The Reasons of Patients to Terminate the Comprehensive Treatment by Dental Students

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Abstract

This study aimed to analyze and compare the reasons of patients to terminate the comprehensive treatment by dental students. A total of 300 patients in a comprehensive dental care clinic were enrolled. Self-administration questionnaires were used to collect data. Descriptive statistics were used to analyze the general data, past dental treatments, and the reasons of the patients to terminate the comprehensive treatment by the dental students. The χ^2 and independent t-test were used to compare the statistically significant difference between walk-in and referred patients. The significant level was set at 0.05. The open-ended questions were analyzed by content analysis and presented with frequency. 183 patients were walk-in patients whereas 117 were referred patients. The main reason to terminate the comprehensive treatment was the duration of the visit (mean=1.25, SD=1.40), followed by the frequency of treatment without progression (mean=1.18, SD=1.46) and the complexity of treatment procedures (mean=1.11, SD=1.36). Comparing the walk-in patients and referred patients, the mean score of referred patients were higher than walk-in patients for all reasons except waiting duration (p=0.537). The patients' suggestion that the authors used the open-ended question found that the patients were satisfied with the dental students entailed the personality, behavior, and caring. The score of the reason was low, which reflects the satisfaction of the patients. The suggestions about dental students were positive, involved the comfort caring by dental students and the excellent manner of dental students.

Keywords: *comprehensive care, dental students, dental treatment, satisfaction, terminate treatment*

1. Introduction

The education of dentists in Thailand was systematically developed since establishing the Faculty of Dentistry Chulalongkorn University in 1943 (Komabayashi et al., 2007). Currently, both government and private universities opened the Doctor of Dental Surgery (DDS). The curriculums were monitored by the Ministry of Higher Education, Researching and Innovation (MHERI) and the Thai dental council (TDC). TDC requires dental students to undertake a minimum of 2000 hours of practicing in patients with minimum requirements in each didactic discipline for applying dental professional licensure examination. Students must pass the experiences of practicing in real patient related to the competency to dental profession issued by TDC (Thai Dental Council, 2012). Before practicing in the dental profession, the students must pass the licensure examination including the theoretical part and the practicing part.

Rangsit University was the first private university that submitted and be approved the DDS curriculum (RSU-DDS) in 2005. RSU-DDS was designed as a bi-lingual program divided into three periods - the basic science and GE in the 1st and 2nd year, the pre-clinic dental science in the 3rd and 4th year, and the clinical dental practice in the 5th and 6th year. The education in GE and general science was instructed by RSU International college and the faculty of science. Pre-clinical dental science is composed of 2 parts; pre-medical science and pre-clinical dental science, taught by lecturing and practicing in dental laboratory and simulation clinic. The last period, the clinical practice, is practicing in real patients. The learning process comprises assigning patients from instructors called team leaders, then examining, diagnosing, and performing the treatment plan. Dental students conduct the treatments under the supervision of clinical instructors. The graduation criteria were both didactic and comprehensive cases.

The reforming of dental education in the US introduced the comprehensive care model which replacing the numeric requirements (Park et al., 2011). The traditional dental education model is based on the requirements of numerical procedural in didactic to meet the graduation criteria (Vining, 1984). The

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comprehensive care model (CCM) of the dental students' clinical training has become the primary model for clinical education in most dental schools (Haden et al., 2010). A study in the University of Tennessee Health Science Center College of Dentistry found that the students in the comprehensive care model were able to accomplish more comprehensive dentistry with greater consistency of supervision from faculty in a more patient-centered environment than in the departmental model (Dehghan et al., 2015). The satisfaction of the patients in a comprehensive clinic was not different from the traditional model (Mascarenhas, 2001).

The problems in clinical dental education in Thailand were the number of patients and the appropriate works for assigning to the dental students. Practically, dentistry faculties promote the low fee or the free of charge campaign to advocate for the teaching clinic. A study by Natthasetsakul and Ratchakom (2018) found that the three factors related to the decision to receive treatment in the dental clinic in Mahidol University were trustworthiness, services, and staff. Furthermore, the study found that 9% of the samples chose dental students' service while most of the patients chose to treat in the faculty practice (Natthasetsakul & Ratchakom, 2018). Therefore, the patients in teaching clinics are important and must be maintained for providing the quality of dental graduates and the dental education system.

