



## Parental Satisfaction with Pediatric Posterior Preformed Titanium Coated Stainless Steel Crown and Conventional Stainless-Steel Crown - A Comparative Study

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### Abstract

**Aim:** To compare and evaluate the parental satisfaction of Titanium coated Stainless steel crown and Conventional Stainless-steel crown in primary mandibular molars.

**Materials and Methods:** 20 children aged 4-10 years who visited the Department of Pediatric and Preventive Dentistry, who required preformed crowns on their lower primary molars were included for the study. The teeth were randomly restored with Titanium coated Stainless steel crown on one side and Conventional Stainless-steel crown on other side. Parental satisfaction was elicited with a 5-point Likert type questionnaire.

**Results:** A significant proportion of parents of study patients [50%] were very satisfied with Esthetic appealing of the Ti-coated stainless-steel crown as compared to Conventional stainless-steel crowns. Majority of the parents [90% and above] were satisfied with shape, size and durability of both the crowns. All parents expressed 100% satisfaction regarding both the crowns for not having any discomfort and sensitivity after placing the crowns. Overall, parents felt Ti-coated stainless-steel crowns were very satisfying [35%] as compared to stainless steel crown and the difference was statistically significant.

**Conclusion:** Ti-coated SSC may be used as an alternative option to Conventional SSC.

**Keywords:** Parental Satisfaction; Stainless Steel Crown; Titanium Coated Stainless Steel Crowns

### Introduction

Dental caries is a highly prevalent disease, especially among young children [1]. The care of decayed primary teeth is crucial due to their role in chewing, speaking, and functioning as natural space maintainers in the dental arch [2]. The treatment of dental caries in the pediatric population is a long-standing issue that involves various challenges, like behavior management and the need for a perdurable treatment that lasts until tooth exfoliation [3].

Stainless steel crowns are the most commonly used restorative option for repairing and preserving the remaining tissue of severely damaged and decayed teeth [2]. Stainless steel crowns have outperformed other materials, such as amalgam and composite, in terms of durability and longevity for more than a half-century [4]. In fact, no restorative material has provided the benefits of low cost, reliability, and durability when interim full-coronal coverage is required [5]. The major disadvantage of SSC was its unesthetic

appearance [6]. Many parents have expressed their desire for gold coloured crown in their child’s mouth instead of silver colour of Conventional SSC.

In the recent past Titanium-nitride coated (TiN) SSC has been introduced and available for use. TiN-coating makes the crown appear golden and yellow and the coating may play a role in strengthening hardness of the surface [7]. The golden colour of the crown tend to attract children’s attention and seemed to be more likeable.

Hence the study was carried out to assess and elicit the parental satisfaction of Ti-coated SSC and Conventional SSC.

**Materials and Methods**

Ethical approval was obtained from the Institutional Review Board, to carry out the study in twenty children aged between 4-10 years who require preformed crowns on their lower right and left quadrant primary molars. The nature of the study was explained to the parents of each patient who were selected for the study and informed consent was obtained before the procedure.

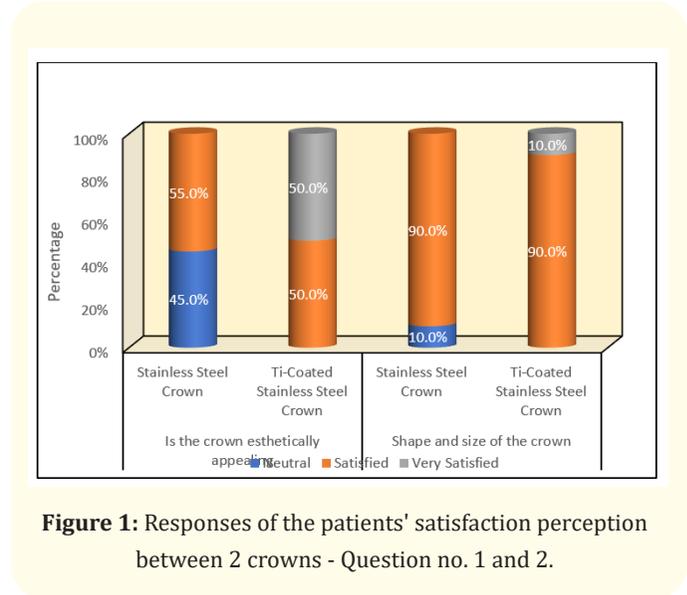
This split mouth clinical trial with 1:1 allocation ratio was conducted on mandibular primary molar and its contralateral tooth. Each tooth was assigned with a specific treatment group- Titanium coated SSC (Group A) and Conventional SSC (Group B). Step by step customized tooth preparation was done to ensure both the crowns were fitted in a similar manner and both the crowns were luted with type 1 GIC (GC Type 1 GIC) as it is the most commonly recommended cement for luting stainless steel crowns.

After placement of the crowns, parents were given a set of questionnaires to assess their satisfaction regarding the restorations done for 1 week follow up visit using two different crowns using Likert scale. Parents were asked to score the criteria such as the crown’s colour, size, shape, durability and their overall appearance on a 5-point Likert scale: 1. Very unsatisfied 2. Dissatisfied, 3. Neutral, 4. Satisfied; and 5. Very Satisfied. The parents evaluated their child’s restoration directly and not from a photograph. Participants were recalled for follow up at 1 week.

