

# What factors predict the uptake of orthodontic treatment among adults?

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**Introduction:** Our aim was to evaluate the factors that predict orthodontic treatment uptake among adults attending a specialist practice. **Methods:** A cross-sectional controlled design was adopted in a private practice setting. The test group included 62 adults seeking fixed orthodontic treatment. The controls were 52 parents of children undergoing orthodontics but who had not undergone treatment themselves. All subjects completed a set of validated questionnaires: the Rosenberg Self-Esteem Scale, the shortened version of the Oral Health Impact Profile, and the demographic and socioeconomic position characteristics. The Dental Health Component and the Aesthetic Component of the Index of Orthodontic Treatment Need were used to assess the severity of the malocclusions. **Results:** A 100% response rate was achieved. Subjects without a partner ( $P < 0.001$ ), with a high oral health impact ( $P < 0.001$ ), or with a need for orthodontic treatment (as assessed by the clinician or the subject using the Aesthetic Component of the Index of Orthodontic Treatment Need;  $P = 0.003$  and  $P = 0.031$ , respectively) were more likely to have orthodontic treatment than were their counterparts with a partner (odds ratio [OR] = 20.8; 95% confidence interval [CI] = 4.63-93.25), with a low oral health impact (OR = 5.3; 95% CI = 2.36-11.88), or with no treatment need (OR = 3.6 and 4.4; 95% CI = 1.57-8.99 and 1.15-16.77, respectively). Self-esteem and demographic and socioeconomic position characteristics were not significantly associated with orthodontic treatment uptake ( $P > 0.05$ ). **Conclusions:** The significance of age, marital status, and the shortened version of the Oral Health Impact Profile in predicting the uptake of orthodontic treatment among adults was demonstrated. (Am J Orthod Dentofacial Orthop 2015;147:704-10)

Enhancing appearance and improving psychosocial function appear to play important roles in an adult's decision to initiate orthodontic treatment.<sup>1-3</sup> However, with limited research about adults seeking treatment, it appears that esthetic and functional improvement in occlusion are the 2 reasons most commonly cited by adults for undergoing combined surgical-orthodontic treatment, according to Cunningham et al.<sup>4</sup> Research in adults has focused primarily on their motivations for seeking treatment, with Pabari et al<sup>5</sup> reporting that adult motives tend to be numerous and varied, with their psychological traits closer to those among the general population than to

orthognathic patients. Both McKiernan et al<sup>6</sup> and Sergl and Zentner<sup>7</sup> used a questionnaire-based study and found that among adults, the primary motivating factor for orthodontic treatment was a desire to improve dental appearance, followed by facial appearance. Sergl and Zentner identified that a functional benefit was also a key motivator for seeking treatment.

Orthodontic treatment uptake has been shown to vary considerably in differing populations, from 5% to 60%, depending on the country.<sup>8,9</sup> Research to date on the factors that predict orthodontic treatment uptake has focused on adolescent populations and identified a number of factors, including sex,<sup>10</sup> ethnicity,<sup>11,12</sup> availability of orthodontic services,<sup>13</sup> socioeconomic status,<sup>13</sup> and treatment need.<sup>14</sup>

Harris and Glassell<sup>12</sup> demonstrated that the greater uptake of orthodontic treatment in girls occurred because of preferential self-selection and not necessarily greater need. The available evidence in relation to socioeconomic factors and treatment uptake shows controversial findings in adolescents. Badran and Al Khateen<sup>13</sup> reported socioeconomic class as a significant predictor for treatment, with a greater frequency of uptake among adolescents from high and middle socioeconomic classes compared with those from a

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lower class. Breistein and Burden,<sup>15</sup> however, found no evidence to support this association. The uptake of orthodontic treatment may also be influenced by the availability and in turn the ease of access to such services, and it relates strongly to the availability of government-subsidized treatment.<sup>10,13,16</sup> This serves to highlight the complex interactions and the reasons that the uptake of orthodontic treatment varies across cultural and socioeconomic backgrounds; these have yet to be identified, particularly in adults.

