

**MOST COMMON SHADE USED IN AESTHETIC MANAGEMENT OF CLASS III RESTORATIONS**

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**ABSTRACT**

**Introduction:**

Direct composite resin restorations provide satisfactory esthetic results and minimum wear of the dental structure. Technological evolution along with a better understanding of the behavior of dental tissues to light incidence has allowed the development of new composite resins with better mechanical and optical properties, making possible a more artistic approach for anterior restorations. The aim of this study was to find the most common shade used in Aesthetic management of Class III restorations.

**Materials and methods:**

A retrospective cross-sectional study was carried out which included patient's details by assessing the report from the data of 86,000 patients between June 2019 and May 2021. The inclusion criteria were : Patient's age, gender, shade and Teeth number. From this we obtained 3194 patients who underwent Anterior Class 3 restoration. Data was tabulated in Excel and imported to SPSS. The type of statistical analysis used in this study was Correlation and Association.

**Results:**

From the results obtained it was seen that age group of 20-40years patients received Anterior Class III restoration at a higher rate (47%) with Female predilection(62%). Permanent teeth was restored at a higher incidence (84.5%) and the most commonly used shade was A2(63.68%).

### **Conclusion:**

The combination of the increasing demand of patients for esthetics and the capacity to preserve the dental structure resulted in the development of different incremental techniques for restoring fractured anterior teeth in a natural way.

**KEYWORDS :** Composite , Resins, Dental tissues.

### **INTRODUCTION :**

Resin-bonded composite has undergone continuous development of physical and mechanical properties[1,2]. The anterior composite restorations are done quickly, less time consuming. At the same time, patients' expectations for cosmetic procedures in dentistry are increasing. Composite build ups recreate better anatomy, shade, and texture of natural teeth[3,4]. Previous composite systems were based on the use of a single enamel and dentin shade that poorly reproduced the optical properties of a natural tooth. More recently, the vitality and depth of restoration has been achieved through the use of Resin Bonded Composite based on natural layering techniques. These systems use dentin masses that reproduce the fluorescence of natural dentin and enamel to replicate the opalescence and translucence of natural enamel. In order to achieve aesthetic anterior Resin Bonded Composite restorations, appropriate layering technique must be chosen and correct shades must be built-up for the teeth of young, adult, and geriatric patients. The integration of the restoration with the adjacent teeth and surrounding soft tissues is most important in obtaining satisfactory results[5-7].

The natural tooth is polychromatic, that is, it has a great variety of colors and nuances that are perceived and interpreted by the human brain[1,8]. To artificially reproduce all the intrinsic characteristics of the tooth is not always a simple task. The dentist should have an artistic sense in order to identify details and define the different nuances of each tooth. Endodontically treated teeth often exhibit excessive loss of dental structure and become fragile and prone to fractures. In these cases, restorative techniques may reinforce the weakened roots[9-13]. Satisfactory results were found when materials with mechanical properties replicating dentin and bonds to the dental tissue are employed to restore endodontically treated teeth (3). Among the factors that can result in lower bond strength of adhesive material to root canal walls failure, it should be highlighted contamination during or after etching and failure in adhesive system application and light-activation of composite resin. [14]A curing method should be done to reduce stress at cavosurface margins and thus add to the long-term clinical success of the Resin Bonded Composite restoration. The potential of a pulse-curing technique in reducing stress has been reported [15-17]and its clinical application has been recently described[18]. Based on this, placement of direct Resin Bonded Composites must be challenging ceramic restorations in terms of longevity and aesthetics.[19]Our team has extensive knowledge and research experience that has translate into high quality publications[20-29],[30-33],[34-38],[39]. The aim of the study was to find the Most common shade used in Aesthetic management of Class III restorations.

## **MATERIALS AND METHODS:**

### **2.1. Study Setting**

A retrospective study was carried out among patients in a University hospital setting. This is based on a university setting because data available was in the similar ethnicity with the particular geographic location. The trends in the other locations that were not assessed in the study setting. Ethical approval was taken from the universal ethical committee. In total, three reviewers were involved to cross verify data.

