

Attitudes of Parents and Children toward Primary Molars Restoration with Stainless Steel Crown

Abstract

Context: Today, attention has increasingly been focused on the studies which include patient-centered consequences. **Aims:** The study aims to investigate the attitude of parents and children toward the application of stainless steel crown (SSC) on primary molars. **Settings and Design:** This cross-sectional descriptive study included eighty 4–6-year-old children having treated with SSC over the past 3–6 months. **Subjects and Methods:** Eventually, a validated child- and parent-centered self-report questionnaire was filled, having 14 questions about demographic information, six questions about childrens' attitude, and eight questions about parents' attitude. **Statistical Analysis Used:** Data analysis was conducted using *t*-test and one-way ANOVA at significant level $P < 0.05$. **Results:** In general, the score of children's attitude was positive, and the mean of attitude scores was obtained to be 9.9 ± 2.6 ; attitudes of 82.43% of children were good. Parents had neutral attitude; the mean of their attitude was obtained to be 20.2 ± 4.8 . Only 53% of the parents scored good attitudes. **Conclusions:** The attitude score of children toward SSC was good and independent of age, gender, career, and education of the parents. Although the parents were not satisfied with how it appeared, the majority of them reported that their child had well accepted the crown.

Keywords: Children, parents, satisfaction, stainless steel crown

Introduction

Stainless steel crown (SSC) is extensively accepted by pediatric dentists as an alternative to restore primary molars with extensive caries, enamel or dentin disorders, and following pulp treatments.^[1] Mata and Bebermeyer^[2] suggested that primary molar restoration with SSC, particularly for high-risk children had better long-term consequences than amalgam restoration. Retrospective studies have indicated that, compared to amalgam and composite, indirect pulp treatment and pulpotomy of primary molars which are restored by SSC, had been more successful.^[3-5]

Although clinical studies of case series report have suggested favorable clinical results for SSC application on primary molars,^[6] general dental practitioners have not clearly considered SSC as their alternative treatments, and claim negative attitudes of patients and parents as the barrier to use SSC.^[7] Threlfall *et al.*^[8] published the following citations from interviews with 98 British general dentists: "Parents hate SSC as it is metallic

and they do not like their children to have a large metal piece in their mouth," "parents are not so happy with large silver crown on their children's teeth," "it is too much for a child and is an extensive treatment."

It must be considered that the above-mentioned opinions are the impact of parents and children idea on general dental practitioners, so it could not be indicative of real thoughts of the patients. A randomized clinical study was conducted in Saudi Arabia to compare the clinical application of SSC and resin-modified light-cured glassionomer and confirmed the evidence that the patients' preferred esthetic restoration to metallic crown.^[9] Fishman *et al.*^[10] investigated the preferences of children for posterior restoration due to the appearance. Resin composite was found to be the most popular restoration, though, African-American children preferred SSC.

Peretz and Ram^[11] concluded that tooth color restorations are preferred to amalgam by both parents and children. Today, the attention has increasingly been focused on patient-centered studies such as common biomedical or clinical studies.^[12] It must be

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noted that it is the patient who receives the treatment and lives with the complications. Thus, their information about treatment choice must increase and they must be involved in the treatment plan.^[13,14]

In fact, there are few studies on attitudes of parents and children regarding SSC restoration. Therefore, the study aims to investigate the attitude of children and parents toward SSC application as an alternative restoration to primary molars.

Subjects and Methods

The study is a retrospective, descriptive-analytical cross-sectional one which was conducted in the second half of educational year 2015 (March–June) in pediatric dentistry department of Isfahan University of Medical Sciences.

The participants included mentally and physically healthy, cooperative, 4–8-year-old children (Frankl +, ++)^[15] who referred to pediatric dentistry department and had at least one SSC treatment for primary molars. Three to six months after treatment, the questionnaires were filled. The treated tooth lacked overnight pain, spontaneous pain, or abscess (case file review and asking parents). The crown had been placed in conventional technique with local anesthesia and no sedation or general anesthesia used as these would affect the comparability of results. It should be noted that the parents had to pay for treatment.

