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Knowledge, attitude and perception of gingival pigmentation among students aged 18-23 Years in UP, India

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Abstract

Background: The clinical appearance of sound gingiva differs from individual to individual and even at different sites in the oral cavity. Some characteristics are genetically influenced; others appear to be determined by external factors, and biological factors such as growth, gender and age. The present study was carried out to assess and compare knowledge, perception, awareness, extent, severity and factors affecting gingival pigmentation among 18-23 year old males and females studying in an institution in UP, India.

Materials & Method: The study sample consisted of 300 degree college students aged between 18 to 23 years. A structured and self-administered questionnaire was used for obtaining information on knowledge, perception, awareness and clinical observations with regard to gingival pigmentation among the participating students.

Results: It was observed that 87% males and 43% females in the 14-18 region, in 87% males and 54.7% females in 13-23 region, 93.5% males and 40.8% females in 24-28 region, 87% males and 45.3% females in the 44-48 region, 87% males and 59.2% females in the 33-43 region, 87% males and 40.8% females in the 34-38 region of the gingiva. Gingival pigmentation was found to be more of mild to moderate than severe, among the students. About half of the study population was still unaware of the treatment modalities available for reduction of gingival pigmentation. A little more than half of the population was not willing to undergo depigmentation procedures the most common reason was that they were fine with the appearance of their own gingiva.

Conclusion: This study showed that females had higher prevalence of gingival pigmentation in the area of the smile line and were more concerned about the appearance of their gingiva than males.

Keywords: Gingival hyperpigmentation, Gingival pigmentation index

Introduction

Gingival hyperpigmentation is manifested as partial or complete darkening of gingiva in contrast to the coral pink colour of normal gingiva. Excessive melanin deposition in the basal and suprabasal cell layers of the epithelium is the cause of the pigmentation seen in the gingiva. Physiologic pigmentation seen in some individuals is genetic in nature. Production of melanin is much more in dark-skinned and black individuals, which is a result of hyperactivity of their melanocytes, and in fair persons, reactivity of melanocytes is highly variable. Hyperpigmentation could also occur due to endocrinal disorders such as Albright's syndrome, malignant melanoma, Peutz-Jeghers syndrome etc. Other causes could be trauma, hemachromatosis, chronic pulmonary disease, HIV, smoking and use of anti-malarial drugs, oral contraceptives, etc.[1]

Gingival hyperpigmentation is benign; however, cosmetic concerns are common especially in patients with a high smile line. This is because much of the gingiva is visible during normal day to day functions such as speech and smiling. This can cause psychosocial problems especially in individuals whose appearance is of vital importance affecting the individual's confidence and self-esteem. Therefore, the social interaction of these patients with other people is affected. These individuals may even miss out on several opportunities due to lack of confidence. There are several treatment modalities for gingival depigmentation unknown to the public and dental practitioners and they include; gingivectomy, gingivectomy with free gingival autografting, surgical depigmentation, electrosurgery, cryotherapy, chemical agents, Nd:YAG lasers, semiconductor diode laser, argon laser, CO_2 laser.[2]

Information on knowledge, perception and prevalence of gingival pigmentation in young adults of Muradnagar, India, is insufficient. Abundant literature on treatment modalities for gingival aesthetic improvement exists and unfortunately, data on prevalence, incidence and knowledge and awareness of varying gingival aesthetic manifestations in populations is still scarce. This study is the first of its kind, which is aimed at determination of knowledge, perception and prevalence of gingival pigmentation among young adults studying at various fields of a degree college at UP, India. Through this study an assessment of treatment needs, to improve gingival aesthetics could be made in the near future.

Materials and Method

Ethical approval was taken from the Institutional Review Board. Permission for conduction of the study was taken from Principals of all the three degree colleges. Study subjects consisting of 300 students (18

to 23 years) were conveniently selected from the Biotechnology, Pharmacy and Dental colleges of the institute. 100 students were randomly selected from each degree college. The students were included in the study if they fulfilled the following criteria;

1. Those who gave their consent.
2. Those who had undergone some kind of drug therapy in the past which had been discontinued 6 months prior.

Students were excluded from the study if:

1. They had undergone gum surgery previously.

Questionnaire: The questionnaire was structured and self-administered and was pretested prior to the start of the study to check for understanding and reproducibility (chronbach's alpha value was 0.90) and was completed by the participants in the presence of the investigator prior to the clinical examination. It consisted of two parts; the first part included information regarding the general information (6 questions), personal information (4 questions), knowledge (3 questions), perception (3 questions), attitude (3 questions) of the students and the second part consisted of clinical examination (3 questions).

Oral examination: The second portion of the questionnaire consisted of clinical data which was recorded on a clinical examination form by the examiner. Students were examined using sterile diagnostics under natural illumination.

