

Faculty Members' Attitude Toward Establishing a Business Center in the Dental School Clinic, King Saud University

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INTRODUCTION

Dental education as a health profession is considered to be one of the most costly educational programs for all students around the world. The financial challenges of any dental educational program covered under the criteria of student tuition fee debts, faculty shortages, and clinical operations and facilities.^[1] Researchers of the United States suggested new educational strategies that will provide the funding needed to invest in education and research programs to formulate the next generation of practitioners to serve the population and to develop

ABSTRACT

Aims and Objectives: The aim of this study was to evaluate the faculty members' attitude toward establishing a business center in the College of Dentistry, King Saud University, Riyadh, Saudi Arabia. **Materials and Methods:** A structured questionnaire comprised three sections: demographic variables such as gender and age, questions regarding the faculty's attitude toward a dental college business center, and a comparison between a business center and private clinics. Statistical analysis was performed to compare the groups with scale response variable; independent *t*-test, analysis of variance, and factor analysis were also conducted. **Results:** The study results show that 43 respondents were men and 26 were women. Twenty respondents were ranked in the position of assistant professor, whereas 38 were ranked as associate professors, and 11 as professors. In total, 88.5% of female faculty members supported the idea of establishing a business center at the dental college, whereas 65% of male faculty members supported the same idea. There is a statistically significant difference among them ($P < 0.05$). The factor analysis extracted three factors named as "treatment accessibility," "treatment effectiveness," and "treatment cost." The factor loading ranges from 0.652 to 0.867, and altogether they explain 79% of the total data variance. **Conclusion:** Our study proved that 65.1% of male and 88.5% of female dental faculty of the college supported the idea of establishing a business center at the dental college as funding is needed to invest in dental education and research programs in order to formulate the next generation of practitioners to serve the population. This study will add to the progress of establishing a business center in dental education and provides the patient with a treatment accessibility and effectiveness in a low-cost budget.

KEYWORDS: Business center, faculty members, finance of dental college

a new model of dental education.^[2] It has been found that profitable faculty practice contributes to the dental school's financial health. A survey of finance officers in 25 U.S. dental schools in 2010 reported that faculty practice revenues are used to increase the faculty salary and/or to supplement dental school financing.^[3]

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As a result, the revenue from the faculty practice in a dental business center can achieve extra funding for dental schools. It can aid in improving the independent income and the educational level of the college, the infrastructure of the college, the salaries of the dental staff as well reducing the student's tuition fee debts. To develop the health-care programs, it is important to understand the patient's preferences toward the service provided by public and private services.^[4] Prior to the treatment, the dentist working in the public dental OPD prescribes the medicines after taking the full history of the patients.^[5] To overcome the lack of skills as well as the expensive cost of private dental treatment, the dental tourists are interested to travel away from home for treatment.^[6] Many patients seek treatment at private clinics operated by the dental college's faculty members in order to get the benefit of their high level of knowledge and experience, and to avoid the long waiting lists of the specialist clinics at the dental college. More often, some of the faculty members were working night shifts in private practices to boost their salary and to practice in their specialty. In a study to compare the public- and private-sector treatment, the public sector had more effort on examining and emergency care of the patients with that of private sector. The dentist in private sector feels that their capability is weak in periodontal treatment and provides three times more with that of public sector.^[7]

It is expected that establishing a business center at the dental college in King Saud University might increase the chances of more patients to receive dental treatment at the specialist clinics. In Saudi Arabia, the number of licensed female dental specialist practicing in public sector is higher than those male dentists in the private sector.^[8]

Most of the female dentists in Kingdom agreed that the child care responsibilities and work-life balance are challenge to their career progress.^[9] Little information is available in the literature review regarding the opinion of the dental faculty members about a business center. Therefore, the main aim of this study was to evaluate the attitude of Saudi male and female faculty members toward establishing a business center in the dental college, King Saud University. The hypothesis formulated that there is a significant difference between the attitudes of faculty members to establish a business center in dental college.

MATERIALS AND METHODS

This study is an observational descriptive cross-sectional and was approved by the College of Dentistry Research Centre (CDRC), Registration Number: (IR 0047). The paper-based questionnaire was distributed

to the subjects, and data were collected during the period of September and October 2013.

