January - February 2020
ISSN: 0193 - 4120 Page No. 17034 - 17040

Evaluation of Pigmentation Pattern in The Smile Zone with Facial Skin Complexion.

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Abstract

The color of the facial skin serves as a basic guide to the gingival display and Tooth shade. Restorative dental practitioners and Prosthodontists have always faced the challenge of harmonizing facial skin complexion with the tooth shade when fabricating any fixed or removable restoration**.**The aim of this study is to determine if there is a relationship of facial skin complexion with the pigmentation of the gingiva in the smile zone.This is a cross-sectional, analytical study conducted in Avadi, Thiruvallur District, Tamilnadu. Our Sample size consisted of 100 individuals. Participants are informed about the nature and purpose of the study. Participants belongs to the age group of 15 to 40 years. This age group is selected because the pigmentation pattern is well observed. The participants are selected according to the inclusion and exclusion criteria. The facial skin complexion is categorised into fair and dark complexion and respectively grades are given. The intensity of physiological gingival tissue pigmentation is evaluated based on the colour of the gingiva.It is seen that gingival tissue pigmentation is more found on the attached gingiva and interdental papilla. It is least found on the marginal gingiva. It is observed that people having fair or lighter skin complexion has mild gingival pigmentation where as people having darker skin complexion has severe gingival pigmentation. However, as such no significant correlation is seen with respect to gender or age. The study reported that people having a darker skin complexion have moderate to severe gingival tissue pigmentation and people having a fair/lighter skin complexion have mild gingival tissue pigmentation. The gingival tissue pigmentation is more commonly seen on the attached gingiva and interdental papilla.

Keywords:Aesthetics,gingiva,facial skin,pigmentation

Introduction: Smile is a facial expression formed by flexing the muscles near both ends of the mouth . It is considered as the most important of facial expression and is essential in expressing friendliness, agreement and appreciation . The word “AESTHETICS”

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January - February 2020
ISSN: 0193 - 4120 Page No. 17034 - 17040

means beauty or appreciation of beauty; is regularly used in contemporary dentistry to describe restorations and artificial teeth replacements (Koirala, 2010).

In today's beauty-conscious society, the demand for aesthetic dentistry has considerably been increased in last few years and moreover people are often judged, and therefore judge themselves, by the smile. An attractive smile results in achieving excellent aesthetics, gain of self-esteem, confidence and an excellent dental and mental health.(Sabherwal et al., 2009) Proper analysis and understanding of psychology, health, function and aesthetics (PHFA) are the most essential components of smile design that particularly dominate in accomplishing patient's needs and expectations respectively. There are certain important factors that predominantly affect a beautiful and a life-like smile. They include; Facial skin complexion, Gingival tissue pigmentation and Tooth shade respectively. The color of the facial skin serves as a basic guide to the gingival display and Tooth shade(Balasubramanian et al., 2015). Restorative dental practitioners and Prosthodontists have always faced the challenge of harmonizing facial skin complexion with the tooth shade when fabricating any fixed or removable restoration. (Murro et al., 2020)The aim of this is study was to determine if there is a relationship of facial skin complexion with the pigmentation of the gingiva in the smile zone.

Materials and Method: This is a cross-sectional, analytical study conducted in Avadi, Thiruvallur District, Tamilnadu. The Sample size consisted of 100 individuals. Equal number of male and female belonging to the age group of 15-40 years took part in the study. This age group is selected because the pigmentation pattern is well observed. The facial skin complexion is categorized into fair and dark complexion based on Fitzpatrick scale and respectively grades are given. The intensity of physiological gingival tissue pigmentation is evaluated based on the colour of the gingiva.

The patients are selected according to the exclusion and inclusion criteria. The exclusion criteria include patients with asymmetrical face, severe malocclusion, swelling, skin allergy, mole. Patient's with permanent maxillary central incisors (right or left) exhibiting any dental caries are excluded from the study. For inclusion criteria, patients of both genders are selected who presented with completely erupted maxillary central incisors without severe malocclusion and having a good periodontal health and a good oral hygiene, healthy patients with uniformly pigmented and non-mottled gingiva. Consent of the participants involved in the research is taken.