Questionnaire preparation

To extract opinion and attitude of parents and children toward placement, appearance, function, and understanding the value of SSC, the questions were prepared based on the principles of attitude-measuring question making and open-interview with some parents and children who referred to pediatric dentistry department; so that, over a 1-month period, the researchers selected and interviewed face-to-face 15 children and their parents who referred regularly and had previously received at least one SSC in the previous 3–6 months. In this regard, key terms and topics which are important to children and parents and the terms which must be used for SSC 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. For instance, the statements were written in present tense, as much as possible, so that they do not induce any answers. In addition, the parents were invited to cite any other opinion on their child's experience of having metallic crown.

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 every expert to be surveyed. To grade the

necessity of every question and proportion to the intended purpose, all the experts 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)

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

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

Total number of experts: N .

After the answers of the experts were collected, the questions, having CVR scores lower than 0.42, were excluded.^[16] The number of questions in the primary questionnaire was 32; four questions were excluded after CVR review. The questions were finally approved by the experts (28 questions), and eventually, the opinions of the experts were asked on face validity. The questionnaire was pilot tested on 15 patients to evaluate the ease of understanding. To ensure the reliability of the attitude questions after pilot testing, the reliability was approved by Cronbach's alpha 0.86. Finally, the validated questionnaire including 14 questions on demographic information, six questions on children attitude and eight questions on parents attitude, was prepared.

Sample population

Having eighty samples, the proportion of desired responses was estimated on 95% reliability level and maximum error of 0.11.

$$n = \frac{Z^2 P(1-p)}{d^2}$$

How to fill the questionnaire

The parents were asked to help their children fill the questionnaire and complete and confirm both questionnaires to the investigator. The purpose of the study was explained to parents and children, then the parents announced their informed consent.

Data analysis

Children questionnaire consisted of six items and three pictorial choices and Likert lexical scales (scores 0–20): positive (score: 2)/neutral (score: 1)/negative (score: 0). Parents questionnaires were prepared, consisting of eight items, using 5-point Likert scale, from strongly disagree to strongly agree (0–32). For positive questions, scoring scale was reported as following: (strongly agree = 4, strongly disagree = 0).

The questions with negative concept were recorded and computed while data analysis. Children scores 0–3, 4–7, and 8–12 indicated negative, neutral, and positive attitudes,

respectively. Parents scores 0–9, 10–20, and 21–32 were considered as negative, neutral, and positive attitudes, respectively.

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) software, Version 22.0. (IBM Corp., Armonk, NY, USA) and the contextual and patient variables were described by simple descriptive analysis. *T*-test, one-way ANOVA, and Spearman coefficient were applied to determine if there is a significant difference between the contextual variables (age and gender of the patient, the operator...). The significance level was considered as $P < 0.05$.

Ethical considerations

In this regard, an informed consent form is prepared and filled. Participation to the study is optional, and personal information and all the responses will be confidential; the parents were informed both verbally and written. The study is approved by Research committee of dentistry department of Isfahan University of Medical Sciences, approval no. 394854.

Results

Seventy-five questionnaires were totally filled (response percentage: 89.2%). The average age of the participants was 6.16 ± 1.32 (44 girls and 40 boys). The majority of the fathers ($n = 55, 63.2\%$) were self-employed, and the mothers ($n = 70, 80.5\%$) were housewives. Most parents had at least diploma and higher education: 26 (29.9%) and 27 (31%) fathers and 39 (44.8%) and 26 (29.9%) mothers had diploma and higher education, respectively. The mean score of parents and children attitude was not significant based on the gender ($P = 0.42, P$ value 0.37) [Table 1]. The mean score of children and parents attitude was not statistically significant based on the job of fathers ($P = 0.37$ and $P = 0.42$). However, the maximum attitude score was related to the children whose fathers were workers (10.9) and the maximum attitude score of the parents was related to fathers who were office workers (24.66). The mean score of children and parents attitude was not statistically significant based on the job of fathers ($P = 0.37$ and $P = 0.42$). The mean score of children and parents attitude was not statistically significant based on the job of mothers ($P = 0.82$ and $P = 0.76$). However, the highest attitude score of children was related to mothers who were self-employed or students, and the highest parents' attitude was related to mothers who were housewives (attitude score = 23.4).

