ORIGINAL RESEARCH

ASSESSMENT OF ESTHETICS FROM THREE DIFFERENT ETHNICITY

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ABSTRACT

Aim & Objectives- The aim of the study is to evaluate the relationship between teeth shade and gingival shade among different ethnicity.

Materials & Methods- Three groups participated in the study. Each group comprised of the people of different ethnicity. Extra oral profile pictures of 30 indifferent people of three different ethnicities were collected. Shade guide was used to determine the pink component and white component. Gingival shade and teeth shade of different ethnicity were analyzed stastically.

Results & Conclusion- There is a correlation between gingival shade and tooth shade among the population studied. Study indicates the positive correlation between the skin colour, hair colour, ethnicity, and associated gingival shade to tooth shade. By knowing the relationship between tooth shade and gingival shade, an operator can provide a prosthesis which is more esthetic. It also helps in fabrication of prosthesis with gingival component where teeth has gingival recession.

KEYWORDS
Gingiva, Shade guide, ethnicity, Colour, Ginigival recession

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Introduction

A Smile is the most visible record of the dentist care. There are three important factors that play an important role when planning and designing any fixed or removable aesthetic and functional restoration. They include; Facial skin complexion, gingival tissue pigmentation and tooth shade. In this study we have concentrated only on gingival shade and the tooth shade.

Each individual will have different gingival shade and teeth shade. The difference in the shades are due to many reasons, reason may be from them factors that affect from intraorally, extraorally or both. E.g. Smoking has an impact on both gingival colour and the tooth color.

Many research studies have drawn a valuable attention towards the importance of distributive pattern of tooth shade colour in order to achieve an adequate knowledge regarding the aesthetic dentistry. Brien et al. reported that a statistically significant difference exists between gingival to incisal region of the teeth and they are clinically significant when fabricating any aesthetic restoration respectively. A study by Richardson has reported a significant contrast between the facial skin complexion and tooth shade; showing that the individuals with a darker skin complexion tend to have a lighter tooth shade.

In a recent study conducted in New Jersey, it was found that people having a medium to darker facial skin complexion were more likely to have teeth with a higher tooth shade value (lighter shades) where as individuals with a fair or lighter skin complexion tend to have teeth with a lower tooth shade value (Darker shades) regardless of their age or gender [1]. Natural teeth are known to possess different shades in their surfaces[2-4]. Teeth shade vary with skin colour, age and gender[3-6]. However, it has been found that the colour of natural teeth is influenced by many factors including the advancing age, light, colour blindness (Physiological factors)[7,8] extrinsic factors including; smoking, betal quid, beverages, alcohol, xerostomia, diet, restorations [3,5] and intrinsic factors including congenital defects of enamel or dentin such as amelogenesis and dentinogenesis imperfecta, hypoplasia, hypocalcification or hypomaturation or environmental factors such as tetracycline staining, traumatic injuries to the teeth, dental caries; affecting the shades of the teeth in vivo respectively [3,5,9-10].

Most authors have studied the colour of natural dentition in a single population. However, only few studies show the objective distribution of natural tooth shades in different

populations. The present study was of those few which was conducted in order to evaluate the most frequent tooth colours among three distinct population, i.e. Indians, Malaysians and Korean.

The aim of this study is to determine a relationship of ethnicity with the gingival tissue pigmentation and tooth shade when designing and fabricating any fixed or removable restoration.

Materials and methods

Thirty individual were selected for this study. They were categorised into three groups based on their ethnicity. Group A included Korean people, group B included Malaysian people and group C included India people. Extra oral pictures of all the individual were taken(Figure 1). Tooth shade and gingival shade was founded using vita shade guide. Then results were analysed statistically and it was compared between all three groups. VITA tooth shade guide(Figure 2) is used for analysing the tooth colour. Vita Classical shade system was chosen because of its routine use by dental professionals. It is arranged by value scale into 4 categories the highest value group (shades B1, A1, B2, D2), high value group (shades A2, C1, C2, D3), medium value group (shades A3, D4, B3, A3.5), and low value group (shades B4, C3, A4, C4). Every value of an object indicates its brightness or darkness, e.g.tooth colour with higher value has as brighter colour.

Gingival shade :

G 1	DUSKY PINK
G 2	ORANGE PINK
G 3	PINK RED
G 3	BROWN RED
G OL	LIGHT FLESH
G OD	DARK FLESH

Gingival shade was measured using vita VM shade guide. (Figure 3)

The subjected teeth were scanned via the device to measure 16 Vita Classical shades of each examined tooth. Thereafter, measurements were recorded on sample form which has a chart of the subjected teeth in this study. Data was collected and converted into a digital form using Microsoft Excel and statistical analysis was made. All shades which had been documented were categorized based on their frequencies in nationality.

Figure 1: Extra oral Smile picture.

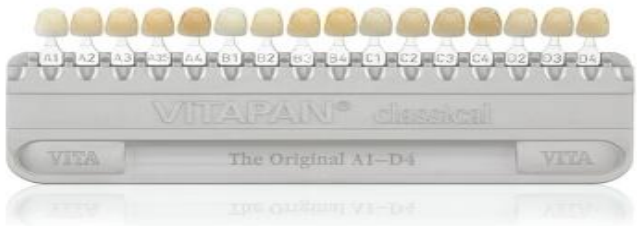

Figure 2: Teeth shade guide

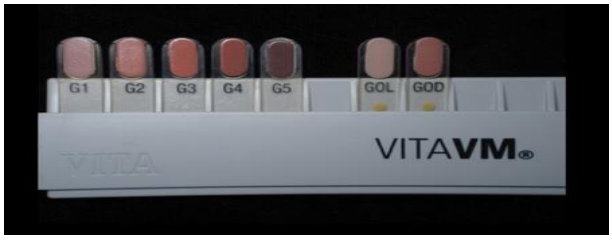

Figure 3:Gingiva shade guide .

