

**Acceptance of Stainless Steel Crown by 6 To 9 Year Old Children - A Questionnaire Study**

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**Conflicts of Interest:** Nil

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**Abstract**

**Background:** Stainless steel crown are tooth shaped covering which are used universally with preference in primary teeth because of its functional acceptance and several advantages of full protection in caries risk group and special children. However it is a candid point to note the acceptance of the steel colour of crown could be a reason for child's rejection of crown and it is of pivotal importance to know his opinion as the present generation is more self motivated. With advancements in aesthetic restorative materials the demand of stainless steel crown is at stake and this study aims to evaluate the opinion of stainless steel crown in 6 to 9 year old children.

**Aim:** The aim of this study is to find out the acceptance of stainless steel crown among 6 to 9 year old children.

**Settings & Design:** This study is a questionnaire study wherein children were recorded about their opinion regarding acceptance of stainless steel crown.

**Methods:** A sample of 70 children of 6 to 9 year-old age who were mentally and physically healthy who had undergone stainless steel crown treatment were studied.

**Statistical Methods used:** Pearson's chi square test for gender wise cross tabulation and Pearson's chi square test for age wise cross tabulation were used.

**Results:** The acceptance of stainless steel crown among male children was about 72.5% and among female children was about 66.7%. The overall acceptance of stainless steel crown among 6 to 9 year old children was about 70% and the results were statistically significant.

**Conclusion:** The acceptance of children towards restoration of primary molars with stainless steel crown was good.

**Introduction**

Stainless Steel Crown are prefabricated crown which are extensively used by paediatric dentists as an alternative to

restore primary molars which are affected by caries, enamel or dentin disorders, and following pulp therapies. These crowns offer outstanding alternative to other restorative materials because of its extreme durability when subjected to minimal technique sensitivity during placement and offers the advantage of full coverage to protect the primary tooth after an paediatric endodontic treatment.<sup>1</sup> Recently interviews done by various author found out that children don't like to have a large metal piece in their mouth as it is metallic. Children are very anxious about the use of stainless steel crown because of the appearance in the oral cavity, the time required for the procedure. In the present day scenario where children are introduced to latest advancement like television, social media, advertisements influence children to the extent that they are well aware of the aesthetic treatments available and they too prefer teeth to be of natural appearance. Studies done by Fishman et al. on preferences of children for posterior restoration due to the appearance found out that Resin composite was found to be the most popular restoration and African-American children preferred Stainless Steel Crown.<sup>2</sup> Studies done by Peretz and Ram concluded that tooth colour restorations are more preferred by children.<sup>3</sup> The recent research in paediatric restoration has been more focused on patient-centered studies such as attitudes of children regarding Stainless steel crown restoration. Based on these studies by Marshman and Hall suggested that the value of getting children to express their opinions about treatment experiences is becoming increasingly important in dentistry. Based on the studies by Mouradian there has been wider recognition that, since it is the child who receives the treatment and lives with the consequences, his/her opinions are important and incredible. Only recently dentistry has been focussed on obtaining these kind of information from children. Recent research

suggest that tooth colored restorations in children influence them in accepting stainless steel crown. So, this research is focused on finding out the acceptance of stainless steel crown among 6 to 9 year old children.

### **Aim and Objectives**

#### **Aim**

The aim of our study is to find out the acceptance of stainless steel crown in 6 to 9 year old children.

#### **Objectives**

To find out the aesthetic acceptance of stainless steel crown among 6 to 9 year old children

To find out the functional acceptance of stainless steel crown among 6 to 9 year old children

### **Materials & Methods**

#### **Sources of the data**

The participant included in this study were mentally & physically healthy, co-operative 6 to 9 year old children who had undergone stainless steel crown placement as treatment in this hospital. The data was obtained from the OPD of Department of Pedodontics & Preventive Dentistry, KVG Dental College & Hospital, Sullia, D K, Karnataka

#### **Selection Criteria**

##### **Inclusion criteria**

Children who were of age 6-9 years old.

