Perceived Satisfaction of Patients and Related Factors for Oral Surgery Student Dental Clinic: Evidence From Sri Lanka

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Abstract
We assessed perceived satisfaction of patients and related factors for treatment provided by the oral surgery student dental clinic of the only Sri Lankan dental school. A descriptive cross-sectional study was conducted among 288 consenting patients who received oral surgery treatment at the student dental clinic of Department of Oral and Maxillofacial Surgery, Faculty of Dental Sciences, University of Peradeniya, Sri Lanka. A self-administered, validated questionnaire and a 19-item multidimensional patient satisfaction scale were used for data collection. Patients of all ages were represented, but were dominated by females, aged 30 to 44 years, possessing educational attainment up to General Certificate of Education ordinary or advanced level of which 54.9% were unemployed. They had travelled distances of less than 10 and 10 to 20 km (28.1% and 27.5%, respectively) predominantly to receive tooth extractions exacerbated by symptoms. Overall, 90% of responding patients were highly satisfied with the items of many dimensions of dental treatment. Despite high levels of perceived satisfaction expressed, further improvements were warranted for waiting time, optimal pain control with more kind, and courteous staff.

Keywords
perceived patient satisfaction, oral surgery, student dental clinic, dental, education, Sri Lanka

Introduction
Patient-centered health care has garnered recognition as a priority concern (1). Contemporary cohorts of patients yearn for their rights to receive the highest standard of treatment. Health care facilities are increasingly evaluated on how satisfactorily they meet these demands and expectations. Hence, “patient-centered practice” is trending (2), and patient satisfaction-based assessment of the quality of care is becoming an integral component of service appraisal of oral health care services (3–6).

Satisfaction with dental treatment helps people to alleviate their dental anxiety and promotes dental care seeking behavior (1). This becomes vital in teaching hospitals, as it helps maintain a growing patient population for teaching purposes (7). Developing countries like Sri Lanka provide undergraduate teaching and training predominantly based on patients rather than on simulation models, hence attracting patients to student dental clinics deemed important. To an
anxious patient, receiving an invasive treatment from a dental student may be quite traumatic. Due to this reason, the satisfaction of patients receiving treatment from students reflects the quality of care provided as well as standards of their training, teachers, and the institution.

Sri Lanka is a lower-middle-income developing country, with a 21.67 million population and US$3991 per capita income (8). The country possesses a unique public health care delivery model for which oral health care is integrated into, catering to all socioeconomic groups. There is a network of public hospitals across the country, ranging from teaching hospitals to primary health care units (9). Moreover, there is a well-posed private sector as well, catering to oral health needs and demands of people (9). However, to this date, a single dental school is in existence for the whole country.

Therefore, the Faculty of Dental Sciences, University of Peradeniya, Sri Lanka, is the only dental school that has produced over 3000 dental surgeons in its 65-year long, illustrious history. As the center of excellence in dental training–based oral health care provision, specialized services are delivered to patients from all regions across the country. However, it is not known how satisfied the patients are on the treatment provided by dental students.

In contrast, there is substantial research on different dimensions of patient satisfaction provided by dental undergraduates in dental school clinic settings across the globe (1,10–13). Findings of such studies support evidence-based decision-making for academic dental institutions to provide a high quality of patient care (13), as well as to inculcate superior skills to budding dentists. Overall, they painted the portrait of the picture of well-satisfied patients (1,10–13) across many dental school settings. Against this backdrop, our study aimed to explore different dimensions of perceived patient satisfaction and related factors for treatment provided at an oral surgery student clinic of the Faculty of Dental Sciences, University of Peradeniya, Sri Lanka.

Methods and Materials

A descriptive cross-sectional study was conducted on patients aged ≥18 years, who visited the student oral surgery clinic, Department of Oral & Maxillofacial Surgery, Faculty of Dental Sciences, University of Peradeniya, Sri Lanka. In their training in oral and maxillofacial surgery, dental students are provided with theoretical knowledge and demonstrations on tooth extractions. They gained their extraction skills practicing on models, gradually progressing to simple tooth extractions in patients. Students start with extraction of incisor teeth and with increasing experience proceeds to extraction of canine, premolar, and molar teeth.

