

## A Study to Correlate Face Form and Tooth Form in Anterior Tooth Selection

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### ABSTRACT

**Background:** To determine the association between the shapes of actual faces and right maxillary central incisors.

**Materials and Method:** For shape form 152 subjects were studied and for size (measurement) 140 individuals were studied. Standardized Photographs were taken using Nikon Digital camera D-90 which was analyzed by three trained professionals. Digital Vernier caliper was used for measurement of dimensions of tooth and face. SPSS-20 software is used for the statistical analysis.

**Result:** The present study showed differences in inter-observer findings. For face, square shape constituted 12.5% - 41.4%, square taper 10.5% - 33.6%, taper 16.4% - 41.4% and ovoid 6.6% - 46.1%. The different types of tooth form according to visual perception were 9.9% - 26.3% for square shape, 10.5% - 52% for square taper, 16.4% - 38.2% for taper, 15.1% - 30.3% for ovoid and 0.7% - 3.9% had undetermined shape. No significant correlation was obtained between face forms and shape of tooth ( $p > 0.005$ ).

**Conclusion:** There is no association between maxillary central incisor form and face form.

**Keywords:** Anterior tooth selection, face form.

### INTRODUCTION

The position, shape, and color of permanent maxillary central incisors enhance the esthetics of the smile<sup>1</sup>. Facial appearance has important social and psychological effect on the human personality<sup>2</sup>. If some natural teeth remain in mouth, the procedure is to select artificial teeth that blend with natural dentition. In cases involving the reconstruction of these teeth, parameters are required to assist in elaborating a plan of treatment that corresponds to the expectations of both patients and dental professionals<sup>1</sup>. Because of this demand, many methods have been proposed to

determine the shape of central incisors. Even today, there are authors who recommend the selection of artificial teeth or the determination of the shape of prosthetic reconstructions from a facial analysis, not only taking as a reference the shape of the face contour, but also considering gender<sup>3</sup>.

This study was conducted to find the association between the shapes of the face and maxillary right central incisor. The results may provide an easy valuable alternative method to select the anterior teeth.

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## MATERIALS & METHODS

A total 152 subjects of which 82 male and 70 female individuals for shape (form) and 140 subjects of which 74 male and 66 female individuals for size (measurement), were selected. Two standardized photographs of each individual were made using Nikon Digital camera D-90; for full face, intraoral view of the maxillary central incisors. The digital archive of images was analyzed by three trained professionals who categorize shape of face and tooth into square, square taper, taper, ovoid and none. Width and height of face and tooth was measured using digital Vernier caliper. SPSS-20 software is used for the statistical analysis. Images were edited with the help of the Adobe Photoshop 7.0 software program initially by converting them to black and white; they were later measured using the Image Tool 3.0 program.

### Statistical Analysis:

SPSS-20 software is used for the statistical analysis. *Friedman Test* was applied to the data obtained for the three observers for the shape of the face and maxillary right central incisor and *Wilcoxon Signed-Rank Test* was used when comparing two observers.

## RESULTS

The present study showed differences in inter-observer findings. For face, square shape constituted 12.5% - 41.4%, square taper 10.5% - 33.6%, taper 16.4% - 41.4% and ovoid 6.6% - 46.1%. The different types of tooth form according to visual perception were 9.9% - 26.3% for square shape, 10.5% - 52% for square taper, 16.4% - 38.2% for taper, 15.1% - 30.3% for ovoid and 0.7% - 3.9% had undetermined shape. There was no significant correlation found between face form and shape of tooth form.

The maximum height of the actual face (n=140) was recorded 144.13 mm and minimum height 93.77 mm (mean height 118.229 mm). The mean height of maxillary right central incisor is 9.77 mm (n=140, male & female). There was no significant correlation between heights of actual faces ( $118.33 \pm 8.998$ ) and right maxillary central incisors ( $9.779 \pm 1.040$ ), ( $p > 0.05$ )

The maximum width of the actual face (n=140) was recorded 148.3 mm and minimum width 87.3 mm

(mean width 121.193 mm). The mean width of maxillary right central incisor is 8.32 mm. There was no significant correlation between widths of bizygomatic face ( $121.19 \pm 9.88$ ) and maxillary right central incisors ( $8.327 \pm 0.673$ ), ( $p > 0.05$ )

## DISCUSSION

The purpose of this paper was to identify face and central incisor shapes and to investigate the possible resemblance between the contours of face shapes and central incisors. The present study showed differences in inter-observer findings. The present study showed differences in inter-observer findings. For face square shape constituted 12.5% - 41.4%, square taper 10.5% - 33.6%, taper 16.4% - 41.4% and ovoid 6.6% - 46.1%. The different types of tooth form according to visual perception were 9.9% - 26.3% for square shape, 10.5% - 52% for square taper, 16.4% - 38.2% for taper, 15.1% - 30.3% for ovoid and 0.7% - 3.9% had undetermined shape.

Thus, it can be concluded that there is no highly defined association between actual face form and right maxillary central incisor form. These methods are therefore not reliable for selecting artificial maxillary central incisor tooth forms for edentulous patients of Indian origin.

The results showed mean width of maxillary right central incisors was 8.32 mm in our study population of People's College of Dental Sciences & Research Centre, Bhopal (M.P.) which is similar to mean width reported by other authors who performed studies in different population in European Caucasian population<sup>4-8</sup>. Sanin et al. (1971)<sup>7</sup> reported mean width of 8.65 mm, Mc Arthur (1985)<sup>8</sup> reported mean width of 8.86 mm, Garn S et al. (1968)<sup>5</sup> reported mean width of 8.84 mm, Mack (1981)<sup>4</sup> reported mean width of 8.8 mm, Cesario et al. (1954)<sup>9</sup> reported mean width of 8.87mm, in Chinese population Keng et al. (1996)<sup>10</sup> reported mean width of 8.85 mm, in African population Mack (1981)<sup>4</sup> reported mean width of 9.9 mm, Ibrahimagic L et al. (2001)<sup>11</sup> reported mean width of 7 mm in their study population of Zenica, Bosnia and Herzegovina.

Ibrahimagic L et al. (2001)<sup>11</sup> reported mean width of the face 138.48 mm in their study population of Zenica, Bosnia and Herzegovina, according to this

study mean width of the face was recorded 121.19 mm.

## CONCLUSION

The study showed wide differences among the observations of the three observers for face form and tooth form for all the subjects. This confirms that the observers mind is more decisive to the visual perception which determines the various forms. Thus, it can be concluded that there is no association between maxillary central incisor form and face form. These findings invalidate William's "law of harmony" because population showed no association by the visual method.

## CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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