College of Dental Medicine Rangsit University prepared the patients for dental students through public relations, offering free of charge services for specific groups and active community activities. Moreover, students could bring their parents, relatives, and acquaintances as patients who were referred to those students. Although the walk-in and referred patients were assigned to dental students, approximately ten patients for one dental student, some of them terminated the treatment halfway. This study aimed to analyze the reasons patients terminate the comprehensive treatment by dental students. This study will benefit the administrators of the College of Dental Medicine in improving dental clinic operations. The continuous improvement will maintain the patients through the complete treatment related to the dental students' clinical practice and graduations.

2. Objectives

The objectives of the study were to
1) analyze the attributes of patients in comprehensive dental care clinics in RSU.
2) identify the reasons for the patients to terminate the comprehensive treatment by dental students.

3. Materials and Methods

The Ethical Committee of Rangsit University approved this survey research with reference number RSUERB2020-12 as an exemption. The questionnaire related to the survey was distributed to 360 patients in a comprehensive dental care clinic, College of Dental Medicine, Rangsit University, in 2021. The informed consent was obtained from all respondents, and all the respondents were assured about the confidentiality of personal information.

The population in this study was the patients who came to the comprehensive dental clinic, College of Dental Medicine, Rangsit University. Yamane's method was used to determine the sample size. The calculated sample size was 360. A simple random technique was conducted to select the samples.

A self-administrative questionnaire entailed three parts – 1) general data, 2) past dental treatments, and 3) reasons to terminate the comprehensive treatment by dental students. Identifying the reasons to terminate the comprehensive treatment by dental students was used six levels Likert scale (0 to 5). Zero scores identified "Do not think that is the problem," while five scores meant "It was the problem on the most level." The index of item objective congruence (IOC) method was performed for content validity by three experts. The pilot study was conducted on 30 patients for assessment of the reliability of the questionnaire. The alpha coefficient of Cronbach was 0.84, which determined the high reliability.

Data collection was conducted during the middle of the second semester in the academic year 2019. After the permission of the Dean of College of Dental Medicine was obtained, the researchers introduced the purposed and nature of the study to all patients. They were invited to complete the questionnaires. The data were cleaned before data entry.

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All statistical analyses were conducted using the IBM Statistical Package for the Social Sciences (SPSS), version 24 (IBM Corp., Armonk, NY, USA). Descriptive analyses were used to summarize data of the respondents' characteristics, past dental services, and the reasons of patients to terminate the comprehensive treatment by dental students (frequencies, percentages, means, and standard deviations). The χ^2 test was used for testing the statistically significant difference of the proportion in various variables between the walk-in and referred patients. Comparisons of the reasons of the patients to terminate the comprehensive treatment by the dental students between the walk-in and referred patients were performed by the Mann-Whitney U test. The open-ended questions were analyzed by content analysis and presented by frequency.

4. Results and Discussion

4.1 Results

A total of 300 respondents participated in this cross-sectional survey with an overall response rate of 83.33%. Female respondents greatly outnumbered males, of which 198 were female (66.00%) and 102 were male (34.00%). Most of the respondents were 36-60 years (42.33%), followed by 18-25 years (32.33%) and more than 60 years old (15.33%). Half of the respondents (51.67%) were single. A total of 201 patients (67.00%) were in the higher education level. Most of the respondents were students, followed by freelance and others, and private business. Almost half of the respondents had an income between 9000-30000 baht per month. A total of 183 patients were walk-in patients whereas 117 were referred patients. The χ^2 test was performed for a significant difference between the walk-in and referred patients, which reveals no statistically significant difference in gender, age, status, and occupation. The demographic data of the respondents are shown in Table 1.