Results

The results were statistically analysed. The gingival shades and teeth shades among the three groups with different ethnicities were assessed. A2 and G2 were found to be the mostly commonly found teeth shade and gingival shade. Malaysians and Koreans were tending to have more lighter gingival and tooth shade than the Indians. Skin complexion

has a significant role in the colour of gingiva and tooth.
The tooth shade of Malaysians was much brighter when compared to all the others. Whereas, the gingival shade and tooth shade of the Indians was dull when compared to the shade of gingiva and tooth of other two ethnicities.

Discussion

Gingival Shade:

Among the Korean population G2 shade was the most common i.e, 60% of the population had G2 shade. The second most common among this ethnicity is G3 i.e.30% of the population. 10% of the population had G1. G1 was the least common shade among this ethnicity.(Table 1)

GINGIVAL SHADE	%
G2	60 %
G3	30 %
G1	10 %

Table .1. Korean population.

Among Indian population, 50% of them had G3 shade. The second commonest shade is G2, i.e. 30% of them had G2 shade. 10% of them had G4 gingival shade and the other 10% of the population had G5 gingival shade. (Table 2)

GINGIVAL SHADE	%
G3	50 %
G2	30 %
G4	10 %
G5	10 %

Table .2. Indian population.

Among the Malaysian population, 60% of them had G2 shade. The second common shade was G3, i.e. 30% of them had G3, whereas G4 was seen among 10% of the population and G5 is seen among 10% of the population. (Table 3)

GIGIVAL SHADE	%
G2	60 %
G3	30 %
G4	10 %
G5	10 %

Table.3. Malaysian population

All over G2 gingival shade was present in most of the individuals in all the three groups ie., in these three different ethnicities. the prevalence of gingival melanin pigmentation increased as the complexion changed to darker shades [11-12].

Teeth shade:

Among the Korean population and Indian population 50% of them had A2 teeth shade. 30% of the Korean population had B2 teeth shade and 20% of them had A1 teeth shade. (Table 4) Whereas, 30% of the Indian population had B2 shade, 10% of them had A3 shade and 10% of them had A1 shade. (Table 5)

TEETH SHADE	%
A2	50 %
B2	30 %
A1	20 %

Table . 4. Korean population

TEETH SHADE	%
A2	50 %
B2	30 %
A3	10 %
A1	10 %

Table. 5. Indian population.

Whereas, among the Malaysian population, 60% of them had A2 shade. 20% of them had A1 shade. 10% of them had B1 shade and 10% of them had B2 shade. (Table 6)

TEETH SHADE	%
A2	60 %
A1	20 %
B1	10 %
B2	10 %

Table. 6. Malaysian population

A2 is the commonest shade among all the three groups.
Considering the role of age in tooth colour, various studies have been conducted to show the relationship between shade values of teeth and age[13-15]. In a study conducted by Jahangiri et al.a significant association was found between the tooth colour and age of patients. With advancing age, teeth tend to become darker in colour[16]. A similar study carried out on Indian population reported that with increasing age, there was a tendency for the teeth to be of darker shades[17-19]. This is largely due to factors like secondary dentin formation after the age of 35 and enamel thinning because of tooth wear[18,19]. Therefore, the present study was conducted only on students of the university age 19-35 to exclude the age factor and results are obtained from natural teeth which are not affected by any physiological changes, like formation of secondary dentin, which gives the tooth appearance of low value colour[19-21]. Colour difference can be also detected between spectrophotometer colour coordinates of central incisors, lateral incisors, canines. Central incisors show a higher value of colour when compared to lateral incisors and canines. Canines were darker than lateral incisors which in turn, were darker than central incisors, which is in agreement with other studies[22-24].

The rationale of this study is to determine a relationship of tooth shade with the gingival tissue pigmentation and tooth shade when designing and fabricating any fixed or removable restoration. G2 and A2 was the mostly found together. They are the most commonly found gingival shade and tooth shade among Korean and Malaysian population. With the help of this study the shades of gingiva and tooth can be decided based on their ethnicity for the fabrication of better replacement units.

Recommendation

It is recommended that such research studies should be more often conducted with a much larger sample size so that more accurate results can be achieved in future, that can definitely be a highly valuable aid in enhancing the contemporary zones of modern dentistry.

Conclusion

A correct colour for a successful aesthetic restoration is a mandatory requirement. The middle one third region of the tooth was taken as a representative of colour shade selection as there is a marked degradation of colour changes from the cervical to incisal region of the tooth due to scattered modification of light and enamel translucency. Gingival shade matching is also necessary for providing a effective replacement treatment. This particular research study will help for a valuable aid for the Restorative dental practitioners and Prosthodontists, when planning and fabricating any aesthetic or functional restorations for individuals belonging to different ethnicities, thereby accomplishing patient's needs and expectations and achieving excellence in aesthetic and functional parameters of modern dentistry

Author Contribution

Sanmathi S.E.-Manuscript editing, Literature search, data collection, Data Analysis, manuscript drafting

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