

# Factors associated with subjective need for orthodontic treatment among Finnish university applicants

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Subjective orthodontic treatment need and associated factors were studied in a sample of 226 young Finnish adults. The subjects, applicants to enter the University of Helsinki, were interviewed immediately after their entrance examination. A need for treatment was felt by 14% of the subjects. For 47% of those expressing such a need their reason was appearance only, and for 25% it was both appearance and their ability to chew. Among subjects who reported a visible dental irregularity, 38% were dissatisfied with their dental appearance, and 25% felt the need for orthodontic treatment. Women were more often dissatisfied with their dentition than men. Subjective need for treatment was significantly associated with perceived visible dental irregularity and infrequent socializing but not with orthodontic treatment in childhood, pattern of dental attendance, or district of residence. Of various perceptions of anterior teeth, irregularly and wrongly positioned teeth were most often connected with treatment need. □ *Appearance; orthodontics; perception; satisfaction; treatment need*

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Concern about dentofacial appearance has often been found to be the major reason for a patient to seek orthodontic treatment (1-6). Cosmetic improvement of dentition is believed to enhance an individual's social acceptance and self-esteem (7, 8). However, the problems of who and how many are to be offered orthodontic treatment have major social and economic consequences. The question of treatment priorities needs to be linked with allocation of scarce resources.

Type and severity of malocclusion may affect people in different ways. Some persons may be unaware of or relatively unconcerned about pronounced malocclusion, whereas others may show great concern over a relatively mild irregularity (9-11).

The subjective need for orthodontic treatment depends on various complex psychosocial factors (2, 12-14). Age, sex, intelligence, socioeconomic status, and earlier orthodontic treatment may be reflected in different levels of recognition of and perception about malocclusion and orthodontic treatment need (15, 16).

The aim of this work was to examine the relative importance of various factors in occurrence of subjective need for orthodontic treatment among Finnish university applicants.

## Subjects and methods

The survey was conducted on the premises of the University of Helsinki, where all faculties represented at the University held their annual entrance examinations during June and July 1992. When student applicants finished their examinations, they were free to leave the auditorium. Two interviewers waited outside the auditorium and randomly asked applicants for interviews as they were departing. After each interview, another person leaving the examination auditorium was selected as the next person in the sample. During 1 examination day, 2 interviewers were able to interview 15 to 20 subjects. Eight subjects refused to participate, and the final sample comprised 226 subjects (137

women and 89 men), representing applicants to all faculties. Altogether 59% of the subjects came from the district of Helsinki; 24% came from other cities and 17% from rural areas. The subjects' mean age was 21.5 (SD = 4.6) years, 21.6 (SD = 5.0) among women and 21.5 (SD = 4.0) among men (NS).

The subjects were not informed of the purpose of the study in advance, and the dental questions followed the questions related to social background and social activities. The subjects were asked the following questions related to their social life:

Are you dating someone regularly or are you engaged/married? With whom do you usually spend your leisure time (alone, with family members, with one or many friends)?

After this the subject was asked questions concerning frequency of meeting with friends outside the home, about having a regular hobby, the frequency indulging in this hobby outside the home, and the size of the group socialized with.

The pattern of dental attendance was ascertained.

The subjects were asked the following question about their need for dental services: Provided that treatment were free, would you like to have any of the following dental services?

- a) Orthodontic treatment
- b) Restorations
- c) Periodontal treatment
- d) Dental prosthetics
- e) Extractions
- f) Oral surgery

If the subject expressed a desire for orthodontic treatment, the following question was posed:

Which of the following reasons make you wish to receive orthodontic treatment?

- a) Appearance
- b) Formation of your speech
- c) Ability to chew
- d) Other reasons: what? \_\_\_\_\_

The subject was asked to recall whether he/she had wished to have orthodontic treatment in childhood.

The subjects' perception of their general oral health came from a five-level scale of alternatives: 1) very good, 2) good, 3) aver-

age, 4) poor, and 5) very poor. If the subject replied "very good" or "good", this was coded as satisfied.

The subjects were asked whether they were satisfied with their ability to chew and with their dental appearance.

The subject was then asked to consider his/her mandibular and maxillary anterior teeth (including canines) on the basis of the following criteria:

- a) Regularly positioned
- b) Crowded
- c) Widely spaced
- d) Protruding
- e) Wrongly positioned
- f) Not properly occluding

From these alternative answers a dichotomy was formulated: 0) no perceived visible dental irregularity (alternatives b, c, d, e not chosen); 1) perceived visible dental irregularity (any or several of the alternatives b, c, d, and/or e chosen).

At the end of the interview the subject was asked whether he/she had ever received orthodontic treatment.

Statistical analysis of the data was based on Student's *t* test for the means, chi-square, and Fisher's exact tests for the proportions.

## Results

A need for orthodontic treatment was expressed by 14% of the subjects. A need for other forms of dental treatment was expressed equally often by those with and without orthodontic treatment need. Among the 87 subjects who had been orthodontically treated, 20% reported a current subjective need for treatment; among the 139 untreated subjects, this figure was 11% (NS).

Altogether 18% of women and 9% of men perceived a need for treatment (NS). For 47% of those feeling such a need, the reason was appearance only, and for 25% it was both appearance and their ability to chew.

Among subjects who reported a visible dental irregularity, 38% were dissatisfied with their dental appearance (47% of women and 19% of men ( $P < 0.01$ ), and 25% felt a need for orthodontic treatment (28% of women and 19% of men (NS)).