### **2.2. Sampling**

The sample was collected from records with patients' data like : PID, Name, Age, ,Shade used, Teeth number, Gender and Date of their first visit from June 2019 to June 2021 and tabulation was done in a chronological order using Excel. Case sheet review was done under the examiner followed by cross verification.

The study sample size included patients who underwent Anterior Class III restorations and data retrieved was n=3194, out of which 38 were males and 62 were females. Statistical method used in this study was the Chi-Square test and the software was SPSS by IBM. Patients who underwent Class III restorations were considered as dependent variables and their Age, Teeth number, Shade used and Gender were considered as a definite variable. The type of analysis used was Correlation and association which is a descriptive type of data analysis.

## **RESULTS :**

From this, we observed people of age range 20-40years received Class 3 restoration at a higher rate (46.96%) (Figure - 1) and people of >40years (30.62%), <31 years (16.03%), 13-19years (6.39%) which was lesser comparatively. Females received Class 3 restoration at a higher rate (62.09%) than Males (37.91%)(Figure - 2). Class 3 restoration in permanent teeth seems to be at a higher rate (84.50%) than deciduous teeth (15.50%)(Figure - 3). The most common shade used in aesthetic management of Class III is A2 (63.68%) followed by A1(23.61%), A3(5.10%), B2 (4.07%), B1(2.50%), A3.5(0.81%), A4(0.16%), A4(0.16%)(Figure - 4).A2 shade was used at a higher rate among patients of the age of 20-40years in association with the shade used (Figure - 5). A2 shade was used at a higher rate among Female patients (Figure -6). A2 shade was used at a higher rate in Permanent teeth (Figure - 7).

## **DISCUSSION:**

People of the age range 20-40years who received Class 3 restoration were at a higher rate (49.69%), people of >40 years (30.62%), <31 years (16.03%) and 13-18years (6.39%) less comparatively (Figure - 1). Female patients who received Class 3 restoration were at a higher rate (62.09%) than Males (37.91%) (Figure - 2). Permanent teeth received Class 3 restoration at a higher rate (84.5%) than Deciduous teeth(15.50%)(Figure - 3). The most commonly used shade was A2 shade which was at a higher rate (63.68%) than A1(23.61%),A3(5.10%), B2

(4.07%), B1(2.50%), A3.5(0.81%), A4(0.16%), A4(0.16)(Figure - 4). A2 shade was used at a higher rate among patients of the age of 20-40years who were in association with the shade used ( $p$ -value  $<0.05$ )(Figure - 5). A2 shade was used at a higher rate among Female patients who were statistically insignificant ( $p$ -value  $>0.05$ ) (Figure - 6). A2 shade was used at a higher rate in Permanent teeth. was statistically significant with Shade used ( $p$ -value  $<0.05$ ) (Figure - 7).

de Moura et al., [40]in his study observed similar results that the common age group who received anterior restorative was 36.5( $\pm$ 12.1) years. Class III composite restoration was given in permanent teeth at a higher rate than deciduous teeth[40].

Gresnigt MMM et al., [41] in his study obtained Female predilection. The mean age was found to be 52 years which was not statistically significant.

### **Limitation of the study**

The study was undertaken with a small sample size hence, it should be generated to a larger population. This altered response was obtained because of the absence of patients own perception which was affected by the time of calling, social factors.

### **Future scope**

Study for a larger population should be done. For the diagnosis and treatment planning of all patients should be recorded.

### **CONCLUSION**

Within the limits of the study, it was concluded that A2 was the most common shade used. Of which most of the Female patients of age 20-40years received Class III restoration at a higher incidence. Furthermore studies to be done in a larger sample.

### **ACKNOWLEDGEMENT**

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**CONFLICT OF INTEREST: None**

