Qualitative evaluation of pretreatment patient concerns in orthodontics

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Introduction: A discrepancy exists between objective and subjective measures of orthodontic treatment need, highlighting the importance of patients' perceptions. Limited qualitative information is available regarding patients' perceptions and orthodontic concerns. For the first time, patient facial images and qualitative methodology were used to assess patients' orthodontic concerns, which are incorporated into and are important in treatment planning and consent. **Methods:** An interview-based, cross-sectional study of adolescent patients eligible to receive orthodontic treatment in a public dental hospital was conducted with 105 adolescents (42 boys, 63 girls) aged between 12 and 17 years. Each patient's face was video recorded, and 3 images were selected from each recording to assess the patient's orthodontic concerns. The initial chief concerns were compared with concerns articulated after the patients assessed their facial images. In addition, patient concerns were compared with occlusal features visible on smiling using the Dental Aesthetic Index and patient study casts. **Results:** For 37% of the adolescent patients, smiling images helped to identify additional concerns. For 87%, their smiling images helped them to describe their concerns in more detail. In addition, a few patients did not articulate any concern about features measurable on the Dental Aesthetic Index that were visible on smiling. **Conclusions:** Showing adolescent patients images of their face and smile helped them to identify and better describe their concerns. Adolescents are not always overly concerned about visible and quantifiable malocclusion features. This might influence orthodontic treatment planning and consent. (Am J Orthod Dentofacial Orthop 2016;150:49-57)

People, in general, agree on attractiveness.[1,2] Attractive people are considered to be more successful, intelligent, and socially more popular.[3,4] When face-to-face conversations occur, the focus is mainly on the mouth and the eyes. Therefore, the smile is considered a dynamic feature of facial and overall attractiveness.[4,5] Authors of a recent study using eye tracking demonstrated that the eyes are the most observed facial feature with regard to duration and fixation, followed by the mouth.[6]

Desire for orthodontic treatment may be strongly influenced by the appearance of the teeth when smiling and the perceived social and psychological impact this might have on others.[7,8] Poor dental appearance can negatively impact people on a day-to-day basis, and people adopt strategies to cope socially.[9] Common strategies include avoidance of showing teeth, minimizing the importance of appearance, and seeking orthodontic treatment.[9]

In a public-funded orthodontic system, priority is often given to the most handicapping malocclusions measured by indexes that attempt to objectively ascertain orthodontic treatment need. A commonly used occlusal index is the Dental Aesthetic Index (DAI).[10] Briefly, the DAI is endorsed by the World Health Organisation as a cross-cultural international index because of its high reliability and validity.[11,12] The DAI measures 10 occlusal features that are weighted using a regression coefficient formula based on the opinions of adolescents and adults. The total DAI score is the sum of all weighted measures plus a constant.[13] Adolescents and adults have rated dental esthetics and the social impact of different malocclusions; therefore, an esthetic impact does not need to be measured separately.[14] Although occlusal indexes are effective screening and epidemiologic tools, most do not incorporate patient perceptions or psychosocial impacts.[15] Therefore,

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Submitted, August 2015; revised, November 2015; accepted, December 2015.
0889-5406/$36.00

http://dx.doi.org/10.1016/j.ajodo.2015.12.017

index-determined orthodontic treatment need may conflict with a patient's desire for orthodontic treatment.[16]

Index-determined orthodontic need does not necessarily result in treatment uptake, and some patients might have dental appearance dissatisfaction disproportionate to their malocclusion severity.[17] Therefore, orthodontic treatment can be considered elective in most cases; this highlights the importance of patient perceptions in orthodontics.

Traditionally, most active orthodontic treatment has been carried out during adolescence, which is the transition from childhood to adulthood. During this time, persons develop their social identity, self-image (especially body image), and self-worth, and these constructs are strongly influenced by external factors such as media, family, friends, and peers.[9,18] If the motive for orthodontic treatment is powered by social norms and pressures, it could explain why some adolescent patients are overcritical of certain occlusal features.[18,19] Nevertheless, adolescent orthodontic perceptions are important; therefore, adolescents are a relevant group to study.[20]

A clear understanding of patients' orthodontic concerns is essential to obtain successful treatment outcomes and fulfil patients' expectations. To our knowledge, this was the first time that videography has been used to explore the orthodontic concerns of adolescent patients in a clinically relevant way. Two null hypotheses were postulated in this study: (1) not all adolescent orthodontic patients can communicate their chief concerns equally well, with or without viewing their own facial images; and (2) not all adolescent orthodontic patients are sensitive to their occlusal features visible on smiling, with the DAI as an objective reference.

MATERIAL AND METHODS

Ethics approval for this cross-sectional, interview-based study was obtained from the Women's and Children's Health Network, Human Research Ethics Committee (HREC/13/WCHN/133), and involved eligible adolescent patients referred for specialist orthodontic treatment at the Adelaide Dental Hospital and residing in the state of South Australia. Eligibility for specialist orthodontic treatment at this hospital depends on multiple clinical factors and a valid South Australian health care concession card.[21] Good oral hygiene and health are prerequisites to access public-funded specialist orthodontic treatment (Fig 1).

Adolescents between 12 and 18 years of age without active orthodontic appliances in place were considered for inclusion. Patient recruitment depended on consent, the availability of a researcher to conduct interviews, and the inclusion criteria.

Patients were recruited and interviewed during the consultation stages before active treatment (Fig 2).The patient and the parent or guardian were verbally informed about the purpose and procedures involved in the research project. A detailed information sheet was provided, including a copy of the consent form. The patient and parent or guardian had an opportunity to ask questions about the study. Written consent was obtained from the parent or guardian of each patient, and participation was voluntary with no incentives offered. Consent included the use of existing study casts for evaluation. An unwillingness to participate did not influence a patient's access to specialist orthodontic services.

The interview consisted of 2 components and took approximately 30 minutes to complete (Fig 2). All audio recordings were coded to protect the privacy of the patients for data entry and reporting. Patients could withdraw their consent at any stage.

All interviews were conducted in the same well-lit room annexed to the orthodontic clinic. Each patient's face was video recorded, and the main objective of the video recordings was to capture the dynamic nature of the smile cycle.[23-26] The goals were to provoke a natural, repeatable posed smile and to observe the teeth in the soft tissue smile frame.[27] When a satisfactory smile could not be produced, participants were asked to say "cheese!" A digital camera (EOS 50D SLR; Canon, Tokyo, Japan) with an EF 100-mm macro lens (Canon) was used for the video recordings. The video function recorded 25 frames per second in high definition at video settings of ISO 1000, shutter speed of 1/125 second, and aperture of f 5.6. A standard tripod was erected 2.4 m from the zone in which the participants were asked to stand, and the camera was aligned parallel to the floor. Each video recording took approximately 20 to 30 seconds. A laptop personal computer with processing capacity to manage the video recordings was used to import the data. PlayMemories Home (Sony, Tokyo, Japan) was used to identify specific image frames from the video recordings, and 1 researcher (E.T.) selected 3 image frames from each video recording. The image frames that best represented the patient's face in profile, full-frontal (nonsmiling), and full-frontal (smiling and showing teeth) views were selected. A digital audio recorder (DS 4000; Olympus, Tokyo, Japan) was used during the face-to-face interviews.

Subsequently, participants were asked about their orthodontic concerns in open-ended questions. These questions were standardized and printed in the questionnaire booklet as a template, and the participants' answers were audio recorded for transcription. The 2 questions were the following.