Table 1 Demographic data

Variables	Frequency (%)			χ^2 Sig.
	Overall (n=300)	Walk-in (n=183)	Referred (n=117)	
Gender				0.487
Male	102 (34.00)	65 (35.52)	37 (31.62)	
Female	198 (66.00)	118 (64.48)	80 (68.38)	
Age				0.694
18 – 25 years	97 (32.33)	61 (33.33)	36 (30.77)	
26 – 35 years	30 (10.00)	17 (9.29)	13 (11.11)	
36 -60 years	127 (42.33)	80 (43.72)	47 (40.17)	
More than 60 years	46 (15.34)	25 (13.66)	21 (17.95)	
Status				0.528
Single	155 (51.67)	98 (53.55)	57 (48.72)	
Marriage	119 (39.67)	68 (37.16)	51 (43.59)	
Widows or divorces	26 (8.66)	17 (9.29)	9 (7.69)	
Education level				0.119
Primary school	23 (7.67)	11 (6.01)	12 (10.26)	
Middle school	17 (5.67)	14 (7.65)	3 (2.56)	
High school education	59 (19.66)	39 (21.31)	20 (17.09)	
Higher education	201 (67.00)	119 (65.03)	82 (70.09)	
Occupation				0.307
Unemployed	43 (14.33)	25 (13.66)	18 (15.38)	
Government officer or State enterprise	18 (6.00)	7 (3.82)	11 (9.41)	
Employee in private sector	30 (10.00)	21 (11.48)	9 (7.69)	
Business owner	73 (24.33)	48 (26.23)	25 (21.37)	
Student	80 (26.67)	50 (27.32)	30 (25.64)	
Freelance or Others	56 (18.67)	32 (17.49)	24 (20.51)	
Salary				0.000
None	56 (18.67)	36 (19.67)	20 (17.09)	
Less than 9,000 Baht	42 (14.00)	33 (18.03)	9 (7.69)	
9,001-15,000 Baht	68 (22.67)	45 (24.59)	23 (19.67)	
15,001-50,000 Baht	108 (36.00)	63 (34.43)	45 (38.46)	
More than 50,000 Baht	26 (8.66)	6 (3.28)	20 (17.09)	

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A total of 161 patients knew the comprehensive dental care clinic by word of mouth from their friends or family members. A total of 117 patients (39.00%) were persuaded by the dental students or dental students' families. Only eight patients (2.67%) knew by the social media. 36 of 300 patients (12.00%) had never received any dental treatment before the treatment with the dental students. Two hundred twenty-six patients (75.33%) had been patients in comprehensive care clinics for more than six months, and more than half of these had been for over a year. 40% of the patients had the appointment once a week, followed by more than one visit per week (27.00%) and two visits per month (13.67%). Half of the respondents came to the dental clinic by personal vehicles. Most of them (70.00%) paid the treatment fee on their own. Seventy-two respondents (24.00%) replied that the dental students were responsible for the treatment fees.

Table 2 Dental treatment of the patients in comprehensive care clinic

Variables	Frequency (%)			χ^2 Sig.
	Overall (n=300)	Walk-in (n=183)	Referred (n=117)	
Past dental treatment				0.051
Never received dental service	36 (12.00)	17 (9.29)	19 (16.24)	
Government hospital or healthcare units	106 (35.33)	73 (39.89)	33 (28.21)	
Private dental clinic	158 (52.67)	93 (50.82)	65 (55.55)	
Source of public relations				0.000
RSU Dental Student	117 (39.00)	0 (0.00)	117 (100.00)	
Word of mouth from friends or family	161 (53.67)	161 (87.98)	0 (0.00)	
Social media (Facebook or Website)	8 (2.67)	8 (4.37)	0 (0.00)	
RSU dental community, Leaflet/Publish or others	14 (4.66)	14 (7.65)	0 (0.00)	
Duration of treatment with dental student				0.022
Less than 3 months	30 (10.00)	14 (7.65)	16 (13.68)	
3 months – 6 months	44 (14.67)	26 (14.21)	18 (15.38)	
6 months – 1 year	100 (33.33)	54 (29.51)	46 (39.32)	
More than 1 year	126 (42.00)	89 (48.63)	37 (31.62)	
Frequency of visits				0.022
More than 1 visit per week	81 (27.00)	51 (27.87)	30 (25.64)	
1 visit per week	120 (40.00)	78 (42.62)	42 (35.90)	
1 visit per month	19 (6.33)	10 (5.46)	9 (7.69)	
2 visits per month	41 (13.67)	29 (15.85)	12 (10.26)	
Not regularly	39 (13.00)	15 (8.20)	24 (20.51)	
Transportations				0.033
Public transportation	80 (26.67)	48 (26.23)	32 (27.35)	
Personal car/motorcycle	150 (50.00)	101 (55.19)	49 (41.88)	
By other's car	30 (10.00)	12 (6.56)	18 (15.38)	
Walking or other	40 (13.33)	22 (12.02)	18 (15.38)	
Payment methods				0.000
Owned money	210 (70.00)	145 (79.23)	65 (55.56)	
Social Security Fund	2 (0.67)	0 (0.00)	2 (1.71)	
Universal Health Coverage program	16 (5.33)	9 (4.92)	7 (5.98)	
Paid by dental student	72 (24.00)	29 (15.85)	43 (36.75)	