Children who were mentally healthy and cooperative.

Children who had undergone stainless steel crown treatment.

##### **Exclusion criteria**

Children who were systemically compromised, physically challenged.

Children who were mentally and medically compromised.

Children who were cognitively compromised

##### **Sample Size estimation**

A sample of 70 children of 6 to 9 year-old age who are mentally and physically healthy who had undergone

stainless steel crown treatment were selected for the study.

### Questionnaire preparation

To extract opinion and attitude of children toward placement, appearance, function, and understanding the value of stainless steel crown the self made questionnaire were prepared based on the principles of attitude-measuring question in children who were referred to pediatric dentistry department. In this regard key terms and topics which are important to children and parents and the terms which must used for stainless steel crown were clarified, and the statements of the questionnaire were prepared while making the statements of attitude measurement, the effort was made to respect the principles of attitude- measuring questionnaires (Attached document no: 1).

### Validity and reliability of questionnaire

To make sure about face validity and content validity of the questionnaire, it was submitted to five members of pediatric dentistry faculty; for content validity, the questions were submitted to a every expert to be surveyed. To grade the necessity of every question and proportion to the intended purpose, All the expert were asked to score every question according to the following pattern. Necessary question = 1, Useful but not necessary question = 2, Not necessary = 3, In addition, the experts were asked to write any opinion or recommendation. Then, the answers were computed according to the following content validity ratio (CVR).

$$CVR = \frac{nE - N/2}{N/2}$$

The number of experts who selected the question as a necessary one: nE

### The Total Number of Experts: N

After the answers of the experts were collected the questions, having CVR scores lower than 0.46 were excluded. The number of questions in the primary

questionnaire was 10, 4 questions were excluded after CVR review. The questions were finally approved by the experts. And eventually, the opinions of the experts were asked on face validity. The questionnaire was pilot tested on 5 patients to evaluate the ease of understanding. To ensure the reliability of the acceptance of stainless steel crown questions after pilot testing, the reliability was approved by Chronbach's alpha value. Finally, the validated questionnaire including 10 question on children acceptance of stainless steel crown was prepared.

### How to fill the questionnaire

The parents were asked to help their children fill the questionnaire & return questionnaires to the investigator. The purpose of the study was explained to parents, then the parents were asked for informed consent.

### Data Analysis

Children questionnaire consisted of three pictorial choices and they were selected from a set of 10 questions selected by pediatric practitioners. The questions with negative concept were recorded and computed during data analysis.

### Results

A total of 70 questionnaires were completely filled (response percentage is around 99.99%) and the average age of patient studied was around 6 to 9 year old (35 girls and 35 boys). Of all the responses recorded in data sheet about 74.53 % ( n = 52) children are happy with the metal tooth in the oral cavity; around 64.30 % ( n = 45 ) children are happy with the shape of the tooth being placed intraorally; around 50 % ( n = 35 ) children are happy with the colour of the metal tooth in oral cavity; about 54.30 % ( n = 40 ) children are happy chewing with the metal tooth in oral cavity; around 74.28 % ( n = 52 ) children are comfortable using metal tooth in the oral cavity & a majority of 85.70 % ( n = 61 ) doesn't have any pain or difficulty using the metal crown in the oral cavity. Of all the responses obtained the acceptances of females

were about 42.9% and males were about of 57.1 % (Table1). Of all the responses obtained the acceptance of stainless steel crown among 6 year old children were 22.9%, among 7 year old children were 15.7 % , among 8 year old children were 41.4 % and among 9 year old children were 20 %. The increased acceptance among 8 year old children may be due to fact that stainless steel crowns are more delivered during that period or may be due to improved behaviour of children during these treatment procedures (Table 2). The overall acceptance of stainless steel crown among 6 to 9 year old children was about 70% (Table 3). The acceptance of stainless steel crown among 6 year old children was about 68.8%, among 7 year old children was about 54.5%, among 8 year old children was about 69 %and among 9 year old children was about 85.7% (Table 4). The acceptance of stainless steel crown among male children was about 72.5% and among female children was about 66.7% (Table 5)

