



EurAsian Journal of Oral and Maxillofacial Surgery

Official publication of AÇBİD
(Association of Oral and Maxillofacial Surgery Society)

EurAsian Journal of
Oral and Maxillofacial Surgery



RESEARCH ARTICLE

Knowledge and Self-Confidence of Dental Students and Newly Graduated Dentists About Dental Implants: An Online Survey

Gökhan Gürses¹, Fulya Idil Omeroglu Akkoc², Ahmet Aktı³

¹ Assistant Professor, DDS, PhD, Selçuk University, Dentistry Faculty, Oral and Maxillofacial Surgery Department, Konya, Turkey

² Private Practitioner, DDS, PhD, Antalya, Turkey

³ Assistant Professor, DDS, PhD, Selçuk University, Dentistry Faculty, Oral and Maxillofacial Surgery Department, Konya, Turkey

ABSTRACT

Introduction: Dental implant treatment is no longer a privileged method for rehabilitating missing teeth. Dental students and newly graduated dentists should have enough knowledge to direct patients to the proper treatment method. Our study aims to evaluate dental students' and newly graduated dentists' knowledge and self-confidence levels.

Materials and Method: This study is conducted as an online survey. The participants were invited by open invitation posts on various social media applications. The survey has fifteen questions; two are about demographic features, and the remaining thirteen are about dental implants.

Results: 259 participants have valid answers. 45% feel moderately knowledgeable about implant procedures. Males were significantly feeling informed about dental implants. Female participants think there is a significantly higher need for a specialist to do dental implant surgery than males.

Conclusion: It is necessary to increase the theoretical and practical courses in faculties. Thus, dental students and newly graduated dentists can provide the required knowledge to guide patients in choosing the appropriate treatment method.

Keywords: dental education, dental implant, dental student, knowledge, self-confidence

INTRODUCTION

In today's modern dentistry, especially with the introduction of the concept of osseointegration, implant treatment has become very popular. Significant developments have occurred quickly in developing technology and industry. The implant material has undergone various modifications over the years and has begun to be produced in many different types and sizes¹. The condition of the patient's alveolar ridge, bone quality, number of missing teeth, gingival disease, systemic condition, and physical factors are the criteria that should be evaluated while planning the implant treatment. In addition,

financial, social, and psychological status are significant factors in deciding the treatment type². Although only some dentists prefer to apply implant treatment, they should have sufficient knowledge about dental implants and accurately inform and guide patients³. The dental implant subject is among the senior year courses in the "Turkish dental education core curriculum." the 4th and 5th-grade students join the implant operations as assistants. Dentistry faculty 4th and 5th-grade students and newly graduated (maximum two years) dentists should have enough knowledge to inform patients about implant therapy

Submission Date: January 12, 2024

Acceptance Date: February 5, 2024

Corresponding author: Gökhan Gürses

Address: Akademi, Selçuk Üniversitesi Diş Hekimliği Fakültesi, Alaeddin Keykubat Kampüsü, İsmet Paşa Cd. No:309, 42250 Selçuklu/Konya/Turkey

Phone: 0505 259 53 59 **Email:** gokhangurses.akademik@gmail.com

Creative Common Attribution Licence, EJOMS Licence © 2024 by Association of Oral and Maxillofacial Surgery Society is licensed under Attribution-NonCommercial-NoDerivatives 4.0 International



EurAsian Journal of Oral and Maxillofacial Surgery

Official publication of AÇBİD
(Association of Oral and Maxillofacial Surgery Society)



It is the faculty's responsibility to provide practical training as well as theoretical education⁴. However, the two most important factors that prevent all practical applications for a bachelor's degree are that students need more time to do all the practical applications in each department, and many faculties' infrastructures need to be more suitable.

In this study, we aim to evaluate the levels of knowledge and self-confidence among dental students and newly graduated dentists regarding dental implants.

MATERIALS AND METHOD

Selcuk University Faculty of Dentistry Research and Ethics Committee reviewed and approved the study [2020/27]. As the study population, 4th and 5th-grade dental students and dentists less than two years after graduation were targeted. The participants were invited by open invitation posts on various social media applications. Our study was adapted from a questionnaire that evaluates implant-related education, knowledge, abilities, and preferences among undergraduate students at the University of Barcelona³.

