The Relationship between Demand and Need for Orthodontic Treatment in High School Students in Bangkok

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Background: *Orthodontic service is limited in Thailand and cannot meet the demand of the population.*
Objective: *(1) To assess the need for orthodontic treatment (OT) using the Index of Orthodontic Treatment Need (IOTN) to analyze the relationship between demand and need for OT, and (2) to compare the demand and need for OT between genders.*
Material and Method: *A cross-sectional study was conducted on 450 students aged 12- to 14-years-old in three government high schools in Bangkok. A constructed questionnaire was used to assess demand for OT. Clinical examination was done by two orthodontists to determine the need for OT using the IOTN.*
Results: *Most of the students (74.0%) wished to have OT, while only one-third (37.5%) had severe need, and one-third (34.4%) had moderate need for OT as judge by the DHC of the IOTN. The AC of the IOTN indicated that most students (55.8%) had mild or no need for OT. Females (79%) demanded OT more than males (66% p-value = 0.033) but the need was similar in both sexes. Most functional factors had strong relationships with the demand for OT except lower teeth bite on palate, but none was found to be associated with need for OT. All of the aesthetic factors had strong relationships with demand for OT. There were significant relationships with needs in five categories, 1) crooked, crowded, or spacing teeth, 2) worried when speaking or smiling, 3) had suggested for OT, 4) breath smell and halitosis, and 5) wanted to put on braces to be like other people or for fashionable reasons.*
Conclusion: *Most of the students requested OT but females had significantly higher demand for OT than males. Most of the samples needed to have OT. The aesthetic factors that had strong relationships with the need for OT were 1) crooked, crowded, or spacing teeth, 2) worried when speaking or smiling, 3) had suggested for OT, 4) breath smell and halitosis, and 5) wanted to put on braces to be like other people or for fashionable reasons.*

Keywords: *Orthodontic treatment (OT), The index of orthodontic treatment need (IOTN), The dental health component (DHC), The aesthetic component (AC)*

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The demand or self-perceived need for orthodontic treatment (OT), especially among adolescents, is increasing in Thailand as it is in many other countries[1,2]. However, not all malocclusions need to be treated. Some people who want to have OT are unaware of the basic risks and problems[3,4]. The prevalence and severity of malocclusion range from near-ideal to markedly anomaly, so the justifications for treatment by specialists is a subjective concept[5]. A large number of indices for assessing malocclusion have been developed for estimating normative OT need, in order to select the patients who should be treated and to establish priorities when resources are limited.

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The Index of Orthodontic Treatment Need (IOTN), described by Brook and Shaw in 1989[6] has been gaining national and international recognition as a method of objectively assessing treatment need because of its reliability and reproducibility. It is easy to learn, allowing rapid recording of relevant features[1,7-10] and had been modified to guarantee greater reliability, especially when used by non-specialists in oral health survey[11]. This index may be applied both clinically and to study casts[6,12,13]. It consists of a dental health component and an aesthetic component. The dental health component (DHC) uses a 5-grade system with clear-cut points between the grades, with the most severe trait identified being the basis for grading the individual need for treatment on dental health grounds. The aesthetic component (AC) consists of a 10-point scale, illustrated by a series of numbered photographs that shows different levels of dental attractiveness. The value gives an indication

of the patient's treatment needs on the grounds of aesthetic impairment[6,12].

There have been many studies of the demand and need for OT using the IOTN, but few had been carried out in Thailand. Pruetiworanan[14] studied 12- to 14-year-old students in Chiang Mai and Utaradit and found that there was relationship between demand and need for OT, but his findings were not in agreement with the study by Sukthawee et al of 12- to 14-year-old students in Hat Yai, Songkhla[15]. Both studies were carried out in rural areas where there were orthodontists working only in the developed parts. No study has been carried out in Bangkok where there is a higher distribution of orthodontists, people have varied socio-economic status and lifestyles, and students can easily access knowledge and information about OT in many ways.

The purposes of the present study were: (1) to assess the need for OT using the IOTN and analyze the relationship between demand and need for OT, and (2) to compare demand and need for OT between genders.