The sample inclusion criterion includes Saudi male and female working at the dental college in the position of Assistant Professor and its above cadre in various departments. The respondent whose ranking position is below assistant professor was excluded from this study. The total sample size of the study was 100 faculty members. A structured questionnaire comprised three sections: Section one contains the demographic information such as gender, age, and ranking position; Section two contains about the faculty's attitude toward a dental college business center; and Section three shows a comparison between a business center and private clinics.

The data were analyzed using the Statistical Package for the Social Sciences software, version 14.0 (SPSS, Chicago, IL), and structural equation modeling using Amos (Version 21.0, Computer Program, Chicago: IBM SPSS). The independent *t*-test, analysis of variance, and factor analysis were applied for the scale responses. A value of $P < 0.05$ was considered statistically significant.

DATA COLLECTION

A structured questionnaire was distributed to the faculty members, which includes Saudi male and female working at the dental college in the position of assistant professor, associate professor, and professor in different departments. The respondent whose ranking position is below assistant professor was excluded from this study. The questionnaire was prepared in both English and Arabic languages with the support of bilingual experts. A pilot study was conducted based on a random sample basis with the dental faculties working in the department ($n = 15$), to obtain their feedback and valuable comments on the questionnaire. Accordingly adequate amendments were made without altering the relevant terms of the questionnaire to make easy to understand the respondents.

Of the total sample size of 100 faculty members, 69 respondents returned back with their answers. The internal reliability of the questionnaire items was measured by using the Cronbach's α . The α values of selected items range from 0.895 to 0.912 and it depicts that the items had an adequate reliability.^[10]

The questionnaire comprised three sections: Section one contains the demographic information such as gender, age, and ranking position such as assistant professor, associate professor, and professor; Section two contains the faculty's attitude toward a dental

college business center; and Section three highlights the comparison between a business center and private clinic practice.

RESULTS

Of the 100 paper-based questionnaires distributed among Saudi male and female faculty members, 69 respondents returned back with their answers. Of those respondents, 43 were male doctors and 26 were female doctors. The highest percentage of respondents (57%) were 36–45 years old, whereas the least percentage (3%) of respondents were aged 65 years and older. 28% were 46–55 years old. 9% and 4% of them were under the age group of 25–35 years and 56–65 years, respectively. The highest percentages of the respondents (55%) were associate professors, 29% were assistant professors, and 16% of them ranked in the position of professors [Table 1].

Regarding the opinion of the respondent members about the establishment of a business center at the dental college, more female faculty members supported the idea (88.5%) as compared to male respondents 65% [Table 2]. The difference was statistically significant at $P < 0.05$ ($P = 0.032$). Although higher percentage (65%) of female faculty members preferred to work in the business center, only 51% of the male faculty members preferred to work in the business center. No statistically significant difference was found at $P = 0.248$ [Table 2].

The internal reliability of the questionnaire items was measured by using the Cronbach's α . Table 3 shows that

the α values of selected items range from 0.895 to 0.912 and it depicts that the items had a good reliability.

Around 46% of the male respondents preferred working at the business center after regular working hours at the dental college, and the least percentage (14.5%) preferred working during the regular working hours and there is no statistically significant difference within the gender [Figure 1]. The highest percentage (54%) of the female respondents opted to work in the business center of the dental college, whereas only 44% of the male doctors preferred working at private clinics. A statistically significant difference was seen between male and female [Figure 2].

When the respondents were asked to compare the business center to private clinics with different aspects, the highest percentage (45%) of male doctors thought that a business center schedule would be less flexible than outer private clinics. On the contrary, 15.4% of the female staff had come out with the same opinion. Most of the female staff (65.4%) expected that the flexibility of the business center schedule is same with that of private clinic. A statistically significant difference was found within the gender's opinion ($P < 0.05$) [Table 4].