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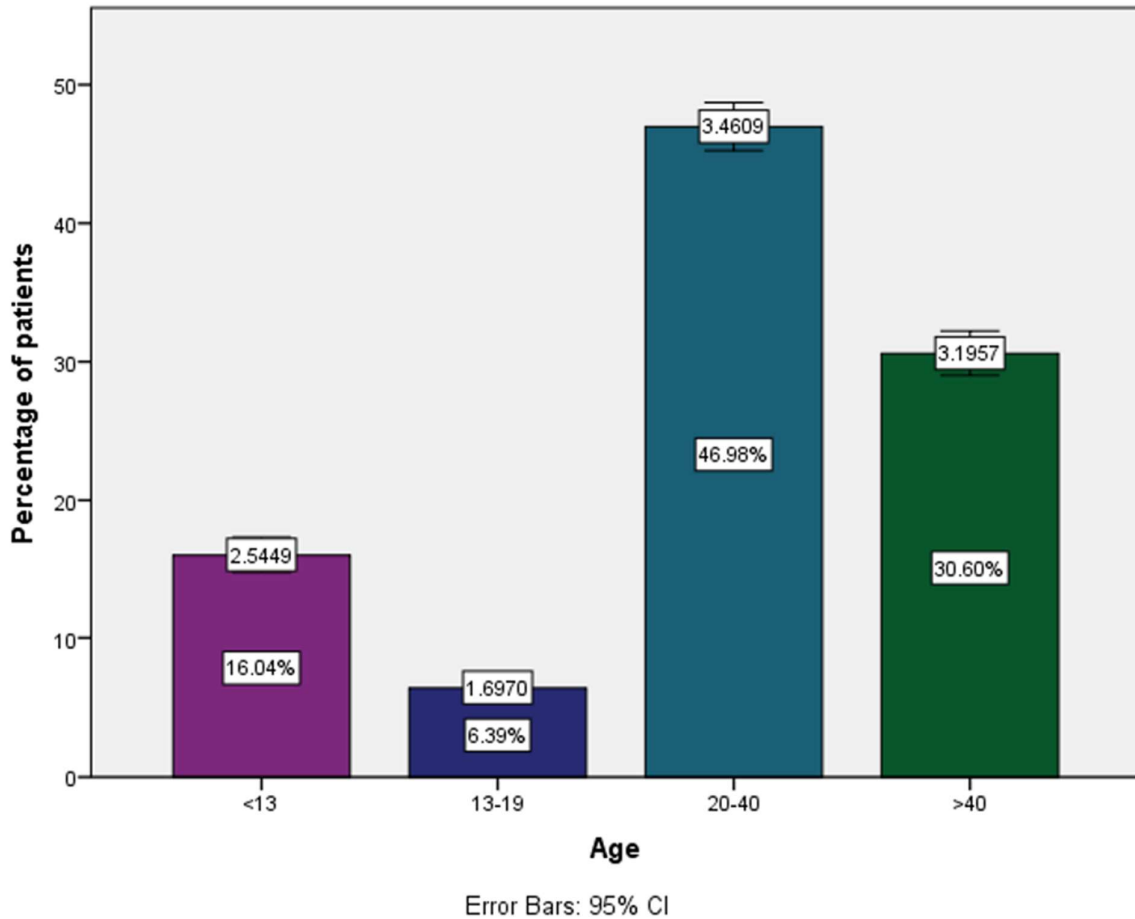
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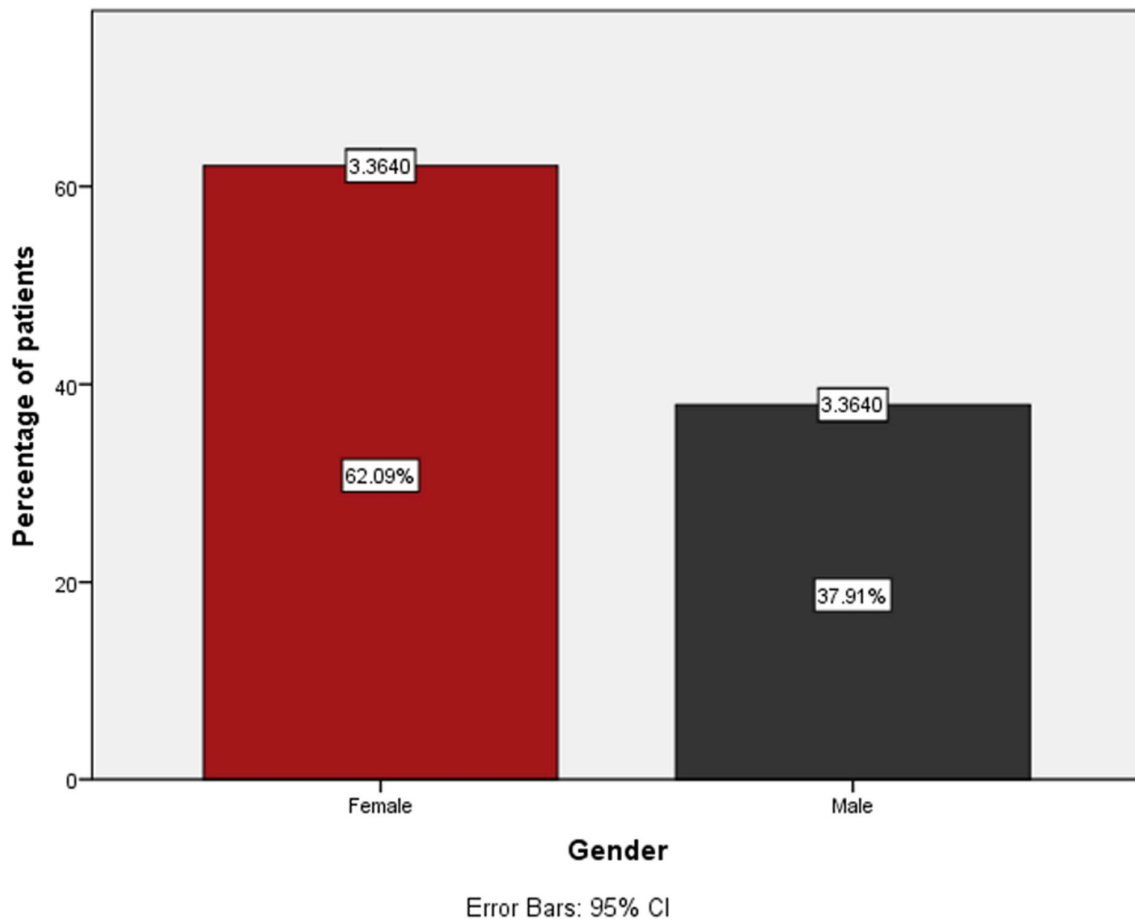
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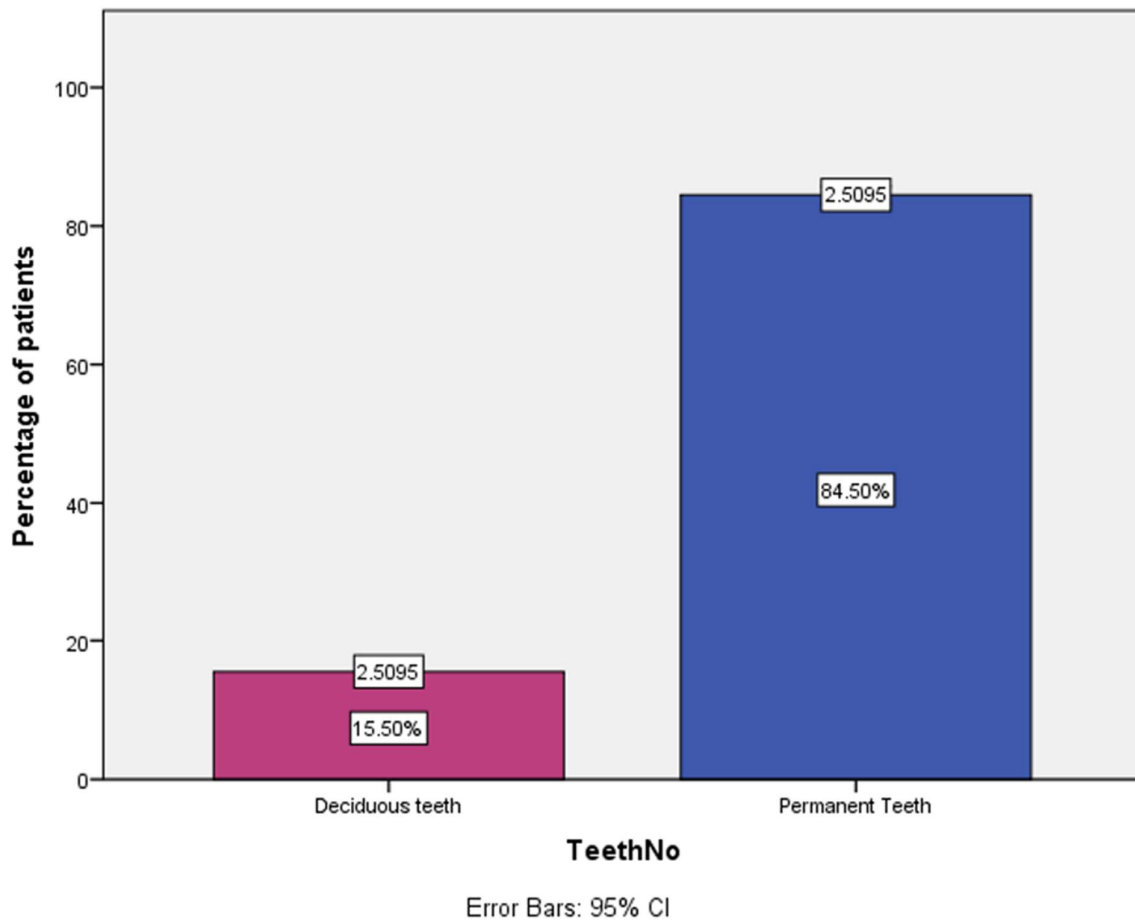