The survey form consisted of 15 questions; the first two questions were about gender and educational information. The other parts included 13 questions to evaluate their participants' attitude and knowledge of implant procedures.

The SigmaPlot 14 program was used for the statistical evaluation of the data. Descriptive analysis was performed for all answers. Proportions and frequencies were obtained. Significant differences between proportions were searched via Chi-square and Fisher exact test. We set the confidence interval to 95%, and $p < 0.05$ was considered statistically significant.

RESULTS

A total of 351 participants joined our online survey. The 259 participants (157 female and 102 male) answered all fifteen questions. We excluded from the study those who did not answer all questions. The 119 participants were 4th-grade students, 94 were 5th-grade students, and 46 are dentists whose graduation date was less than two years.

We compared the level of feeling knowledgeable about implant procedures between male and female students; the level of feeling knowledgeable by male students was higher ($p=0.024$).

The same comparison was made between academic degrees; no significant difference was found ($p=0.873$). The evaluation of implant placement difficulty levels between the academic degrees and genders showed no significant difference ($p=0.149$, $p=0.458$, respectively).

A statistically significant difference was found when evaluating the necessity for a specialist in implant surgery based on gender. Specifically, females indicated a belief that specialists are required for dental implant placement ($p < 0.001$).

All questions and frequency and percentage of answers are shown in Table 1.

DISCUSSION

Due to the rapid spread of dental implant treatments today, newly graduated dentists encounter more patients demanding dental implants. General practitioners should know the indications for implant treatment and learn to refer the patient to a specialist if necessary⁵. In addition, the general practitioner must be competent in assessing clinical situations and presenting different treatment options to patients. In cases of peri-implantitis, the student should be familiar with appropriate interventions⁴. Many dentistry schools in the United States allow senior pre-doctoral students to perform single implants and over-implant restorations⁶.

In dentistry undergraduate education, dental implant courses are given by oral and maxillofacial surgery, prosthodontics, and periodontology departments. After undergraduate education, there is no qualification requirement to perform dental implant surgery. Therefore, dental implant training is limited to theoretical lessons due to insufficient infrastructure, time, and academic personnel. In these circumstances, we aimed to reveal the students' knowledge about dental implants and how knowledgeable they felt.

In this study, it was seen that most of the survey participants felt moderately knowledgeable, with a rate of 45%, similar to studies conducted in India^{7,8}. These studies show that the implant education provided during the undergraduate period in both countries needs to be improved for the students. The educational system and curriculum of dentistry education can cause insufficient knowledge of dental implants because India's dentistry education system is similar to that in Turkey⁹. In another study conducted in Nepal, 56% of the students stated that they were moderately knowledgeable¹⁰.



EurAsian Journal of Oral and Maxillofacial Surgery

Official publication of AÇBİD
(Association of Oral and Maxillofacial Surgery Society)

EurAsian Journal of Oral and Maxillofacial Surgery



Table 1. Survey questions and the frequency and percentages of the answer given by the participants

Question	Frequency	Percent
Question 1- Gender		
Female	157	60,6
Male	102	39,3
Question 2- Academic Degree		
4th Class	119	45,9
5th Class	94	36,2
Newly Graduated	46	17,7
Question 3- Level of feeling knowledgeable about dental implants		
Very well	11	4,2
Well	96	37
Moderate	119	45
Poor	31	11
I have no idea	2	0,7
Question 4-Difficulty level of implant placement		
1(so easy)	3	1,2
2	2	0,8
3	9	3,5
4	27	10,4
5(moderate)	53	20,5
6	58	22,4
7	57	22
8	41	15,8
9	5	1,9
10(very difficult)	4	1,5
Question 5-The biggest advantage of the implant among other missing tooth treatment methods		
The most aesthetic method	23	8,883
More conservative treatment	154	59
Long time survive	79	30
No extra advantage	2	0,7
No idea	1	0
Question 6-The most important factor in implant success		
Case selection	125	48
Implant type and material	40	59
Patient cooperation	17	6,6
Surgery technique	23	8,9
Dentist experience	53	20
No idea	1	0,4
Question 7-How long will the implant survive?		
2-5 year	8	0,09
5-10 year	77	29,7
10-20 year	83	32
Lifetime	35	13
No idea	56	21
Question 8-Does the implant require more care than normal teeth?		
Requires more care than normal teeth	146	56
Same care as normal teeth	110	42
Requires less care than normal teeth	3	1,1
No idea	0	