Table 1 :The acceptance of stainless steel crown among 6 to 9 year old children by gender

Acceptance of stainless steel crown	Percentage
Female	42.9
Male	57.1
Total	100.0

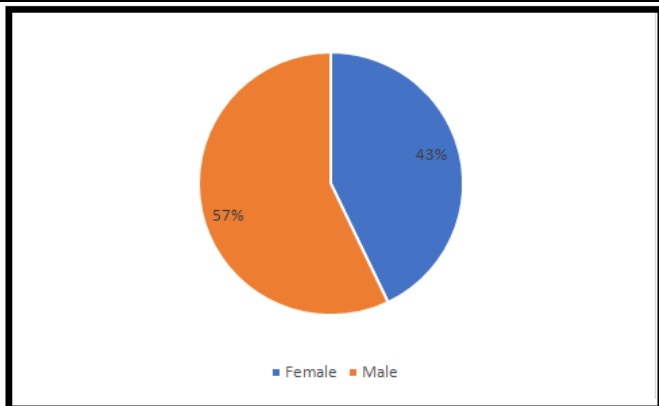


Table 2:The acceptance of stainless steel crown among 6

to 9 year old children by age

Acceptance of children of age group	Percentage
6	22.9
7	15.7
8	41.4
9	20.0
Total	100.0

Table 3: Children’s overall acceptance of stainless steel crown among 6 to 9 year old children

Acceptance	Percentage
Not Accepted completely	30.0
Accepted completely	70.0
Total	100.0

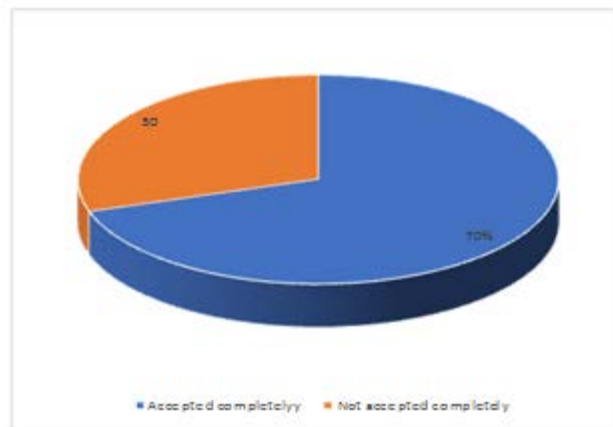


Table 4: Gender wise distribution of acceptance of stainless steel crown among 6 to 9 year old children

Gender wise distribution				Total acceptance of stainless steel crown	
		Not accepted completely	Accepted completely		
gender	female	Count	10	20	30
		% within gender	33.3%	66.7%	100.0%
	male	Count	11	29	40
		% within gender	27.5%	72.5%	100.0%
Total		Count	21	49	70
		% within gender	30.0%	70.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.278(b)	1	.598		

Table 5: Age wise distribution of acceptance of stainless steel crown among 6 to 9 year old children

Age wise distribution		not completely accepted		completely accepted		Total acceptance of stainless steel crown
age 6	Count	5	11			16
	% within age	31.3%	68.8%			100.0%
7	Count	5	6			11
	% within age	45.5%	54.5%			100.0%
8	Count	9	20			29
	% within age	31.0%	69.0%			100.0%
9	Count	2	12			14
	% within age	14.3%	85.7%			100.0%
Total	Count	21	49			70
	% within age	30.0%	70.0%			100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.924(a)	3	.403