The facial skin complexion is categorized into fair and dark complexion and respectively grades are given based on Fitzpatrick scale. Fair complexion is further divided into very fair and fair and dark complexion is divided into very dark and dark. Grades 1,2,3,4 are given to complexions fair, very fair, dark, very dark respectively. The intensity of physiological gingival tissue pigmentation is evaluated

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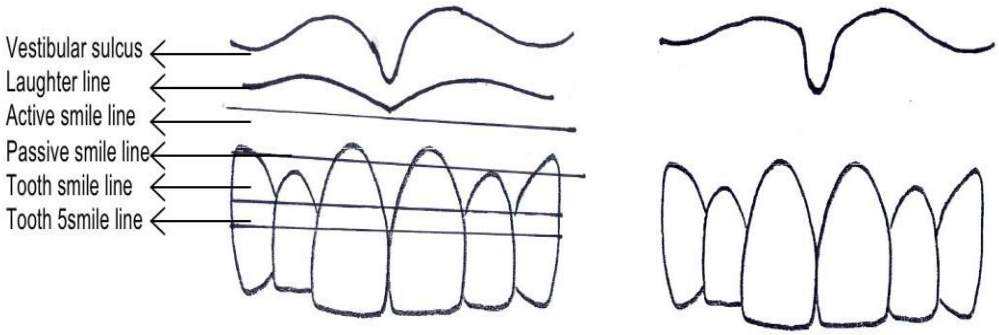
January - February 2020
ISSN: 0193 - 4120 Page No. 17034 - 17040

based on the colour of the gingiva. Gingival pigmentation is considered only if the gingiva colour ranged from medium brown to dark black and respectively grades given. If the gingiva colour is in shades of pale pink to light brown, it is considered non-pigmented. Distribution of pigmentation in the smile zone was evaluated by comparing the participants smile zone with figure 1.



Results:

It is seen that gingival tissue pigmentation is more found on the attached gingiva and interdental papilla. It is least found on the marginal gingiva. It is observed that people having fair or lighter skin complexion has mild gingival pigmentation where as people having darker skin complexion has severe gingival pigmentation. However, as such no significant correlation is seen with respect to gender or age. Figure 1 shows classification of the pigmentation in the various zones of gingiva. In figure 2 the prevalence of pigmentation in different zones of gingiva is observed. It is clear from the graph that many individuals has pigmentation in the attached gingiva. From Figure 3 it is observed that those who have a fair skin complexion have mild to moderate pigmentation while those who have a dark skin complexion has heavy gingival pigmentation. Figure 4 shows the relationship between skin complexion and gingival pigmentation

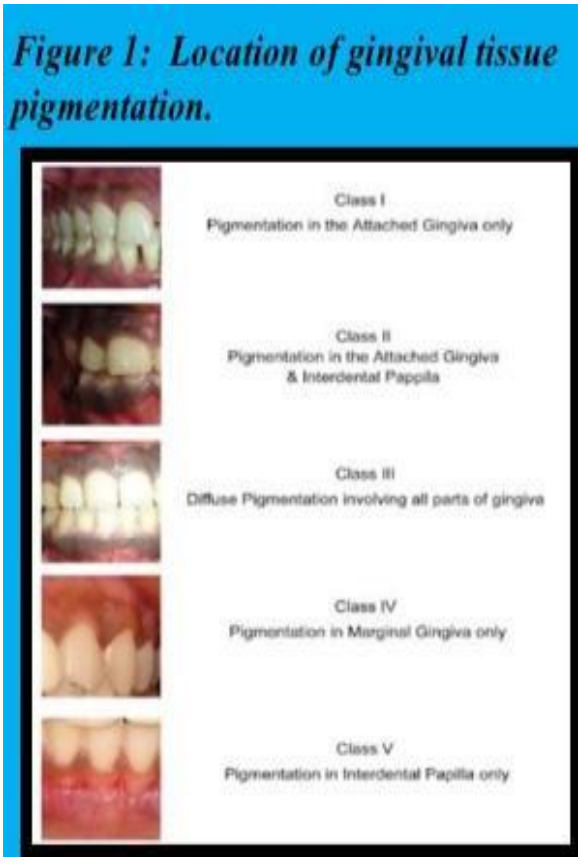


Figure 1: Location of gingival tissue pigmentation.

