Original Article

The Perception of Undergraduate Dental Students Toward a Clinical Learning Environment at School of Dentistry and Oral Health, Fiji National University, Fiji

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ABSTRACT

Background: The clinical learning environment is one of the key factors for undergraduate dental students to excel in their academic career. There has been no previous study in Fiji regarding dental students' perception of their learning environment. **Aim:** This study aimed at investigating the perception of undergraduate dental students toward the clinical learning environment at the School of Dentistry and Oral Health (SDOH), Fiji. **Materials and Methods:** This is a cross-sectional prospective study conducted among 157 undergraduate dental students, all of whom were selected from three undergraduate dental programs. The modified 24-item Dental Clinical Learning Environment Inventory (DECLEI) was used to assess students' perceptions. The mean DECLEI score was interpreted as follows: ≤19.9 is very poor perception, 20–39.9 is poor perception, 40–59.9 is moderate perception, 60–79.9 is good perception, and >80 is excellent perception toward the clinical learning environment. A correlation test was used to examine the relationship between independent variables and DECLEI scores. $P < 0.05$ was considered as level of significance. **Results:** The response rate was 82.8%. Majority of the participants (76.9%) were in the age range of 20–29 years, were females (72.3%), and were Fijians of Indian descent (75.4%). The mean DECLEI score was 70.83 ± 9.11 which could be interpreted as a good perception toward the clinical learning environment. Age and gender had a statistically significant negative correlation with DECLEI scores ($P < 0.05$). **Conclusion:** The dental clinical learning environment at SDOH can be perceived as "good"; however, issues related to patients' missing appointment were highlighted.

KEYWORDS: *Clinical learning environment, DECLEI, Fiji National University, perception, undergraduate dental students*

INTRODUCTION

Attaining high-quality dental education and training at an undergraduate level is essential for overall success in the students' academic environment and later in their working career.[1] In a dental learning environment, it is important that students are trained to possess appropriate skills, which guide them in managing patients efficiently. Learning and teaching (L&T) can be quite challenging to students, and more so in the field of medicine and dentistry.[2]

Universities around the world are continuously advancing in their L&T strategies, with better

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innovative curriculum delivery methods. As a result of this, there is a growing interest of health professionals in the education environment of students and how student learners' understanding of the practice is developed through different learning methods that are designed by individual curricula.[3] An "ideal" academic environment can be defined as one that best prepares the students for their future professional life and contributes toward their personal development, psychosomatic and social well-being.[1]

The oral health curriculum is designed to include different types of learning methods and training areas.[4] A dental student's learning environment may play a vital role in achieving competent dental graduate outcomes. Hence, undergraduate dental schools essentially need to be standardized in their style of content delivery.[5] An oral health curriculum should be devised and amended based on evidence from student reflection and also from the oral health needs of the local population.[2,4,5] The learning environment of all dental curricula should be self-directed and integrate all aspects of learning so that dental graduates become lifelong learners.[1,6] Student learning is best enhanced by the use of combined educational methods that emphasize the learning skills and competence rather than knowledge alone.[7,8]

The only dental school in Fiji belongs to Fiji National University's College of Medicine, Nursing and Health Science (CMNHS). The role of the college includes educating and training medical and dental students from Fiji and the regional countries. Students from different ethnic and cultural backgrounds come to study together at one place. At the SDOH, students are offered three undergraduate dental programs, namely a two-year Certificate in Dental Hygiene (CDH), a three-year Bachelor of Oral Health (BOH), and a five-year full-time Bachelor of Dental Surgery (BDS) program. The dental curriculum includes students in first and second years to do common units together and then based on their exam results, a weighted average of 65% and above qualifies students to gain entry into the BDS program.

