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ETHICAL DILEMMA & CONTROVERSIES OVER COSMETIC LAMINATE VENEERS AMONG DENTISTS IN RIYADH

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ABSTRACT

Cosmetic & aesthetic procedures are usually accompanied by ethical considerations toward the patient such as, whether they need to have this procedure or not or whether will it be beneficial and long-lasting for their case. The study aims to have a better understanding of the ethical values & views of dentists toward cosmetic dentistry, in particular: laminate veneers. This is a descriptive cross-sectional study of dentists working at hospitals & clinics in Riyadh in both private & public sectors. After receiving ethical approval (RC/IRB/2018/1155), data was collected through a self-administered questionnaire after validation & conducting the pilot study. A total of 351 dental practitioners gave their consent to participate in this study and filled the questionnaire, 196(55.8 %) were males and 155(44.2 %) were females. The study included 74.1% of GP's and 25.9% in dental clinics in Riyadh. The findings in our study suggest that the overall aesthetic dental practice among the participants in this study runs within the relevant ethical rules and guidelines cited by national and international dental regulatory.

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Introduction

One of the basic characteristics of humans, dating from our earliest knowledge of history to the present time, is their desire and ability to change, alter, and, in most cases, improve almost everything in their surroundings as well as themselves [1]. The laminate veneers are no exception, and they flourished & evolved over the last few decades unlike the older days when the goal of dentistry would be stated as "maintenance of the dentition in health, comfort, and function for life". In this time and age, the goal of oral health should be mutually agreed upon between the dentist and the patient [2-4].

Most experienced dentists are well aware of their patient's requirements and desires during the treatment. Many of them are more devoted towards their patient's satisfaction level and thus, practice more and train more accordingly and create their skill set suitably. They put all these efforts to make sure their means of doing the treatment results in minimal damage to the patient's dental appearance and also less pain [5].

Cosmetic & aesthetic procedures are usually accompanied by ethical considerations toward the patient such as, whether they need to have this procedure or not or whether will it be beneficial and long-lasting for their case. It should be noted that when patients ask for elective cosmetic procedures that do not necessarily mean that they should get it, no matter how persuasive they are. It is critical to explain to the patient what they are up to, and what that implies, from success potential to the consequences of failure, to avoid any ethical & medicolegal complications [6].

It is an extremely unethical act of various dentists if in case they do not inform their patients of any relevant facts which are associated with the preparations involved in the cosmetic restorations. Such an act can be ethically wrong if the changes involved in the procedure are carried forward as minor changes. This is also because all these changes might seem extremely insignificant by the end of the procedure when the patient is at last rewarded with a perfect Hollywood smile [7].

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At first glance, it would be considered a low-risk & minimally invasive procedure, but the maintenance of the laminate veneers state is a whole different matter. A meta-analysis of 15 studies showed a 92% cumulative success rate [8], it should be noted that it was only for no more than 3 years, a study in the UK was done on 1177 patients showed that only 53% of the cases still had their laminate veneers, without re-intervention, at 10 years. It should be noted that factors related to dentists were relevant, but patient factors such as age, gender & geographical area were more relevant [9]. Another study in Austria had a conclusion of the estimated success rate of 93.5% over 10 years with the significant increase in failure rate with non-vital teeth, fracture with bruxism patients, & marginal discoloration with smokers [10], which supports the conclusion of [7] that patient factors are more relevant to the failure rate, but it is also important that the dental practitioner would be qualified for veneer preparation and placement. A study in the UK showed a higher rate of failure with inexperienced operators [11].

At times there are also several veneer procedures where ethical concerns are kept ignorant for a long considerable amount of time. When discussing ethics especially in cosmetic dentistry, it seems very wise to gain attention to the matter that the porcelain veneers are not permanent. Usually, the porcelain veneers do not stay for a longer time according to a study [12].