Material and Method

The present cross-sectional study was approved by the Research Ethics Committee, Rajavithi Hospital, Bangkok, Thailand. It was conducted in three governmental high schools with permission from the principals and the education authorities. Purposive sampling technique was used because these schools have equally educational standard and students have similar socio-economic status. Sample size was calculated using estimated single proportion formula. The present study used 46.7% of demand for OT[15], and the 5% precision of estimation was indicated. Minimally required samples were 383 students, 20% dropping out were added. Therefore, 450 students were recruited. The samples consisted of 450 subjects (168 males and 282 females), all of whom were between 12- and 14-years-old. They were randomly selected by schoolteachers using the cluster sampling method according to the following inclusion criteria (1) all permanent teeth were erupted except third molars, and (2) there was no history of orthodontic treatment or extractions for orthodontic treatment. All students were given permission by their parents or guardians, and written informed consents were obtained.

The present study consisted of two parts. The first was a questionnaire comprised five parts. Demographic data contained four questions about sex, age, GPA, and family income. Dental history contained three questions about routine dental check up, students' awareness of malocclusion, and dental trauma from accident. The responses of these two were designed as fixed statements and free answers. Demand for OT contained one questions about demand for OT. Functional factors contained ten questions about functional problems resulted from malocclusion. Finally, aesthetic factors contained ten questions about aesthetic problems resulted from malocclusion. The details of the questionnaires about functional and aesthetic factors had been shown in Table 4 and 5. The responses of these three parts were designed as "yes" or "no" answers. Some questionnaires were constructed by the author and some were derived from previous studies[14-16]. They were adjusted and tested for reliability by performing the same test on a group of thirty other dental patients of the same age at Rajavithi Hospital, a private hospital and some dental clinics. Cronbach's alpha coefficient was 0.89. The questionnaires were answered at the school by the subjects in attendance on that day, and a dental assistant was available to clarify any queries.

The second part was a clinical examination conducted in the school's meeting room, consisting of an intraoral inspection of teeth and occlusion, and palpation of the temporomandibular joint (TMJ) and muscles. In the present study, the examiner did not use a specially designed ruler (IOTN Ruler for DHC) but used a mouth mirror, a sliding caliper, and rulers. Each subject's occlusion was classified using the IOTN. The total time required to record both the dental health and aesthetic components was approximately one minute. However, if several grades required examination to identify the most severe, grade allocation may take up to three minutes[6]. In the present study, the DHC was assessed by the author and the AC was assessed by another orthodontist. Five grades of DHC and ten grades of AC were segregated into three groups according to the method used by Richmond et al[17]. In the present study, when assessing the relationship between demand for OT and factors that indicated dental health and aesthetic need, group 1 of the DHC and the AC were considered to have either no need or only slight need for OT, while groups 2 and 3 of the DHC and AC were considered to be in need of OT.

As the IOTN can be applied both in the clinical setting and in research study models[12,13], twenty study models of orthodontic patients in Rajavithi Hospital were randomly selected using the

same criteria for inclusion as the research subjects, in order to train the assessment technique of the IOTN. To test intra-examiner reproducibility, the study models were re-examined two weeks after their initial examination (kappa values for DHC and AC were = 0.90 and 0.83 respectively). Kappa values for Intra-examiner agreement of the second orthodontist for AC was 0.92 and inter-examiner agreement for AC was 0.89, indicating good agreement. The Statistical Package for Social Science (SPSS) program version 16.0 was used for data analysis. Descriptive statistics such as frequency, mean, and standard deviation were used to describe demographic information. The Pearson Chi-square test was used to assess the relationships between demand and need for OT with statistical significance set at *p*-value less than 0.05.

Results

In the present study, 452 students were selected but two were excluded because one had had previous OT and the other was over 15 years old. Therefore, 450 children (282 females, 168 males) were recruited, age between 12- to 14-years-old with mean age of 13 years 11 months. Demographic information is shown in Table 1.

Demand and need for orthodontic treatment as shown in Table 2, the demand for OT assessed from the answers given in the questionnaires was significantly associated with OT need assessed from clinical examination using the IOTN (DHC and AC). Using the DHC assessment, most of the samples needed to have OT (severe need = 37.5%, moderate need = 34.4%). These results were not in agreement with those found when assessing subjects using the AC, when most of them were found to have no need or only slight need for OT (55.8%).

The relationships between demand for OT and the need for it were shown in Table 3. It was found that the gender distribution of demand was significantly different, females had more demand or self-perceived need than males (female 78.7% and male 66.1%, $p = 0.033$). Differences in treatment need assessed by the IOTN between the sexes were not observed.

