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# Perceptions of dental interns in Saudi Arabia toward implant placement in medically compromised patients

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## Abstract:

**BACKGROUND AND AIM:** Increasing incidence of medically compromised patients seeking dental treatment and implant rehabilitation, necessitates greater knowledge toward managing such patients. The objective of the present study was to evaluate the perceptions of dental interns in Riyadh, Saudi Arabia, toward dental implant therapy for medically compromised patients.

**MATERIALS AND METHODS:** Using a convenience random sampling technique, a cross-sectional questionnaire-based study was conducted to evaluate the perceptions of the interns from dental schools in Riyadh, Saudi Arabia. Data pertaining to demographic details of the participants, academic grade point average (GPA), clinical implant training and experience and perceptions about dental implant therapy for medically compromised patients were collected.

**RESULTS:** The survey response rate was 82.9% ( $n = 174/210$ ; Males-129/Females-45). Less than half of the interns ( $n = 82/174$ ; 47.1%) had performed dental implants, out of which 41.5% ( $n = 34/82$ ) had placed implants in medically compromised patients. Most medical illnesses except controlled diabetes mellitus and hypertension were perceived by the interns as contraindications for dental implant placement.

**CONCLUSION:** Based on the results of the present study, it could be concluded that courses with a greater emphasis toward management of dental patients with medical problems and undergraduate implant training for such patients would result in better knowledge and perception among dental interns regarding dental implant placement in medically compromised patients.

## Keywords:

Dental implant, dental interns, medically compromised patient

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## Introduction

Dental implants are increasingly being used to replace missing teeth. The single most important reason for dental implant success is osseointegration postimplant placement.<sup>[1]</sup> Factors contributing to osseointegration failure include, delayed wound healing and infection and inflammation of peri-implant tissues leading to loss of bone support.<sup>[2]</sup> Minor causes of implant failure include breakage during function and untreated parafunctional habits.<sup>[3]</sup> The long term outcomes of implant

therapy can be affected by local or systemic diseases or other compromising factors.<sup>[4,5]</sup> In fact, it has been suggested that some local and systemic factors could represent a contraindication to dental implant placement.<sup>[6,7]</sup>

While early complications after implant installation can include pain, infection and occasionally neuropathy, systemic conditions such as uncontrolled diabetes mellitus (DM), osteoporosis, bleeding disorder, and cancer therapy can interfere with implant healing and adversely affect the outcome of implant treatment.<sup>[8-10]</sup>

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Current undergraduate curricula in dental schools worldwide have introduced implant training.<sup>[11]</sup> Nevertheless, the ability of freshly graduated dentists to diagnose and manage implant patients by themselves is questionable. Moreover, the increasing incidence of medically compromised patients seeking dental treatment and implant rehabilitation necessitates greater knowledge among dentists in managing such patients.

The objective of the present study was to evaluate the perceptions of dental interns in Riyadh, Saudi Arabia, regarding dental implant therapy in medically compromised dental patients.

## Materials and Methods

The sampling frame was obtained from the internship training program (ITP) of the established dental schools in Riyadh, Saudi Arabia and included all the dental interns from those schools. Using a convenience random sampling technique, a cross-sectional questionnaire based study was conducted to evaluate their perception toward dental implant placement in medically compromised patients. A close-ended survey questionnaire was designed by the authors based on data reported previously in the literature. The designed questionnaire was tested on a pilot sample of 20 dental interns drawn from the same sampling frame. Feedback obtained from the pilot survey was used for refining the questionnaire and standardizing it for validity and reliability. The final survey questionnaires were distributed as both physical surveys and electronic surveys (E-survey). Survey responses were collected personally in the case of physically distributed surveys and through electronic submission for the E-surveys.

Calculating the sample size for the given sampling frame, using 95% confidence level ( $\alpha = 0.05$ ), 5% confidence interval and a statistical power of 0.85, a study sample of 166 participants ( $n = 166$ ) was required to achieve a statistically valid result. This was possible for the given sampling frame and the chosen sampling methodology. In the present study, a convenience random sampling technique was used to enroll participants due to the fact that the sampling frame comprised only one particular geographic area within Saudi Arabia and also to ensure recruitment of adequate number of participants to achieve outcomes which are statistically verifiable.

