinical Pediatric Dentistry.* 2013 Dec 1;38(2):139-41.
3. Souza-Oliveira AC, Paschoal MA, Rezende T, Alvarenga-Brant R, Abreu MH, Martins-Pfeifer CC. Adhesive restorations in primary dentition: A retrospective analysis of survival rate and associated factors. *International Journal of Paediatric Dentistry.* 2024 Apr 16.
4. Bagher SM, Allaf H, Khogeer L, Felemban O. Patient satisfaction and preference with dry shield vs rubber dam isolation among pediatric patients. *Journal of Dental and Medical Sciences.* 2021 Mar;9:82-90.
5. BRUNINI SH, TOMAZINHO LF, HOMEM AM, SANTANA GB, da SILVA LF. Use of absolute isolation in Endodontics: an analysis of the perception of the patient and the dentist of northwestern Paran a/Brazil.
6. Zahra SF, Yousaf A, Ashfaq S, Ali F, Aslam M. Different techniques for rubber dam isolation: a cross-sectional study. *Life and Science.* 2021 Jun 29;2(3):5-.
7. Saha A, Kamatham R, Mallineni SK, Nuvvula S. A cross-sectional survey on children perception of isolation methods for restorative procedures and influence of cognitive development. *SRM Journal of Research in Dental Sciences.* 2016 Oct 1;7(4):219
8. Mattar RE, Sulimany AM, Binsaleh SS, Al-Majed IM. Comparison of fissure sealant chair time and Patients' preference using three different isolation techniques. *Children.* 2021 May 25;8(6):444.
9. Leal AM, Serra KG, Queiroz RC, Ara jo MA, Maia Filho EM. Fear and/or anxiety of children and parents associated with the dental environment. *Eur J Paediatr Dent.*, 2013 Dec;14(4):269-72. PMID: 24313576.
10. Stewardson DA, McHugh ES. Patients' attitudes to rubber dam. *Int Endod J.* 2002 Oct;35(10):812-9. doi: 10.1046/j.1365-2591.2002.00571.x. PMID: 12406374.

11. Vanhée T, Tassignon C, Porta P, Bottenberg P, Charles T, Vanden Abbeele A. Behavior of Children during Dental Care with Rubber Dam Isolation: A Randomized Controlled Study. *Dentistry journal*. 2021 Aug;9(8):89.
12. Mohebbi SZ, Razeghi S, Gholami M, Kharazifard MJ, Rahimian S. Dental fear and its determinants in 7–11-year-old children in Tehran, Iran. *European Archives of Paediatric Dentistry*. 2019 Oct;20(5):393-401.
13. Ammann P, Kolb A, Lussi A, Seemann R. Influence of rubber dam on objective and subjective parameters of stress during dental treatment of children and adolescents—a randomized controlled clinical pilot study. *International journal of paediatric dentistry*. 2013 Mar;23(2):110-5.
14. Sadana G, Grover R, Mehra M, Gupta S, Kaur J, Sadana S. A novel Chotta Bheem–Chutki scale for dental anxiety determination in children. *Journal of International Society of Preventive and Community Dentistry*. 2016 May 1;6(3):200-5.
15. Kapitán M, Sustova Z, Ivancakova R, Suchánek J. A comparison of different rubber dam systems on a dental simulator. *Acta Medica (Hradec Kralove)*. 2014 Jan 1;57(1):15-20.
16. Tanalp J, Kayataş M, Başer Can ED, Kayahan MB, Timur T. Evaluation of senior dental students' general attitude towards the use of rubber dam: a survey among two dental schools. *The Scientific World Journal*. 2014 Jan 1;2014.
17. Innes N. Rubber dam use less stressful for children and dentists. *Evidence-Based Dentistry*. 2012 Jun;13(2):48-.
18. Christensen GJ. Using rubber dams to boost quality, quantity of restorative services. *J Am Dent Assoc*. 1994 Jan;125(1):81-2. doi: 10.14219/jada.archive.1994.0019. PMID: 8294668.
19. H. M. A. Ahmed, S. Cohen, G. Lévy, L. Steier, and F. Bukiet, "Rubber dam application in endodontic practice: an update on critical educational and ethical dilemmas," *Australian Dental Journal*, vol. 59, no. 4, pp. 457–463, 2014