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Choice of Dental Specialties among dental students and associated influencing and motivating factors in Saudi Arabia

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Abstract:

Background: Healthcare providers including dentists reserve a significant role in the society. The oral health of a community mainly relies on dentists and specialists in the field. Therefore, the choice of dentistry as a career and selecting specialty and continuing Postgraduate Dental Education is an important milestone in an individual's life which ultimately affects his social status and financial stability. The aim of this study is to investigate motivating factors that influence and inspire students in choosing a dental specialty.

Methodology: A cross sectional study was conducted on a sample of 600 dental students and graduates from different universities in Riyadh, Saudi Arabia. The data was collected through an online questionnaire, disseminated on Twitter with convenience sampling technique while Cluster simple random technique was used for targeting colleges. Data was analyzed using SPSS version 16. Arithmetic mean and standard deviation was calculated for quantitative data, chi-square and Fischer Exact test to compare categorical data. For comparing numerical data, Mann-Whitney test, Kruskal -Wallis test, student`s t-test and ANOVA test were used. Additionally, factor analysis and regression analysis were used to group common items and identify their effect after controlling other predictor variables.

Results: The results of the study show that many of the students want to pursue their career in dental subspecialty from an international program however, prefer to work as a civilian dentist in the public sector. Oral maxillofacial surgery was the most wanted career choice followed by Orthodontic, dentofacial orthopedics, restorative and cosmetic surgery in males and pediatric surgery in females. For these, salary aspects and cost of living expenses were the influencing factors. Moreover, six factors for motivation were obtained and significance was achieved against a variety of socio-demographic factors including job and financial security, family encouragement, inspiration from other people, and flexibility in working hours.

Conclusion: Dentistry is a well-known field of science and dentists require appropriate opportunities and guidance for enhancement of their career whether academic education or clinical sub specialty. Therefore, keeping in view the factors which motivates and influences their decision of choosing dental career, professional development guidance and mentoring should be provided at the university level.

Keywords: Dental students; oral maxillofacial surgery; influencing factors; factor analysis; Riyadh.

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1. INTRODUCTION

The healthcare system is comprised of a vital workforce [1] with the contribution of dentistry being no exception [2]. The profession of dentistry possesses an important position in the service of the society, as is the decision of selecting dentistry as a career. This decision can be a critical one in an individual's life, which may affect even his own with reference to one's social status and economic status [3]. To be a specialist, dental students should obtain Postgraduate dental education (PGDE) that has been defined as an elective, individual decision to continue additional education after completing graduation or prior to entering practice [4]. A variety of reasons can be enumerated for continuing dental post-graduation which may include training individuals with advanced skill and knowledge of dentistry so that their expertise in dentistry won't get limited. Another objective is to develop dental specialty areas, as per the need of the society that cannot be fulfilled by general dentistry practice [5]. Based on the statistics provided by the Ministry of Health Saudi Arabia in 2014, the total number of dentist included were 12,785 (dentist-to-population ratio, 1:2666) [2].

Considering these factors and more, specialization in dentistry whether nationally or internationally, for obtaining clinical or higher academic degrees, certain factors should be considered for instance the need, interest, present expertise, and related social and economic factors of the country [6]. Additionally, individuals are prepared through PGDE to peruse their careers further in research and teaching to provide the dental education system, a panel of qualified faculties. Through this, contribution would be made towards the advancement of the knowledge base of dental practice, science and practice as well as in physical and behavioral sciences [5]. A high-quality patient care can only be achieved when a sound foundation of training and education is maintained, this can be supervised by robust peer assessment [7]. Besides, constant improvement and enhancement in skills of a dental professional is always required to deliver highest quality care [8].

Many factors influence the career pathway of a dentist when entering professional life. These factors can be an individual's strengths and weaknesses towards personal career, individual's willingness, desires, financial status, interest to undergo a lengthy training period, acceptance of working conditions, influences by family and friends, flexibility of working hours, reward and scope of the field [9]. These absolute factors may have different approaches for men and women or according to age or socioeconomic background and family status. Previous studies have identified several motivational and influencing factors in this regard. Abbott surveyed dental students of Georgia in their first, second, and third year of education and found that the most frequently rated options for selecting dentistry were provision of service to others and opportunities for self-employment [10]. Students' perceptions regarding dentistry as a career from an Australian university showed that men were more likely to adopt dentistry to earn good

money while women wanted to work for others [9]. Another survey conducted in Louisiana reported that flexible working hours, autonomy and working with people were the most influential factors in dentists [11] while students from UK selected this profession to help people with their appearance [12] whereas, a study from Israel emphasized on more financial security in selecting dental career [13].