Furthermore, data pertaining to demographic details of the participants, academic GPA, clinical implant training and experience and perceptions about dental implant therapy for medically compromised patients were collected using a self-administered, close-ended questionnaire. Collected data were tabulated using Microsoft Excel spreadsheet software program (Microsoft Office 2010, Microsoft Inc.,

Redmond, VA, USA) and analyzed statistically using SPSS software program (Version 20, IBM Statistics, Chicago, IL, USA). Statistical analysis was primarily focused on the descriptive analysis of the data and group comparisons were done using Pearson Chi-square test assuming a 95% significance level.

## Results

A total of 210 surveys were distributed among dental interns in the dental schools of Riyadh, Saudi Arabia. The response rate for the survey was 82.9% ( $n = 174$ ), which exceeded the estimated sample size by eight responses. Among the 174 survey respondents, 129 were male (74.1%) and 45 were female (25.9%). The majority of the respondents reported to have undergraduate GPA between 3.0 and 4.0 ( $n = 125$ ; 72.2%). While only less than half ( $n = 82$ ; 47.1%) of the interns responded to having done dental implant procedures during their undergraduate training period, they had all done <5 dental implants. Nevertheless, 78.1% ( $n = 137$ ) of the respondent dental interns felt that they possessed more than a fair knowledge regarding diagnosis and management of dental implant patients. With regard to managing medically compromised patients, 73% ( $n = 127$ ) of the interns responded to seeing and treating dental patients with medical problems at least once every week. Moreover, the majority of the dental interns ( $n = 147$ ; 84.4%) were confident of treating medically compromised patients provided their medical condition was under control and were deemed fit to undergo dental treatment by their physician. Interestingly, among the interns who had performed dental implants, 41.5% ( $n = 34$ ) had performed the implant procedures in medically compromised patients.

Irrespective of their undergraduate experience in performing dental implants, the respondent interns were surveyed for their perceptions regarding implant placement in medically compromised dental patients [Table 1]. Majority of the interns were opposed to the placement of dental implants in patients with bleeding diatheses (73.8%), cardiovascular disorders (70.8%), uncontrolled DM (85.3%), bone disorders (76%), endocrine disorders (66.8%), uncontrolled hypertension (HTN) (87.7%), infectious diseases (HIV/Hepatitis – 69.9%), radiation or chemotherapy for cancer (71.4%), and renal diseases (58.7%). However, they agreed that dental implants can be safely placed in patients with controlled DM (61.1%) and HTN (65.6%).

## Discussion

Owing to advances in the field of medicine and dentistry, the present day dentists are faced with a greater proportion of medically compromised patients in their

**Table 1: Interns perception regarding implant placement in medically compromised dental patients**

Medical problems/illnesses	Strongly disagree, n (%)	Disagree, n (%)	Neither agree nor disagree, n (%)	Agree, n (%)	Strongly agree, n (%)
Bleeding diatheses	50 (28.7)	78 (45.1)	32 (18.3)	12 (6.7)	2 (1.2)
Cardiovascular disorders	38 (22.1)	85 (48.7)	40 (22.8)	7 (4.2)	4 (2.2)
Diabetes mellitus (controlled)	27 (15.3)	41 (23.6)	31 (17.8)	43 (24.8)	32 (18.5)
Diabetes mellitus (uncontrolled)	82 (47.2)	66 (38.1)	22 (12.7)	1 (0.7)	2 (1.4)
Disorders of bone	53 (30.6)	79 (45.4)	33 (18.7)	5 (3.1)	4 (2.3)
Endocrine disorders	31 (17.5)	86 (49.3)	46 (26.3)	6 (3.7)	6 (3.2)
Hepatic disease	24 (13.9)	38 (21.9)	43 (24.5)	41 (23.8)	28 (15.9)
Hypertension (controlled)	27 (15.6)	33 (18.8)	41 (23.4)	44 (25.3)	29 (16.9)
Hypertension (uncontrolled)	66 (37.7)	87 (50.0)	18 (10.3)	4 (2.1)	0
Infectious diseases (HIV/hepatitis)	66 (37.8)	56 (32.1)	30 (17.3)	13 (7.7)	9 (5.1)
Post cancer treatment	26 (15.0)	98 (56.4)	40 (23.0)	4 (2.4)	6 (3.4)
Renal disease	20 (11.6)	82 (47.1)	60 (34.3)	10 (5.9)	2 (1.3)