The highest percentage of male (45%) and female (73%) doctors thought that patients at the business center would spend similar time at the waiting areas, as at any private clinic before consulting the doctors, which is in line with the previous study.^[11] No significant differences were found between the opinions of male and female doctors. When comparing the quality of equipment, the type of material used, and the helpfulness of the dental staff between a business center and outer private clinics, the highest percentages of respondents thought that it would be the same. Regarding the accuracy of diagnosis and management, although around 54% of the female doctors thought that this service would be better at the business center than private clinics, only 52% of the male doctors thought that it would be the same ($P = 0.173$). The highest percentages of respondents from both genders believed that the final result of the treatment and the follow-up of the treatment at the business center would be similar to the private clinic, with no significant differences ($P = 0.206$ and $P = 0.100$, respectively) [Table 4]. 65% of female respondents thought that the cost of the dental treatment at a business center would be less than outer private clinics;

Table 1: Sample distribution, gender, age, and rank

Particulars	n (69)	%
Gender		
Female	26	37.7
Male	43	62.3
Age		
25–35 years	6	8.7
36–45 years	39	56.5
46–55 years	19	27.5
56–65 years	3	4.3
65 years and older	2	2.9
Rank		
Assistant professor	20	29.0
Associate professor	38	55.1
Professor	11	15.9

Table 2: The responds of the participants regarding establishing and working in a business center at the dental college

	Male		Female		P value
	Yes	No	Yes	No	
Support the idea of establishing a business center at the dental college	65.1%	34.9%	88.5%	11.5%	0.032
Prefer working at the business center if established	51.2%	48.8%	65.4%	34.6%	0.248

40% of the male respondents had the same opinion. No statistically significant differences were found within gender's opinion ($P = 0.107$) [Table 4].

An exploratory factor analysis was performed using IBM SPSS software (IBM SPSS Statistics for Windows, Version 21.0, Armonk, NY: IBM Corp.) for the nine questionnaire items, which was recorded as Likert scale with a value of 5 being strongly agree to 1 as strongly disagree. The initial set of nine question items was analyzed to test reliability and the Cronbach's α measure was 0.912, which was higher than 0.6.^[12] After the reliability test of Cronbach's α , a sample adequacy by performing principal component method with varimax rotation showed eigenvalues more

than 1, that is, 2.462, 1.757, and 1.192, respectively, and the variances explained were 19.82%, 13.56%, and 11.65%, respectively. The extracted factors were named "treatment accessibility" as factor 1, "treatment effectiveness" as factor 2, and "treatment cost" as factor 3. Factor loading ranged from 0.652 to 0.867, and altogether they explained 79% of the total data variance [Table 5].

The significance of individual parameters was analyzed by conducting path analysis using IBM AMOS software, version 21.0. Table 6 shows the results such as variable items, the standardized path coefficients (β and γ), the critical ratios (t values), and also the P values. As per the 11 variables given in Table 6, eight of the individual constructs is significant with a value of $P < 0.001$, and two of the constructs show the significance value of $P < 0.05$ and one construct with a P value > 0.05 , which is not significant. Hence, it is supported the faculty attitude toward business center. The path analysis in Figure 3 depicts the variance of individual constructs toward the attitude of faculties.

Table 3: Internal reliability of the questionnaire items

Sr. no.	Questionnaire items	Cronbach's α
1	Schedule flexibility	0.900
2	Waiting duration	0.904
3	Equipment and materials	0.903
4	Helpfulness of the dental staff	0.902
5	Accuracy of diagnosis and management	0.906
6	Professionalism and care of the patient	0.912
7	Final result of the provided treatment	0.905
8	Follow-up of the treatment	0.895
9	Cost of the treatment	0.905

DISCUSSION

The study results generated information about the attitude of Saudi male and female faculty members toward establishing a business center in the dental

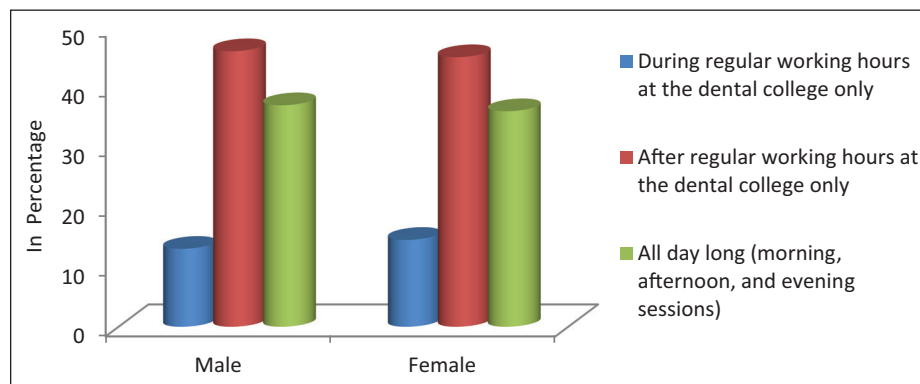


Figure 1: Q8: Do you think that the business center should be active (N = 69)