Gaining entry into the BDS program can be very competitive and challenging. Students at an early level of study are observed to be at risk of poor performance, which remains a concern at SDOH in Fiji. Further to this, preclinical and clinical training has to be incorporated in the undergraduate dental curriculum.[1] The need for preclinical and clinical training is mandatory, as this builds student-to-patient relationship with high focus on patient management and gives an opportunity to improve through clinical reflective practice.[9] It is essential that students receive a highly creative, interactive session with supervisors. The social aspect of learning and education training should also be incorporated for an effective clinical learning experience.[10]

Increasing the interest of health professionals in the perceptions of medical students to their learning environment led to the development of multiple measuring tools, the first of which was developed in 1970 and was known as the Medical School Learning Environment Survey (MSLES).[11] In a study conducted in Saudi Arabia, the perception of undergraduate dental students toward their clinical dental environment was evaluated by using the DECLEI questionnaire. The DECLEI questionnaire is a 24-item self-administered questionnaire.[11,12]

Over the years, the undergraduate dental program at SDOH has been amended based on reviews carried out as a requirement of the School and on external expertise. The review process allowed personal judgments and recommendations to enhance the program. There has been no study to date to assess dental students' views on the current dental training and its learning environment in Fiji. This study could be used for reviews and act as evidence for proposing changes in the dental curriculum. The objective of this study is to determine the undergraduate dental students' perception toward the clinical learning environment.

Materials and Methods

This was a cross-sectional study of 157 undergraduate dental students at the SDOH, and it was conducted from 1 September to 20 November 2018. The study sample included all the clinical undergraduate dental students who were enrolled in the BDS program (third, fourth, and fifth year), BOH program (first, second, and third year), and CDH program (first and second year). This was due to their exposure to the clinical setting. Those who were on deferment or suspension and students who were not willing to participate were excluded from this study. A total population of 157 students was expected to participate in this study.

Measurements

The modified DECLEI questionnaire has been validated on current psychometric standards and has been described as a valid tool. The Cronbach's Alpha for the total questionnaire was 0.89, with an inter-scale correlation ranging from 0.39 to 0.48.[11,12] The questionnaire used was in English and included items on demographics details and close-ended questions related to the clinical learning environment.

Student responses were on a 6-point Likert Scale as follows: "strongly agree," "agree," "slightly agree," "slightly disagree," "disagree," and "strongly disagree." The 24-item DECLEI scores were as follows: "strongly agree" = 100 points, "agree" = 80 points, "slightly agree" = 60 points, "slightly disagree" = 40 points, "disagree" = 20 points, and "strongly disagree = 0 point." Responses to four negatively worded statements were coded in reverse. The higher scores represented higher levels of agreement. These negative statements were scored as follows: "strongly disagree" = 100, "disagree" = 80, "slightly disagree" = 60, "slightly agree" = 40, "agree" = 20, and "strongly agree" = 0. Item numbers 16, 19, 21, and 22 were scored in a reverse manner.[9,12]

Study procedure

The DECLEI questionnaires were distributed face to face to students enrolled in undergraduate dentistry programs and those present for lecture sessions at the planned delivery of the questionnaires at the CMNHS, Pasifica Campus. The completed questionnaires were collected by the program officers at the end of lecture sessions during the last quarter of semester 2 in 2018 (September to October). For students who had missed out, another day was planned and questionnaires were collected within a week. All participants received the participant information sheet and a consent form. Students were informed about this study through e-mail, and it also stated that this questionnaire was part of a research study and participation was voluntary.

Data analysis

All data received were entered into a Microsoft excel file for cleaning of data, the data were imported into the Statistical Package for the Social Science (SPSS) software (version 25) for data analysis, and other selected data were analyzed in Microsoft excel.

A descriptive analysis was done for the data analysis, which included population demographics followed by quantitative analysis of the questionnaire. The mean DECLEI score was interpreted as follows: ≤19.9 is very poor perception, 20–39.9 is poor perception, 40–59.9 is a moderate perception, 60–79.9 is a good perception, and >80 is excellent perception toward the clinical learning environment with positive factors; however, it may require interventions in specific items.[9,12] The DECLEI questionnaire is also subdivided into three factors: Factor I: Facilities, teachers, and clinical learning opportunities, Factor II: Patient interaction and professionalism, and Factor III: Overall satisfaction and individual commitment.

Appropriate ethical approval was sought from the relevant authorities. Full approval was given by the College Health Research and Ethics Committee. The study population was given a participant information sheet and consent form before administration of the questionnaire.