The relationships between factors indicated demand and need for OT were analyzed by Chi-square test (Table 4, 5). Most of the factors considered by the DHC had significantly high correlation with the demand for OT at *p*-value <0.05, excepted lower front teeth bite on palate. All of the aesthetic factors indicating treatment need assessed from the AC had high correlation with demand for OT. These were 1) crooked, crowded, or spacing teeth, 2) worried when speaking or smiling, 3) had suggested for OT, 4) breath smell and halitosis, and 5) wanted to put on braces to be like other people or for fashionable reasons.

Discussion

The present study was conducted in the students aged 12- to 14-years-old. They were able to independently answer the questionnaires and make decisions on aesthetic improvement and self-perception of demand for OT[13,16]. Results from questionnaires indicated that most of the students requested OT and this was higher than the findings of Sukthawee et al[15]. The present study was done in Bangkok where there were more OT services, and students could obtain knowledge about OT from many sources. Students were familiar with people wearing colorful braces, which made some of them wanting to put on braces to be like other people or for fashionable reasons.

Using the IOTN assessment, the DHC scores showed that most of the students were in need for OT

Table 1. Demographic information of the 450 students

Characteristics	Total (n = 450)
Gender	
Male	168 (37.3)
Female	282 (62.7)
Age (years)	13.11±0.8
GPA**	
<2.5	30 (7.1)
2.5-2.9	52 (12.3)
3.0-3.49	110 (26.1)
>3.5	230 (54.5)
Family income/month**	
<20,000	135 (30.5)
20,000-49,999	158 (35.7)
50,000-100,000	106 (23.9)
>100,000	44 (9.9)
Routine dental check up**	
Never	80 (17.8)
Every 6 months	108 (24.1)
When problems occur	261 (58.1)
Awareness of malocclusion**	337 (75.9)
Treatment suggestion**	179 (40.7)
Dental trauma from accident**	78 (17.7)
Demand for OT	333 (74.0)

OT = orthodontic treatment
Data were represented as number (%) and mean ± SD
** Numbers may not add up to the totals due to missing data

Table 2. Comparisons of demand for OT and OT need assessed from clinical examination using IOTN

Orthodontic need (IOTN)	Total (n = 450)	Demand		*p*-value
		No	Yes	
DHC				<0.001*
No need	127	53 (41.7)	74 (58.3)	
Moderate need	155	40 (25.8)	115 (74.2)	
Great need	168	24 (14.3)	144 (85.7)	
AC				<0.001*
No need	251	88 (35.1)	163 (64.9)	
Moderate need	100	18 (18.0)	82 (82.0)	
Great need	99	11 (11.1)	88 (88.9)	

IOTN = index of orthodontic treatment need; DHC = dental health component; AC = aesthetic component
Data were represented as number (%)
* Significance set at $p<0.05$

Table 3. Comparison of OT need assessed from clinical examination of the DHC and AC grades by demand and gender

Characteristics	Total (n = 450)	Male (n = 168)	Female (n = 282)	*p*-value
DHC	323 (71.8)	126 (75.0)	197 (69.9)	0.241
AC	199 (44.2)	83 (49.4)	116 (44.1)	0.088
Demand	333 (74.0)	111 (66.1)	222 (78.7)	0.033*

Data were represented as number (%)
* Significance set at $p<0.05$

and had a highly significant relationship with demand for OT: when the subjects with moderate or great need for treatment were concluded, the proportion of need for orthodontic treatment was found to be 71.9%, which was similar to the results of Brook and Shaw's study[6]. A highly significant difference between need and demand for OT was found. These results corresponded with the previous studies[6,9,15]. The present finding supported that the IOTN had relatively predictive accuracy for treatment need judgments that corresponded with demand for OT. All of the subjects had greater need levels when assessed by the DHC than when the AC was used. The finding corresponded with Ucuncu and Ertugay's[9]. The AC was assessed by recording the severity of anterior aesthetic tooth arrangement of 10 colored photographs. They did not take into account the malposition of posterior teeth such as posterior crossbite, posterior openbite, posterior crowding, and impacted teeth that indicated great need for treatment. There were also some problems in the AC assessment because some subjects had anterior crossbite, openbite, and spacing that could not be compared with any of the 10 colored photographs. In addition, these 10 colored photographs showed anterior occlusion in only two dimensions so the horizontal relationship of the anterior teeth (overjet) could not be assessed. Therefore, the examiner had to use her personal judgment in grading the severity of the AC component. In practical application of the IOTN, the DHC is a good predictor for OT need. The AC alone is unsuitable for screening treatment need but a stronger indicator of patient satisfaction. In the present study, the DHC was used to differentiate between 'need' and 'no need'. The IOTN is simple to use and having relatively few traits to measure and application of the index takes approximately one minute for each case, therefore, it is relatively quick. Most of the measurement protocols are common. The index is now widely used in Britain and in countries where orthodontics is totally or partly including in public health system. Over 70 papers have been published from many countries such as Ireland, Britain, Norway, USA, Singapore, and Australia[20].