The percentage of problems leading to the dental clinic was presented in Figure 1. The most reason to come to the comprehensive dental care clinic was general checkup (25.67%), followed by tooth decay (21.00%) and pain and sensitivity (17.00%). The minor reason was tooth discoloration (1.67%). Figure 2 reveals the problems leading to the clinic as compared between the walk-in and referred patients. Fifty-three walk-in patients and twenty-four referred patients came to the dental clinic due to the general checkups. Furthermore, a total of 46 walk-in and 17 referred patients came because of tooth decay.
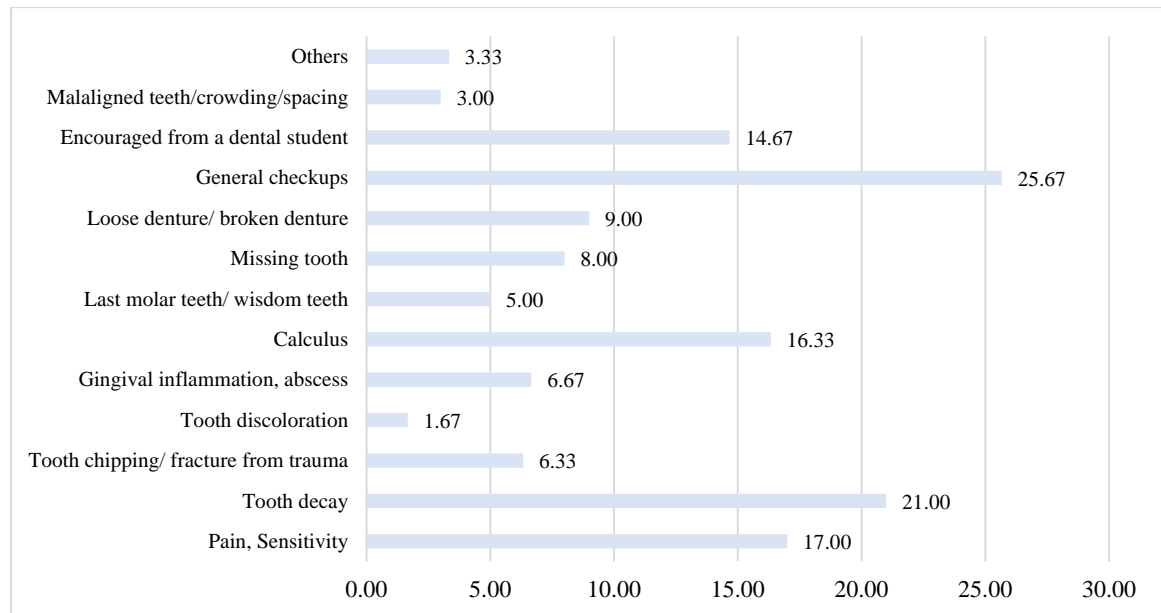
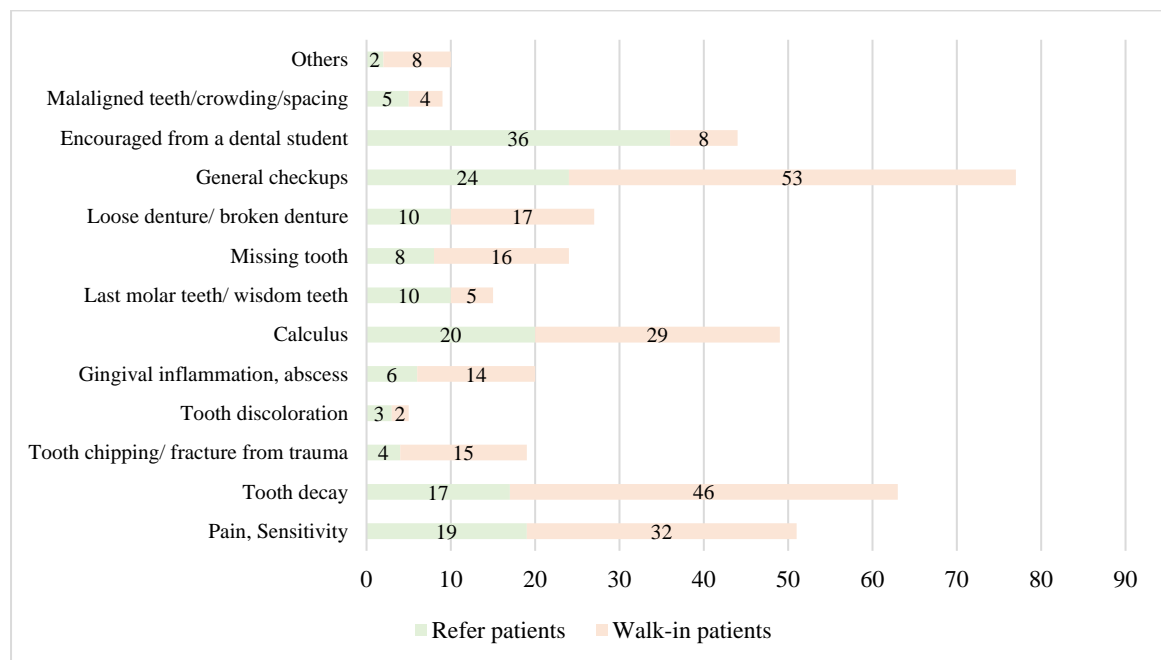**Figure 1** Percentage of problems leading to the dental clinic (%)