Saudi Arabia is currently producing approximately 2500 dental graduates from over 30 dental schools per year. It is eminent to focus on the distribution of healthcare force in the various working domains accordingly [14, 15]. Nowadays, one of the most important step is to guide the dental students to dental specialties available. However, a study reported that counseling is usually not done to explore academic talents and student potentials [16] therefore; kingdom should focus on raising the status of health care, boost research work, allocate and distribute dental services in a larger area in addition to increasing the dentist to patient ratio around the country [17]. Exploring the academic skills and potentials of students during the undergraduate period is essential towards selecting an appropriate specialty afterwards. The aim of the present study is to recognize the influences in choosing specialty by the dental graduates and dental students as well as to acquire empirical evidence regarding the motivational factors and personal preferences across various socio-demographic factors. This study intends to combine data from different institutions across Riyadh, Saudi Arabia.

2. MATERIALS AND METHODS

2.1 Research design

A cross sectional study was conducted using an online-based questionnaire. These questionnaires were distributed on social media to recruit participants.

2.2 Settings

A number of institutions were selected from Riyadh such as Riyadh Colleges for Dentistry and Pharmacy, King Saudi bin Abdul Aziz health science college (KSAU-HS), King Abdul Aziz Medical Centre and King Saudi University (KSU), Dentistry College etc. for recruiting those participants who were willing to fill this online-based questionnaire on the spot. The study population included current dental students and graduates from Riyadh, Saudi Arabia.

2.3 Sample size/ sampling technique

The sample size was calculated based on total population of 500 dental students, 50 current graduates and 50 general practitioner dentists with a total of 600 individuals. This selection was done to generalize the study findings and make inferences to the total population. The potential non-response rate of approximately 10% participants was addressed by randomly selecting individuals to receive the assessment questionnaires. The computation of sample size accounted for the prevalence factors influencing students and dental graduates' specialty choice to be 50%, along with a sampling error of

+5% at the 95% confidence level, alpha= 0.05, and power = 80%, and + 20% for compensating non-response.

The sampling technique included mix mode of data collection in which convenience sampling was undertaken where the participants were enrolled using Twitter, an online social media to get the benefit of being cost-effective and proficient. The advertising and recruitment of the eligible participants was done after posting a Twitter account whereby Tweets were directly sent to the organizations as well as individuals requesting a re-tweet with the survey link. For this purpose, a smaller version of the study's URL was generated which met the 140-character limit of the tweets. Duplicate entries were excluded by complete review of the IP addresses of the participants using the same electronic survey.

Additionally, cluster simple random technique was also used in the targeted colleges of Riyadh where the respondents were selected from every identified college or university by simple random sampling. These two sampling techniques were simultaneously carried out in order to compensate for barriers like less time, travel, transportation, financial resources which could be encountered during recruitment process.

2.4 Data collection/ Instrument

All eligible individuals were requested to fill the online questionnaire on the spot through electronic tablets. In order to validate the questionnaire, a pilot study was conducted using a random sample of individuals (n = 6). The questions comprised of three parts. First part contained information collected from dental students and graduates about PGDE regarding demographics, their personal preference and their specialty of choice. Second part was related to their Dental practice effects toward PGDE, the third part included their knowledge regarding PGDE while the fourth part inquired about the behavioral and cultural factors that may affect their choices of career specialty. These questions were validated from different resources, for example, we took the second, third and fourth sections from Scarbecz M, study with slight modifications [18]. After pilot testing, required changes were made in the questionnaire and reviewed by experts in the fields of epidemiology and ethics for validity, content, flow and appearance. Data were collected by different research assistants and coordinators who were familiar with the survey.