EurAsian Journal of Oral and Maxillofacial Surgery

Official publication of AÇBİD
(Association of Oral and Maxillofacial Surgery Society)

EurAsian Journal of Oral and Maxillofacial Surgery



Question 9-Average cost of the implant to the patient		
1000-2000	30	11,6
2000-3000	102	39,4
3000-5000	108	41,7
5000 TL and up	19	7,3
Question 10-Do dental implants in Turkey offer an acceptable solution for the treatment of missing teeth?		
Yes	127	49
No,there are not economic	115	44,4
No,it is a very invasive procedure for the patient to accept	12	4
No, for other reasons	5	1,9
Question 11 - Do you think that you received sufficient training on implant treatment procedures in your dentistry education?		
Yes	236	91,1
No	23	8,9
Question 12- Do you think there should be more courses about implant procedures in the dental curriculum?		
Yes	236	91,1
No	23	8,9
Question 13-How do you think your level of knowledge about implant procedures will be when you graduate?		
I don't think I will have enough theoretical and practical knowledge.	147	56,8
I have enough theoretical knowledge but no experience	101	39
I have enough knowledge and experience to diagnose and treat myself	11	4,2
Question 14-Is it necessary for a specialist (surgeon or periodontologist) to perform the implant application?		
Yes	172	66,4
No	87	33,6
Question 15-Where would you like to receive training on dental implants?		
Short-term training or courses organized by implant companies	17	6,6
One of the 1-year certified training programs organized by universities or implantologists	128	49,4
Postgraduate programs or courses organized by universities	15	5,8
Internet-based training programs or videos	0	
By specializing in oral and maxillofacial surgery or periodontology	99	38,2

In studies comparing all academic degrees, the expectation that the level of knowledge would increase with the increase in academic degrees remained unrequited¹³. Accordingly, in our study, it has been observed that the responses given remain consistent regardless of academic degree. We compared the level of feeling knowledgeable about dental implant procedures between male and female students; male students exhibited statistically higher levels. ($p=0.024$). However, no significant result was found in the same comparison between academic degrees ($p=0.873$). This difference is because male participants are more courageous against surgical procedures, and most male students are likely to overestimate their skills¹¹.

According to the answers, participants' opinions regarding the difficulty level of implant placement are moderate to complex.

91.1% of the responses vary between 4 and 8. It is coherent with the study conducted in Barcelona³.

59% of the participants believe the main advantage of dental implants is that they are more conservative. In the case of dental implant treatment, there is no preparation of adjacent teeth and, therefore, no damage to adjacent teeth¹². In fixed partial dentures, the teeth lose substance with the preparation process, sometimes leading to endodontic, periodontal, and structural problems to achieve optimum aesthetic results¹². Dental implant treatment offers many advantages over traditional fixed or removable prosthetic alternatives. The clinical success of implant treatment in edentulous and partially edentulous patients has been well demonstrated in studies^{13,14}.



EurAsian Journal of Oral and Maxillofacial Surgery

Official publication of AÇBİD
(Association of Oral and Maxillofacial Surgery Society)

EurAsian Journal of Oral and Maxillofacial Surgery



Case selection and management are critical factors in dental implant planning. Considering the opinions of the survey participants about the most crucial element in implant success, 48% stated that it was case selection. In a student study conducted in Spain, case selection was the critical factor, with a rate of 41%³. Similarly, in a survey conducted in India, 65.1% of the student participants answered case selection for essential factor questions¹⁵.

