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ASSOCIATION OF TOOTH SHADE VALUE WITH AGE, GENDER AND COLOUR OF SCLERA IN MORADABAD POPULATION - A CROSS- SECTIONAL STUDY

Dental Science

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ABSTRACT

Teeth are an integral part of facial aesthetics involved in complex social, cultural & psychological interaction. Shade selection for artificial teeth is based on visual comparison of skin, hairs & sclera with the aid of commercially available shade matching systems. Total 1500 individuals aged 16 to 75 years were divided into three groups. The shade of the labial surface of maxillary left or right central incisors and colour of sclera were recorded using Vita shade guide classic. Result showed that most common tooth shade according to age and gender was B2 & shade of sclera was B1. It was concluded that there is a strong association of tooth shade values with colour of sclera and age.

KEYWORDS

Tooth shade, Age, Sclera, Shade guide

Introduction The word esthetic, means "the theory and philosophy that deals with beauty and the beautiful, especially with respect to the appearance of a dental restoration, as achieved through its form and/or colour.[1] The objective of aesthetics in dentistry is to create a beautiful smile and aesthetics of any restoration needs to consider the parameters of surface form, translucency and shade.[2] Prosthodontists have always been faced with the challenge of harmonising tooth shade with facial appearance in fully edentulous patients. The knowledge of human tooth colour and its distribution are very important to the understanding of matching in aesthetic dentistry.[3] In prosthetic applications, colour selection of an artificial teeth is based mainly on visual comparison of the remaining teeth. Attempt has been made to find out the association of tooth shade with colour of skin, hairs, iris & sclera etc. with the aid of commercially available shade matching systems to improve the shade matching of edentulous patients.[4-7] The purpose of this study was to investigate the co-relation of various tooth shade value with age, gender and colour of sclera for an esthetically accepted facial restoration in Moradabad population.

Materials and Method:

The present study was conducted for a period of six months. During this period 1500 patients who were resident of Moradabad including both genders were selected from the OPD of Kothiwal Dental College and Research Centre, Moradabad. The subjects were divided into following groups:

1. Group 1: 16-30 years
2. Group 2: 31-45 years
3. Group 3: >46 years

Subjects with one maxillary left or right central incisor in the oral cavity were included in the study. Subjects with Congenital defects of enamel or dentin, Caries, Intrinsic and extrinsic staining, staining of central incisor, Restoration of central incisor, Patients having history of jaundice or anemia, tooth bleaching, any tooth abnormality were excluded in the study. Shade matching was done in natural daylight between 10 am and 12 noon on days with a clear sky. The shade matching was done by viewing the middle third of labial surface of the tooth at an arm's length distance and matching it to the nearest shade on the Vita shade guide classic by squint method. Eyes were rested for 5 seconds after noting each shade value. Similarly, sclera of the eye was matched by placing shade guide near the sclera.

Results:

Table 1: Distribution of most common tooth shade in different age groups:

Age Groups		A1	A2	A 3.5	B1	B2	B3	B4	C1	C2	C3	D2	D3	D4	Total
Group1: 16-30yrs	N	6	11	0	168	254	16	1	16	9	1	5	3	0	490
	%	1.2	2.2	0	34.2	51.9	3.2	0.2	3.2	1.8	0.2	1.0	0.6	0	100
Group2: 31-45yrs	N	17	29	2	129	232	47	1	40	42	21	4	2	3	570
	%	3.0	5.0	0.3	22.6	40.8	8.2	0.1	7.0	7.4	3.6	0.7	0.3	0.5	100
Group3: Above46yrs	N	7	5	0	63	97	51	9	69	74	46	10	5	4	440
	%	1.6	1.2	0	14.3	22.0	11.5	2.0	15.7	16.9	10.5	2.27	1.1	0.9	100
Chi square value	333.062														
pa value	0.00														

The most common tooth shade is B2, followed by B1 across all age groups. Chi-square test was found to be statistically significant $p < 0.05$.

Table 2: Distribution of most common tooth shade in different gender:

Gender		A1	A2	A 3.5	B1	B2	B3	B4	C1	C2	C3	D2	D3	D4	TOTA
Males	N	12	12	0	181	277	53	6	53	53	37	10	6	3	704
	%	1.7	1.7	0	25.7	39.3	7.7	0.9	7.5	7.5	5.3	1.4	0.9	0.4	100
Females	N	15	28	1	219	306	50	4	64	62	27	12	5	3	796
	%	1.9	3.5	0.1	27.5	38.4	6.3	0.5	8.0	7.8	3.4	1.5	0.6	0.4	100
Chi square value	11.633														
Pa value	0.558														

The most common tooth shade is B2, followed by B1 among both the genders. Chi-square test was not statistically significant $p < 0.05$.