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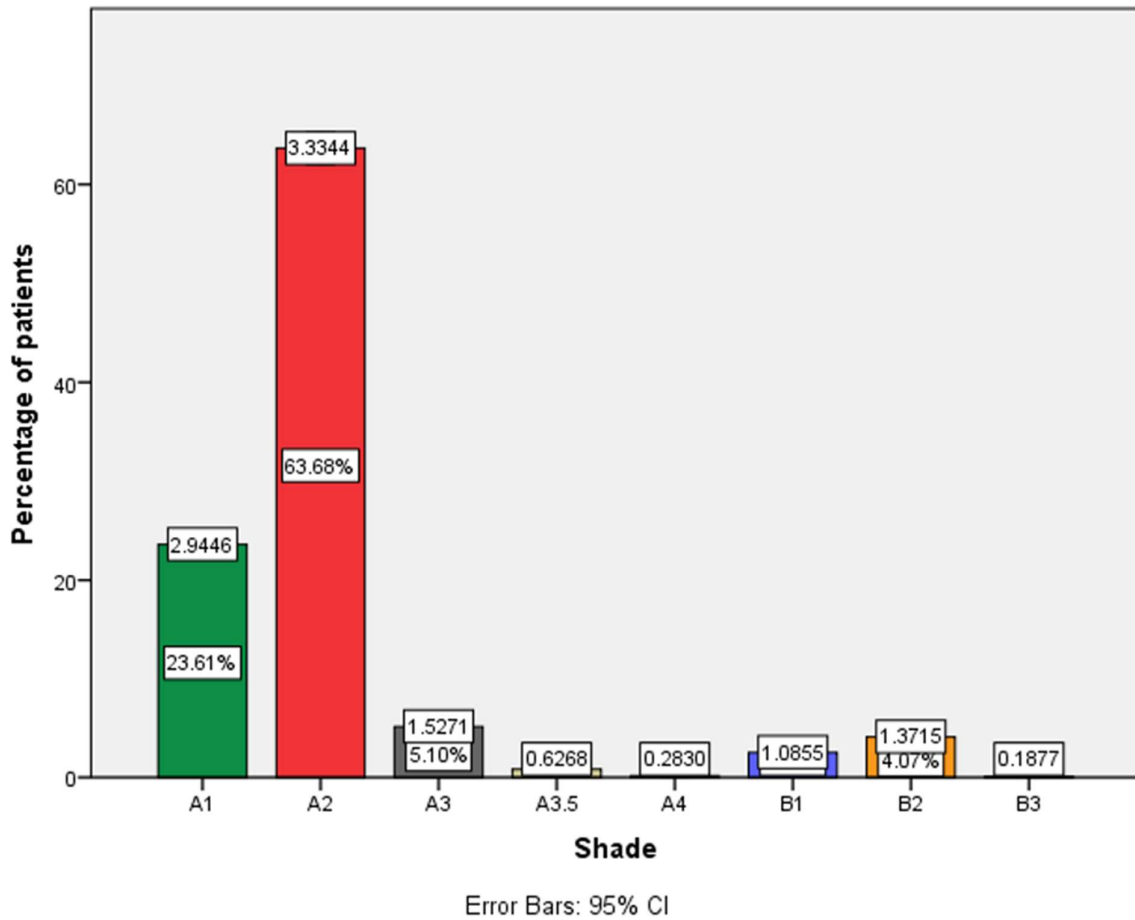
**Figure-1** shows the bar graph of distribution of age among people who underwent Class III restoration. The age group of patients were mentioned in X-axis which were categorized as <31 years , 13-19years, 20-40and >40 years and the percentage of patients who received Class 3 restoration were mentioned in Y-axis. Of these, people of the age range 20-40years who received Class 3 restoration were at a higher rate (49.69%), people of >40 years (30.62%), <31 years (16.03%) and 13-18years (6.39%) less comparatively.