HIV=Human immunodeficiency virus

dental practice, and this has been reported by several studies in the literature.<sup>[1,5-8,12,13]</sup> Although university dental curricula worldwide have been incorporating syllabi pertaining to the dental management of the medically compromised patients, there have not been many studies evaluating the outcome of such curriculum changes.<sup>[11]</sup> Therefore, the objective of the present study was to evaluate the dental interns' perception regarding implant placement in medically compromised dental patients. Most international dental training programs incorporate a compulsory rotatory internship as a prerequisite for completion of the undergraduate dental program. Similar to international programs, the dental ITPs at dental schools in Saudi Arabia is a 1 year mandatory clinical training program before graduation. After completion of 5 years of study, the dental students are enrolled to the ITP. Not only are the students expected to be aware of management of medically compromised patients, but also are exposed to treating dental patients with medical problems as the ITP is conducted at recognized teaching dental hospitals and under expert supervision.

Saudi Arabia has witnessed a steady increase in the number of patients with chronic illnesses seeking dental treatment.<sup>[14,15]</sup> Most dental schools in Saudi Arabia function as a part of renowned universities and are attached with medical teaching and training facilities (e.g., King Khalid University Hospital attached to the College of Dentistry in King Saud University). Therefore, dental students and interns are faced with the dental management of a lot of medical patients. This is evidenced from the number of participants who agreed to seeing a medically compromised patients at least once every week ( $n = 127$ ; 73%). Furthermore, most dental school curricula in Saudi Arabia expose the students to dental implant training beginning from their 3<sup>rd</sup> or 4<sup>th</sup> year and allow them to perform dental implant procedures under supervision during their 5<sup>th</sup> year and ITP.<sup>[16]</sup> Although not mandatory, nearly half

of the participants in the present study ( $n = 82$ ; 47.1%) had performed dental implant treatment during their undergraduate course, and this is higher than what has been reported among dental students in the literature. In addition, 78.1% ( $n = 136$ ) of the participants perceived themselves to be possessing fair enough knowledge regarding dental implant treatment in medically compromised patients. Although not evidence based, the above-mentioned findings indicate the beneficial effect of undergraduate dental implant training for the dental students. While it might be true that the students are being taught about dental implant management of medically compromised patients as a part of implant training courses, there are no available performance indicators for the same.

Interestingly, interns who participated in the present study were found to be aware of the importance of knowing the medical status of the patients ( $n = 143$ ; 82.2%) and seek a referral from specialists ( $n = 163$ ; 93.7%) when necessary. Moreover, within the participants who had placed implants, 41.5% ( $n = 34$ ) reported placing dental implants in medically compromised patients. In spite of these, the perception of the dental interns toward implant treatment in dental patients with medical problems was guarded. Majority of the participants believed that dental implants could be safely placed in patients with common medical problems such as DM and HTN, provided they were controlled. Nevertheless, medical problems such as bleeding diatheses, cardiovascular disorders, endocrine diseases and infectious diseases were considered as contraindications for dental implant treatment. Based on a systematic review of studies reporting dental implant treatment in medically compromised patients, it has been reported that there are no absolute contraindication in terms of medical illnesses for dental implants.<sup>[9]</sup> While several diseases involving the cardiovascular, endocrine, hepatorenal, immune and neurological systems have been reported as relative contraindications, disorders of bone due to osteoporosis, bisphosphonate treatment,

and exposure to ionizing radiation have been reported as the worst contraindications for dental implant survival.<sup>[6,10,12,17,18]</sup> More importantly, the level of control of the medical problem has been regarded as the key indicator for dental implant success among medically compromised dental patients.<sup>[1,2,4]</sup>

## Conclusion

Although the results of the present study indicate a satisfactory level of awareness, among dental interns in Riyadh, regarding management of medically compromised dental patients, there have been wide ranging misconceptions regarding the indications and contraindications of dental implant rehabilitation of such patients. Evidence from literature clearly points to the fact that dental implants can be safely and successfully placed in patients with medical illnesses, provided they are well controlled and managed. Based on the results of the present study, it can be assumed that the introduction of courses with a combined emphasis toward dental management and rehabilitation of medically compromised patients and undergraduate implant training would result in better knowledge and perceptions among interns regarding dental implants in medically compromised patients.

