



# Comparative Study of Class 2 Caries Requiring Stainless Steel Crown and Restoration in Maxillary Arch among Children Aged between 2 to 6 Years

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## Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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## ABSTRACT

**Introduction:** Dental caries is a global public health issue, especially among young children. In both developing and developed countries, it is a major public health problem. Dental caries can start early in life, develop quickly in those at high risk, and go untreated often.

**Materials and Methods:** This was a retrospective study done in a university hospital in Chennai. Children fulfilling the inclusion and exclusion were included in the study

**Results:** 88.89% patients had stainless steel crown compared to 11.11% of them have chosen restoration as a treatment option. Class II restorations were found to be more in older children. Children in the age of 2 years did not receive class II restorations

**Conclusion:** Stainless steel crowns were found to be the preferred choice of restoration in children aged 2-6 years with class II caries in maxillary teeth.

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**Keywords:** Stainless steel crown; class 2 caries; restoration; maxillary arch.

### 1. INTRODUCTION

“Dental caries is a global public health issue, especially among children. In both developing and developed countries, it is a major public health problem. Dental caries can start early in primary dentition and often go untreated affecting the quality of their life. Its repercussions may have an immediate and long-term impact on the child's family's quality of life, as well as major social and economic ramifications beyond the family. The interaction of bacteria, primarily *Streptococcus mutans*, and sugary foods on tooth enamel causes dental caries, the most common chronic infectious disease of childhood” [1]. “Dental caries may start soon after eruption, initially on the smooth surfaces, spread quickly, and have a long-term negative effect on the teeth. Children who develop caries as babies or toddlers have a significantly higher risk of developing caries later in life in both their primary and permanent teeth” [2]. Dental caries are common in infants and young children around the world. The lifetime of the dentition, infant feeding practices related to sugary beverages, and breast feeding practices are all currently linked to dental caries in children.

Stainless steel crowns were introduced into pediatric dentistry in 1950 by Humphrey [3-5]. They were the best technique to restore the broken down, caries containing, pulpotomy treated, pulpectomy treated primary teeth. Stainless steel crowns have given excellent results for multi surface carious lesions where various restorative materials have often failed.

### 3. RESULTS

These crowns are also indicated in children with high caries risk.

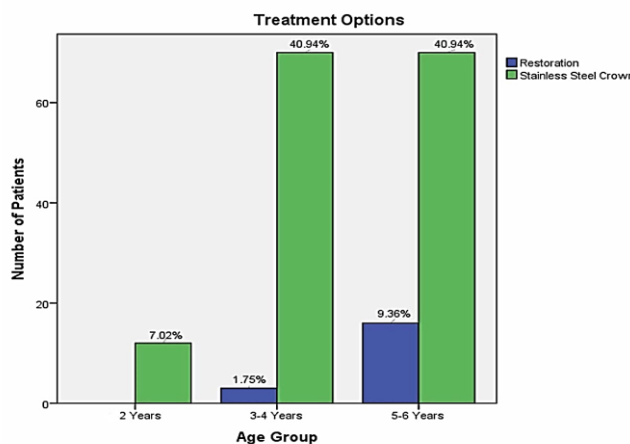
The management of class II caries in children has often been a debate. Stainless steel crowns have shown high durability as well higher longevity compared to other restorative methods [6-8]. However young children may often be uncooperative and the placement of a crown may often become difficult. Hence this study was undertaken to evaluate class 2 caries requiring stainless steel crown and restorative material in maxillary arch among children aged 2-6 years.

### 2. MATERIALS AND METHODS

This was a retrospective study undertaken in a university hospital setting. Data records of children aged 2-6 years visiting the department of pediatric and preventive dentistry were analyzed from the digital archives information system from January 2020 to May 2020.

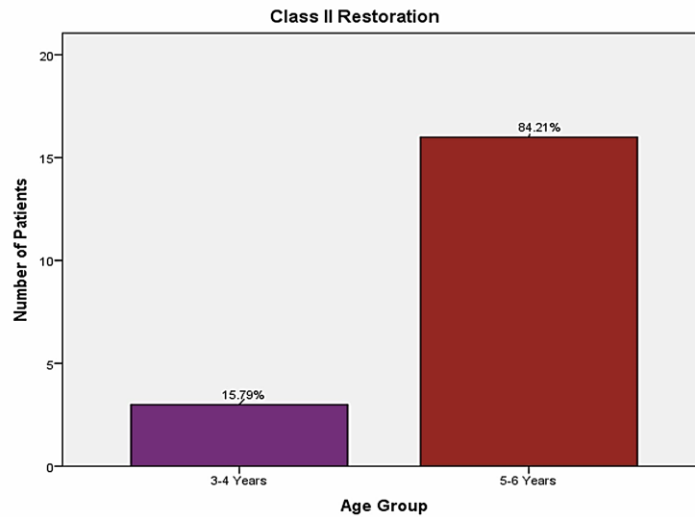
Inclusion criteria for the study include children between the age group of 2-6 years with class 2 caries and the Exclusion criteria include the above age group of 6 years, class 1 caries and those requiring pulp therapy were excluded. The ethical approval was obtained from the institutional ethical committee (ethical approval number: (SDC/SIHEC/2021/DIASDATA/O619-0320).

The collected data were subjected to statistical analysis using the SPSS software by IBM of version 23 using the Chi-square test.