Recently, the focus has been more on (1) patients' own perceptions of oral health status and the ability of oral health care systems to understand their needs, (2) patients' satisfaction with treatment, and ultimately (3) adults' perceived overall quality of health systems.<sup>17</sup> Thus, oral health-related quality of life (OHRQOL), perceived orthodontic treatment need, and self-esteem may play important roles in determining treatment uptake. Feu et al<sup>18</sup> compared OHRQOL in adolescents seeking orthodontic treatment with age-matched peers not seeking treatment and found that those who sought treatment were 3.1 times more likely to have a worse OHRQOL than those in the comparison group. Helm et al<sup>19</sup> attempted to evaluate the influence of the Aesthetic Component (AC) of the Index of Treatment Need (IOTN) as a motivator for seeking treatment, reporting unfavorable perceptions of teeth and high dental awareness in adults with a malocclusion. Only Mandall et al<sup>14</sup> reported the AC of the IOTN as a predictor of orthodontic treatment, but that study was limited to adolescents. In relation to self-esteem, the AC of IOTN has only been evaluated in relation to any observed change as a result of treatment but not as a potential predictor of orthodontic treatment uptake.

Currently, there is no evidence to evaluate the factors that may predict the uptake of orthodontic treatment, especially in light of the greater numbers of adults undergoing treatment. The aim of this study was therefore to evaluate the role of sociodemographic background, orthodontic treatment need, OHRQOL, and self-esteem in terms of their ability to predict orthodontic treatment uptake among adults attending a specialist practice.

## MATERIAL AND METHODS

In this study, we used a cross-sectional controlled design, for which ethical approval was obtained from the research ethics committee of Queen Mary University (reference number, QMREC2009/33) in London, United Kingdom. All subjects aged 18 years and above who fulfilled the selection criteria were recruited from 4 specialist practices in southeast England into 2 groups,

with written informed consent obtained. The test group was recruited from adult patients who were due to receive active fixed orthodontic treatment to correct their malocclusion in the specialist practice. The control group was recruited from parents of children undergoing orthodontic treatment in the same settings with no history of orthodontic treatment themselves. Subjects were excluded if they were not literate and fluent in English, or had caries, periodontal disease, recent dental treatment or orthognathic surgery, or a craniofacial deformity. A sample of 114 patients distributed into 2 groups was estimated to be sufficient to demonstrate a 3-fold or greater odds ratio in explanatory variables between the test and control groups with respect to orthodontic treatment uptake, with a power of 80% at a significance level of 5%. The calculation assumed no more than a 70% frequency of exposure to the explanatory variables in the test or the control group.

Explanatory variables included sociodemographic background, orthodontic treatment need, OHRQOL, and self-esteem. Sociodemographic variables included age, sex, ethnicity, marital status, and socioeconomic position indicators: occupation, education, and employment status.<sup>20</sup> Occupation is considered an indicator of social class. The Registrar General's Classification of Occupations was used to allocate social class (groups I-V) based on each participant's occupation. These 5 groups are broadly dichotomized into nonmanual (high social class, groups I-III) and manual (low social class, groups IIII-V). In the case of unemployment or retirement, the Registrar General's Classification of Occupations provides no classification. Thus, this information was considered missing. Education was measured by the highest qualification obtained, with high levels indicating university or postgraduate qualifications.<sup>21</sup> Employment status information included being an employee or self-employed. Marital status included not having a partner (never married, separated, divorced, or widowed) or having a partner (married, remarried, or cohabiting).

Orthodontic treatment need was assessed using the Dental Health Component (DHC) and the AC of the IOTN.<sup>22</sup> The DHC and the AC of the IOTN were assessed by trained and calibrated examiners. In addition, each patient's self-perceived dental esthetics was assessed with the AC of the IOTN. The scores of the DHC of the IOTN were dichotomized into 2 categories of need for orthodontic treatment: moderate or lower need, and great or very great need. The scores of the AC of the IOTN were also dichotomized into 2 categories of need for orthodontic treatment: no need (scores 1-4), and borderline or definite need (scores 5-10).<sup>23</sup>

Self-esteem was measured using the Rosenberg Self-Esteem Scale.<sup>24</sup> It has proven validity and

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