When a patient is considering going through cosmetic dentistry who gives complete consent on the whole procedure, the patient must be given proper information which is evidence-based. The information provided should be in a language and in such a form that is completely understandable and has all the limitations. They should be made aware of the fact that the porcelain veneers do not stay intact for a much longer period and also that the anterior of the substance which is used in the tooth will have to be removed if any sort of issues arises in the crowns or the veneers. This should also be done if the patient has decided to go for any short-term case of orthodontics. They should be well informed that their original alignment might be lost and, in this case, they should choose to have an option that is restorative just so that there can be an aesthetic recovery. The patients should also be devised to inform about the risk of root resorption which is associated with the orthodontic forces and that they should be selecting realignment shortly [13].

In the last few years, the demand for dental cosmetic procedures increased at an alarming rate in the UK, one of the main reasons is the declined rate of dental caries in developed countries [14]. With such an increase in demand, a moral & ethical question is asked here. Is it considered ethical to recommend veneers to the patient or give in to their demands when they ask for it when they don't need it? Either that they have other alternative cosmetic solutions, or simply that what would they gain is insignificant compared to the complications that they might face afterward. It is important to have a better understanding of the dental force's ethical views, and how do they deal with such cases.

Aim/Objectives

The study aims to have a better understanding of the ethical values & views of dentists, toward cosmetic dentistry, in particular: laminate veneers.

Materials and Methods

This is a descriptive cross-sectional study of dentists working at hospitals & clinics in Riyadh in both private & public sectors. After receiving ethical approval (RC/IRB/2018/1155), data was collected through a self-administered questionnaire after validation & conducting the pilot study; the questionnaire was handed in the electronic device without asking for personal info to maintain confidentiality. The filled questionnaire was collected back on the spot. On average, the questionnaire will take approximately 10 minutes to fill. Males and females, Saudi and non-Saudi dental practitioners working as GP or Prosthodontist in both private & public sectors were included. The questionnaire consisted of 6 questions about personal data & 18 questions of several scenarios of clinical cases, 6 of them were negative control that was placed to camouflage the research purpose to avoid bias of the participants. Factors associated with ethical & moral compass concerning choosing veneers as a treatment were tested using chi-square. Values were considered significant when $p<0.05$.

Results and Discussion

A total of 351 dental practitioners gave their consent to participate in this study and filled the questionnaire, 196(55.8 %) were males and 155(44.2 %) were females. The study included 74.1% of GP's and 25.9% in dental clinics in Riyadh. 49%of the participants had 5 years or less of experience, 59% have had their dental degree from Saudi Arabia, while 41% were from other countries. 51.1% of the participants were practicing in the private sector, whereas 29.3% in the governmental sector & the remaining 19.1% stated that they are in both sectors. The majority of the practitioners (77.2%) reported that practice dental veneers regularly, while 77.5% of the dentists took workshops on veneer treatment before **(Figure 1)**.

Regarding selection of veneers for a 14 years old with mild fluorosis, significant difference was observed in only sector of work. The highest selection was bleaching **(Table 3)**. For treating a discolored endodontically treated tooth, the majority selected internal bleaching as the first option (53%) followed by crowning (32.5%) and veneers was the lest selected method of treatment (5.7%) **(Table 6)**. When the participants were asked about the preferred option for treating severely eroded teeth in a 27y old female, the majority selected crowning as the preferred option (71.8%) while only (18.3%) chose veneer related treatment. Regarding managing a fracture tooth with fracture line extended to dentin, 47.3% selected composite restoration as the first option followed by crowing in 38.5%. Ceramic veneers were selected by 11.4% of the participants. In the part questioning the effect of occlusal relation with aesthetic treatment selection, 49% mentioned they will refer the patient with

edge to edge bite to an orthodontist before performing veneers treatment while 31.6% selected that they will convince the patient to accept bleaching treatment. Very few doctors selected refusal of treatment of such patient (4.8%) and only 14.5% answered they will comply patient request. When investigating participants selection for a periodontally compromised teeth, the majority (81.2%) selected patient referral to periodontist before starting the treatment which is considered the most recommended action for such patients. The participants who selected veneers for such case was 9.4%. When asked about the preferred option for patient with cervical carious lesions, around half of the dentists included in this study selected doing composite restorations as an aesthetic treatment (49.3%). Veneering of such tooth was the second most selected treatment option by 30.5% of the participants.