Figure 2 Problems leading to clinic compared between walk-in and referred patients

The main reasons to terminate the comprehensive treatment by the dental students were the duration of the visit (mean=1.25, SD=1.40), followed by the frequency of treatment without progression (mean=1.18, SD=1.46) and the complexity of treatment procedures (mean=1.11, SD=1.36). Comparing the walk-in patients and referred patients, the mean score of referred patients was higher than the walk-in patients for all reasons. The independent t-test revealed statistically significant differences in all reasons except waiting duration (p=0.537) (See Table 3).

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Table 3 The reasons to terminate the comprehensive treatment by the dental students

Reasons	Overall		Walk-in		Referred		Sig.
	Mean (SD)	Rank	Mean (SD)	Rank	Mean (SD)	Rank	
Long-term waiting duration	0.69 (1.12)	5	0.66 (1.09)	4	0.74 (1.18)	7	0.857
Behavior or personality of dental students	0.39 (1.02)	8	0.24 (0.79)	8	0.63 (1.27)	8	0.001
Behavior or personality of staffs (dental assistants, receptionists, and cashiers)	0.48 (1.14)	7	0.28 (0.85)	7	0.80 (1.43)	6	0.000
Verbal communication of clinic instructors	0.63 (1.17)	6	0.41 (0.89)	6	0.97 (1.45)	5	0.019
Inconvenience of travelling	0.77 (1.18)	4	0.49 (0.89)	5	1.22 (1.42)	4	0.000
Long duration of treatment	1.25 (1.40)	1	1.07 (1.31)	1	1.52 (1.50)	2	0.021
The frequency of treatment without progression	1.18 (1.46)	2	0.96 (1.30)	2	1.54 (1.16)	1	0.013
The complexity of treatment procedures	1.11 (1.36)	3	0.93 (1.27)	3	1.40 (1.46)	3	0.028

Table 4 presents the level of the problem that leads the patients to terminate the comprehensive treatment by the dental students. The problems of the frequency of treatment without progression, the long duration of treatment, and the complexity of treatment procedures were the problem that affected the decision to terminate the treatment. 22.67%, 22.99%, and 19.33% of the respondents perceived those problems as medium to very big, respectively. 82.67% and 80.00% of the respondents thought they would not consider the behavior or personality of the dental students and staff as the problem leading to the termination of the comprehensive treatment by dental students.