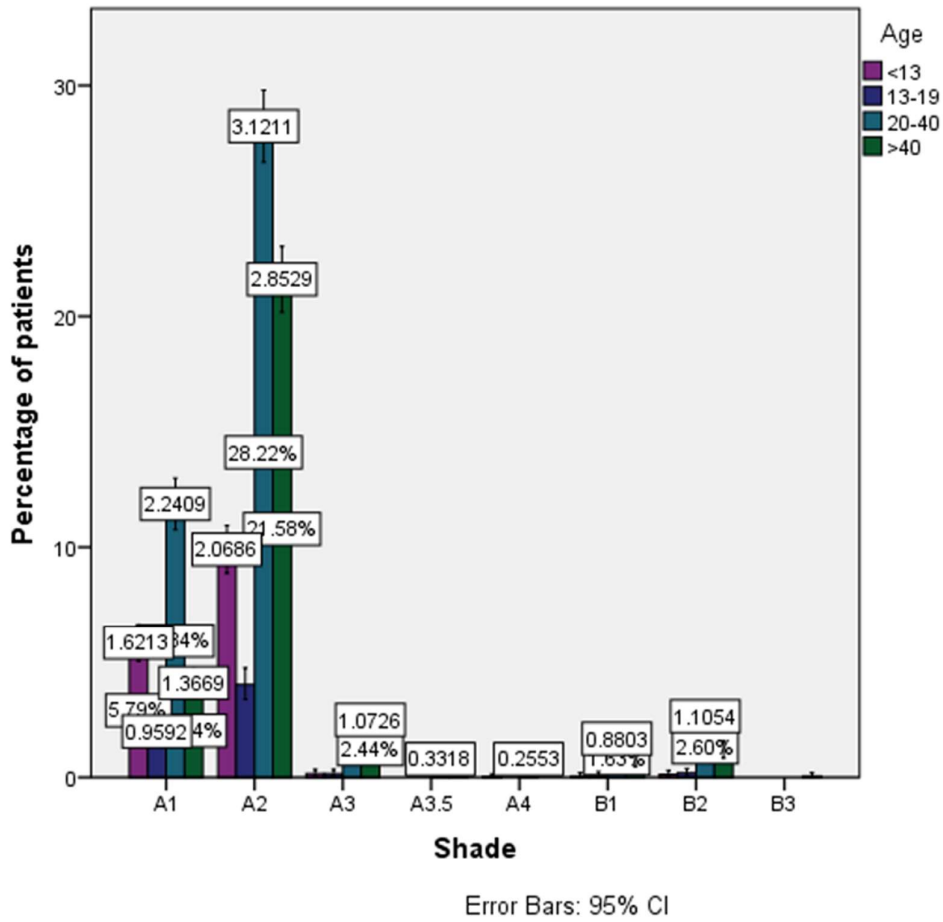
**Figure-2** shows the bar graph of distribution of Gender among people who underwent Class III restoration. The Gender of patients were mentioned in X-axis which were categorized as Female and Males and the percentage of patients who received Class 3 restoration were mentioned in Y-axis. Of these, people of the Female patients who received Class 3 restoration were at a higher rate (62.09%) than Males (37.91%).