Children attitude score was not influenced by experience level of the operator ($P = 0.15$). The highest score of parents' attitude was for cases that the treatment was conducted by a general dental practitioner or a pediatric dentist, and the difference between the treatment by them, and dental students were significant as in Table 2 ($P = 0.001$).

Table 1: The attitude (mean and standard deviation) of parents and children toward restoration of primary molars with stainless steel crown by gender

Attitude	Gender	n	Mean±SD	P
Children	Girl	40	9.77±2.8	0.554
	Boy	44	10.14±2.2	
Parents	Mother	45	23.37±5.3	0.093
	Father	39	21.09±5.4	

SD: Standard deviation

Table 2: The attitude (mean and standard deviation) of parents and children towards restoration of primary molars with SSC by the experience of operator

Attitude	The operator	Number	Mean±SD	P
Children	Dental student	50	9/96±2.5	0.155
	General dental practitioner	14	8/62±3.3	
	Pediatric dentist	8	10/78±1.4	
Parents	Dental student	46	19.4±4.9	0.001*
	General dental practitioner	14	24.1±7	
	Pediatric dentist	7	26.3±2.6	

SD: Standard deviation; **statistically significant

Responses of children and parents are summarized on Tables 3 and 4, respectively. The main findings were as follows:

Children responses (Q15–20)

- Most children ($n = 61, 81.3\%$) liked the appearance of their iron tooth, but a small minority ($n = 8, 10.6\%$) were unsatisfied
- Most children ($n = 59, 77.6\%$) were happy with their iron tooth but 12.6% ($n = 11,$) were unhappy
- Most children ($n = 58, 76.3\%$) liked the session that the iron tooth was installed
- 89.61($n = 69$) stated that the dentist had been friendly to them
- Almost half of children ($n = 39, 51.3\%$) hated being questioned about their iron tooth
- About two third of children liked the iron cap, immediately after it was installed on their tooth ($n = 56, 72.7\%$).

Parents' responses (Q21–28)

- Only one-third of parents ($n = 27, 30\%$) liked the appearance of their child's metallic crown, and 24% had no opinion
- The majority ($n = 74, 85.1\%$) thought that their child accepted his/her metallic crown well (agree or strongly agree)
- Only 23% ($n = 20$) strongly agreed or agreed that metallic crown had not interfered with the growth of permanent tooth
- The majority ($n = 78, 89.6\%$) strongly agreed or agreed that the team had been friendly while treating their child's tooth

- 63.2% (n = 55) strongly agreed or agreed that the metallic crown was safe for the health of child’s tooth or body
- Only 27.6% (n = 40) was satisfied with the appearance of the metallic crown, immediately after it was installed
- 70.3% (n = 57) strongly agreed or agreed that metallic crown had been more durable than other restoration methods such as complicated amalgam or composite restoration
- Only 16% (n = 14) was not interested in treating their child’s tooth with metallic crown due to high cost.

In general, the score of children attitude was positive, and the mean of attitude scores was obtained to be 9.9 ± 2.6 ; 82.43% of the children scored good attitudes. The scores of parents attitude were positive, as well; the mean of their attitude was obtained to be 20.2 ± 4.8 ; 61.53% of the parents scored good attitudes [Table 5].