The sample size was calculated using the formula estimating a single proportion with a requirement for 95% CI and 5% SE (14). The calculated minimum sample size was 275 based on an assessment of patient satisfaction among a random sample of 50 patients who received restorative dental treatment from dental undergraduates that reported to be 78%. Subsequently, 300 consenting patients were recruited from patients who attended the student clinic of oral surgery who fulfilled the inclusion criteria. When the patients entered the clinic, the nurses at the reception, while registering them and checking with those who had prior appointments, extended an invitation to take part in the study for those who fulfilled the inclusion criteria. The communication guidelines also included explanation that participation would be entirely voluntary. Moreover, the patients were communicated on how they should participate by answering a questionnaire by themselves as an exit survey based on the treatment experience they received at the oral surgery clinic provided by dental students. Moreover, they were informed that those who were willing to participate would be provided with an information sheet and consent form.

The data were collected from August 22, 2016, to February 22, 2017. Time constraints, poor literacy, and not having brought reading glasses were reasons for nonconsent. Moreover, 12 questionnaires were excluded from the analysis due to grossly incomplete responses. Final sample size is composed of 288 patients. A pretested, validated, self-administered questionnaire was used for data collection. A psychometric scale on dental patient satisfaction developed and validated by Perera and Usodaarachchi for Sri Lanka (2009) provided the basis for questionnaire designing (15). The original scale is composed of 4 main dimensions of dental patient satisfaction, namely, clinic environment, factors related to treatment, convenience, and the outcome of care. Nevertheless, the original scale was developed and validated for dental patients receiving treatment from the public and private dental clinics manned by qualified dental surgeons. The questionnaire was developed in English and translated into the native languages (Sinhala and Tamil) to suit the patient population. A pilot study was conducted to pretest the modified questionnaires in a different student clinic, and necessary changes were made. Accordingly, few of the original items were excluded as they were considered irrelevant for a student dental clinic. The finalized questionnaire is composed of sociodemographic information, aspects related to past and present dental treatment, and a 19-item dental satisfaction scale. Of them, 4 items were negatively worded to overcome the bias induced by response fix. The respondents were instructed to mark their agreement on a 5-point Likert scale as $1 = $strongly disagree$, $2 = $partially disagree$, $3 = $no comment/neutral$, $4 = $partially agree$, and $5 = $strongly agree$, based on their experience at the oral surgery clinic. Hence, the score for each item ranged from 1 to 5, with an overall satisfaction score ranging from 19 (highly dissatisfied) to 95 (highly satisfied).

The questionnaires were distributed among the consenting patients by the clinic receptionist immediately upon completion of treatment and while waiting for clinic documentation. All participants were asked to complete the questionnaires by themselves and collected into a sealed box. Complete privacy was secured while patients completed the questionnaire.
Data were entered and analyzed using the Statistical Package for Social Sciences (SPSS) for Windows software, version 21.0 (SPSS Inc, Chicago). Total satisfaction score was computed by addition of each item score. Negatively worded items were reverse scored. Descriptive statistics such as means for continuous variable, frequency, and percentage for categorical variables were determined. As the distribution of overall satisfaction score was not a normal distribution, determined by Kolmogorov-Smirnov and Shapiro-Wilk tests ($P = .0001$), the overall satisfaction score was used to compare the level of satisfaction of responding patients by sociodemographic characteristics, and selected accessibility-related factors by employing Mann-Whitney $U$ test and Kruskal-Wallis test for independent samples. The level of significance was set at .05.

**Results**

The sociodemographic profile of the dental patients is indicated in Table 1. The predominant age groups were 30- to 44-year-old adults (40.3%), followed by 16- to 29-year-olds, adolescents, and young adults (31.9%). Moreover, the percentage of 45- to 59-year-old adults was discernible (20.5%). Among dental patients, the overwhelming majority were females (60.4%) having General Certificate of Education (GCE) ordinary level (O/L) or GCE advanced level (A/L) as the highest level of educational attainment (67.4%). Nearly a quarter (22.2%) had obtained diplomas and degrees. Furthermore, the majority (54.9%) were unemployed (Table 1).