Table 1. Personal information of the study participants

Characteristics		n	%
Gender	Male	196	55.8%
	Female	155	44.2%
	Total	351	100.0%
Job title	GP	260	74.1%
	Prosthodontist	91	25.9%
	Total	351	100.0%
Experience	1-5	172	49.0%
	6-10	110	31.3%
	11-15	40	11.4%
	16 and above	29	8.3%
	Total	351	100.0%
Country of graduation	Saudi	207	59.0%
	Outside Saudi	144	41.0%
	Total	351	100.0%
Sector	Government	103	29.3%
	Private	181	51.6%
	Both	67	19.1%
	Total	351	100.0%

The number of participants in this survey was 351 (196 male and 155 female). Characterization of the study population are presented in **Table 1**

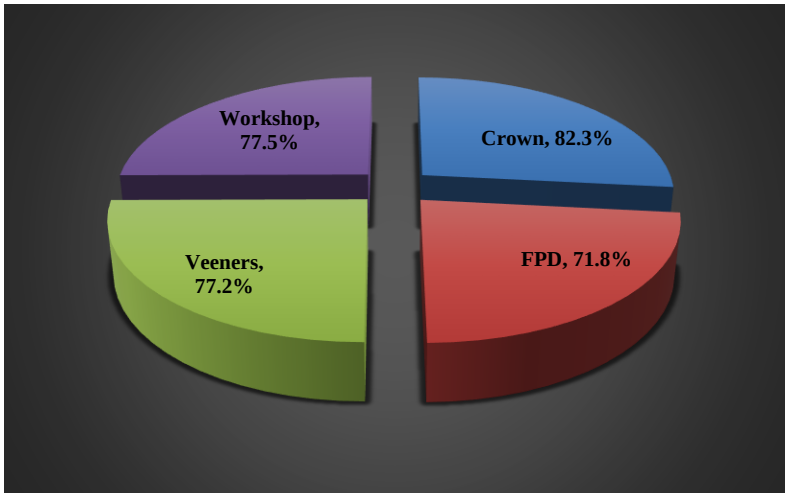

Figure 1. Dental esthetic related responses among practitioners

Statistical analysis was done using Statistical package of Social Science (SPSS). Results of this survey after correlated using Chi Square Test show a statistical significant correlation (P value 0.05) between veneers selection as the preferred option of treatment and job title, experience and sector of work (government vs private). Country of graduation and gender didn't show any significant relation to veneers selection.

Table 2. Pearson Chi-Square Tests for the placement of crowns, FPD, Veneers and Workshop

Variables		Gender	Job title	Experience	Countrygraduation	Sector
Crowns	Chi-square	.907	14.870	9.703	.015	44.723
	df	1	1	3	1	2
	Sig.	.341	.000*	.021*	.901	.000*
FPD	Chi-square	.789	31.290	30.443	1.239	11.048
	df	1	1	3	1	2
	Sig.	.374	.000*	.000*	.266	.004*
Veneers	Chi-square	.356	15.917	10.416	.093	35.454
	df	1	1	3	1	2
	Sig.	.551	.000*	.015*	.760	.000*
Workshop	Chi-square	.001	4.761	4.672	10.701	2.002
	df	1	1	3	1	2
	Sig.	.977	.029*	.197	.001*	.368

Results are based on nonempty rows and columns in each innermost subtable.*. The Chi-square statistic

Table 3. A 14 y old female with mild fluorosis came with her parents seeking to fix the appearance of her smile.

	Gender		Job title		Experience (Yrs)				Country graduation		Sector		
	Male	**Female**	**GP**	**Prosthodontist**	**1-5**	**6-10**	**11-15**	**>16**	**Saudi**	**Outside Saudi**	**Govt**	**Private**	**Both**
	%	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**
Ceramic veneer	12.8	7.7	9.6	13.2	10.5	10.9	7.5	13.8	10.6	10.4	6.8	12.2	11.9
Bleaching	40.3	47.7	47.3	33.0	40.1	52.7	40.0	34.5	44.9	41.7	62.1	37.6	31.3
No Prep. Veneer (Lumineers)	10.7	15.5	12.3	14.3	11.0	10.9	22.5	17.2	10.1	16.7	8.7	15.5	11.9
Micro-abrasion	36.2	29.0	30.8	39.6	38.4	25.5	30.0	34.5	34.3	31.3	22.3	34.8	44.8
Chi-square	**6.052**		**5.778**		**11.536**				**3.267**		**22.788**		
df	**3**		**3**		**9**				**3**		**6**		
Sig.	**.109**		**.123**		**.241**				**.352**		**.001***		

*. The Chi-square statistic is significant at the .05 level.