In our study, 32% of the participants stated that the survival period of dental implants is 10-20 years, while 13% indicated that it is lifetime. The perception that implants survive a lifetime can lead to unrealistic patient expectations. There needs to be more evidence from extended follow-up studies (>20 years follow-up) of implant survival rates to help us answer this question. The belief that implants have a better long-term prognosis than teeth has been explicitly rejected in comparative studies and systematic reviews; even teeth with poor prognoses due to periodontal disease or endodontic problems can survive much longer than the average implant¹⁶.

More than half of the participants (56%) thought implants require more oral care than natural teeth. After the implants are placed in edentulous areas, the clinicians should evaluate them with routine control appointments and radiographs to ensure regular maintenance and survival of their restorations. Providing hygiene in dental implants is crucial for long-term implant success and avoiding conditions such as periimplantitis¹⁷.

Half of the participants (49%) said dental implants are acceptable for treating missing teeth, while 44.4% said they were not because the economic situation would limit their use. The studies conducted in Austria by Pommer et al.¹⁸, in the United States by Zimmer et al.¹⁹, in Japan by Akagawa et al.²⁰, and in India by Chowdhary et al.²¹ have also highlighted patients' concerns regarding the increased cost of dental implants and reported that patients cited economic infeasibility as the main reason for not prefer dental implant treatment. Thus, there is concern among dentists alike that the high cost of dental implants may limit their usage⁷.

86% of the participants think they need to receive adequate training on implant procedures in dentistry education. The training given about the implant is only a theoretical course and has no practical application in Turkey. Hands-on training is provided in specialization education or doctoral programs.

Turkey is not the only country with no practical dental implant training. Spain's dental education curriculum consists of five-year theoretical and practical courses. The subject includes implant dentistry, entitled "advanced orofacial implantology," which can be taken during the fourth or fifth year. According to some surveys of undergraduate courses in dentistry conducted internationally at different Universities, the total number of teaching hours in implant dentistry varies between 10 and 40³.

In the answers given to the question "What do you think your level of knowledge about dental implants will be when you graduate?", 56% of the participants stated that they needed more knowledge. Another survey with 21 questions was conducted among recent graduates to learn about their basic knowledge level. The study reached the same conclusions in most respects, confirming the lack of knowledge and confusion about issues such as indications and risk factors, with 78.8% of graduates considering that they did not receive adequate training in implants and 100% insufficient knowledge²².

We asked whether a specialist (surgeon or periodontologist) should perform implant surgery, and 66.4% of the participants answered "Yes." We evaluated the same question based on gender, and a statistically significant difference was found in favor of females ($p < 0.001$). Still, we compared between academic degrees, and no significant difference was found ($p: 0.052$).

The contents of implant courses in undergraduate education in dentistry faculties in Turkey should be expanded. Studies investigating dental implant education given in different universities should be carried out. Opportunities should be provided for students to enhance their skills in practical dental implant education. Dental implant education should not solely be reserved for postgraduate studies; there should be an increase in theoretical courses on implants within undergraduate education.

CONCLUSION

Most participants are familiar with dental implants, but the percentage of unsatisfactory answers is also high. Therefore, increasing the theoretical and practical courses in faculties is necessary. Thus, dental students and newly graduated dentists can provide the required knowledge to guide patients in choosing the appropriate treatment method.



EurAsian Journal of Oral and Maxillofacial Surgery

Official publication of AÇBİD
(Association of Oral and Maxillofacial Surgery Society)