Gingival melanin pigmentation and pigmented lesions index by Peeran et al (2014)[3] was recorded by a single trained and calibrated investigator (good intraexaminer reliability, i.e. kappa value of >0.91 was reached).

This index measured gingival pigmentation from scores 0-10, with score 0 indicating normal gingiva, scores 1 & 2 concerned with severity of gingival pigmentation, score 3 exclusively for posterior gingival pigmentation, score 4, 5, 6 and 7 according to the etiology of the pigmentation and 8, 9 and 10 scores according to the systemic associations of the gingival pigmentation.

Smile Line classification by Liebart and Deuelle (2004)[4] was used to analyze each student's smile line, as follows:

Class 1- Very high smile line-more than 2mm of the marginal gingiva visible during smile

Class 2- High smile line-0 to 2mm of marginal gingiva visible during smile

Class 3- Average-gingival embrasures visible only during smile

Class 4- Low- gingival embrasures and cement-enamel junction not visible during smile

Statistical Analysis: MS excel 2007 was used for data entry of the variables. Correlation of variables was assessed by chi square test @ p value<0.05 (95% CI) as significant. The results were collected, tabulated and statistically analyzed by a personal computer using SPSS software program (Statistical Program for Social Science), Version 20 under Windows 8. Quantitative data were expressed as mean and standard deviation. Qualitative data were expressed as number and percentage.

For the aim of analysis all question in the knowledge, perception and awareness parts that was replied positively was given a grade of 1 and each question that was replied negatively was given a grade of 2.

Student t-test was applied to determine the significant difference in the means of knowledge, perception and awareness for gender at p value < 0.05. One-way ANOVA was applied to determine the association of knowledge, perception and awareness in relation to gender. Chi- Square test (χ 2) was applied with 5% level of significance.

Results

When it came to the concern of the colour of their gingivae, 59.3% of the subjects were concerned. 58.7% felt that the colour of the gums should match the facial colour. 75% of the subjects thought dark gums to be unattractive. 92.3% of the study subjects felt that pink is the normal colour of gums, while 7.7% felt it to be brown. (Table 1) 55.7% of the study subjects reported the colour of their gingivae to be pink, followed by 26.7% being brown and 17.7% having black gums.(Table 2)

54.3%, 63% and 54.3% of the subjects exhibited gingival pigmentation in the sextants 18-14, 13-23 and 24-28 respectively. 52.7%, 66.3% and 56% of the study subjects exhibited gingival pigmentation in the 34-38, 43-33 and 48-44 areas respectively. Gender wise, pigmentation of the gingival was found in 87% males and 43% females in the 14-18 region, in 87% males and 54.7% females in 13-23 region, 93.5% males and 40.8% females in 24-28 region, 87% males and 45.3% females in the 44-48 region, 87% males and 59.2% females in the 33-43 region, 87% males and 40.8% females in the 34-38 region of the gingiva. (Table 3 and 4)

Mild gingival pigmentation was seen in 31.7%, 27.7%, 30%, 28%, 29.3% and 33.3% of the subjects respectively in the 18 -14, 13-23, 24-28, 34-38, 43-33 and 48-44 areas. Moderate to severe gingival pigmentation was seen in 18.7%, 25.7%, 20.3%, 18.7%, 27.3% and 18.7% in the 18 -14, 13-23, 24-28, 34-38, 43-33 and 48-44 areas respectively. Tobacco associated pigmentation was seen in 2%, 9.7%, 2%, 4%, 9.7% and 2% of the study subjects in the 18 -14, 13-23, 24-28, 34-38, 43-33 and 48-44 areas respectively. Drug related gingival pigmentation was seen in 2% each of the 18-14, 24-28, 34-38 and 48-44 areas respectively. (Table 5 and 6)

More than half (55.7%) of the population was aware of treatments that are available for reducing darkness of the gingiva. Females were better aware

(58.3%) than males (48.1%), of the fact that treatment for reducing darkness of gingiva is available. (Table 7)

54.7% of the total population was willing to go for gum treatment in future. Reasons for unwillingness were that they were fine with the appearance of their gums (41.3%). Among other reasons the population did not want to go for treatment were cultural (2%) and financial (3.7%). (Table 8)

Table 1: Perception of study subjects towards gingiva

Perception		Percentage of study subjects(%)
Colour of gingiva	Pink	92.3
	Brown	7.7
Matching of facial skin and gingival colour important		58.7
Darks gums are unattractive		75
Were concerned about gingival colour		59.3

Table 2: Prevalence of gingival pigmentation according to colour

Colour	Percentage of study subjects (%)
Pink	55.7%
Brown	26.7%
Black	17.7%

Table 3: Prevalence of gingival pigmentation in maxillary arch

Study subjects	Sextant		
	14-18	13-23	24-28
Females	43%	54.7%	40.8%
Males	87%	87%	93.5%
Total	54.3%	63%	54.3%