Table 4 Level of the problem leading to the termination of comprehensive treatment by the dental students

	Level of problem Frequency (%)					
	Not consider	Very small	Disappointed	Medium	Frustrate	Very big
Long-term waiting duration	198 (66.00)	38 (12.67)	31 (10.33)	24 (8.00)	9 (3.00)	0 (0.00)
Behavior or personality of dental students	248 (82.67)	24 (8.00)	4 (1.33)	12 (4.00)	10 (3.33)	2 (0.67)
Behavior or personality of staffs (dental assistants, receptionists, and cashiers)	240 (80.00)	23 (7.67)	9 (3.00)	13 (4.33)	10 (3.33)	5 (1.67)
Improper communication with clinical instructors	214 (71.33)	34 (11.33)	17 (5.67)	23 (7.67)	9 (3.00)	3 (1.00)
Inconvenience transportation	182 (60.67)	57 (19.00)	20 (6.67)	31 (10.33)	8 (2.67)	2 (0.67)
Long duration of treatment	132 (44.00)	60 (20.00)	40 (13.33)	44 (14.67)	18 (6.00)	6 (2.00)
The frequency of treatment without progression	149 (49.67)	52 (17.33)	30 (10.00)	37 (12.33)	28 (9.33)	4 (1.33)
The complexity of treatment procedures	147 (49.00)	56 (18.67)	39 (13.00)	37 (12.33)	16 (5.33)	5 (1.67)

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Data from the open-ended questions are shown as the frequency in Table 5. The content analysis grouped the answers of the respondents into three categories. Most of the respondents suggested that the dental clinic's accommodation entailed the very cool temperature, inadequate waiting area, dirty restroom, and scarcity of parking lodges. The suggestions about the instructors and staff were negative, including the improper communication of instructors and the inappropriate manner of the staff. In contrast, the suggestions about the dental students were positive, involved the comfort caring by dental students and the excellent manner of dental students.

Table 5 The frequency of suggestion from patients

Issues	Frequency
Student	
Comfort caring by dental students	11
A good manner of dental students	4
Instructor and staff	
Improper communication of instructors	10
Inappropriate manner of the staff	14
Accommodation	
The improper temperature in the clinic	20
High-quality dental materials and tools	3
Inadequate waiting area	6
Unsanitary restroom	5
Inadequate parking area	5

4.2 Discussion

Patient satisfaction with care is a useful measure that evaluates care, including the quality of care and the provider-patient relationship. Additionally, patient satisfaction makes a patient return to receive the dental service. This study is interested in the reasons to terminate the comprehensive dental treatment by dental students. The comprehensive dental treatment is centered around the patient and is more representative of the dentistry model practiced in the real situation. In the clinical part of the College of Dental Medicine, Rangsit University, a patient is assigned to a dental student in the comprehensive dental clinic after the screening in the oral diagnosis clinic. This dentist becomes the patient's dental care provider who provides most of their needs like a general dentist. The treatments are under the supervision of clinical instructors.

Our study found that 61.00% of the patients were walk-in patients while 39.00% were persuaded by dental students as referred patients. The characteristics between the walk-in and referred patients were not different. Although oral healthcare services in Thailand fully cover all Thais population, our study found that 12.00% of the patients had never received oral healthcare services. The previous study predicated the inequity in various population groups (Krisdapong et al., 2014; Pothidee et al., 2016; Somkotra, 2011, 2013; Somkotra & Vachirarojpisan, 2009). Notwithstanding the population-dentist-ratio was decreased to less than 5000 population in 2014 (Bureau of Dental Health, 2015), the dentists' distribution is the major problem. Dental services in the faculty of dentistry could be one of the measures to alleviate the accessibility problem.