REFERENCES

- Misch CE. Contemporary Implant Dentistry. *Implant Dentistry* 1999;90. <https://doi.org/10.1097/00008505-199901000-00013>.
- Tomruk CÖ, Özkurt-Kayahan Z, Şencift K. Patients' knowledge and awareness of dental implants in a Turkish subpopulation. *The Journal of Advanced Prosthodontics* 2014;133. <https://doi.org/10.4047/jap.2014.6.2.133>.
- Sanchez-Garces MA, Berastegui-Jimeno E, Gay-Escoda C. Knowledge, aptitudes, and preferences in implant dentistry teaching/training among undergraduate dental students at the University of Barcelona. *Medicina Oral Patología Oral Y Cirugia Bucal* 2017;0-0. <https://doi.org/10.4317/medoral.21741>.
- Hicklin SP, Albrektsson T, Hämmerle CHF, 1st European Consensus Workshop in Implant Dentistry University Education. Theoretical knowledge in implant dentistry for undergraduate students. *Eur J Dent Educ* 2009;13 Suppl 1:25-35.
- Young MP, Carter DH, Sloan P, Quayle AA. A survey of oral implantology teaching in the university dental hospitals and schools of the United Kingdom and Eire. *Br Dent J* 1999;187:671-5.
- Maalagh-Fard A, Nimmo A, Lepczyk JW, Pink FE. Implant dentistry in predoctoral education: the elective approach. *J Prosthodont* 2002;11:202-7.
- Chaudhary S, Gowda TM, Kumar TAB, Mehta DS. Knowledge and attitudes of dental interns in Karnataka state, India, regarding implants. *J Dent Educ* 2013;77:1365-70.
- Sharma A, Shrestha B, Chaudhari BK, Suwal P, Singh RK. Knowledge, Awareness, and Attitude Regarding Dental Implants among Dental Interns. *Journal of Nepal Medical Association* 2018;607-15. <https://doi.org/10.31729/jnma.3440>.
- Rao LN, Hegde MN, Hegde P, Shetty C. Comparison of dental curriculum in India versus developed countries. *Journal of Health and Allied Sciences NU* 2014;04:121-4.
- Sharma A, Chaudhari BK, Shrestha B, Suwal P, Parajuli PK, Singh RK, et al. Knowledge and perception about dental implants among undergraduate dental students. *BDJ Open* 2019. <https://doi.org/10.1038/s41405-018-0009-1>.
- Dunning D, Johnson K, Ehrlinger J, Kruger J. Why People Fail to Recognize Their Own Incompetence. *Curr Dir Psychol Sci* 2003;12:83-7.
- Jivraj S, Chee W. Rationale for dental implants. *Br Dent J* 2006;200:661-5.
- Adell R, Lekholm U, Rockler B, Brånemark P-I. A 15-year study of osseointegrated implants in the treatment of the edentulous jaw. *International Journal of Oral Surgery* 1981;387-416. [https://doi.org/10.1016/s0300-9785\(81\)80077-4](https://doi.org/10.1016/s0300-9785(81)80077-4).
- Lindh T, Gunne J, Tillberg A, Molin M. A meta-analysis of implants in partial edentulism. *Clinical Oral Implants Research* 1998;80-90. <https://doi.org/10.1034/j.1600-0501.1998.090203.x>.
- Chaudhary S, Gowda TM, Kumar TAB, Mehta DS. Knowledge, Attitudes, and Perceptions of Undergraduate Dental Students Toward Dental Implants—An All India Survey. *Implant Dentistry* 2015. <https://doi.org/10.1097/id.0000000000000184>.
- Elemam RF, Pretty I. Comparison of the Success Rate of Endodontic Treatment and Implant Treatment. *ISRN Dentistry* 2011;1-8. <https://doi.org/10.5402/2011/640509>.
- Gulati M, Govila V, Anand V, Anand B. Implant Maintenance: A Clinical Update. *Int Sch Res Notices* 2014;2014:908534.
- Pommer B, Zechner W, Watzak G, Ulm C, Watzek G, Tepper G. Progress and trends in patients' mindset on dental implants. I: level of information, sources of information and need for patient information. *Clin Oral Implants Res* 2011;22:223-9.
- Zimmer CM, Zimmer WM, Williams J, Liesener J. Public awareness and acceptance of dental implants. *Int J Oral Maxillofac Implants* 1992;7:228-32.
- Akagawa Y, Rachi Y, Matsumoto T, Tsuru H. Attitudes of removable denture patients toward dental implants. *J Prosthet Dent* 1988;60:362-4.
- Chowdhary R, Mankani N, Chandraker NK. Awareness of dental implants as a treatment choice in urban Indian populations. *Int J Oral Maxillofac Implants* 2010;25:305-8.
- Aljohani, Hind Ahmed, and Ali Saad Thafeed AlGhamdi. 'Predoctoral dental implant education at King Abdulaziz University.' *The Saudi Dental Journal* 21.3 (2009): 135-138 n.d.