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Perception of altered smile esthetics among Moroccan professionals and lay people

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KEYWORDS

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Visual analog scale

Abstract *Objective:* To evaluate and compare the impact of altered smile characteristics on the perception of smile esthetics between Moroccan dentists and lay people.

Materials and methods: Thirty-four digital smile photographs displaying alterations in crown length and width, lateral incisor gingival margin position, gingival exposition, midline diastema, and upper midline deviation were presented to a sample of 30 dentists and 30 lay people. The ratings were assessed with a visual analog scale.

Results: Compared to that of lay people, Moroccan dentists' evaluation of the gingival smile was more critical when the decrease in central incisor crown length was 2.5 mm ($p < 0.001$) or greater and when the increase in gingival exposition was 4 mm or greater ($p < 0.01$). Moroccan dentists were also critical in their evaluation of maxillary lateral incisor crown width alterations ($p < 0.05$) and incisal midline deviations ($p < 0.05$). However, the professionals and lay people similarly evaluated irregularities in the incisor gingival margin position. Increases in the midline diastema were judged critically by both Moroccan dentists and lay people.

Conclusions: In this sample, Moroccan dentists evaluate smile esthetic alterations more critically than Moroccan lay people. This difference in perception of smile discrepancies must be taken into account during the finishing phases of orthodontic treatment and restoration of the anterior teeth in Moroccan patients.

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1. Introduction

Smile is a dynamic position of the lips, which varies according to the degree of facial muscle contraction and the lip profile (Borghetti and Monnet-Corti, 2008). The elements that contribute to the esthetics of the smile involve the facial and labial framework, which are dependent on dental alignment and teeth/gingival interfaces. Examining the levels of defined orofacial parameters at which a smile is perceived to be acceptable

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Fig. 1 Photographs showing a decrease in the maxillary central incisor crown length by (a) 0.5 mm, (b) 1 mm, (c) 1.5 mm, (d) 2 mm, (e) 2.5 mm, and (f) 3 mm.

within the community is essential for making orthodontic treatment decisions.

Professional and attentive lay individuals can identify an imbalance or lack of harmony in a smile (Miller, 1989). The perception of dental esthetic transformations by professionals and nonprofessionals has been previously evaluated (Flores-Mir et al., 2004; Kokich et al., 1999; LaVacca et al., 2005; Moore et al., 2005). Asymmetric alterations make the teeth unattractive to not only dentists but also the public (Kokich et al., 2006). The visual analog scale (VAS) is regarded as a simple and reliable method for evaluating the perception of facial and dental esthetics (Talic and Al-Shakhs, 2008). This study aimed to assess and compare the impact of altered smile characteristics on perception of smile esthetics between Moroccan dentists and lay people. We hypothesized that the dentists' assessment of facial and particularly smile esthetics is different compared to that of the general lay population.

2. Materials and methods

The protocol used for this study, composed of two groups of 30 people each, was adapted from Talic et al. (2013). The first group consisted of 30 professionals (dentists, general practitioners, and specialists). The second group consisted of 30

Moroccan lay people of different socioeconomic backgrounds that had no involvement with dentistry.

A total of 34 digital photographs were presented to each participant in both groups. These photographs showed only the patient's smile. The other facial structures were excluded to minimize variables that may affect the participants' judgment. The smile characteristics in the photographs were altered incrementally with Adobe Photoshop software (Adobe Systems Incorporated, San Jose, CA, USA) in order to create discrepancies in smile esthetics. The photographs were grouped into six sets, with each set displaying alterations of a different smile characteristic in increments ranging from 0.5 to 1 mm. The altered smile features were as follows: crown length of the central incisors, gingival margin position of the lateral incisors, gingival exposition, crown width of the lateral incisors, maxillary midline, and midline diastema. The photographs were coded before VAS assessment of the participants' perception of smile esthetic discrepancies.

2.1. Crown length of the central incisors

The crown length of the central incisors was shortened in increments of 0.5 mm, using the incisal edge as reference for

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