

Survey of Students' Perceptions of Undergraduate Education in Oral Implantology

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1. Introduction

When implant treatment first began to spread, knowledge and skills related to implants were often learned at vendor-led workshops and lectures, and opportunities to acquire basic knowledge were limited. Therefore, in 2003, Fukuoka Dental College began offering practical training in implantology using models to its master's course students. In addition, students attend 13 lectures on the basic principles of implant treatment, and two treatment planning exercises using implant simulations are conducted in parallel with the practical training. In order to evaluate the educational effect of implants at that time, we reported the results of a comparison of students' perceptions before and after the practical training in 2009 (1).

Fifteen years have passed since that report, and implant therapy is now recognized as a priority treatment for prosthetic rehabilitation of missing teeth. Furthermore, implant education is now offered in most dental colleges.



Figure 1. A simulation model for predoctoral implant training



Figure 2. Two types of implants for predoctoral training



Figure 3. Implant placement procedure on simulation model



Figure4a. Implant analogs connection procedure with silicone impression



Figure 4b. Optical impression procedure using an intraoral scanner

2. Methods

The following conditions were used for both 2009 and 2024.

Implantology models

A simulation model specifically developed for this hands-on training (Nisshin Dental Products Co., Ltd., Kyoto, Japan) was employed (Fig. 1).

The model consists of three layers: silicone rubber gingiva, cortical bone, and cancellous bone.

For implant training, two types of implants was used.(Fig.2)

Tapered implants (Replace Select Tapered, Nobel Biocare)
Straight implants (Replace Select Straight, Nobel Biocare)

Students learned techniques such as gingival incision, flap reflection, determination of implant placement sites, preparation of implant sockets, placement of implants, and suturing (Fig. 3).

Furthermore, they were trained in implant platform exposure, abutment connection, and impression-taking methods (Fig. 4a,b). The same hands-on approach was used in the 2009 survey, but optical impressions using an intraoral scanner were not performed at that time.

Questionnaire

To assess students' perceptions of implant treatment, a questionnaire was administered to all students who participated in the implant training .

The questionnaire was administered immediately before and after the training.

3. Results

Table1	2009		2024	
	Before(%)	After(%)	Before(%)	After(%)
What do you think about learning the techniques of implant treatment?				
A1: These techniques should be incorporated into student education after it becomes a part of the national examination.	9.0	15.7	35.7	39.3
A2:These techniques should be taught after students learn the conventional dental treatment.	18.0	11.2	14.3	13.1
A3:These techniques need to be taught in lectures but not in basic practical training	1.1	0.0	0.0	1.2
A4:These techniques need to be taught in lectures and in practical training.	70.8	73.0	50.0	46.4
A5:Other	1.1	0.0	0.0	0.0

Tabel2				
	Before(%)	After(%)	Before(%)	After(%)
Do you think you would incorporate implant treatment into your future practice?				
A1: Yes, I will incorporate it.	44.9	62.9	40.5	53.6
A2:I would like to wait a little more before I incorporate it.	44.9	32.6	54.8	41.7
A3:Probably not.	6.7	1.1	4.8	4.8
A4:Other	3.4	3.4	0.0	0.0

Table3				
	Before(%)	After(%)	Before(%)	After(%)
Do you think implant treatment is more difficult compared with treatments using bridges and partial dentures?				
A1:I do not think it is particularly more difficult technically.	4.5	15.7	1.2	9.5
A2:I think it is slightly more difficult.	47.2	56.2	52.4	53.6
A3:I think it is more difficult.	30.3	19.1	33.3	28.6
A4:I think it is much more difficult.	14.6	5.6	10.7	6.0
A5:Other	3.4	3.4	2.4	2.4

Table4				
	Before(%)	After(%)	Before(%)	After(%)
If your first mandibular molar were missing, how would you like to have it restored?				
A1: With an implant	59.6	77.5	58.3	76.2
A2: With a bridge	30.3	16.9	34.5	20.2
A3: With a partial denture	6.7	3.4	4.8	0.0
A4: Other	3.4	2.2	2.2	3.6

In 2009, 94 students (53 males, 41 females) participated in hands-on implant training. In 2024, 84 students (47 males, 37 females) participated in hands-on implant training. The questionnaire response rate was 100% in both 2009 and 2024.

Significant differences in chi-square tests before and after hands-on.

Table1	No statistical difference of answer.
Table2	No statistical difference of answer.
Table3	Significant differences are found in 2009, but not in the 2024 results.
Table4	This change was statistically significant in 2009 and 2024.

4. Discussion & Conclusions

The 2009 survey showed a significant increase in students' willingness to incorporate implant therapy into their future practice. More students perceived implant therapy as “less difficult” compared to bridges and partial dentures, and after training, a significant increase in the number of students choosing implants over bridges for restoration of mandibular first molar defects was observed.

A similar increase in the number of students choosing implants over bridges for mandibular first molar defects was observed in the 2024 study. However, unlike in 2009, there were no significant differences in the other responses. This may be due to advances in implant education, such as computer simulations, problem-solving exercises, and practical training using intraoral scanners. Furthermore, the 2012 NHK program “Dental Implant Problems: Reasons for the Surge in Troubles” may have had a negative impact on students' perception of implant treatment. Despite this, hands-on training remains effective in motivating students toward implant treatment. the integration of digital technology in implant treatment, such as CAD/CAM, virtual simulation, and AI, continues to evolve and enhance dental education is being considered. The findings of this study highlight the importance of early exposure to implantology in the dental education curriculum to foster motivation and interest.

Future research should examine the long-term impact of such educational improvements on clinical practice and patient outcomes.