Table 4. A 20 y old male patient came to your clinic with mild dental fluorosis on the teeth and the problem is the patient doesn't like his smile.

	Gender		Job title		Experience (Yrs)				Country graduation		Sector		
	Male	**Female**	**GP**	**Prosthodontist**	**1-5**	**6-10**	**11-15**	**>16**	**Saudi**	**Outside Saudi**	**Govt**	**Private**	**Both**
	%	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**
Ceramic veneer	31.1	32.9	31.2	34.1	33.7	36.4	22.5	17.2	36.2	25.7	31.1	32.0	32.8
Bleaching	30.6	30.3	31.5	27.5	25.6	36.4	25.0	44.8	29.0	32.6	34.0	33.1	17.9
No Prep. Veneer (Lumineers)	21.9	14.2	16.9	23.1	20.3	12.7	25.0	20.7	18.8	18.1	22.3	14.4	23.9
Composite veneers	16.3	22.6	20.4	15.4	20.3	14.5	27.5	17.2	15.9	23.6	12.6	20.4	25.4
Chi-square	4.666		2.806		15.033				5.972		11.703		
df	3		3		9				3		6		

Sig.	.198	.423	.090	.113	.069

*. The Chi-square statistic is significant at the .05 level.

Table 5. A 70 y old female, asking for whiter & reshaping her teeth

	Gender		**Job title**		**Experience (Yrs)**				**Country graduation**		**Sector**		
	Male	**Female**	**GP**	**Prosthodontist**	**1-5**	**6-10**	**11-15**	**>16**	**Saudi**	**Outside Saudi**	**Govt**	**Private**	**Both**
	%	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**
Ceramic veneer	13.3	9.7	11.2	13.2	9.3	13.6	10.0	20.7	11.1	12.5	13.6	13.3	4.5
Bleaching	15.8	9.0	12.3	14.3	11.0	14.5	7.5	24.1	8.2	19.4	18.4	12.2	6.0
No Prep. Veneer (Lumineers)	25.5	31.6	27.7	29.7	25.6	34.5	15.0	37.9	30.0	25.7	31.1	27.6	25.4
Reshape tooth with composite after bleaching	45.4	49.7	48.8	42.9	54.1	37.3	67.5	17.2	50.7	42.4	36.9	47.0	64.2
Chi-square	5.537		1.049		26.193				10.299		15.653		
df	3		3		9				3		6		
Sig.	.136		.789		.002*				.016*		.016*		

*. The Chi-square statistic is significant at the .05 level.

Table 6. - A 32 y male patient came with a darkened frontal tooth after RCT asking to make it to match the shade of his teeth.

	Gender		**Job title**		**Experience (Yrs)**				**Country graduation**		**Sector**		
	Male	**Female**	**GP**	**Prosthodontist**	**1-5**	**6-10**	**11-15**	**>16**	**Saudi**	**Outside Saudi**	**Govt**	**Private**	**Both**
	%	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**
External bleaching	9.2	8.4	7.3	13.2	8.7	10.9	2.5	10.3	7.7	10.4	8.7	11.6	1.5
Ceramic veneers	5.6	5.8	5.4	6.6	7.0	5.5	0.0	6.9	3.4	9.0	7.8	5.0	4.5
Internal bleaching	52.6	53.5	55.8	45.1	55.8	47.3	65.0	41.4	57.0	47.2	48.5	50.8	65.7
Crown	32.7	32.3	31.5	35.2	28.5	36.4	32.5	41.4	31.9	33.3	35.0	32.6	28.4
Chi-square	.088		4.544		10.114				7.034		9.899		
df	3		3		9				3		6		
Sig.	.993		.208		.341				.071		.129		