As illustrated in Table 2, little more than half of the patients (51.7%) had utilized public dental clinics previously and a quarter (25.3%) had utilized private dental clinics. The overwhelming majority (71.9%) presented with toothache and dental extraction was the most common treatment modality provided (60.1%). Another 11.5% received minor surgical procedures to remove the remaining part of the tooth left behind by previous extractions. There were similar representations of patients who lived in distances of <10 and 10 to 20 km (28.1% and 27.5%, respectively) from the present dental clinic. Interestingly, another 22.2% lived >30 km away from the present dental clinic. A marginal majority 53.1% reported having the experience of previous dental treatment from the present dental clinic.

As demonstrated in Table 3, over 90% of responding patients were highly satisfied with many dimensions of dental treatment provided by dental students. However, with regard to pain, only 52.4% were fully satisfied with perception of pain during treatment procedure and 77.4% for kind and courteous behavior of the staff. However, only 27.4% were fully satisfied with the convenience related to the waiting time.

As presented in Table 4, the overall perceived satisfaction score was high of dental patients on the dental treatment provided by dental students across all sociodemographic variables and 2 predisposing factors: distance from the dental clinic and previous experience that were considered in the present study.

**Table 1.** Distribution of Responding Patients by Sociodemographic Profile.

| Attribute              | N   | %    |
|------------------------|-----|------|
| Age group, years       |     |      |
| 16-29                  | 92  | 31.9 |
| 30-44                  | 116 | 40.3 |
| 45-59                  | 59  | 20.5 |
| ≥60                    | 21  | 7.3  |
| Gender                 |     |      |
| Males                  | 114 | 39.6 |
| Females                | 174 | 60.4 |
| Educational attainment |     |      |
| Grade 1-5              | 4   | 1.4  |
| Grade 6-10             | 26  | 9.0  |
| GCE (O/L and A/L)      | 194 | 67.4 |
| Diploma and degree     | 64  | 22.2 |
| Occupational status    |     |      |
| Employed               | 130 | 45.1 |
| Unemployed             | 158 | 54.9 |
| Total                  | 288 | 100.0 |

Abbreviations: A/L, advanced level; GCE, General Certificate of Education; O/L, ordinary level.

**Table 2.** Distribution of Responding Patients by Selected Aspects of Their Dental Service Utilization.

| Variable                                    | N   | %    |
|---------------------------------------------|-----|------|
| Type/types of dental clinic attended previously |     |      |
| Public                                      | 133 | 51.7 |
| Private                                     | 65  | 25.3 |
| School dental clinic                        | 45  | 17.5 |
| Other                                       | 14  | 5.5  |
| Total                                       | 257 | 100.0|
| Present complaint                           |     |      |
| Toothache                                   | 207 | 71.9 |
| Outside referral                            | 8   | 2.8  |
| Abscess/gum pain                            | 18  | 6.3  |
| Other                                       | 55  | 19.9 |
| Total                                       | 288 | 100.0|
| Type treatment received                     |     |      |
| Advice                                      | 25  | 8.7  |
| Advice and medicine                        | 23  | 8.0  |
| Dental extraction                           | 173 | 60.1 |
| Small surgery to remove a part of a tooth   | 33  | 11.5 |
| No treatment received                       | 3   | 1.0  |
| Other                                       | 31  | 10.8 |
| Distance from the dental clinic, km         |     |      |
| <10                                         | 81  | 28.5 |
| 10-20                                       | 79  | 28.1 |
| 21-30                                       | 58  | 20.6 |
| >30                                         | 64  | 22.8 |
| Past experience at the same clinic          |     |      |
| No                                          | 135 | 46.9 |
| Yes                                         | 153 | 53.1 |
| Total                                       | 288 | 100.0|

*Total is less than 288 due to missing responses.*
Discussion

The present study was the first to explore perceived satisfaction of patients for treatment provided by dental students in the single-tertiary care university dental hospital in the country. A 4-dimensional, 19-item scale was used to assess patient satisfaction. The percentage prevalence of highest level of satisfaction was assessed for each item in the scale, and mean overall satisfaction scores were compared among socioeconomic groups and accessibility-related factors.

