

## Correlation Of Skin Colour and Gingival Pigmentation Among Middle Aged Women In Chennai A Hospital Based Analysis

Research Article

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### Abstract

The aim of the study was to correlate gingival pigmentation skin colour among middle-aged women since middle-aged women tend to undergo drastic hormonal changes which can result in gingival hyperpigmentation. Female patients with mean age of 40 years were categorised as fair medium dark on the basis of skin colour and they were correlated with the level or amount of gingival pigmentation. The level of gingival pigmentation increases along with the level of skin pigmentation from fair to dark which is proved as statistically significant with a P value of 0.017. Gingival pigmentation is one of the major aesthetic concerns especially in women with the limitation of the study it is found that the level of gingival pigmentation increased along with an increase in the intensity of skin pigmentation.

**Keywords:** Skin Colour; Gingival Pigmentation; Mild Moderate And Severe.

### Introduction

The colour of the gingiva is usually described as coral pink colour and gingival pigmentation is presented as diffuse discolouration or irregularly shaped brown or brown black patches or strands [4, 20, 27]. Melanin is a pigmentation agent that gives colour to the tissues including gingiva and skin [1, 11, 14, 18, 24]. Melanin is synthesised by (Javali, Tapashetti and Deshmukh, 2011) [7] and excessive deposition of melanin in the basal or supra basal region of the epithelium can result in gingival hyperpigmentation (Dummett and Barens, 1971) [3]. Hormonal changes can affect the overall pigmentation [2, 10] Everyone other than albinos has some amount of melanin pigmentation and its distribution in the epidermis. Pigmentations develop during the first two decades of life and it requires no treatment. Moreover, color variation can be generalised and uniform, unilateral, bilateral and macular they also involve the gingival papillae or present through out the gingiva and into other oral tissues.

Various factors such as physiological reasons, manifestations of systemic disease, neoplasm, endocrine changes, drugs can have effect over gingival pigmentation [9, 10, 12, 20, 25, 27]. The main determinant of natural skin colour is the melanogenic activity within the melanocytes and the quantity and quality of melanin production, but not melanocyte density. The amount of melanin pigmentation in human epidermis and in the epithelium of oral mucosa is based on the amount of melanin. The maturation of melanosomes, the number of keratinocytes containing melanosomes and the distribution of melanin present in the keratinocytes throughout the epithelium [5].

The gingival hyperpigmentation is not categorised as a disease it can be an esthetic problem and patients with hyperpigmentation can ask or demand for gingival depigmentation [6].

Eumelanin is a pigment present in large amounts in skin hair and are photo protective this physiologic pigmentation varies is among different people and different ethnicity.

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Attached gingiva is a common site of such pigmentation [8, 21]. various factors like age sex and hormonal influences can alter the pigmentation of skin and oralmucosa. gingiva is the part of the oral mucosa of which covers the neck of the tooth and alveolar mucosa [13, 17]. middle-aged women tend to undergo drastic hormonal changes which can result in gingival hyperpigmentation. Thus the aim of this study is to correlate the skin colour and enjoyable pigmentation among middle-aged women.

### Materials and Methods

The study is a retrospective study the study was conducted after obtaining permission from the institutional review board of the university (Saveetha University Chennai India).

A total of 130 female patients aged between 30 to 60 years were screened and after analysing with the inclusion and exclusion criteria 99 patients were included in the study the inclusion criteria it includes all patients with proper photograph extra oral and intra oral images and systemically healthy patients are also patient with past medical history of diabetes and hypertension were included in the study.

The exclusion criteria it includes all the patients with past medical history of syndrome is like Peutz jeghers syndrome Melasma, and other pigmented skin lesions pregnant patients and lactating women were not included in the study.

The profile picture of the patient and intra oral photograph of the patient( frontal) where evaluated to assess the amount of gingival pigmentation.

The criteria that was used to assess the gingival pigmentation was gingival pigmentation index-Bradley Cooper.

- 0 pink
- 1 mild light brown pigmentation
- 2 medium brown pigmentation
- 3 dark brown/black pigmentation

Skin colour was categorised as for medium or wheatish and dark based on the study relating skin colour and tooth study by Vivek Sharma et al.

### Statistical Analysis

All the data were analysed and results were drawn in percentage. Pearson correlation coefficient was used to analyse and correlate level of skin colour and gingival pigmentation.

### Results and Discussion

In the present study a total of hundred female patients aged between 30 to 60 years were analysed( mean age of 42.1 years) the data was obtained from the digital cash sheet it was found that 76 percentage of the patients Belong to medium skin tone 16 percentage where dark skin tone and only 8 percentage fair skin tone 76 from the overall patients included in the study (Figure 1).

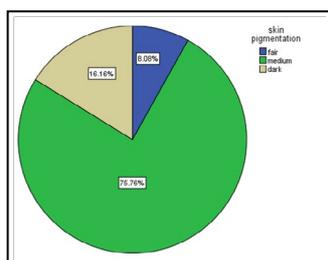
#### Level Of General Pigmentation In Moderate Skin Tone The Patient (Figure 3)

In patients with moderate skin tone it was observed that 17 % had gingiva pink in colour and 45 % had gingiva with mild light brown pigmentation and 31 % had gingiva with medium brown pigmentation and only 7 % had dark brown or black pigmentations.