Results

A total of 130 questionnaires were filled and cleaned after data entry (82.8% response rate). The study sample had an age range from 19 to 43 years, with the majority of the study sample being in the age group of 20 to 29 years (76.9%) whereas the least participants (0.8%) were observed in the age group of 30 to 39 years of age. No participants observed were of age 50 years and older. Among the participants, a higher number (72.3%) was observed among the female group (27.7%) as compared with the male group. Among the ethnic group's majority were Fijians of Indian descent (75.4%) whereas the smallest ethnic groups consisted of others, mainly composed of the regional and international students, which were 13 participants (10%). The BDS program had the highest level of participants with 51.5%, followed by BOH students with 44.6%. No participant was observed in the CDH level 1 of study whereas the highest number observed was among the BDS cohort in the BDS 4 (n = 26, 20%), followed by BDS 5 (n = 25, 19.2%) and the least number was in BDS 3 (n = 16, 12.3%). Overall, BOH 1 had the highest number of participants; refer to Supplemental Table 1.

The mean of DECLEI score was calculated to be 70.83 ± 9.11, which can be interpreted as a good clinical learning environment for students. A further analysis of individual items in the questionnaire revealed that nine items were rated "excellent." These were noted to be satisfactory clinical infrastructure, teachers chosen with strict and proper criteria, approachable teachers, the dental study program adequately prepares students for clinical practice, teachers fulfil their duty and uphold the work hours and that the topics covered in clinical seminars prepare them adequately for the dental profession. In addition, 14 items were rated "good" in the questionnaire. These were looking at research opportunities, learning about sufficient clinical techniques, using up-to-date material and equipment, freely asking questions, technical problems being dealt with quickly, students being confident that they will complete their clinical responsibilities, patients are polite, students organize their patient's folder, and students systematically self-evaluate their progress and are satisfied with the service they provide. There was one moderately noted area that was highlighted as patients not turning up on time for their appointments; refer to Supplemental Table 2.

Table 1: Distribution of respondents by their demographic characteristics (n = 130)

Demographic details	Frequencies	Percentage (%)
Age groups (years)		
<20	27	20.8
20–29	100	76.9
30–39	1	0.8
40 and older	2	1.5
Gender		
Male	36	27.7
Female	94	72.3
Ethnicity		
I-Taukei	19	14.6
Fijians of Indian Descent	98	75.4
Others	13	10
Program of study		
CDH	5	3.8
BOH	58	44.6
BDS	67	51.5
Level of study		
CDH 1	0	0
CDH 2	5	3.8
BOH 1	34	26.2
BOH 2	16	12.3
BOH 3	8	6.2
BDS 3	16	12.3
BDS 4	26	20
BDS 5	25	19.2

A factor analysis of the components of the clinical learning environment demonstrated that participants had an excellent perception (DECLEI score 81.15 ± 1.33) toward factor I, which was on school facilities, teachers, and clinical learning opportunities provided. Students felt good about their patient interaction, professionalism, which was analysis on factor II (DECLEI score 67.23 ± 4.94). Factor III also had a good perception regarding students' overall satisfaction and individual comments (DECLEI score 72.19 ± 2.42). Refer to Supplemental Table 3.

The correlation test shows that there is a weak negative significant correlation between age and gender to the average DECLEI scores. As age ($r = -0.18$, $P < 0.05$) increases, the perception toward the clinical learning environment becomes more negative. Males have a more positive perception toward their clinical learning environment than females ($r = -0.178$, $P < 0.05$); refer to Supplemental Table 4.

Discussion

This study focuses on students' perception of the clinical learning environment, as it is one of the most important and mandatory trainings in the undergraduate dental program at SDOH, Fiji National University (FNU),