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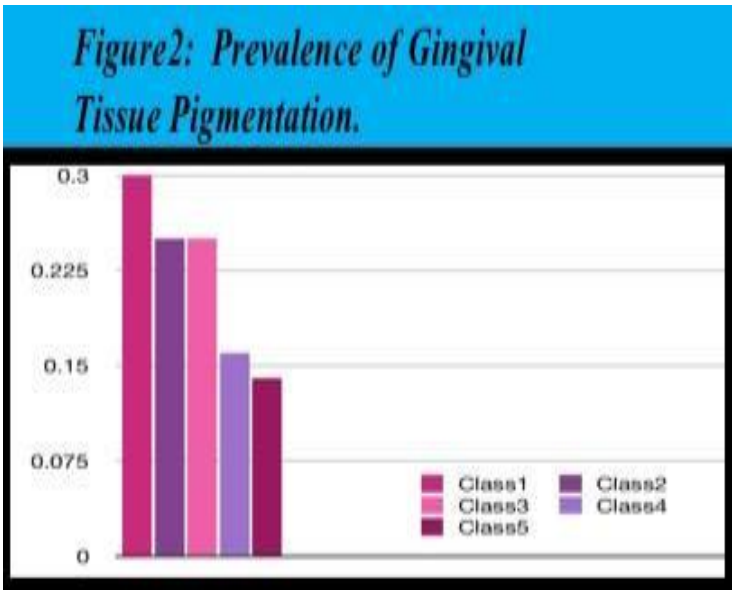

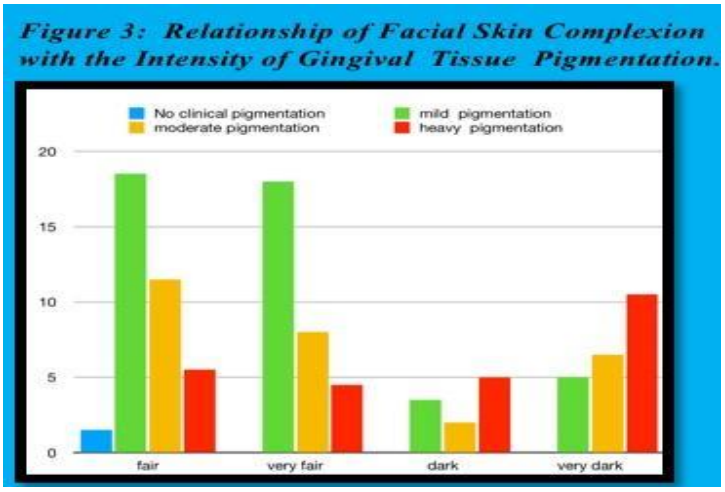

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ISSN: 0193 - 4120 Page No. 17034 - 17040

DISCUSSION:

Very few studies have been carried on to evaluate the relation between facial skin tone and the pigmentation in the smile zone. Skin color may be a significant indicator of oral mucosal and gingival pigmentation (Ghani et al., 2016; Jahangiri et al., 2002). The hyperpigmentation of the gingiva could be a genetic trait in some populations (Veeraganta et al., 2015). The incidence of melanin gingival pigmentation is reported to be 0-89% in regard to genetic and secondary factors like smoking habits (Agarwal et al., 2017; Vandana & Savitha, 2005). In the present study, it is noted that majority of participants had pigmentation on the attached gingiva. However, this finding is in contrast with a Jewish population study where they found attached gingiva, to be the only most common pigmented anatomic division and in a South African population, where the melanin pigmentation is most frequently found in the interdental papilla (Gorsky et al., 1984;Gozalo-Diaz et al., 2008). This produces a strong valuable fact that there is racial variation in the pigmentation of the gingiva.(Dosumu et al., 2010)

This study established the fact that people having a darker skin complexion has heavy gingival melanin pigmentation. These findings are similar to a previous research study carried on in an Indian population where the prevalence of gingival melanin pigmentation increased as the complexion changed to darker shades (Kaur et al., 2010).A life-like beautiful smile is the most valuable asset for the patient visiting the restorative dental practitioner to achieve an excellent aesthetic restoration (Kaur et al., 2010; Mahajan et al., 2017). When designing, planning and fabricating any aesthetic or functional restorations or any dental treatment, care should be taken to keep certain important considerations in mind that can surely achieve the desired objective; including Facial skin complexion, age and gender respectively.(Mahantesha et al., 2010) ;Guo et al., 2002)

This particular research study will definitely prove to be a valuable aid for the Restorative dental practitioners and Prosthodontists, when planning and fabricating any aesthetic or functional restorations for individuals belonging to different age groups, thereby accomplishing patient's needs and expectations and achieving excellence in aesthetic and functional parameters of modern dentistry.

Conclusion:

The study concludes that people having a darker skin complexion have moderate to severe gingival tissue pigmentation and people having a fair/lighter skin complexion have mild gingival tissue pigmentation. The gingival tissue pigmentation is more commonly seen on the attached gingiva and interdental papilla.

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