Discussion

In this study the overall attitude of children in acceptance of stainless steel crown for restoration of SSC were good. And attitude scores of children towards appearance and acceptability were excellent. The majority of the children who participated in the study accepted the treatment and thought the treatment was good. Most children thought that treatment was not difficult found out that stainless steel crown acceptability is good and these result were in

accordance to the study done by Bell et al. Also children accepted the clinical process of treatment and thought the treatment session was good. In this study, almost half of the children hated colour of the metal tooth used for restoring primary tooth; these results are contrasting to the study done by Bell et al. The appearance acceptability of stainless steel crown and acceptability of treatment in our study was almost in accordance with studies by Bell et al.<sup>4</sup> In this study wherein majority of the children liked the shape of the tooth in oral cavity were in accordance with studies done by by Fishman et al where the children didn't worry about the appearance of the crown in the oral cavity.<sup>2</sup> Majority of children did not worry about the appearance of the tooth instead they liked the appearance of the metal tooth, these findings were in accordance with studies by Bell et al where children were worried about the appearance of tooth in the oral cavity, and these findings are not in accordance to our study maybe due to fact that the knowledge of children regarding the appearance of crowns, different aesthetic outlook of crowns and lack of exposure to latest dental news among these children and their parents.<sup>4</sup>

In our study, almost half of children liked colour of tooth and are happy with teeth of different appearance, these findings were in accordance to the study by Akhlaghi et al.<sup>5</sup> There was higher acceptability of stainless steel crowns placed on children's primary molars. Children treated with the stainless steel crown were asked immediately after treatment whether they had enjoyed their visit to the clinic that day. Majority of the children responded positively about their visit to the clinic. These findings of this study are in accordance with study done by LA et al.<sup>6</sup>

In children aged 6 years better acceptance maybe due to the reason that crown gave children speech, appearance and well-being which could be reason for the acceptance

among these children. It is important to make a good relationship with children for explaining the efficiency, function & importance of crowns for better acceptance and making a good attitude. Further scope of research can be focused on the behaviour accept of children wherein influence of various factors like socioeconomic status, television, social media which influence in acceptance of stainless steel crowns can be considered. Also it is recommended to investigate the attitude of parents & socio-economic status of parents and its influence in acceptance of stainless steel crown.

In general that making a good relationship with children and then explaining about function, durability & importance of crown helps them to accept it better & make a good attitude. The limitation of our study maybe the possibility of recall bias as questionnaires were filled around 4 - 6 months after stainless steel crown treatment. Further scope of research can be focused on considering a larger sample size and comparison of stainless steel crown with esthetic restorative materials, investigating relationship between dental appearance of teeth with crowns, self confidence of children in accepting crowns and influence of peer groups among school going children.

### **Conclusion**

In general, the acceptance of stainless steel crown among children was good. The aesthetic acceptance of stainless steel crown was poor and the functional acceptance among children was satisfactory. Also, among older age group children better acceptance of stainless steel crown was seen compared to younger age group.

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Attached Document No 1

OPNO:  
DATE:

PATIENT NAME :  
ADDRESS :  
CHIEF COMPLAINT :  
HISTORY OF PFI :  
MEDICAL HISTORY :  
DENTAL HISTORY :  
PERSONAL HISTORY :  
HABITS:

3. DO YOU LIKE THE COLOUR OF THE YOUR METAL TOOTH?



YES NO I DON'T KNOW

4. DO YOU LIKE CHEWING WITH THIS METAL TOOTH?



YES NO I DON'T KNOW

1. ARE YOU HAPPY WITH YOUR METAL TOOTH?



YES NO I DON'T KNOW

2. DO YOU LIKE THE SHAPE OF YOUR METAL TOOTH



YES NO I DON'T KNOW

5. ARE YOU COMFORTABLE USING THE METAL TOOTH?



YES NO I DON'T KNOW

6. DO YOU HAVE ANY PAIN OR DIFFICULTY USING METAL CROWN?



YES NO I DON'T KNOW

I