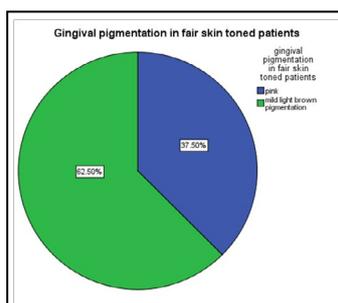
#### Level Of Gingival Pigmentation In Dark Skin Tone Patients

It is seen that 7 % of the patients had pink coloured gingiva and 31 % of the patients had gingiva with mild light brown pigmentation.

**Figure 1.** The pie chart represents the percentage of skin colour in patients of which 76 percent of the patients Belong to medium skin tone (Green). 16 percent were dark skin toned patients (Brown) and only 8 percent fair skin tone (Blue).



**Figure 2.** The pie chart represents percentage of gingival pigmentation in fair skin toned patients It is seen that of the fair skin toned patients 38 % of them has gingiva pink in colour and 62 % had gingiva with mild light brown pigmentation.



tion and other 31% had medium brown skin pigmentation and the rest 31 % of the patients had dark brown or black pigmentation (Figure 4).

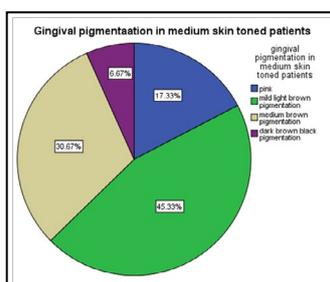
The level of gingival pigmentation increases along with the level of skin pigmentation from fair to dark which is proved as statistically significant with a P value of 0.017.

Health and appearance of gingiva are important in terms of esthetic concern. The color of the gingiva differs among individuals and is assumed to be associated with cutaneous pigmentation Skin colour varies from light to dark brown or black. The skin tone and texture of the skin and color is different in various races and

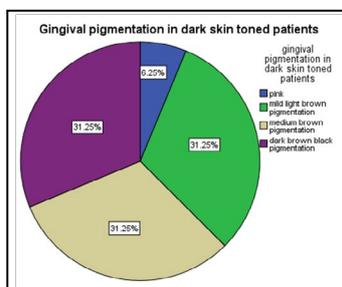
geographic locations the colour of gingiva is based mainly upon the number and size of vasculature/blood supply thickness of the epithelium, keratinization degrees and pigments with in the gingival epithelium. Melanin, carotene, reduced haemoglobin and oxyhaemoglobin are the major pigments contributing to the normal color of the oral mucosa The present study showed that the level of gingival pigmentation increases when the skin pigmentation is intense. The correlation value shows that there is a low positive correlation where at some instances there could be some changes in the level of gingival pigmentation with the skin colour.

The results of the study is partially in agreement with the results of the study done by Rakeshwar et al where they found that there

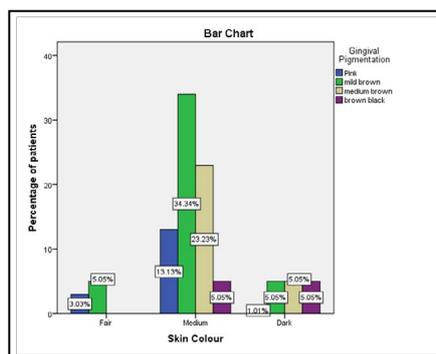
**Figure 3.** The pie chart represents percentage of gingival pigmentation in medium skin toned patients ,it is observed that of the medium skin toned patients 17 % had gingiva pink in colour(Blue) and 45 % had gingiva with mild light brown pigmentation(Green) and 31 % had gingiva with medium brown pigmentation(Brown) and only 7 % had dark brown or black pigmentations(Purple).



**Figure 4.** The pie chart represents percentage of gingival pigmentation in dark skin toned patients, it is seen that 7 % of the patients had pink coloured gingiva (Blue)and 31 % of the patients had gingiva with mild light brown pigmentation (Green)and other 31% had medium brown skin pigmentation(Brown )and the rest 31 % of the patients had dark brown or black pigmentation(Purple).



**Figure 5.** The bar graph depicts the association between the skin colour and gingival pigmentation. X axis represents groups with fair medium and dark skin tone. Y Axis represents the percentage. The colour blue represents pink coloured gingiva, the colour green represents patients with mild light brown coloured gingiva, the brown colour in the graph represents patients with medium brown coloured gingiva and the purple colour in the graph represents dark brown or black coloured gingiva. Mild brown gingival pigmentation (34.34%) is predominantly found in medium skin colour followed by medium brown gingival pigmentation (23.23%)in medium skin coloured females. There is a significant difference between different skin colour and gingival pigmentation. Chi square test p value is 0.017 (<0.05) which was clinically and statistically significant.



is positive correlation between severity of gingival pigmentation and skin colour [15]. In a study by Raut et al [23] they found that the skin colour of ginger and facial complexion showed a positive correlation dark subjects observed heavy gingival pigmentation and their subjects with mild pigmentation on a study in Indian population The results of Ponniyan et al also had a positive correlation with the skin colour and gingival pigmentation [16, 22] thus skin colour can determine gingival pigmentation. The low positive correlation of the study shows that the level of gingival pigmentation can vary from individual to individual based on factors like age hormonal factors et cetera.

## Conclusion

Gingival pigmentation is one of the major aesthetic concerns especially in women. With in the limitation of the study, it is found that the level of gingival pigmentation increased along with an increase in the intensity of skin pigmentation.

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