Differences in self-perceived demand have been documented in some studies. In the present study, females had significantly more self-perceived demand than males, and these findings are consistent with those of previous studies[2,3,17-19]. Possible explanations may relate to the higher number of females participating in the studies and females are more selective in their self-perception than males, they value dental appearance higher than males. No difference between genders in terms of treatment need was also observed in the present study (Table 3), which similar to the

Table 4. Functional factors indicating the DHC association with demand and need for OT

Functional factors	n_1:n_2	Demand	No demand	*p*-value	n_3:n_4	Need	No need	*p*-value
Upper front teeth bite on lower gum	333:115	67 (20.1)	13 (11.3)	0.033*	321:126	62 (19.3)	18 (14.2)	0.200
Lower front teeth bite on palate	333:116	27 (8.1)	7 (6.0)	0.467	322:127	28 (8.7)	6 (4.7)	0.152
Difficult to clean the teeth, food impaction	332:116	287 (86.4)	78 (67.2)	<0.001*	322:126	265 (82.3)	100 (79.4)	0.472
Lip and/or cheek biting	331:116	274 (82.8)	84 (72.4)	0.016*	321:116	262 (81.6)	96 (76.2)	0.196
Front teeth cannot bite	332:116	92 (27.7)	16 (13.8)	0.003*	321:127	84 (26.2)	24 (18.9)	0.105
Can chew only one side	333:116	142 (42.6)	26 (22.4)	<0.001*	322:127	129 (40.1)	39 (30.7)	0.065
Gums are usually inflamed and swollen	332:116	168 (50.6)	37 (31.9)	<0.001*	322:126	148 (46.0)	57 (45.2)	0.890
Pain in front of ear area during opening and shutting the mouth or chewing	333:116	134 (40.2)	30 (25.9)	0.006*	322:127	120 (37.3)	44 (43.6)	0.603
Clicking joint sound /locked jaw	333:116	42 (12.6)	5 (4.3)	0.012*	322:127	38 (11.8)	9 (7.1)	0.142
Problems with pronunciation	332:117	201 (60.5)	39 (33.3)	<0.001*	321:126	176 (54.5)	64 (50.8)	0.481

Data were represented as number (%)
* Significance set at $p<0.05$
n_1 = number of students, who had demand for OT, answered the question; n_2 = number of students, who did not have demand for OT, answered the question
n_3 = number of students, who had need for OT, answered the question; n_4 = number of students, who had did not have need for OT, answered the question

Table 5. Aesthetic factors indicating the AC association with demand and need for OT

Aesthetic factors	n_1:n_2	Demand	No demand	*p*-value	n_3:n_4	Need	No need	*p*-value
Felt that anterior teeth protruded	332:116	228 (68.7)	31 (26.7)	<0.001*	322:126	191 (59.8)	68 (54.0)	0.303
Crooked, crowded or spacing teeth	333:116	286 (85.9)	50 (43.1)	<0.001*	323:126	268 (83.0)	68 (54.0)	<0.001*
Worried when speaking or smiling	333:116	286 (85.9)	49 (42.2)	<0.001*	323:126	255 (78.9)	80 (63.5)	0.001*
Friends' remarks	332:116	99 (29.8)	6 (95.2)	<0.001*	321:127	78 (24.3)	27 (21.3)	0.494
Teasing from others	333:117	127 (38.1)	17 (14.5)	<0.001*	323:127	113 (34.7)	32 (25.2)	0.052
Felt they had an asymmetrical face	333:117	36 (10.8)	2 (1.7)	0.002*	323:127	29 (9.0)	9 (7.1)	0.516
Had orthodontic treatment suggested	333:117	232 (69.7)	28 (23.9)	<0.001*	323:127	218 (67.5)	42 (33.1)	<0.001*
Breath smell or halitosis because of food impaction from crowded teeth	333:116	190 (57.1)	41 (23.9)	<0.001*	323:126	185 (57.9)	46 (36.5)	<0.001*
Wanted teeth to look good and beautiful	332:116	324 (97.6)	89 (76.7)	<0.001*	323:125	301 (93.2)	112 (89.6)	0.204
Wanted to put on braces to be like other people or for fashion reasons	333:117	247 (74.2)	30 (25.6)	<0.001*	323:127	209 (64.7)	68 (53.5)	0.028*