2.5 Data Analysis

For data entry, cleaning, management and analysis, the SPSS version 16 (statistical package for social sciences, SPSS Inc., Chicago, IL) was used. For summary statistic, arithmetic mean was used while and standard deviation was used as a measure of dispersion for quantitative data. The chi-square test and the Fischer Exact test were used as tests of significance to compare categorical data. The Mann-Whitney test, Kruskal -Wallis test, Student`s t-test and ANOVA test were used as tests of significance for

comparing numerical data. A regression analysis was conducted to determine whether the gender, age or any other independent variable differences in the study persisted once the effect of other demographic factors are considered. For all statistical analysis, a p-value less than 0.05 were considered statistically significant.

2.6 Ethical Considerations

This study was conducted in compliance with the Ethical Standards and Research Protocol #RC 16/191 approved by Institutional Review Board of King Abdullah International Medical Research Centre, Riyadh, Saudi Arabia. All respondents provided their verbal consent.

3. RESULTS

Table 1 shows the demographic data and parent's occupation regarding the study population.

Characteristics	Frequency (%)
Gender	
Male	270 (44.4)
Female	338 (55.59)
Age	
18-20years	142 (23.36)
20-25years	436 (71.71)
25-30 years	30 (4.93)
Nationality	
Saudi	554 (91.12)
Non-Saudi	54 (8.88)
Marital status	
Married	45 (7.40)
Single	563 (92.60)
Mother's occupation	
Housewife	294 (48.36)
Dentist	24 (3.95)
Healthcare provider	52 (8.55)
Non-healthcare provider	238 (39.14)
Father's occupation	
Military	126 (20.72)
Dentist	29 (4.77)
Healthcare provider	80 (13.16)
Non-healthcare provider	373 (61.35)

The female respondents (55.6%) were more in number as compared to males (44%). Most of the study participants (72%) were aged between 20-25 years while only 24% belonged to 18-20 years age group. Likewise, majority of the participants were Saudi (92.6%) while only 9% were non-Saudi

residents. Regarding the marital status, 92.6% of them were married. The occupation of both the parents usually influences the career of their children. The data recorded showed that only 3.9% and 4.8% of the mothers and fathers were dentists respectively. While most of the mothers were housewives and vast majority of the fathers were non-healthcare providers.

Table 2: Educational background of the study population

Characteristics	Frequency (%)
College	
KSAU-HS college of Dentistry	140(23.03)
KSU college of Dentistry	168(27.63)
PNU college of Dentistry	56(9.21)
Riyadh college of Dentistry	170(27.96)
Dar al Uloom college of Dentistry	24(3.95)
Al Farabi college of Dentistry	50(8.22)
Class	
Pre-clinical years	238 (39.14)
Clinical years	286 (47.04)
Currently graduated	84 (13.82)
GPA	
Between 3 to 3.5	59(9.70)
Between 3.5 to 4	117 (19.24)
Between 4 to 4.5	232 (38.16)
Between 4.5 to 5	200(32.89)
Was dentistry your first choice	
Yes	417(68.59)
No	191(31.41)
Preference for post-graduation	
National program	154(25.33)
International program	300(49.34)

Table 2 shows the educational status of the participants. Similar number of participants were studying in KSU and Riyadh i.e. 27% college while 23% were from KSAU-HS College. A large number of respondents (47%) were studying in their clinical and preclinical years (39%) however, approximately 14% were fresh graduates. Many of them had their GPA between 4 – 4.5 (38%) and 4.5-5 (33%). When the participants were asked about their choice for pursuing career in dentistry, 68.6% specified that choosing dentistry was their first choice. The preference for post graduate education from an International

institute was shown by 49% of these individuals while 25% were interested to continue their post-graduation from a national institute.

3.1 Personal preferences

As evident from figure 1, the participants' responses regarding their personal preferences for dental subspecialty show that the most desirable specialty was oral maxillofacial surgery (16%, n= 100), which was followed by Endodontics (15%, n=89), Orthodontics and dentofacial orthopedics (15%, n=88) and then restorative and cosmetic surgery (n= 87). Then we had Prosthodontics (n=74), pediatric dentistry (n=68) and other diplomas.