Table 3: Distribution of most common shade of sclera in different age groups:

AGE GROUPS		A1	A2	A3	A 3.5	B1	B2	B3	B4	C1	C2	C3	C4	D2	D3	D4	TOTAL
GROUP 1: (16-30YRS)	N	14	1	3	0	399	37	3	0	21	3	2	0	7	0	0	490
	%	2.8	0.2	0.6	0	81.4	7.5	0.6	0	4.2	0.6	0.4	0	1.4	0	0	100
GROUP 2: (31-45YRS)	N	41	7	3	0	253	118	41	0	83	16	0	0	8	0	0	570
	%	7.1	1.2	0.5	0	44.3	20.7	7.1	0	14.5	2.8	0	0	1.4	0	0	100
GROUP 3: (ABOVE 46 YRS)	N	3	4	5	0	67	59	50	38	72	57	64	3	8	7	3	440
	%	0.6	0.9	1.1	0	15.2	13.4	113	8.6	16.3	12.9	14.5	0.6	1.8	1.5	0.6	100
Chi square value	230.543																
pa value	0.00*																

The most common shade of sclera is B1 followed by B2 across all age groups. Chi-square test was found to be statistically significant.

Table 4: Distribution of most common shade of sclera based on gender:

Gender		A1	A2	A3	A 3.5	B1	B2	B3	B4	C1	C2	C3	D2	D3	D4	Total
Males	N	15	3	8	0	355	87	42	19	85	38	34	9	6	4	704
	%	2.1	0.4	1.1	0	50.4	12.3	5.9	2.6	12	5.3	4.8	1.2	0.8	0.5	100
Females	N	43	9	2	0	364	126	53	19	91	38	32	14	2	2	796
	%	5.4	1.1	0.2	0	45.7	15.8	6.6	2.3	11.4	4.7	4.0	1.7	0.2	0.2	100
Chi square value	5.678															
Pa value	0.301															

The distribution of most common tooth shade in both gender was B1. Chi-square test was not found to be statistically significant.

Table 5: Association of tooth shade of different age groups with colour of sclera

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	333.062a	28	<.0001
Likelihood Ratio	381.752	28	<.0001
Linear-by-Linear Association	381.752	28	<.0001
N of Valid Cases	1500		

There is a strong association between tooth shade of different age groups with colour of sclera as
$p < 0.001$

Table 6: Association of tooth shade of different gender with colour of sclera

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.844a	3	.279
Likelihood Ratio	3.839	3	.279
Linear-by-Linear Association	2.937	1	.087
N of Valid Cases	1500		

There is no association between tooth shade of different gender with colour of sclera as $p < 0.279$

Table 7: Association of tooth shade with colour of sclera

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5706.285a	182	<.0001
Likelihood Ratio	2425.245	182	<.0001
N of Valid Cases	1500		

There is an association of tooth shade values with colour of sclera. Chi-square test was used for comparison between categorical variables (Tooth shade with age and colour of sclera). Level of statistical significance was set at p-value less than 0.05. It was found to be significant. Hence a relationship does exist between shade values of teeth and colour of sclera.

Discussion:

In this study the most common tooth shade in all age groups was B2 as age advances the tooth shade showed darker shade because there is secondary dentin formation.4,8The results of the present study are in accordance with many authors like Brewer, Veeraganta, etc.[4,5,9-11] the most common shade of sclera in group 1and group 2 was B1 but in group 3 the most common shade of sclera was C1. Age was another factor that influences the appearance of the sclera surface as age advances shade of sclera darkens. Present study showed strong evidence of presence of interaction. i.e. association of tooth shade values of different age groups with colour of sclera. Younger patients showed lighter colour of sclera when compared it with the tooth shade of same age group but as age advances the colour of sclera showed darker shade when compared it with the tooth shade of same age group. This study proves that there is a strong association between colour of sclera and tooth shade in Moradabad population.

Conclusion:

On the basis of results obtained and their analysis, the following conclusion were drawn from the present study:

1. The most common tooth shade among all age groups and gender was B2.
2. In younger patients colour of sclera was lighter than the colour of tooth.
3. There was a strong association of tooth shade values with colour of sclera & age.

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