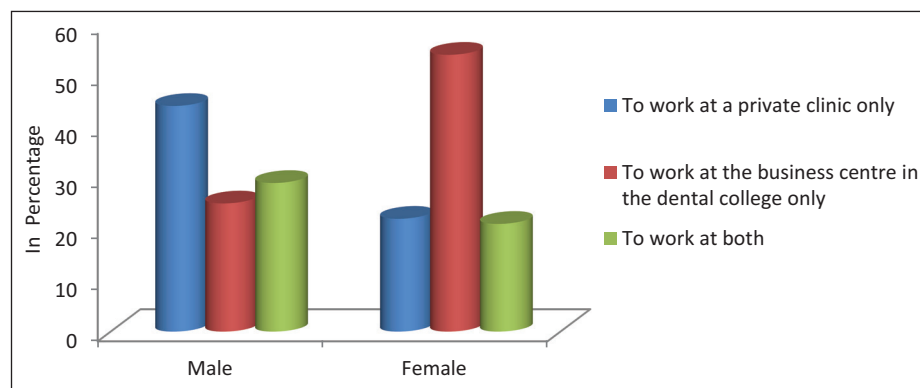


Figure 2: Do you prefer, if you are eligible to work in a private clinic outside the dental college? (N = 69)

Table 4: Comparison between business center and private clinic

	Male			Female			P value
	Better (%)	Same (%)	Worse (%)	Better (%)	Same (%)	Worse (%)	
Schedule flexibility	11.9	42.8	45.2	19.2	65.4	15.4	0.040
Waiting duration	16.7	45.2	38.1	7.7	73.1	19.2	0.079
Equipment and materials	28.6	45.2	26.2	23.1	57.7	19.2	0.602
Helpfulness of the dental staff	28.6	52.4	19.0	26.9	65.4	7.7	0.387
Accuracy of diagnosis and management	38.1	52.4	9.5	53.8	46.1	0	0.173
Professionalism and care of the patient	23.8	66.7	9.5	46.1	53.8	0	0.067
Final result of the provided treatment	26.2	64.3	9.5	46.1	50.0	3.8	0.206
Follow up of the treatment	21.4	61.9	16.7	46.1	42.3	11.5	0.100
Cost of the treatment	40.5	38.1	21.4	65.4	26.9	7.7	0.107

Table 5: Factory analysis results of the questionnaire items

	Factor 1			Factor 2		Factor 3
	Treatment accessibility			Treatment effectiveness		Treatment cost
1	Schedule flexibility		0.845			
2	Waiting duration		0.765			
3	Follow-up of the treatment		0.719			
4	Accuracy of diagnosis and management			0.867		
5	Professionalism and patient care			0.765		
6	Final result of the treatment provided			0.719		
7	Helpfulness of the dental staff			0.652		
8	Equipment and materials					0.853
9	Cost of the treatment					0.727
	Eigenvalue	2.462		1.757		1.192
	% of total variance	19.824		13.567		11.657
	Total variance			78.984		
Extraction method: principal component analysis.						
Rotation method: varimax with Kaiser normalization ^a						

^aRotation converged in five iterations

Table 6: Regression weights

DIM	INF	Factors	E	SE	SE	CR	P value
FATBS	←	Treatment effect	0.216	0.092	0.017	3.241	0.124 NS
FATBS	←	Accuracy	0.221	0.354	0.034	4.977	***
FATBS	←	Patient care	0.247	0.185	0.012	6.221	***
FATBS	←	Equipment and materials	0.269	0.283	0.014	5.943	***
FATBS	←	Patient's waiting duration	0.314	0.252	0.019	6.687	***
FATBS	←	Flexibility	0.317	0.312	0.002	5.926	***
FATBS	←	Staff cooperation	0.329	0.158	0.007	4.462	0.032
FATBS	←	Treatment result	0.342	0.268	0.071	5.687	***
FATBS	←	Treatment cost	0.332	0.321	0.015	7.699	***
FATBS	←	Working preference	0.376	0.271	0.012	6.064	0.028
FATBS	←	Follow-up of patients	0.412	0.193	0.058	2.296	***

SE = standardized estimate, SE = standard error, CR = critical ratio, P = probability value, DIM = dimensions, INF = influence, FATBS = faculty attitudes toward business center, NS = not significant, E = unstandardized estimate

***Significant at 1% level

college, King Saud University. The study also helps to increase the awareness of dental school administrators for the need of establishing a business center in the dental college. The hypothesis was formulated that there is a significant difference between the attitudes of faculty members to establish a business center in the dental college.