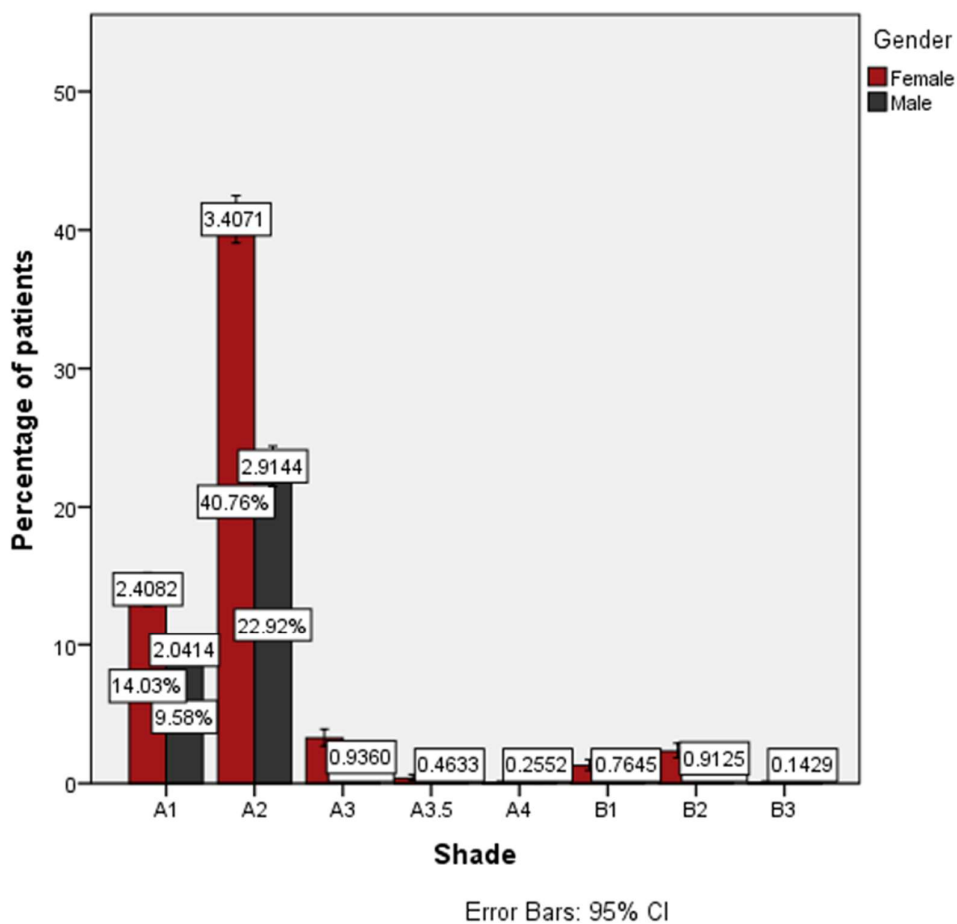
**Figure-3** shows the bar graph of distribution of teeth indicated among people who underwent Class III restoration. The teeth indicated for restoration of patients were mentioned in X-axis which were categorized as Deciduous and Permanent teeth and the percentage of patients who received Class 3 restoration were mentioned in Y-axis. Of these, people with Permanent teeth received Class 3 restoration at a higher rate (84.5%) than Deciduous teeth(15.50%).