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## Conflicts of interest

There are no conflicts of interest.

## References

1. Diz P, Scully C, Sanz M. Dental implants in the medically compromised patient. *J Dent* 2013;41:195-206.
2. Smith RA, Berger R, Dodson TB. Risk factors associated with dental implants in healthy and medically compromised patients. *Int J Oral Maxillofac Implants* 1992;7:367-72.
3. Baqain ZH, Moqbel WY, Sawair FA. Early dental implant failure: Risk factors. *Br J Oral Maxillofac Surg* 2012;50:239-43.
4. Scully C, Hobkirk J, Dios PD. Dental endosseous implants in the medically compromised patient. *J Oral Rehabil* 2007;34:590-9.
5. Ramalingam S, Al-Hindi M, Al-Eid RA, Nooh N. Clinical evaluation of implant survival based on size and site of placement: A retrospective study of immediate implants at single rooted teeth sites. *Saudi Dent J* 2015;27:105-11.
6. Gómez-de Diego R, Mang-de la Rosa Mdel R, Romero-Pérez MJ, Cutando-Soriano A, López-Valverde-Centeno A. Indications and contraindications of dental implants in medically compromised patients: Update. *Med Oral Patol Oral Cir Bucal* 2014;19:e483-9.
7. Hwang D, Wang HL. Medical contraindications to implant therapy: Part II: Relative contraindications. *Implant Dent* 2007;16:13-23.
8. Charalampopoulos A, Dimopoulos I, Koliakos N, Kopanakis K, And TL. Non-complicated acute appendicitis in adults treated successfully by conservative treatment without recurrences. *Chirurgia (Bucur)* 2017;112:25-32.
9. Bornstein MM, Cionca N, Mombelli A. Systemic conditions and treatments as risks for implant therapy. *Int J Oral Maxillofac Implants* 2009;24 Suppl:12-27.
10. Marchand F, Raskin A, Dionnes-Hornes A, Barry T, Dubois N, Valéro R, *et al.* Dental implants and diabetes: Conditions for success. *Diabetes Metab* 2012;38:14-9.
11. Atashrazm P, Vallaie N, Rahnema R, Ansari H, Shahab MP. Worldwide predoctoral dental implant curriculum survey. *J Dent (Tehran)* 2011;8:12-8.
12. Arekat MR, And G, Lemke S, Moses AM. Dramatic improvement of BMD following Vitamin D therapy in a bone marrow transplant recipient. *J Clin Densitom* 2002;5:267-71.
13. Tischler M. Implant treatment planning for the medically compromised patient: A case report of full-mouth reconstruction with dental implants. *Dent Today* 2006;25:60, 62.
14. Calvo-Soto P, Martínez-Contreras A, -Hernández BT, And FP, Vásquez C. Spinal-general anaesthesia decreases neuroendocrine stress response in laparoscopic cholecystectomy. *J Int Med Res* 2012;40:657-65.
15. ElAbdin HA, Al-Muhaimeed Y, Al-Muhaidib G. Medically compromised Saudi patients attending the dental practice: A retrospective study. *Saudi Dent J* 1996;8:136-9.
16. Aljohani HA, Alghamdi AS. Predoctoral dental implant education at king abdulaziz university. *Saudi Dent J* 2009;21:135-8.
17. Al-Osaimi A, Samman M, Al-Shakhs M, Al-Suhaim F, Ramalingam S. An unusual case of atrophic mandible fracture in a patient with osteogenesis imperfecta and on oral bisphosphonate therapy: Case report. *Saudi Dent J* 2014;26:68-73.
18. Al-Bazie SA, Bahatheq M, Al-Ghazi M, Al-Rajhi N, Ramalingam S. Antibiotic protocol for the prevention of osteoradionecrosis following dental extractions in irradiated head and neck cancer patients: A 10 years prospective study. *J Cancer Res Ther* 2016;12:565-70.