Table 1. Percentage distribution of subject's perception of his/her maxillary and mandibular anterior teeth (including canines) among subjects with and without subjective treatment need

Perception	Subjective treatment need					
	Women		Men		All	
	Need (n = 24)	No need (n = 113)	Need (n = 8)	No need (n = 81)	Need (n = 32)	No need (n = 194)
Irregularly positioned	79	37***	75	22**	78	31***
Crowded	54	24**	50	21	53	23***
Widely spaced	0	9	13	3	3	6
Protruding	25	6*	38	6*	28	6***
Wrongly positioned	50	14***	63	11**	53	13***
Not properly occluding	29	4***	13	1	25	3***

Statistical evaluation between subjects with and without treatment need: \* =  $P < 0.05$ ; \*\* =  $P < 0.01$ ; \*\*\* =  $P < 0.001$ .

Table 2. Percentage distribution of subjects who were dissatisfied with their dentition among subjects with and without subjective treatment need

Dissatisfaction with	Women		Men		All	
	Need (n = 24)	No need (n = 113)	Need (n = 8)	No need (n = 81)	Need (n = 32)	No need (n = 194)
General oral health status	33	20	38	22	34	21
Appearance	67	27***	50	7***	63	19***
Ability to chew	29	8**	25	0**	28	5***

Statistical evaluation between subjects with and without treatment need: \*\* =  $P < 0.01$ ; \*\*\* =  $P < 0.001$ .

Perception of one's anterior teeth differed significantly between subjects with and without treatment need. Similar patterns were observed both among women and men. Irregularly positioned teeth were mentioned most often, and widely spaced teeth least often (Table 1).

Altogether 25% of the subjects were dissatisfied with their dental appearance, and 8% with their ability to chew. Both among women and men, subjects with treatment need were significantly more often dissatisfied than those without. Dissatisfaction was pronounced among women (Table 2).

Need for treatment was expressed more often by subjects who met friends outside the home once a week or less often (25%) than by those with more frequent socializing

(12%) and more often by those with a hobby outside the home once a week or less often (23%) than by more frequent enthusiasts (12%) ( $P < 0.05$ ). Orthodontic treatment in childhood, the pattern of dental attendance, and the district of residence were not associated with current need for treatment.

## Discussion

The subjects of the present study, all taking the entrance examinations to the University of Helsinki, came from all parts of the country; a variety of individuals was obtained by inclusion of all the university faculties. The sample is therefore not representative of the whole population for that

age but gives an overview of those who have graduated from high school and wish to continue into higher education. The sampling method did not enable analysis of refusals to participate, but this number was small.

In previous studies the proportion of those with subjective need for treatment was lower than in our study (10, 17–19). It has been suggested that people at a higher educational level are more aware of the malalignment of their teeth (18, 21). Our study included university applicants, in contrast to the studies involving military conscripts and working people (10, 17, 18), which may partly explain the difference. Academic people may be better able than others to recognize body signals, like chewing ability. Standards for dental appearance and aesthetics may also differ.

Self-perception of dental appearance and attitudes toward malocclusion have been reported as important factors in an individual's decision to obtain orthodontic treatment (2). There are, however, differences in recognition and evaluation of dental features (21–23), and our study shows that individuals' responses to dental irregularities and problems in chewing vary. That perception of malalignment of teeth does not always lead to dissatisfaction or treatment need corroborates the findings of earlier studies (5, 10, 14, 19).

Compared with findings of our and two other recent studies (8, 19), rather low levels of dental awareness and subjective treatment need were reported in the seventies for adult Swedish men (10, 17). This difference may partly be due to the fact that dental health in Nordic countries is considerably better today than 10–15 years ago. This is likely to be associated with keener awareness of dental appearance and tooth alignment (24).

Appearance may be a significant factor in the development of subjective treatment need among adolescents (4, 5, 25). Our findings suggest that aesthetic reasons are important factors also in early adulthood in determining treatment need, both among women and men.

The degree of visible dental irregularity was an important determinant of satisfaction with dental appearance and influenced sub-

jects' desire for orthodontic treatment, a finding in agreement with earlier studies (14, 26). Dissatisfaction with one's ability to chew has less often been a reason for treatment need, because problems with chewing may be less common among young adults than are problems with aesthetics. Aesthetic and functional reasons for needing treatment can have equally strong effects on subjects' everyday life. When deciding treatment priorities, aesthetic reasons should not be overlooked.

In our study men were more satisfied with their dentition or dentofacial appearance than women, which corroborates previous studies (14, 20, 27). Both dissatisfaction with one's dental appearance and treatment need are related not only to gender but also to the severity of occlusal irregularities (2, 10, 14, 19, 28). However, dissatisfaction and subjective treatment need are not synonymous, and our study shows that dissatisfaction does not always lead to treatment need.

It has been suggested that earlier orthodontic treatment may affect level of awareness, and patients with orthodontic treatment experience have been shown to be more aware of malocclusion than are untreated individuals (17, 20). This would support our finding that a higher percentage of subjects who had been orthodontically treated expressed a current subjective need for treatment than did the untreated subjects. However, this association was not found by Espeland & Stenvik (24).

In an earlier study (29), treatment was found to be less acceptable to those in a region where less orthodontic appliance therapy was being undertaken. Gravely (29) suggested that the presence of orthodontic practitioners in a community may stimulate demand. During the past decades regional inequalities in access to orthodontic care have significantly decreased in Finland, which may be the reason for the minor differences observed between urban and rural subjects.

On the basis of earlier findings and on our results we conclude that the most important factors determining the need for orthodontic treatment are variables directly related to positioning of teeth.

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