Data were represented as number (%)
* Significance set at $p<0.05$
n_1 = number of students, who had demand for OT, answered the question; n_2 = number of students, who did not have demand for OT, answered the question
n_3 = number of students, who had need for OT, answered the question; n_4 = number of students, who had did not have need for OT, answered the question

results of the study of Sukthawee et al[15]. The distribution of rating for the DHC showed that most of the samples had moderate to great need for OT because of malposition of posterior teeth. The most important reason was early loss of deciduous molars, which caused mesial movement of the first permanent molars and lack of space for alignment of premolars and canines[21]. These problems can cause crowding, crooked teeth and impacted canines, and could be prevented by making people aware of the importance of caries prevention, problems that result from early loss of deciduous teeth, and encouraging them to use preventive and interceptive orthodontic treatment. These measures could help prevent malocclusion and reduce the need for OT.

In the studies of functional and aesthetic factors, most functional factors had highly significant relationships with demand, but none had any relationship with need assessed by IOTN. All of the aesthetic factors had highly significant relationships with demand, and some had a relationship with need, and this was not in line with the results of the study of Sukthawee et al[15]. The possible explanation may be that the research done by Sukthawee et al was carried out in a rural area, which had few general dentists and orthodontists, all of whom worked in the developing part of Hat Yai, Songkhla. The students and their guardians lacked knowledge about malocclusion, and the risk of dental health problems caused by malocclusion. The students were satisfied with their dental appearance. The highly significant relationship of aesthetic factors category 2, 3, 7, 8, and 10 to both demand and need indicated that these present findings agreed with previous studies[2,3,5,7,12,14,17,18], which described the power of social pressures such as aesthetic and social norms resulting in the demand for OT and the decision to undergo the procedure.

It is interesting to note that about two thirds of the samples were in need of OT to avoid the associated health risks generated by malocclusion, but unfortunately, not many of them had access to OT. This is because of long waiting times for the patients after they apply for OT especially in governmental hospitals. There are 750 orthodontists working in Thailand, but only one-third of them are working in governmental service. All of them are working in the developing part of the country. One possible explanation may be that orthodontic concern is still given low priority in the oral health care system in Thailand because of the high cost of treatment (cost for OT in governmental hospital is 32,000 to 36,000 baht/case) and the shortage of orthodontists. Therefore, orthodontic services are not readily accessible to the general population. Cost-benefit and cost-effectiveness analyses should be carried to assess the acceptability of the level of service. It is important to identify the patients who are in great need of treatment and give them a high priority in order to achieve high standard of OT and reduce waiting times.

The questionnaires used in the present study had high reliability because they were minimized errors. They were adjusted to be easy for the students to understand and answer the questions. The school meeting rooms used for data collection in the present study were rather small, and some students sat in groups and shared their information when they were completing the questionnaires. They might have chosen to give the same answers as their fellow participants, and this could have affected data analysis. The present study also has its limitation when considering the way the sample was selected. It might not represent the adolescents in Bangkok, because of limitation of labor and time. Data collection regarding the need for OT using the IOTN could be done only by clinical examination of the subjects because of the large number of students, sterilization was also the problem. In the present study, measurements of occlusal traits were done without taking radiographs, although anomalies such as impacted teeth, congenitally missing teeth, and bimaxillary protrusion would be best diagnosed accurately by radiography. Thus, the findings could be under estimation of the actual need for treatment. Results of the present study were limited to 12- to 14- year-olds students and malocclusion in the permanent dentition stage. Assessment of malocclusion of other (older as well as younger) age groups would also be useful if the national need assessment were to be estimated. Further studies are required to improve our understanding of the demand and need for OT, especially in developing countries. It has to include the IOTN in the teaching of undergraduate orthodontics in dental schools in Thailand, so all dentists can use the IOTN to prioritize cases for OT, which is based on greatest need, i.e. highest priority has to be given to a malocclusion associated with risk of tissue damage, functional disturbances, or psychological problem. More studies will help to assess the perception and the level of orthodontic awareness in children, adolescents, and young adults in addition to treatment need to provide more precise information about labor requirements, to plan the future service of orthodontic care. It may