Of the 100 paper-based questionnaires distributed among Saudi male and female faculty members, 69 respondents replied with their answers. The findings of our study indicate that 88.5% female faculty members supported the idea of establishing a business center at the dental college. On the contrary, 65% of the male faculty members conveyed a positive attitude toward the response. Their support

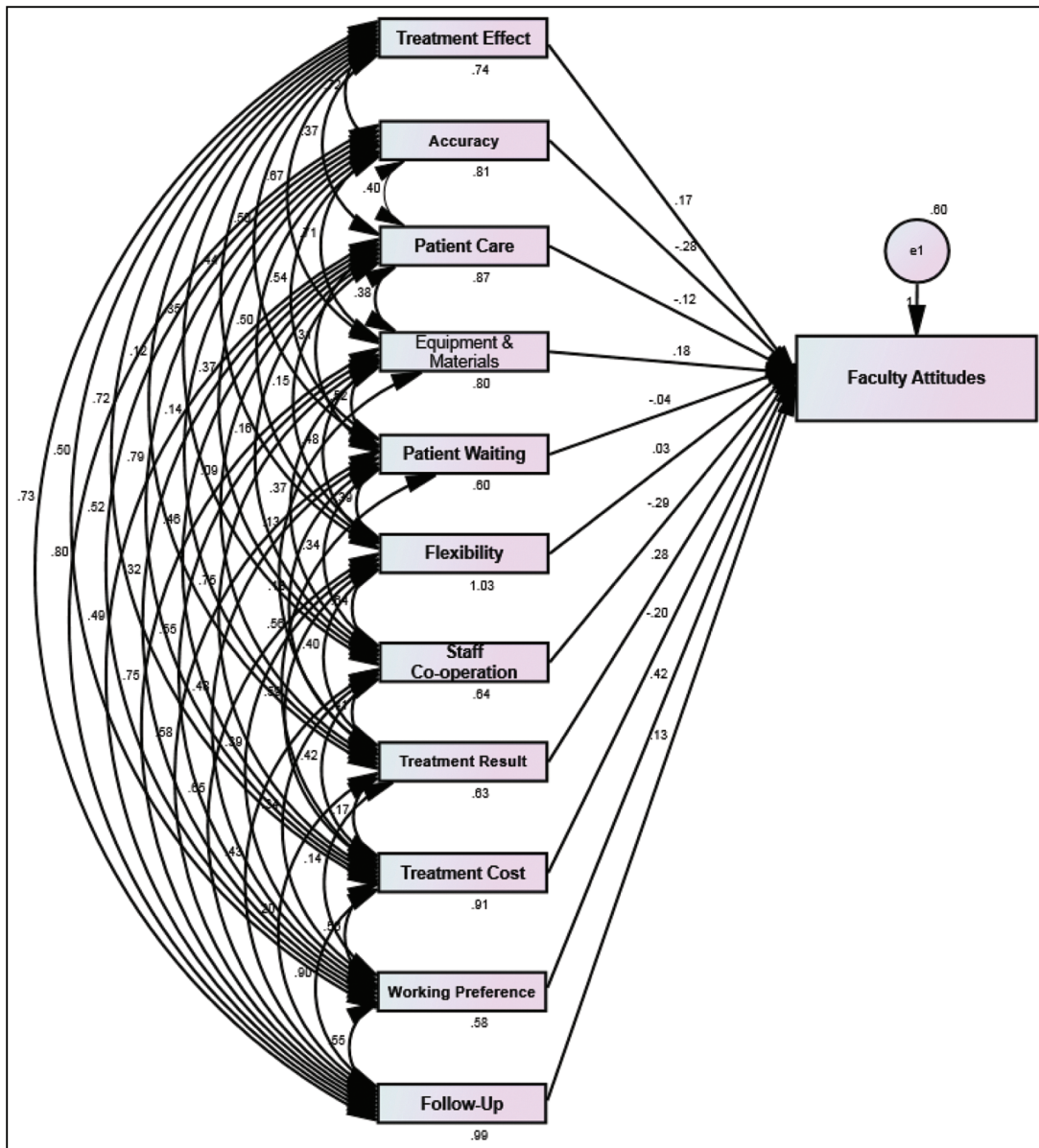


Figure 3: Faculty attitude toward business center (path analysis)