Figure 1: Personal preferences

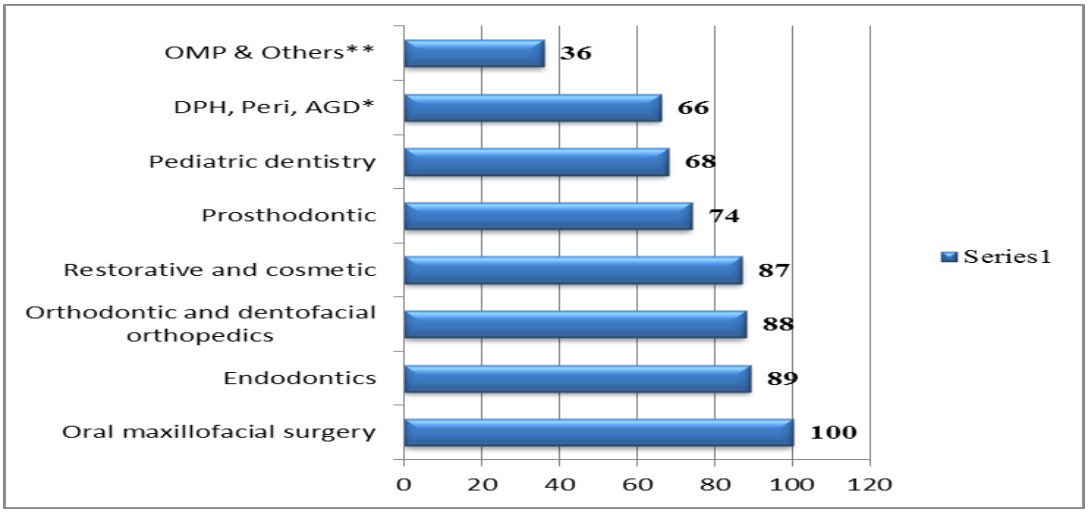

Table 3: Most preferred specialty according to gender

Most preferred specialty	Male N (%)	Female N (%)	P-value
Dental public health, Periodontics, Advance general dentistry	34(12.59)	32(9.47)	<0.01 ***
Endodontics	42(15.56)	47(13.91)	
Oral maxillofacial pathology, Oral maxillofacial radiology, Oral medicine and diagnosis, Forensic dentistry	7(2.59)	29(8.58)	
Oral maxillofacial surgery	47(17.41)	53(15.68)	
Orthodontic and dentofacial orthopedics	43(15.93)	45(13.31)	
Pediatric dentistry	16(5.93)	52(15.38)	
Prosthodontic	38(14.07)	36(10.65)	
Restorative and cosmetic	43(15.93)	44(13.02)	
***** Highly Significant**			

When these personal preferences were evaluated according to the gender distribution, statistically significant associations were obtained. It was found that oral maxillofacial surgery was the most wanted dental specialty in 17.4% males and 15.7% females. This was followed by Orthodontic, dentofacial orthopedics, restorative and cosmetic surgery in males while pediatric surgery, Orthodontic and dentofacial orthopedics and Restorative and cosmetic in females.