As emerged from the findings of the study, the patients represented both older and young adults predominantly consisting of 30- to 44-year-old females who had received high school education, which was equivalent to 10 to 12 years of education, but were unemployed. However, Aldosari et al presented a median age of 38.7 years in their study on dental patient satisfaction (16).

Nevertheless, corroborating the findings of the present study, females dominated in dental patient satisfaction studies conducted in other countries by Tin-Oo et al (70.2%) (17) and Aldosari et al (83.9%) (16). Tin-Oo et al reported that a majority (66.8%) of the sample in their study either had primary or secondary education (16). In contrast, the majority (67.4%) of the present study had accomplished GCE O/L and A/L. This finding could be explained by the free education policy in Sri Lanka since 1943, which has contributed to a commendably high adult literacy rate of 96.3% in 2015 (18). Moreover, in the study by Aldosari et al, 61.4% was unemployed (16). Free of charge or less expensive dental treatment provision could be plausibly attributed to unemployed, to seek dental treatment from dental schools.

It was interesting to note that as a tertiary care center, the majority of patients travelled up to 20 km. Yet, another
Preventive and conservative dental treatment as well as individual patient education on the importance of opting for procedures, dental students supervised by the lecturers provided tooth extraction. Therefore, prior to the treatment procedures, patients were willing to undergo tooth extraction as they presented with late complications of tooth loss due to advanced dental caries among adults. In most cases, they had missed opportunities of opting for restorative dental treatment to prevent and control the spread of dental caries. The majority of patients underwent tooth extraction as they presented with late complications of dental caries. Furthermore, patients were willing to undergo tooth extraction. Therefore, prior to the treatment procedures, dental students supervised by the lecturers provided individual patient education on the importance of opting for preventive and conservative dental treatment as well as motivation on maintaining optimal oral hygiene to prevent and control further dental caries.

Patient satisfaction denotes a multidimensional psychological construct, demonstrating the patient’s contentedness toward a treatment provided to him or her by their health care provider (5). Therefore, the overall level of perceived satisfaction of those patients who responded was quite high, demonstrating high contentedness for services provided by dental students. A majority of responding patients were satisfied (>90%) as there was adequate time for treatment by dental students, referral for other problems, comprehensive patient education on the cause, and rationale for the treatment. There was a perception by patients that they had received the proper treatment, adequate time was spent listening to the patients’ complaint, cleanliness and neatness of practice, and friendliness of the staff. In addition, dental students’ concern about patient discomfort during treatment was satisfactory. This finding corroborated the global trend of published studies in this regard (1,10–13). However, the mean overall satisfaction score of 86.58 ± 7.75 of Sri Lankan dental patients for treatment from our dental student clinic was much higher than 55.30 ± 11.55 of Logos State University Teaching Hospital dental clinic (1). The items that generated the highest levels of satisfaction in the present study were cleanliness and tidiness of the dental clinic and adequate time given to explain a patient’s dental problem. The Logos study reported similar findings, although both studies highlighted the importance of reducing waiting time. Moreover, Aldosari et al found that 89.2% of patients were satisfied as adequate time was given for the treatment (17). Hence, allocating adequate time for dental treatment and related aspects deemed positively influencing higher levels of perceived satisfaction among dental patients.

Moreover, studies have reported that satisfaction with dental care was positively related to sociodemographic characteristics of patients. The study conducted in Logos State University Tertiary Care Teaching hospital dental clinic revealed that overall satisfaction of patients was significantly related to their age group and level of education whereas communication perspectives were significantly associated with gender (1). In contrast, findings of the present study did not demonstrate differences in the level of satisfaction among age groups, gender, level of education, as well as travelling distance and previous dental treatment experience from the same clinic.

Evidence-based continuous improvements are essential in assuring a steady flow of patients for undergraduate as well as postgraduate student training and teaching purposes. Even though qualified and experienced dental surgeons provide free dental treatment through dental clinics of the Ministry of Health at the same premises, many patients continue to patronize the dental student clinics. Therefore, it is important to understand the level of patient satisfaction in clinics serviced by dental students. The high perceived satisfaction of patients for treatment provided by dental surgery undergraduates despite availability of the option of fully
qualified and experienced public sector dental surgeons in the same hospital premises merits further exploration. This could plausible be attributed to cramped spacing, crowding, and probably longer waiting time for treatment, inherent in outpatient dental clinics in the tertiary care public dental hospital settings in Sri Lanka.