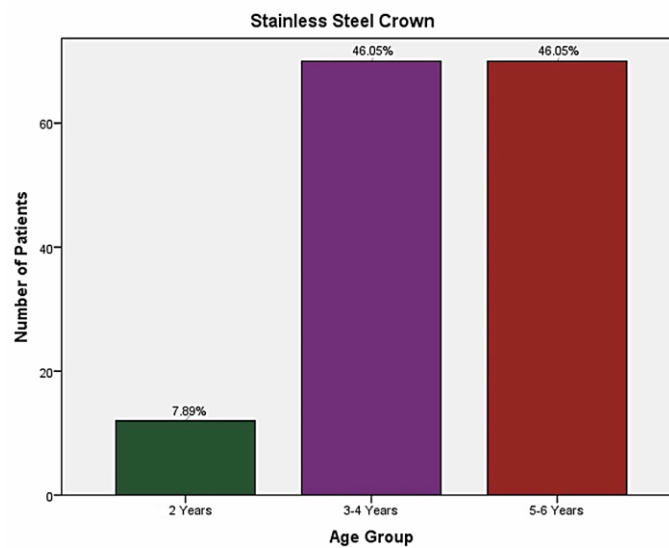
**Graph 1. Represents the association between the treatment options and the age group of the participants**

The X-axis represents the age group of the participants and the Y-axis represents the no of patients. Blue color represents restoration and the green color represents the stainless steel crown. About 7.02% of them choose stainless steel crown as a treatment option in the age group of 1-2 years, in the age group of 3-4 years about 1.75% choose restoration and 40.94% choose stainless steel crown as treatment option. In the age group of 5-6 years 9,36% of them choose restoration and 40.94% choose stainless steel crown. However this is statistically not significant with p-value = 0.3 (p-value > 0.05) hence insignificant.



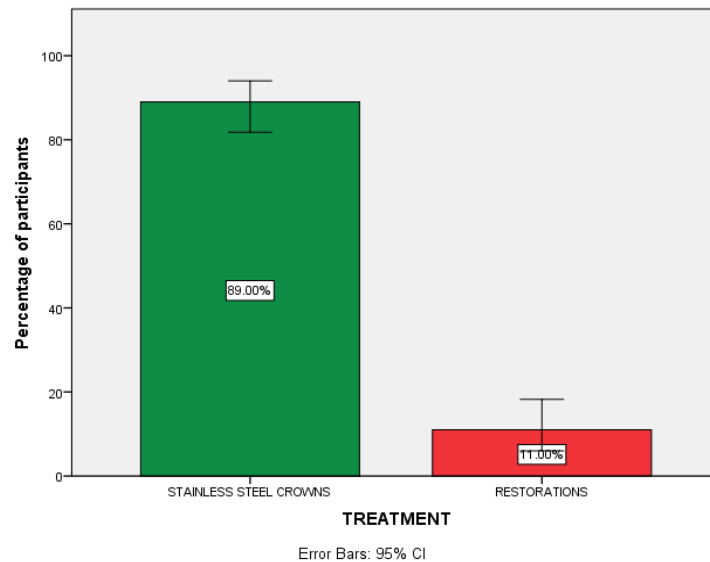
**Graph 2. Represents the number of participants undergone class 2 restoration**

The x-axis represents the age group and y-axis represents the number of participants undergoing class 2 restoration. About 15.79 % (purple) from the age group of 3-4 years and about 84.21% (red) from the age group of 5-6 years have undergone class 2 restoration.



**Graph 3. Represents the number of participants treated with a stainless steel crown**

The x-axis represents the age group and y-axis represents the number of participants treated with a stainless steel crown. About 7.89 % (green) from the age group of 1-2 years, about 46.05% (indigo) from the age group of 3-4 years and 46.05% (red) from the age group of 5-6 years have been treated with stainless steel crown.



**Graph 4. It represents the treatment option chosen by the participants**

About 88.89% (green) have chosen stainless steel crown and 11.1% of them have chosen restoration as a treatment option.

#### 4. DISCUSSION

It has been emphasized that Class II cavity restorations are used for minimal sized cavities. For larger cavities, or where the caries involve both proximal surfaces, stainless steel crowns are a better option [9]. From Graph 2 it is evident that 15.79 % from the age group of 3-4 years and about 84.21% from the age group of 5-6 years have undergone class 2 restoration. From Graph 3 it shows about 7.89% from the age of 2 years, 46.05% from the age group of 3-4 years and 46.05% from the age group of 5-6 years have been treated with stainless steel crown. About 88.89% have chosen stainless steel crown and 11.1% of them have chosen restoration as a treatment option (Graph 4). Stainless steel crowns are not only more acceptable to the patient and more cost effective, but also more acceptable to the dentist because of the comparatively simple procedures involved in restoring even severely affected primary molars.

About 7.02% of the dentists choose stainless steel crown as a treatment option in the age group of 1-2 years whereas in the age group of 3-4 years about 1.75% choose restoration and 40.94% choose stainless steel crown as treatment option [10,11]. In the age group of 5-6 years 9.36% of them choose restoration and 40.94% choose stainless steel crown. The

problem with Class II composite restorations is , while preparing a Class II composite restoration, a matrix is placed around the tooth and tightened with a wedge, no such tightening can be performed when preparing the crown-form posterior composite matrix. The problems in making the posterior crown form composite restorations resemble more to those of anterior strip-crown preparations for primary teeth [12]. Stainless steel crowns have the advantage that the full coverage restoration covers the tooth and rarely dislodges. In light of the above mentioned possible problems, stainless steel crowns should still be the treatment of choice when severely decayed primary molars.

#### 5. CONCLUSION

Within the limitations of our study, it was found that stainless steel crowns were preferred as the treatment of choice for class 2 caries in maxillary arch among children aged between 2 to 6 years.

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## CONCENT

It is not applicable.

## ETHICAL APPROVAL

The ethical approval was obtained from the institutional ethical committee (ethical approval number: (SDC/SIHEC/2021/DIASDATA/O619-0320).

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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