Discussion

Results of the present study indicated that the overall attitude scores of children toward the restoration of posterior primary molars with SSC were good. The attitude scores of children toward appearance and acceptability of the crown, relationship with the dentist, and the experience of treatment procedure on the session of installing the crown, were good.

However, almost half of the children hated being questioned about their iron tooth.

In addition, although the mean score of parents’ attitude was neutral, 2/3 of the parents, were not satisfied with the appearance of the crown. Nevertheless, the majority of the parents reported that their children accepted the crown. Half of the parents thought crown treatment of the

Table 3: Children responses to questions about attitudes and experiences of stainless steel crown




Children attitude questions	Children attitude		
	Yes  , n (%)	I don't know  , n (%)	No  , n (%)
15. Do you like the form of your iron tooth?	61 (81.33)	6 (8)	8 (10.67)
16. Are you happy with your iron tooth?	59 (77.63)	6 (7.89)	11 (14.47)
17. Did you like the session that the iron tooth was installed?	58 (76.32)	7 (9.21)	11 (14.47)
18. Was the dentist friendly?	69 (89.61)	4 (5.19)	4 (5.19)
19. Do you mind people asking about your iron tooth?	39 (51.32)	29 (38.16)	8 (10.53)
20. Did you like the iron cap, immediately after it was installed on your tooth?	56 (72.73)	12 (15.58)	9 (11.69)

Table 4: Parents’ responses to questions about attitudes of preformed stainless steel crown for their child

Attitude questions of parents	Strongly agree	Agree	No opinion	Disagree	Strongly disagree
21. I do not like my child’s metallic crown	13 (14.9)	22 (25.3)	21 (24.1)	25 (28.7)	2 (2.3)
22. My child accepted his/her metallic crown well	26 (29.9)	48 (55.2)	5 (5.7)	1 (1.1)	2 (2.3)
23. Tooth treatment does not interfere with the growth of permanent tooth	6 (6.9)	14 (16.1)	19 (21.8)	33 (37.9)	12 (13.8)
24. The medical team was friendly while treating my child’s tooth	53 (60.9)	25 (28.7)	2 (2.3)	2 (2.3)	1 (1.1)
25. The metallic crown is safe for the health of my child’ tooth or body	27 (31)	28 (32.2)	12 (13.8)	6 (6.9)	6 (6.9)
26. I was not satisfied with the appearance of the metallic crown, immediately after it was installed	12 (13.8)	28 (32.2)	18 (20.7)	18 (20.7)	6 (6.9)
27. Metallic crown is more durable than other restoration methods	17 (20.98)	40 (49.38)	6 (6.9)	12 (13.8)	6 (6.9)
28. Due to high cost, I am not interested in treating my child’s tooth with metallic crown	5 (5.7)	9 (10.3)	15 (17.2)	39 (44.8)	15 (17.2)

Table 5: Children and parents’ attitude scores

Attitude scores	Children (0-12)			Parents (0-32)		
	0-3 negative	4-7 neutral	8-12 positive	0-9 negative	10-18 neutral	19-32 positive
Number (%)	4 (5.4)	9 (12.16)	61 (82.43)	1 (1.28)	29 (37.17)	48 (61.53)
Min		3			9	
Max		12			32	
Mean±SD		9.90±2.62			20.28±4.88	

teeth interferes with the growth of permanent teeth. In the area of relationship with the dentist, treatment costs and tendency of parents to pay the costs, regarding the crown efficiency, there was a good attitude. It is concluded that the function of SSC must be explained more precious to parents.

The mean score of children's and parents' attitude was not significant based on gender, parents' jobs, and parents' education. The highest score of parents' attitude was for cases that the treatment was conducted by a dentist, and the difference between the treatment by them and dentistry students was significant.