may be increased because 64% of the total respondents thought that establishing a business center would reflect positively on the education process, researches, and the financial status of the dental college. This result is in line with the study of Kim *et al.*,^[3] who reported that faculty practice revenues are used to increase faculty salary and/or to supplement dental school financing. It also supports the study of Bailit *et al.*^[13] mentioning that one potential funding source is revenue from patient care, which currently comprises an average of approximately 21% of total dental school revenue.

The study results show that establishing a business center will increase the consumption of materials in the stores. Because of the agreement of the majority of the respondents, the business center at the dental college

would allow more patients to be treated at the specialist clinic and would reduce the patient's waiting list. In addition, it should be noted that the general reputation of the dental school may encourage potential dental consumers to choose a dental school faculty.^[14]

In our study, the majority of the respondents rated dental attributes such as the quality of equipment, the type of material used, the helpfulness of the dental staff, the final result of the treatment, and the follow-up of the treatment as the same with that of private clinics [Table 4]. Although most of the male (40%) and female (65%) respondents agreed that the cost of the dental treatment at a business center would be lesser than outer private clinics, this opinion is true with increasing dental school partnerships with private

industry.^[15] Such partnership includes donations for capital projects, endowed professorships, symposia, continuing education courses, educational materials, scholarships, fellowships, research funding, access programs, and implant grant support.^[16-18]

Another common example of corporate support for dental schools is dental suppliers providing products and equipment at a significantly reduced cost to the schools.^[9] Although corporate support reduces clinic operation costs, other potential areas of corporate support would be access to newer technologies such as digital impressions and associated computer-based systems such as CAD/CAM for generating indirect restorations.^[1] The expected low cost may increase the flow of the patients; therefore, the flexibility of the business center schedule could be lesser than the outer private clinics. The study is limited to the faculty employees and the factors that influence the establishment of business center in King Saud University, Riyadh.

CONCLUSION

This study proved that the 65.1% of male and 88.5% of the female dental faculty of the college supported the idea of establishing a business center at the dental college. A number of dental practice attributes were considered similar to the private practice. These attributes include the quality of equipment, the type of material used, the helpfulness of the dental staff, the final result of the treatment, and the follow-up of the treatment, whereas the low cost was found to be more in the established business center. Establishing a business center could be a smart way of using the human resources to serve the community as well as to solve the financial issues of dental schools that might affect the education, operations, research, and patient care. The path analysis shows that individual constructs is significant, hence supporting the faculty attitude toward business center. The study will explore the expertise of dental faculty members and thereby provides the patient with treatment accessibility, treatment effectiveness, and a low-cost budget. The study results will add to the progress of establishing a business center in dental education. Further to the research outcomes, future research in dental education can be seen in the following three fields: treatment accessibility, treatment effectiveness, and treatment cost as funding needed to invest in dental education and research programs that will formulate the next generation of practitioners to serve the population.

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Nil.

CONFLICTS OF INTEREST

There are no conflicts of interest.

AUTHOR CONTRIBUTIONS

ASA conceived the study. HIT, NK and YRT composed the initial data analysis plan, which was revised following feedback from ASA. HIT cleaned the data and NK performed the analysis. ASA wrote the first draft of this paper, HIT, YRT, NK revised and approved the final version. All authors have read and approved the final manuscript.

ETHICAL POLICY AND INSTITUTIONAL REVIEW BOARD STATEMENT

The study was approved by the College of Dentistry Research Centre (CDRC) Registration Number: (IR 0047) in September 2013 and all the procedures have been performed as per the ethical guidelines laid down by Declaration of Helsinki (2000).

PATIENT DECLARATION OF CONSENT

Not directly related to the patients.

DATA AVAILABILITY STATEMENT

The data used to support the findings of this study are available from the corresponding author upon request.

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