The findings in our study suggest that the overall aesthetic dental practice among the participants in this study runs within the relevant ethical rules and guidelines cited by national and international dental regulatory. The results of the chi-squared tests reveal that associations between veneers selection as the preferred option of treatment and job title, experience and sector of work, level of were found to be existent. Although, a slight overuse of aesthetic veneers was observed in private practice. The results of our study showed that the majority of the practitioner used to select the most suitable aesthetic treatment. Although in some conditions, the practitioners tend to use the more invasive approaches or comply with patients' requests which is not the ideal option in many cases.

We tried to correlate dental practitioner aesthetic practice to many factors such as the sector of practice, gender, years of experience, & job title, which revealed the associations between veneers selection as the preferred option of treatment and three factors which were: job title, experience, and sector of work, Although, a slight overuse of aesthetic veneers was observed in private practice. **Table 3**: the patient was a 14y old which is contradictory for a child to have a permanent prosthetic treat as she is still growing, but 23.3% went with veneer treatment. And for **Table 5**: a clear contraindication for the veneer treatment & the patient did not need that kind of treatment to get the result she wanted, yet 14.5% complied with the patient request. Where she could what she wanted with bleaching. To achieve proper solutions to these aesthetic problems, first of all, discussions should be done among the professionals, in which proper evaluations should be conducted

from all the highlighted options. Furthermore, options that are chosen by them should be well aided by their skills and disciplines.

According to Jones and Dodd, as mentioned in their study, only those dental practitioners are fulfilling their duties professionally and with ethical obligations who are giving aesthetic dental services that are purely based with respect for patient autonomy, fulfilling the obligatory standards of care, and are using methods which are based on the concepts of non-maleficence and beneficence. Ethical principles include proper foundation, justification, and rules for their behavior and the method of treatment else, the level of trust the patients have in the clinicians has deteriorated if the dentists fail to stick to the basic ethical principles [15].

Similarly, Kelleher stated that consistency should be there among the dental practitioners as long as they are treating their patients with full devotion and leaving them with the same health after the treatment as they found them before it, including meeting the patient's demand during the treatment [16]. Every detail should be studied and assessed which can lead to any possible risk and damage to the patients during or after the treatment and then should inform the patients too as in some cases the risk of harm can overshadow the benefits from the treatment comparatively [17].

Lastly, in a research carried out by Kirsch, if there are any chances of complications in the procedure, the patients should be well informed by the dentists with all the realistic expectations and the results that are possible. A good treatment is the one that does not damage the teeth much and in fact, saves or preserves it leaving it in the best possible condition. Keeping this in consideration, the patients' desires and needs are also to be fulfilled during the treatment. No matter how experienced a dentist is, failure is part of their long-term career. Even though the risks cannot be ignored and prevented, the dentists should be well alert while treating the patients and should prevent and eliminate the risks as much as they can. A dentist should be well aware of his or her boundaries. Keeping this rule in mind, rather than trying new procedures that a dentist has never observed before, he or she should refer the patient to the specialist of that specific treatment so that there could be no harm and damage. We are comparing the principles of both the dentists and patients here which require predictability, durability, and a good outcome rate. The risks are a must part of the treatment but the practitioners can minimize and avoid those risks as much they can with their skills and experience along with planning and discussions that they should conduct responsibly. We should be well equipped when it comes to information and planning and assessing so that we can answer the question: What is the right thing to do? so that the treatment can be done most professionally and securely [18].

Conclusion

The findings in our study suggest that the overall aesthetic dental practice among the participants in this study runs within the relevant ethical rules and guidelines cited by national and international dental regulatory. The associations between veneers selection as the preferred option of treatment and job title, experience and sector of work, were found to be existent. Although, a slight overuse of aesthetic veneers was observed in private practice. It is recommended that dental ethics and the selection of less invasive treatments should be reinforced in dental curriculum during undergraduate programs, and to mandate by law to explain all possible treatments to the patients and explain the pros and cons of every treatment by using stricter policies regarding the medico-legal aspects.

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