Based on a study by Zimmerman *et al.*^[17] on the attitude of parents toward materials and methods used for their children's teeth, it was suggested that the major concern and reluctance of the parents to restore primary molars of their children was due to four main reasons as follows: (1) Esthetics features, (2) cost, (3) toxicity, and (4) durability. It was clarified in this study that most parents were worried about SSC which was due to uncertainty of the beauty and cost. It was finally clear that parents in a higher economic and social position complained more about the used amalgam in dentistry offices, while SSC was less favorable for esthetics and cost; it was also clear that 43% of the dentists respected the opinion of the parents and their idea was before the dentist's opinion.

The present study did not considered the economic condition of parents. However, the job or education level of parents was not effective on the attitude of parents and children. Although the parents were not satisfied with the appearance of the crown, they considered the cost to be reasonable.

According to another study by Page *et al.*^[18] on the attitude of children toward SSC for primary molars, it was suggested that almost 90% of the children who received the treatment were satisfied with the crown. It was also suggested that most individuals were worried about the pain and surgery, and the majority of them were happy with referring to clinics to have SSC on their primary molars. However, there were no significant differences between gender, age, and condition of parents, which was consistent with the results of our study. It should be noted that the crown had been placed in conventional technique with local anesthesia in the present study, however, Page *et al.* used hall technique.

Fishman *et al.*^[10] investigated the preferences of children for posterior restoration, based on the appearance. They showed 100 American children aged 5–12, the pictures of different restoration materials and asked them to rate their acceptability of the pictures. Resin composite was the most popular, however, African-American children preferred SSC.

Bell *et al.*^[19] reported that SSC acceptability was good by parents and children and most children thought the treatment process were not difficult.

The majority of the participants to the present study accepted the clinical process of the treatment and the children thought the treatment session was good. The result was similar to the findings of Bell *et al.* Therefore, the result is important as some parents, even some dentists, thought the child could not tolerate SSC treatment and it was considered to be a barrier.

In our study, the appearance, acceptability, and experience of treatment process in children were almost better than Bell *et al.* study.^[19] However, in parents, the appearance, acceptability, function of SSC, and relationship with the dentist were higher in Bell *et al.* study.

The result of the present study showed that, similar to the study by Bell *et al.*,^[19] SSC acceptability in children is not influenced by experience level of the operator; however, unlike the study by Bell *et al.*, the attitude score of the parents was higher when the treatment was conducted by a dentist or a pediatric dentist. It could be attributed to the fact that in these cases, parents trusted the dentists, and accept the explanation of the operator.

One finding of the present study was that most children were not worried about the appearance of the crown; the result was consistent with the study by Bell *et al.*^[19] and contrary to the study by Fishman *et al.*^[10] and Zimmerman *et al.*^[17] However, the parents were not much satisfied with the appearance of the crown (similar to the study by Bell *et al.* and contrary to the study by Zimmerman *et al.*) that could be due to the fact that the children participated in our study were aged 6.16, on average, and the crown gave the children special appearance which could be even a privilege. Individual, as an adult or an adolescent, generally look for a normal appearance and do not like SSC. In addition, it is important to point out differences in study methodologies of the present study and Fishman and Zimmerman. This study asked children about appearance of SSC, but they showed pictures of the alternatives such as composite restoration to patients. In general, it seems that making a good relationship with children and their parents as well as explaining the efficiency, function, and importance of the crown cause them to accept it and make a good attitude.^[20]

The possibility of recall bias is one of the limitations of this study because the questionnaires were filled almost 3–6 months after SSC treatment.

It is recommended to investigate the complicated relation between dental appearance, self-confidence, and social acceptance. It is certainly ideal to have white teeth, but the present study indicated that children are happy with teeth of different appearance.

Conclusions

In general, the attitude scores of children toward the restoration of primary molars with SSC was good and did

not depend on age, gender, job, and level of education of parents. Although the parents were not satisfied with how it appeared, the majority of them reported that their child had well accepted the crown. Therefore, the result is important as some parents, even some dentists, thought the child could not tolerate SSC treatment and it was considered to be a barrier.

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Conflicts of interest

There are no conflicts of interest.

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