Table 2: Average score per item in DECLEI questionnaire

Item no.	Question	Average score ± SD	Interpretation
1	I have great research opportunities	74.5 ± 21.42	Good
2	I am learning about sufficient clinical techniques	79.8 ± 16.04	Good
3	In the clinics, there is a feeling of mutual respect between teachers and students	85.4 ± 15.5	Excellent
4	We use up-to-date materials and equipment in the clinics	79.1 ± 20.51	Good
5	The clinic infrastructure of the school is satisfactory	87.5 ± 16.19	Excellent
6	The clinical teachers are chosen with strict and proper criteria	83.8 ± 16.72	Excellent
7	My clinical teachers are approachable	87.2 ± 14.73	Excellent
8	The dental study program prepared me adequately for clinics	80.2 ± 17.7	Excellent
9	The clinical teachers fulfill their duty and uphold the work hours of the clinic	83.8 ± 18.48	Excellent
10	I undertake patients with similar demands and difficulties as my colleagues	82.3 ± 16.82	Excellent
11	I feel I can freely ask any question I have	75.9 ± 17.9	Good
12	The clinical cases that I handle adequately prepare me for my profession	85.5 ± 14.94	Excellent
13	The technical problems of dental units are quickly dealt with	70.6 ± 23.25	Good
14	The topics in my clinical seminars helped me in my clinical training	80.6 ± 15.13	Excellent
15	**The patients are on time for their appointments**	46.9 ± 27.36	**Moderate**
16	My association with my patients leads to many problems* (100–36.3)	63.7 ± 25	Good
17	I am confident that this year I will complete my clinical responsibilities	75.5 ± 21.31	Good
18	The patients are polite toward the students	79.3 ± 18.29	Good
19	I am too tired to be able to work effectively in the clinics*(100–37.5)	62.5 ± 26.59	Good
20	I adequately organize my patients folders	75.4 ± 19.37	Good
21	The teachers are not adequately prepared for their clinical class*(100–27.1)	72.9 ± 24.25	Good
22	I am disappointed with my overall clinical experience*(100–34.8)	65.2 ± 26.18	Good
23	I systematically self-evaluate my progress	74.3 ± 19.16	Good
24	I am satisfied with the service that I provide	76.3 ± 17.57	Good
Overall DECLEI average score	70.83 ± 9.11	Good	

Bold results show the significant results from the table which the readers might be interested in

Table 3: Average DECLEI score according to the factor analysis

Factor no.	Factor area	Average score ± SD	Interpretation
Factor I	Facilities, teachers, and clinical learning opportunities	81.16 ± 1.33	Excellent
Factor II	Patient interaction and professionalism	67.23 ± 4.94	Good
Factor III	Overall satisfaction and individual commitments	72.19 ± 2.42	Good

Table 4: Pearson's r correlation among independent variables and DECLEI score

Independent variable	Pearson's *r*	*p*-value
Age	−0.18	**0.037**
Gender	−0.178	**0.042**
Ethnicity	0.018	0.834
Level of Study	−0.04	0.624
Program of Study	−0.08	4.1

Bold results show the significant results from the table which the readers might be interested in

Fiji. From this study, it can be stated that dental students' perception toward their clinical learning environment is seen to be "good." Similarly, in a study carried out on the fourth- and fifth-year undergraduate dental students in private and public schools in Riyadh, Saudi Arabia the mean DECLEI score was 64.1%, which was interpreted as a good learning environment.[9]

In addition, another survey was carried out in Khyber Pakhtunkhwa, Pakistan; the students in the public sector university achieved an average score of 56.69, which was interpreted as "moderate" and 60.53 and 62.76 were interpreted as "good" among the two private universities.[12] The average DECLEI score found in this study was known to be 70.83, which is higher than the universities in Pakistan. Hence, it can be said that the students in FNU have a more positive perception regarding their clinical learning environment. The difference could be attributed to better facilities, up-to-date materials, approachable teachers, supportive clinical staff, mutual respect between staff and students, and well-organized clinical schedules.

Furthermore, in a survey carried out at the University of Athens in Greece, the average DECLEI score was said to be 56.1%,[11] which is interpreted as moderate, as opposed to this study, where the scores were interpreted as a good clinical learning environment. This can be attributed to participants in the study who were involved in a good transition from preclinical to clinical practice; hence, they get more time to adjust to their learning environment. The curriculum structure of institutes is very critical in supporting this transition and may involve a change in the perceived status, role, and working pattern.[13]

The positive perception can be attributed to increased encouragement for collaborative research, and increased opportunities for clinical seminars and workshops that experts feel can be beneficial for collaborative learning.[14] The multisectorial approach occurs very frequently at SDOH, whereby clinical practice is further supported by online teaching, tutorials with clinical conveners, and lectures to strengthen or review theoretical knowledge.