Moreover, the high level of perceived satisfaction of dental patients reflected the quality of training the dental undergraduates received. This included not only the surgical skills inculcated among dental undergraduates in the extraction of a tooth, but the soft skills they demonstrated such as communication, empathy, and compassion as the treatment deemed procedures usually make patients anxious. Nevertheless as perceived by patients, further improvements are needed in waiting time as well as optimal pain control in tooth extraction and soft skills of dental students and other staff members.

The faculty of dental sciences at Peradeniya is the only dental school available in Sri Lanka and caters to a substantial population of the Central Province of the country. Therefore, the unit often gets overcrowded by service recipients, and treatment services are provided with or without fixing prior appointments. This is a common scenario in almost all public dental clinics in Sri Lanka. In this context, waiting time becomes an issue and as at present is compounded by lack of space in waiting areas in the oral surgery department. Hence, patient education is not happening as a routine practice; nevertheless, LED televisions fixed at public areas in the dental hospital display oral health awareness videos on the importance of good oral health, maintaining good oral hygiene and also raising awareness on oral cancer, which is the number 1 cancer among males in Sri Lanka. Based on the findings of this study, it is planned to restructure patient appointment systems by giving staggered appointment to reduce the waiting times.

Present findings could have been influenced to some extent by “selection bias” as those who were highly satisfied responded, while dissatisfied could have become nonrespondents. In addition, it was not clear whether responding patients had a relatively low demanding expectation for the treatment they received as the services were provided free of charge. However, the present study has the strength of using a psychometric scale to assess patient satisfaction based on a validated, cross-culturally adopted dental patient satisfaction scale in Sri Lanka with necessary modifications to the study context (15). As it was conducted in the form of an exit survey, those who were in a hurry to leave and with visual disabilities were among the nonrespondents. Hence, it would be important to get a feedback from nonrespondents by including follow-up data collection. Furthermore, present study did not assess whether they received adequate information on available preventive and conservative dental treatment, which could have made their minds to opt for those.

This aspect has to be included in future questionnaires on assessing patient satisfaction for treatment provided by dental students. Moreover, psychometric assessment of present multidimensional 19-item patient satisfaction scale should be assessed for wider utilization.

Nevertheless, it could be speculated that high overall satisfaction perceived by patients for oral surgery treatment provided by dental students would influence more patient visits. It would be challenging in future to maintain such satisfaction among dental patients for dental treatment services exclusively provided by dental undergraduates. Population growth, demographic transition underpinned by an aging population, and epidemiological transition contributing to the high burden of noncommunicable diseases will not only increase the need and demand for dental treatment but may pose more challenging scenarios. It could be rationally argued that one dental faculty, therefore, would not be able to cater to such complexities while maintaining the quality of care reflected by the present level of high perceived satisfaction. This justifies the emerging need for establishing another dental school for Sri Lanka by utilizing present findings to improve quality of care in the patient care services provided. Capacity building of not only clinical skills but soft skills as well combined with optimal pain management strategies and staggered appointments for patients to reduce their waiting time would be important in this regard.

**Conclusion**

Patients who received treatment from dental undergraduate oral surgery clinic perceived a high level of overall satisfaction for the dental care they received for all dimensions assessed, but needed further improvements for waiting time as well as better pain control with more kind and courteous staff. Overall satisfaction was not influenced by age group, gender, level of education, employment status, travelling distance, and previous dental experience of the patients. However, patient awareness should be improved on conservative options for their symptomatic teeth.

**Authors’ Note**

All procedures in this study were conducted in accordance with the ethics review committee, Faculty of Dental Sciences, University of Peradeniya, Sri Lanka (ERC/FDS/UOP/I/2016/27) approved protocols. Written informed consent was obtained from the patient(s) for their anonymized information to be published in this article.

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