Figure 2: Working environment preferences

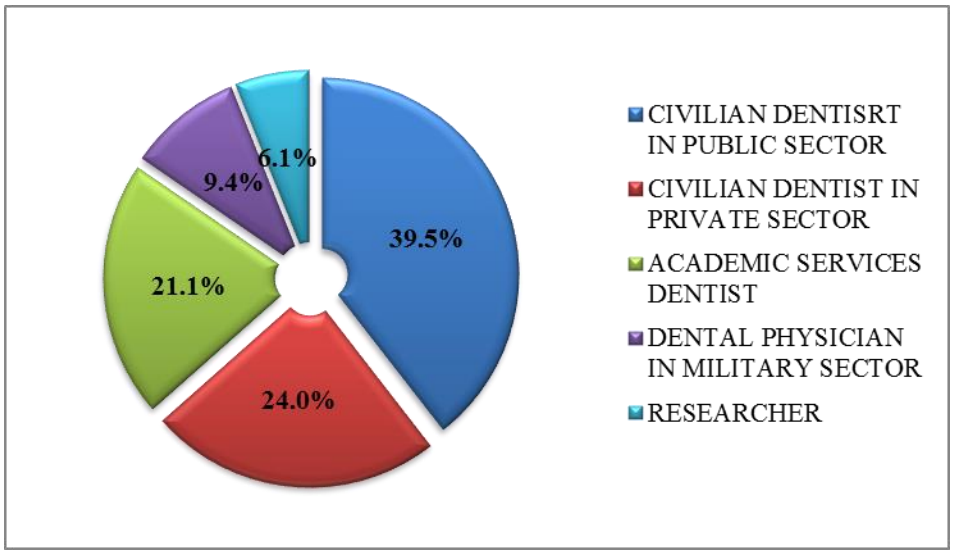

Figure 2 shows the working environment preferences as nominated by the participants. The most common working environment condition in which the respondents wanted to continue their career was

civilian dentistry in public sector which was selected by 39.5%. This was followed by civilian dentistry in private sector (24%) and Academic services dentist (21%)

In Table 4, stratification was done for working environment preferences according to different socio demographic variables as well as according to the education status of the participants. We obtained statistically significant associations in evaluating these relationships. It was noted that males preferred to be a civilian dentist in public sector (36.5%) followed by private sector (32.5%). While the most desirable career choices for females included working as a civilian dentist in public sector (42.6%) and academic services dentist (26.9%). However, the selection of working as a civilian dentist in public sector was mutual across all age groups, students studying in either government or private universities or in pre-clinical, (47.5%) and clinical years (36.7%). Furthermore, recent graduates chose working a civilian dentist in private sector (38.1%) as their most preferred working condition.

Table 4: Working environment preferences stratified according to various socio demographic factors

Working environment preference	Civilian dentist in public sector	Civilian dentist in private sector	Dental physician in military sector	Academic services dentist	Researcher	P-value
Male N (%)	96(35.56)	88(32.59)	38(14.07)	37(13.7)	11(4.07)	<0.01**
Female N (%)	144(42.6)	58(17.16)	19(5.62)	91(26.92)	26(7.69)	
						<0.01**
18Y-20Y	64(45.07)	35(24.65)	9(6.34)	28(19.72)	6(4.23)	
20Y-25Y	163(37.39)	101(23.17)	45(10.32)	98(22.48)	29(6.65)	
25Y-30Y	13(43.33)	10(33.33)	3(10)	2(6.67)	2(6.67)	
Gov. University N (%)	145(39.84%)	68(18.68%)	42(11.54%)	89(24.5%)	20(5.49%)	<0.01**
Private University N (%)	95(38.93%)	78(31.97%)	15(6.15%)	39(15.9%)	17(6.97%)	
						<0.01**
Pre-clinical	113(47.48%)	54(22.69%)	18(7.56%)	39(16.4%)	14(5.88%)	
Clinical years	105(36.71%)	60(20.98%)	33(11.54%)	67(23.4%)	21(7.34%)	
Currently graduated	22(26.19%)	32(38.1%)	6(7.14%)	22(26.2%)	2(2.38%)	

** Highly Significant

3.2 Reasons of Influence

Individuals were also inquired about factors that influenced their choice of career in dentistry. Eight common influencing factors were studied for this purpose which included enjoyment of providing that type of specialty service, type of patient seen in the specialty of service, future salary as a

professional specialist, length of program, exposure prior to dental school, faculty influence, location of program and cost of living expenses which were further studied according to gender, university type and study years of the participants.

Table 5: Reasons of Influence according to gender

	Male (%)	Female (%)	P value
Future salary as professional specialist			
Agree	174(64.44)	180(53.25)	0.02*
Disagree	36(13.33)	59(17.46)	
Neutral	60(22.22)	99(29.29)	
Cost of living expenses			
Agree	148(54.81)	129(38.17)	<0.01**
Disagree	56(20.74)	99(29.29)	
Neutral	66(24.44)	110(32.54)	