Patients not turning up for their appointments comprises an issue among the students. When patients do not turn up on time, the students lose out on a lot of productive time on patient management and acquiring essential dental practice skills and time management skills as they end up rushing to complete their task. In Fiji, patients' attitude may be related to patients seeking dental treatment only when there is pain. This negative attitude and behavior of patients often lead to patients not turning up for consecutive visits once they are out of pain. Pain is a factor that is related to patients' perception of disease severity since it also affects their daily chores.[15]

The current study showed a statistically significant correlation between age and gender and the DECLEI scores. The study conducted in Pakistan showed statistically significant differences among the gender, different institutes, and level of study. The gender-related differences can be attributed to the sociocultural environment that the study is conducted in.[16,17] In Fiji, there are some cultural differences and norms of behavior among the different genders. Gender equality is being highly advocated and to some extent today there are more female students than male students at SDOH. The study conducted in Saudi Arabia also highlighted significant difference among the male and female dental students and their DECLEI scores, which was linked to the gender-related variation and the complex nature of gender inequality in Saudi Arabia.[9] Age, year of study, and duration of clinical experience did not have a major impact on the DECLEI scores in the study conducted in Saudi Arabia.

The underlying principle of the Health Belief Model is that individuals with better information make better health decisions.[18] To understand the issue of poor compliance to the dental appointment, one must understand their patients. Evidence has shown a strong association between the perception of health and healthy behavior.[19] For example, if the population is

more aware and focused on improving oral health, and dental caries or periodontal disease is advocated as a severe oral health condition, people are more likely to react to it and will look for all means of treatment and preventative measures. Modifying patients' perception and getting patients to act on healthy living can be quite a challenging task.[18,20]

In the study conducted in Pakistan, individual items in the DECLEI questionnaire were further analyzed and it was seen that dental students in public school had the most positive response toward the clinical environment. The positive responses were related to being able to handle cases that adequately prepare them for their profession, whereas the most positive item in the two private schools was that the teachers are adequately prepared for their class or demonstration and that clinical teachers are approachable.[12]

The most negative response stated that the public schools did not use up-to-date materials and equipment in the clinic, whereas the private schools stated that the technical problems of the dental units were not dealt with in a timely manner and the patients were not on time for their dental appointment. The second private school dental students support the dental students' perceptions here, as they both feel that patients do not turn up for appointments on time. This study supports the fact that the students' perception of the learning environment is affected by patients not turning up to dental appointments on time, which is similar to the results presented in this study. Another similarity noted is that the technical issues of the clinics are not dealt with in a timely manner. However, a different perception exists here in terms of using up-to-date materials and equipment: Since the FNU dental clinics and stock are new, the materials and equipment are quite updated.

Strengths and limitations

This study is one of the first prospective studies done in Fiji whereby the perception of undergraduate dental students to their learning environment is measured. In addition, it involves all the students from first to fifth year, rather than only fourth and fifth year. This study also utilized a standard questionnaire that has been well validated with a high level of reliability.

This study had some limitations. The sample size was small. As this study is a cross-sectional study, the results of this study cannot be generalized to other medical schools in the region. This was a questionnaire-based survey, which may not give us more in-depth information about students' perception. It can be further strengthened by a qualitative study to develop deeper understanding of the areas of interests and student perceptions.

Conclusion

From this study, it can be noted that students had more positive responses to research opportunities, learning about sufficient clinical skills, mutual respect among students and teachers, material and equipment in the clinic, chosen teachers, freely asking questions, and having clinical seminars. Weaknesses in the clinical learning environment were related to patients not being on time for their appointment and technical problems of the dental unit not being dealt with on time. This information serves as a baseline record for SDOH on the students' perception and it can be incorporated in the next review or followed up over the next few years with more research. The clinical learning environment can be improved with a patient booking system that improves a patient's punctuality to dental appointments. A more advanced and standardized patient management system needs to be introduced to the clinic whereby student patients are chosen appropriately, and compliant patients are booked.

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Conflicts of interest

There are no conflicts of interest.

Authors' contributions

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