be necessary to use more than one index in an epidemiologic study to gather all the required information.

Conclusion

Most of the students requested OT, and females had significantly higher demand for OT than males. Most of the subjects were found to have need for OT when assessed by the DHC. Aesthetic factors such as crooked crowded or spacing teeth, worried when speaking or smiling, had been suggested for OT, breath smell and halitosis, and fashionable reasons had strong relationships with the need for OT.

What is already known on this topic?

Patients' demand or self-perceived need for OT may not agree with orthodontists' perception of normative need. The prevalence and severity of malocclusion range from near ideal to markedly anomaly, and the Index of orthodontic treatment need (IOTN) has been gaining national and international recognition as a method of objectively assessing treatment need. There have been many studies of demand and need for OT using the IOTN: some of these found that there was a relationship between demand and need for OT, but some were in disagreement.

Two studies using IOTN have been done in Thailand. The study of 12- to 14-year-old students in Chiang Mai and Utaradit showed that there was a relationship between demand and need for OT[14], but this disagreed with the findings of the study in Hat Yai, Songkhla[15]. Both studies were carried out in rural areas where orthodontists worked only in the developed parts; in fact, there was no orthodontist working in Utaradit at the time of these studies. No study had been carried out in Bangkok where there is a wider distribution of orthodontists, people are difference in socio-economic status and life style, and students can easily obtain knowledge and information about OT in many ways.

What this study adds?

The present study reported that most of the students requested OT. Using the IOTN assessment, the DHC scores found 37.5% of subjects had great need, 34.4% had moderate need, and 28.2% required little or no treatment. In these school populations, there was highly significant relationship between DHC scores and demand for OT. When subjects with moderate and great need for treatment were added up, 71.9% of them were in need of orthodontic treatment. When the need for OT was evaluated by the AC: 22.0%, 22.2%, and 55.8% were found to have great need, moderate need, and little or no treatment need respectively, so the proportion of subjects requiring orthodontic treatment was found to be 44.2%, which was less than the number of people with little or no treatment need. There was a marked difference between the need for OT assessed using the DHC and the need when the AC was used. Most subjects were found to have higher need values when assessed using the DHC than the AC.

In the studies of functional and aesthetic factors, most functional factors had highly significant relationships with demand, but none had any relationship with need when assessed by the IOTN. All of the aesthetic factors had highly significant relationships with demand. Aesthetic factors such as crooked crowded or spacing teeth, worried when speaking or smiling, had been suggested for OT, breath smell and halitosis, and fashionable reasons had strong relationships with need for OT assessed using the AC.

The findings support the view that social pressures such as aesthetic ideals and social norms are powerful influences on the demand for OT and people's decisions to undergo the procedure. It is important to determine which patients are in greatest need of treatment and give them a high priority in order to achieve a good standard of OT and reduce waiting times.

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Potential conflicts of interest

None.

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ความสัมพันธ์ระหว่างความต้องการและความจำเป็นในการจัดฟันของนักเรียนชั้นมัธยมศึกษาตอนต้นในกรุงเทพมหานคร

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ภูมิหลัง: การบริการการรักษาทันตกรรมจัดฟันในประเทศไทยยังไม่เพียงพอต่อความต้องการ การศึกษานี้เป็นการประเมินความจำเป็นในการรักษาทางจัดฟันด้วยดัชนีไอโอทีเอ็นซึ่งประกอบด้วย 2 ส่วน คือ องค์ประกอบส่วน dental health component ใช้บันทึกความจำเป็นในแง่ของทันตสุขภาพ และส่วน aesthetic component ใช้บันทึกความความจำเป็นในแง่ของความสวยงาม และเปรียบเทียบกับความต้องการการจัดฟันในนักเรียนชั้นมัธยมศึกษาตอนต้นในกรุงเทพมหานคร