Being a patient in the faculty of dentistry is valuable because treating dental students would be time-consuming and entailed frequent visits and duration. The patients would be appointed one visit in a week and spend 3 hours for each visit. In our study, most of the respondents were patients in the comprehensive clinic over a year and had the appointment every week. The authors found that the score of reasons to terminate the dental students' comprehensive treatment was low in all aspects. Nevertheless, the issues related to time consumption in comprehensive treatment were in the high ranking. Generally, the dental students' treatment would considerably consume visits and treatment duration, comparing with the private dental clinic.

Although the College of Dental Medicine Rangsit University dedicated the resources to advocate for being the patients in the comprehensive dental clinic, our study found that only 7.33% of the respondents were from public relations campaigns. Most of the respondents were from word of mouth. Therefore, the power of patient perception is essential to increase the number of patients. A previous study concluded that

improving patient relationship quality can promote positive word of mouth (Hsu, 2018). Strategies are needed to promote a positive perception of dental clinics by effectively responding to the patients' views with strong opinion leader tendencies (Jung et al., 2018).

For the reason to terminate the comprehensive treatment when compared with walk-in and referred patients, it was revealed that most of the referred patients wanted to terminate the treatment more than the walk-in patient in every cause. Our studies found a significant difference, except for the long-term waiting duration. It could be that most of the referred patients (families or hired workers) were forced to come with no willingness whereas the walk-in patients understand the comprehensive dental care and learning process which is complicated and takes time before receiving the treatment.

Besides, the result was different from the represent paper that examined differences in patient satisfaction in walk-in clinics, family practices, and emergency departments. Their study found that family practice patients were more satisfied than walk-in clinic patients. Most patients in a walk-in clinic had regular family physicians; however, one-third reported that their family physician was not available, which led to their attendance at a clinic. These patients' frustration with not being able to see their family physician might have resulted in lower levels of satisfaction (Hutchison et al., 2003).

The patients' suggestion that the authors used the open-ended question found that the patients were satisfied with the dental students entailed the personality, behavior, and caring. On the contrary, they were dissatisfied with the faculty members; both instructors and staff. The result was in the same direction, either walk-in or referred patients. The improper communication of instructors and lousy manner of the staff were reported. A study of the patients' satisfaction in the comprehensive care model found a high overall dental satisfaction index (Mascarenhas, 2001). However, there was no correlation between satisfaction and oral hygiene (Habib et al., 2014). Dissatisfaction in oral health service was associated with the accessibility to the information (Roberto et al., 2017). Therefore, health services should ensure appropriate information to their users to increase health literacy levels and improve satisfaction and equity (Roberto et al., 2018).

It was commonly known that the patients are one of the significant factors in dental education; the cooperation, variety, and adequate of the patients are indispensable. A study for maintaining the patient in the dental education system is necessary to obtain satisfaction and prevent the patients' future scarcity. Our study investigated the reasons to terminate the comprehensive treatment in the patients treated by the dental students that reflected the patients' dissatisfaction that led them to cease the treatment halfway. Therefore, our population tended to satisfy with the services by the dental treatment. The weak point affected the scores of reasons to terminate dental students' comprehensive treatment to a low score. Further study should be conducted on the patients who declined the treatment by the dental students. The investigation in that population might be meaningful information for the administrators, clinical instructors, and dental students to improve the dentistry practices for maintaining the patients in the dental education system.

5. Conclusion

In conclusion, the main reasons to terminate the comprehensive treatment by the dental students were the duration of the visit, followed by the frequency of treatment without progression and complexity of treatment procedures. The score of the reason was low, which reflects the satisfaction of the patients. The suggestions about dental students were positive, involved the comfort caring by dental students and the excellent manner of dental students.

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7. References

Bureau of Dental Health, D. o. H. (2015). *Dental Health Personnel Report 2014*. Retrieved from
http://dental2.anamai.moph.go.th/:

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Dehghan, M., Harrison, J., Langham, S., Scarbecz, M., & Amini, M. (2015). Comparing comprehensive care and departmental clinical education models: students' perceptions at the University of Tennessee College of Dentistry. *Journal of dental education*, *79*(2), 133-139.

