

## Report

# Effect of age on colour of dentition of Baghdad patients

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**SUMMARY** The aim of this study was to assess the effect of age on tooth colour and to record the range of tooth colour in patients in Baghdad, Iraq. A total of 650 patients who were treated by fixed prosthesis were included in the study. In younger patients the commonest colours found in teeth were white-red and yellow. The proportion of patients with grey colour and red-grey increased with age. Since each tooth might possess different shades in its surface, the quadrant method of shade selection is recommended.

## Introduction

The success of aesthetic restorations is governed by many factors. Tooth colour is one of the main factors, as is patient satisfaction. The shade selection depends on selected measures such as the hue which resembles the colour name (A, B, C as in Ivoclar standard shades) (Table 1). It is dependent on dentine, and therefore will be in the yellow-red range. Another measure is the lightness or brightness of the colour (A1, A2, A3, etc.), which is dependent on enamel transparency. The chroma measure indicates the quantity of colour and the strength of colour saturation and is affected by dentine and enamel thickness [1-4].

Chiche and Pinault [4] considered there was no definitive method to determine the best way of shade selection, but McLean [5] showed that it was perhaps useful to make a quadrant colour rather than full size. Trials to find a definitive method have met with limited success. Today, shades are designed to resemble natural teeth with a man-made shade guide [3,5].

The effect of age on colour shade has been assumed theoretically [4], and it needs to be verified. This study aimed to assess the effect of age on tooth colour, and to record the range of tooth colour in patients in Baghdad. This information is important to have for the purposes of dental prosthesis and for purchasing dental materials.

## Materials and methods

The method of shade selection used by many prosthodontists [5,7,8] was used for shade selection of 650 patients treated by fixed prosthesis who were randomly selected for

Table 1 Colour interpretation of hue

Hue	Colour
A	White-red
B	Yellow
C	Grey
D	Red-grey

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the survey. They were attending the Dental School of the University of Baghdad over the years 1987–96 and were treated by one dentist to standardize the method and results. The patients were treated by cast restoration with Ivoclar isosist resin facing. The shade selection was made in daylight or under fluorescent light [6–10]. The shade selection was made twice, once before preparation and once after insertion of the final restoration when the teeth were wet. The average measure was taken. The data were classified into groups according to the age of the patient. Percentage evaluation was used to determine the difference between these groups and their tooth colour.

## Results

The data shown in Table 2 indicate that the commonest hues in age groups 1, 2 and 3

were A, B and C, in that order. Hue D was rarely seen. In age group 4, C was the commonest hue found. Also, in the last two groups, there was a higher prevalence of hue D than in the first two groups. These results clearly indicate the effect of age on the colour of teeth.

## Discussion

Our study confirms what is commonly known, that young people tend to have whiter teeth. Therefore, A is the dominant colour and when people become older their teeth gradually become yellower in colour [4,9,10] and hues B and C become dominant. Hue D became considerably more prevalent in older patients (over 40 years). This result can be explained by the calcium content and thickness of dentine [11] and the increased likelihood of enamel reduc-

Table 2 Frequency of the four hues and colour shade by age group

Age group (years)	Group	Hue		1		Shade 2		3		4	
		Hue	%	1	%	2	%	3	%	4	%
10–20 (n = 50)	1	A	78.5	A1	20.3	A2	47.4	A3	10.5	A4	–
		B	24.6	B1	19.9	B2	4.6	B3	–	B4	–
		C	5.0	C1	0.2	C2	3.0	C3	–	C4	–
		D	0.3	D1	0.3	D2	–	D3	–	D4	–
20–30 (n = 20)	2	A	57.8	A1	30.0	A2	14.8	A3	10.0	A4	3.0
		B	21.7	B1	0.9	B2	12.3	B3	8.6	B4	–
		C	10.6	C1	9.2	C2	1.4	C3	7.0	C4	–
		D	2.1	D1	2.1	D2	–	D3	–	D4	–
30–40 (n = 200)	3	A	30.6	A1	3.1	A2	14.9	A3	15.6	A4	5.1
		B	38.2	B1	6.8	B2	19.8	B3	3.6	B4	–
		C	22.3	C1	2.0	C2	13.3	C3	7.0	C4	–
		D	3.3	D1	1.9	D2	1.4	D3	–	D4	–
Over 40 (n = 200)	4	A	18.7	A1	–	A2	6.4	A3	12.3	A4	–
		B	28.8	B1	4.0	B2	13.1	B3	8.6	B4	2.3
		C	39.5	C1	11.7	C2	12.6	C3	15.2	C4	–
		D	6.7	D1	5.9	D2	0.8	D3	–	D4	–

tion in older ages due to the wear and tear process on the tooth [11,12]. Enamel reduction affects the value and chroma measures of the tooth [11,12].

There is still no simplified and reliable technique for successful shade selection

[5,13,14] and each tooth might possess different shades (hues) in its surface. Thus, the quadrant method is particularly useful and is considered the method of choice for shade selection, in collaboration with the dental laboratory [14-16].

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