วัตถุประสงค์: (1) เพื่อหาความสัมพันธ์ระหว่างความต้องการและความจำเป็นในการจัดฟันด้วยดัชนีไอโอทีเอ็น (2) เพื่อเปรียบเทียบความต้องการและความจำเป็นในการรักษาทางทันตกรรมจัดฟันระหว่างเพศหญิงและชาย

วัสดุและวิธีการ: การศึกษาภาคตัดขวางในนักเรียนจำนวน 450 คน อายุ 12-14 ปี ในโรงเรียนระดับมัธยมศึกษาตอนต้น 3 โรงเรียนในกรุงเทพมหานคร ประเทศไทย โดยใช้แบบสอบถามเพื่อประเมินความต้องการรักษาทันตกรรมจัดฟัน และตรวจภายในช่องปากเพื่อประเมินความจำเป็นในการจัดฟันโดยดัชนีไอโอทีเอ็น โดยทันตแพทย์เฉพาะทางจัดฟัน 2 คน

ผลการศึกษา: นักเรียนส่วนมาก (74.0%) มีความต้องการรักษาทางทันตกรรมจัดฟัน ประเมินความจำเป็นในการรักษาทางจัดฟันด้วยส่วน dental health component พบว่า กลุ่มนักเรียนที่มีความจำเป็นต้องรักษาทางทันตกรรมจัดฟันมาก และกลุ่มที่มีความจำเป็นต้องรักษาทางทันตกรรมปานกลางแต่ละกลุ่มมีจำนวนหนึ่งในสามของนักเรียนทั้งหมด (37.50% และ 34.4% ตามลำดับ) ประเมินความจำเป็นในการการรักษาทางจัดฟันด้วยส่วน aesthetic component พบว่า กลุ่มตัวอย่างส่วนใหญ่ไม่มีความจำเป็นหรือมีความจำเป็นน้อยในการจัดฟัน (55.8%) เพศหญิงมีความต้องการจัดฟันมากกว่าเพศชายอย่างมีนัยสำคัญ ไม่พบความแตกต่างของความจำเป็นในรักษาทางทันตกรรมจัดฟันระหว่างเพศ ปัจจัยด้านการทำงานที่บ่งชี้องค์ประกอบส่วนทันตสุขภาพส่วนมากมีความสัมพันธ์อย่างมากกับความต้องการรักษาทางทันตกรรมจัดฟัน ยกเว้นฟันล่างกัดชนเพดานปาก แต่ไม่พบมีความสัมพันธ์กับความต้องการรักษาทางทันตกรรมจัดฟัน ปัจจัยด้านความสวยงามทั้งหมดมีความสัมพันธ์อย่างมากกับความต้องการรักษาทางทันตกรรมจัดฟัน และพบความสัมพันธ์กับความจำเป็นในรักษาทางทันตกรรมจัดฟัน 5 ข้อ คือ ฟันเรียงตัวไม่เป็นระเบียบ ซ้อนเกหรือฟันห่าง กังวลเวลาพูดหรือยิ้ม เคยรับคำแนะนำให้จัดฟัน ลมหายใจมีกลิ่นและมีกลิ่นปาก และต้องการใส่เครื่องมือจัดฟันเหมือนคนอื่นหรือเพื่อการจัดฟันตามแฟชั่น

สรุป: นักเรียนส่วนมากต้องการรักษาทางทันตกรรมจัดฟัน นักเรียนหญิงมีความต้องการรักษาทางทันตกรรมจัดฟันมากกว่านักเรียนชาย นักเรียนส่วนใหญ่มีความจำเป็นต้องรักษาทางทันตกรรมจัดฟันเมื่อประเมินด้วย DHC ปัจจัยด้านความสวยงาม เช่น ฟันเรียงตัวไม่เป็นระเบียบ ฟันซ้อนเกและฟันห่าง กังวลเวลาพูดหรือยิ้ม ลมหายใจมีกลิ่นหรือมีกลิ่นปาก และต้องการใส่เครื่องมือจัดฟันเหมือนผู้อื่นหรือเพื่อการจัดฟันตามแฟชั่น