Habib, S. R., Ramalingam, S., Al Beladi, A., & Al Habib, A. (2014). Patient's satisfaction with the dental care provided by dental students. *Journal of Ayub Medical College Abbottabad*, *26*(3), 353-356.

Haden, N. K., Hendricson, W. D., Kassebaum, D. K., Ranney, R. R., Weinstein, G., Anderson, E. L., & Valachovic, R. W. (2010). Curriculum change in dental education, 2003–09. *Journal of dental education*, *74*(5), 539-557.

Hsu, L. C. (2018). Investigating effect of service encounter, value, and satisfaction on word of mouth: an outpatient service context. *International journal of environmental research and public health*, *15*(1), 132.

Hutchison, B., Østbye, T., Barnsley, J., Stewart, M., Mathews, M., Campbell, M. K., ... & Tyrrell, C. (2003). Patient satisfaction and quality of care in walk-in clinics, family practices and emergency departments: the Ontario Walk-In Clinic Study. *Cmaj*, *168*(8), 977-983.

Jung, Y. S., Yang, H. Y., Choi, Y. H., Kim, E. K., Jeong, S. H., Cho, M. J., ... & Song, K. B. (2018). Factors affecting use of word-of-mouth by dental patients. *International dental journal*, *68*(5), 314-319.

Komabayashi, T., Srisilapanan, P., Korwanich, N., & Bird, W. F. (2007). Education of dentists in Thailand. *International dental journal*, *57*(4), 274-278. doi:10.1111/j.1875-595X.2007.tb00132.x

Krisdapong, S., Somkotra, T., & Kueakulpipat, W. (2014). Disparities in early childhood caries and its impact on oral health-related quality of life of preschool children. *Asia Pacific Journal of Public Health*, *26*(3), 285-294. doi:10.1177/1010539512438608

Mascarenhas, A. K. (2001). Patient satisfaction with the comprehensive care model of dental care delivery. *Journal of Dental Education*, *65*(11), 1266-1271.

Natthasetsakul, S., & Ratchakom, W., K. W. (2018). Factors that influence decision making about getting dental treatments in faculty of dentistry mahidol university. *Mahidol R2R e-Journal*, *5*(1), 131-150.

Park, S. E., Timothé, P., Nalliah, R., Karimbux, N. Y., & Howell, T. H. (2011). A case completion curriculum for clinical dental education: replacing numerical requirements with patient-based comprehensive care. *Journal of dental education*, *75*(11), 1411-1416.

Pothidee, T., Sringernyuang, L., & Tuongratanaphan, S. (2016). Inequity in access to oral health service of primary students: A case study of a dental fund in a central region province. *Kasetsart Journal of Social Sciences*, *37*(3), 175-181.

Roberto, L. L., Martins, A. M. E. D. B. L., Paula, A. M. B. D., Ferreira, E. F., & Haikal, D. S. A. (2017). Dissatisfaction with the dental services and associated factors among adults. *Ciencia & saude coletiva*, *22*(5), 1601-1613.

Roberto, L. L., Noronha, D. D., Souza, T. O., Miranda, E. J. P., Lima, A. M. E. D. M., DePaula, A. M. B., ... & Haikal'ana, D. S. (2018). Lack of access to information on oral health problems among adults: an approach based on the theoretical model for literacy in health. *Ciencia & saude coletiva*, *23*(3), 823-835.

Somkotra, T. (2011). Socioeconomic inequality in self-reported oral health status: the experience of Thailand after implementation of the universal coverage policy. *Community Dent Health, 28*(2), 136-142.

Somkotra, T. (2013). Experience of socioeconomic-related inequality in dental care utilization among Thai elderly under universal coverage. *Geriatrics & gerontology international*, *13*(2), 298-306. doi:10.1111/j.1447-0594.2012.00895.x

Somkotra, T., & Vachirarojpisan, T. (2009). Inequality in dental care utilisation among Thai children: evidence from Thailand where universal coverage has been achieved. *International dental journal*, *59*(6), 349-357.

Thai Dental Council. (2012). *The framework of Thai dentists' competencies*: Thai dental council.

Vining, R. V. (1984). Comprehensive dental care: objectives, management, and financial impact. *Journal of dental education*, *48*(6 Suppl), 7-10.