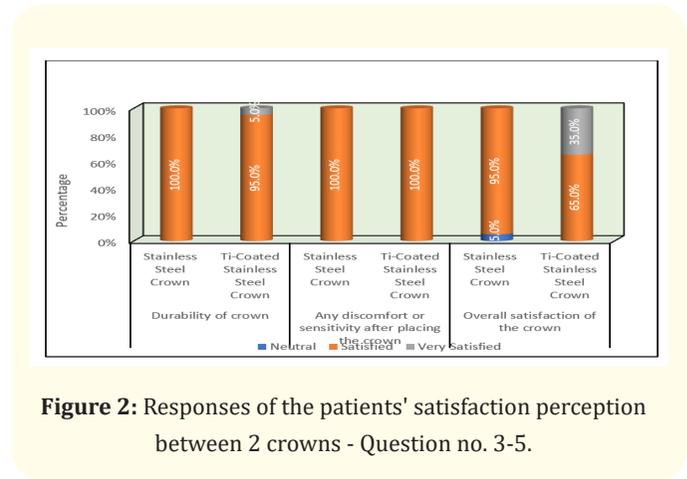
**Results**

Parental satisfaction with durability was similar in both the groups (100%). 90% of them were satisfied with the size and shape of stainless-steel crowns and there were biased responses

for satisfaction of colour (Neutral-2% and satisfied-18%) whereas for Titanium coated stainless steel crown with respect to shape and size 90% of them were satisfied and with respect to colour the responses were satisfied-90% and very satisfied-10%. All patients expressed 100% satisfaction regarding both the crowns for not having any discomfort and sensitivity after placing the crowns. Overall, patients felt Ti-coated stainless steel crowns were very satisfying [35%] as compared to stainless steel crown and the difference was statistically significant at  $p = 0.01$  (Figure 1 and 2).



**Figure 1:** Responses of the patients' satisfaction perception between 2 crowns - Question no. 1 and 2.



**Figure 2:** Responses of the patients' satisfaction perception between 2 crowns - Question no. 3-5.

**Discussion**

The problem of dental decay in children’s teeth is a major public health issue. There are several approaches for offering full coverage restoration for the primary dentition, each with its own set of benefits and drawbacks [8]. There has been a wide selection of crowns accessible that meet the satisfaction and acceptance of parents in terms of both looks and function.

Stainless steel crowns (SSCs) are the most commonly used in full coronal restorations in pediatric dentistry, as they were easily available as pre-formed, pre-trimmed and pre-contoured crowns with wide range of sizes and with proven clinical efficiency [1]. The only disadvantage of SSC was its unaesthetic appearance [6]. Recently, a new full coverage crown has been introduced by Shinhung Co. Ltd. Titanium coated golden stainless-steel crown, they are stainless steel crown having natural golden luster through titanium coating which provides high quality esthetic finish [7]. The golden colour of the crown tends to more appealing and attractive to the children as well as parents instead of silver of Conventional SSC as the silver colour is less attractive than golden colour.

Keeping the above fact in mind, the present study was conducted to elicit parental satisfaction of Titanium coated SSC with that of

Conventional SSC which are the most commonly used crowns for posterior primary teeth.

In the present study a five-point Likert scale was used for evaluation and the parents were asked to score parameters such as the crown’s color, size, durability, any discomfort or sensitivity after placement of crown and their overall satisfaction during the follow-up visit after 1 week.

The questionnaire revealed good satisfaction with respect to size and shape of both the crowns. With respect to colour, Titanium coated SSC outperformed Conventional SSC. Both Titanium coated SSC and Conventional SSC performed similar with respect to parents’ perception of durability. Overall satisfaction with Titanium coated SSC was better than the Conventional SSC. Problems experienced by children after the crowns were none.

Majority of the parents were ready to opt for Titanium coated SSC over Conventional SSC due to its golden colour appearance which tend to be more pleasing to them as well as for the children.

Titanium coated SSC has added advantage over Conventional SSC as the titanium coating provides easy manoeuvrability and reduce chair side time [9].

Questions	Responses	Stainless Steel Crown		Ti-Coated Stainless Steel Crown		p-value
		N	%	n	%	
Is the crown aesthetically appealing	Neutral	9	45.0%	0	0.0%	< 0.001*
	Satisfied	11	55.0%	10	50.0%	
	Very Satisfied	0	0.0%	10	50.0%	
Shape and size of the crown	Neutral	2	10.0%	0	0.0%	0.14
	Satisfied	18	90.0%	18	90.0%	
	Very Satisfied	0	0.0%	2	10.0%	
Durability of crown	Neutral	0	0.0%	0	0.0%	0.31
	Satisfied	20	100.0%	19	95.0%	
	Very Satisfied	0	0.0%	1	5.0%	
Any discomfort or sensitivity after placing the crown	Neutral	0	0.0%	0	0.0%	..
	Satisfied	20	100.0%	20	100.0%	
	Very Satisfied	0	0.0%	0	0.0%	
Overall satisfaction of the crown	Neutral	1	5.0%	0	0.0%	0.01*
	Satisfied	19	95.0%	13	65.0%	
	Very Satisfied	0	0.0%	7	35.0%	

**Table 1:** Comparison of responses of the patients’ satisfaction perception between 2 crowns using Chi Square Test.

## Conclusion

Titanium coated SSC may be used as an alternative option to Conventional SSC in pediatric dentistry. However long-term studies are required to substantiate the results of the present study.

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