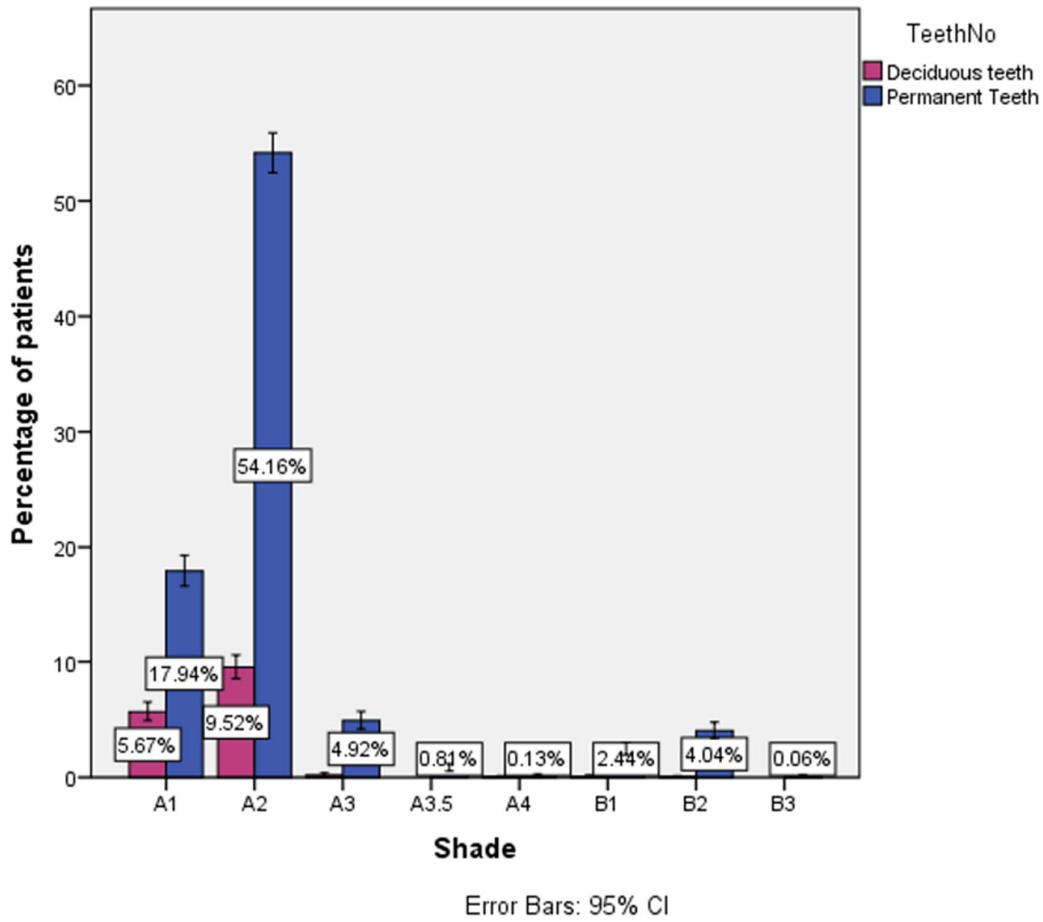
**Figure-4** shows the bar graph of distribution of shade used in Class III restoration. The shade used in restoration for patients were mentioned in X-axis which were categorized as A1, A2, A3, A3.5, A4, B1, B2, B3 and the percentage of patients who received Class 3 restoration were mentioned in Y-axis. Of these, A2 shade was used at a higher rate (63.68%) than A1(23.61%),A3(5.10%), B2 (4.07%), B1(2.50%), A3.5(0.81%), A4(0.16%), A4(0.16%).



**Figure 5** shows the bar graph representing the association between shade used in Class III restoration and age of patients who received Class III restorations where X-axis represents the shade used association with age and Y-axis represents the count of patients who received Class III restoration. A2 shade was used at a higher rate among patients of the age of 20-40years in association with the shade used.  $p$ -value  $<0.05$ (Chi-square value - 199.967<sup>a</sup>; P-value : 0.000). Hence, it is statistically significant.



**Figure 6** shows the bar graph representing the association between shade used in Class III restoration and gender of patients who received Class III restorations where X-axis represents the shade used association with age and Y-axis represents the count of patients who received Class III restoration. A2 shade was used at a higher rate among Female patients.  $p$ -value  $>0.05$ (Chi-square value - 17.844a<sup>a</sup>; P-value : 0.013). Hence, it is statistically insignificant.



**Figure 7** shows the bar graph representing the association between shade used in Class III restoration and Teeth involving Class III restorations where X-axis represents the shade used association with Teeth restored and Y-axis represents the count of patients who received Class III restoration. A2 shade was used at a higher rate in Permanent teeth.  $p$ -value  $< 0.05$  (Chi-square value - 96.591<sup>a</sup>; P-value : 0.000). Hence, it is statistically significant.