Table 4: Prevalence of gingival pigmentation in mandibular arch

Study subjects	Sextant		
	44-48	33-43	34-38
Females	45.3%	59.2%	40.8%
Males	87%	87%	87%
Total	52.7%	66.3%	56%

Table 5: Prevalence of gingival pigmentation in maxillary arch, in accordance with Gingival index by Peeran et al (2014)

Criteria	Sextant		
	18-14	13-23	24-28
Mild	31.7%	27.7%	30%
Mod/severe	18.7%	25.7%	20.3%
Tobacco associated	2%	9.7%	2%
Drug associated	2%	0	2%

Table 6: Prevalence of gingival pigmentation in mandibular arch, in accordance with Gingival index by Peeran et al (2014)

Criteria	Sextant		
	48-44	43-33	34-38
Mild	33.3%	29.3%	28%
Mod/severe	18.7%	27.3%	18.7%
Tobacco associated	4%	9.7%	4%
Drug associated	2%	0	2%

Table 7: Knowledge of gingival depigmentation procedures

Study subjects	Knowledge
Males	48.1%
Females	58.3%
Total	55.7%

Table 8: Willingness to undergo depigmentation procedures

Reason for unwillingness to undergo depigmentation procedures	Percentage of study subjects(%)
Comfort with own gingival colour	41.3%
Culture	2%
Financial constraints	3.7%

Discussion

Oral esthetics depends on several variables, including tooth visibility and proportions as well as healthy gingival tissues. Proper integration between teeth and periodontal tissues plays an important role in esthetic success, which is mainly represented by an appealing smile.

Today, innovative restorative materials and techniques allow for minimally invasive prosthetic procedures, which are paramount to the preservation of hard and soft dental tissues. An integrated approach combining dental and esthetic medical therapies could be useful to improve the quality of life of patients, improving function, esthetics, and self-confidence.[5]

Demand for cosmetic therapy of gingival hyperpigmentation is common. Various methods such as chemicals, gingivectomy, gingivectomy with free gingival autografting, acellular dermal matrix allografts, electrosurgery, cryosurgery, abrasion with diamond bur and various types of lasers have been used in the treatment of gingival melanin depigmentation with varied degrees of success.[6]

Our study was carried out among 18-23 year old young students attending ITS group of colleges.

In our study, more than 50% of study subjects reported the colour of their gingivae to be pink. However, our findings were inconsistent with those reported by Tamizi et al,[7] with respect to Asians.

Mild gingival pigmentation was seen in maxillary arch in 29.8% study subjects and 30.2% in the mandibular arch. Moderate to severe gingival pigmentation was seen in 21.5% in the maxillary arch and 21.56% in the mandibular arch. This finding was in accordance with a study by Dummett et al,[6] where they found that gingival hyperpigmentation was bilateral and clearly demarcated. Tamizi et al[7] reported decreasing gingival pigmentation from incisal regions to the posterior regions.

Smoking related pigmentation in the maxillary arch was seen in the mandibular arch, similar to a finding reported by Hajifattahi F, Azarshab M, Hagoo R, Lesan S,[8] where they discovered that smoking does have an effect on gingival pigmentation. Drug related gingival pigmentation in maxillary and mandibular arch was seen among study subjects. However, number of study subjects in whom external factors were found to be associated with gingival hyperpigmentation was inadequate, making it impractical to comment on the above.

Gender wise, pigmentation of the gingiva was found more in males than females in the maxillary and mandibular arch. The difference in the prevalence of gingival pigmentation, between the genders was found to be significant in this study, quite contradictory to as reported by Caldeira PC et al[9,10] according to whom physiological melanin pigmentation of the oral mucosa affects males and females equally.

The study population had an average smile line, followed by very high, low and a high smile line. This meant that in 76% of the study subjects, gingiva is visible when they smile, thus making them more conscious about the appearance of their gingiva.

The study subjects perceived pink as the normal colour of gums. Knowledge on the natural appearance of normal gingival was found to be very good in the study subjects. Dummet et al[6] had surveyed personal attitudes of other populations and had found that pink gums were the ideal ones which was in coherence with our study.

The lack of concern among the subjects could be due to the low level of knowledge of gingival pigmentation and treatments available. More people need to be educated and made aware about gingival esthetics, looking at the above results.

Conclusion

From our study, we concluded that majority of the study subjects felt that pink is the ideal colour of gingiva but not much difference was observed between subjects who were and who weren't concerned about the colour of their gingiva. Most students felt dark gums to be unattractive. Pigmentation was observed to be bilateral and more severity was seen in the lower anterior region as compared to other regions. Not even half of the study subjects were aware of availability of depigmentation procedures and only a little more than half of the study subjects were willing to undergo depigmentation procedures.

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