Table 6: Reason of Influence according to Type of University

	Gov. University (%)	Private University (%)	P value
Type of patient seen in the specialty of service			
Agree	143(39.29%)	113(46.31%)	<0.01**
Disagree	57(15.66%)	56(22.95%)	
Neutral	164(45.05%)	75(30.74%)	
Faculty influence			
Agree	182(50%)	140(57.38%)	0.03*
Disagree	90(24.73%)	39(15.98%)	
Neutral	92(25.27%)	65(26.64%)	
Location of program			
Agree	125(34.34%)	124(50.82%)	<0.01**
Disagree	104(28.57%)	60(24.59%)	
Neutral	135(37.09%)	60(24.59%)	
Cost of living expenses			
Agree	140(38.46%)	137(56.15%)	<0.01**
Disagree	102(28.02%)	53(21.72%)	
Neutral	122(33.52%)	54(22.13%)	

Table 7: Reason of Influence V/s Level of Education

	Pre-Clinical (%)	Clinical (%)	Graduated (%)	P value
Future salary as professional specialist				
Agree	159(66.81%)	148(51.75%)	47(55.95%)	0.01*
Disagree	27(11.34%)	51(17.83%)	17(20.24%)	
Neutral	52(21.85%)	87(30.42%)	20(23.81%)	
Location of program				
Agree	112(47.06%)	98(34.27%)	39(46.43%)	<0.01**
Disagree	66(27.73%)	75(26.22%)	23(27.38%)	
Neutral	60(25.21%)	113(39.51%)	22(26.19%)	
Cost of living expenses				
Agree	133(55.88%)	95(33.22%)	49(58.33%)	<0.01**
Disagree	46(19.33%)	92(32.17%)	17(20.24%)	
Neutral	59(24.79%)	99(34.62%)	18(21.43%)	
***Significant**				
****** Highly Significant**				

Tables 5, 6 and 7 show statistically significant reasons that influenced the selection of dental career according to gender, university type, and level of education. It can be appreciated that the major influencing factor included future salary as professional specialist and cost of living expenses among both males and females; men being more inclined towards money. While private university students were more inspired by the type of patient seen in the specialty of service, the faculty, location of program and cost of living expenses as compared to government university students. However, the major stimulating factors for preclinical and clinical year students were found to be future salary as professional specialist and location of program, while for the graduates it was cost of living expenses.

3.3 Motivational factors

3.3.1 Factor Analysis

Around 19 motivational factors were identified for the participants included in the study. To regress the data, an initial factor analysis was carried out which resulted in six factors along with an explanation of 51.4% of the variance as shown in Table 8. This table also lists the items that make up the four factors, their factor loadings, and the percentage of variance explained by each factor. As revealed by the confirmatory factor analysis, the motivational factors for pursuing their career in dentistry seem to revolve around six central themes. The dimensions also demonstrated that the reliability of the factors is high in general, majority ranging from .60 to .81. While those less than 0.4 were not considered.

Table 8: Factor analysis

	Component					
	1	2	3	4	5	6
One, or more, of my relatives is a dentist					.833	
One, or more, of my friends is a dentist					.831	
It's easy to find employment	.409					
pays better than other options available to me	.506					
I want to treat/help people to improve their appearance			.665			
My family encouraged me				.360		-
I had good experiences visiting my family dental specialist and this lead me to think about a career choice in dentistry		.675				
offers job security	.588					
have a flexible work schedule				.703		
give me enough time to be with my family				.690		
is a caring profession			.723			
is a science-based profession			.607			
I would like to make a lot of money	.501					
is a prestigious profession	.559					
My family dentist encouraged me		.607				
Teachers and/or counselors encouraged me		.728				
offers financial security	.713					
There is not much "on call" work						.729
do not have to deal with life and death cases on a routine basis						.599
% of variance explained	11.1	8.93	8.60	8.06	8.01	6.76

Six factors identified are named accordingly to the items it represented. Factor 1 was named as job and financial security as it encompasses those items which reflect dentistry to a profession in which one gets job security and financial stability. Factor 2 was termed as encouragement by people including teachers, counselors, and good experience with the dentists. Factor 3 included good profession, since dentistry is a caring and prestigious profession keeping students motivated to select it as a career. Factor 4 was referred to as family encouragement. Factor 5, interaction with dentists, the presence of a dentist in a family or friend circle can also motivate other people to become dentists. Lastly, factor 6, relaxed job also established the motivation towards dentistry since such a profession does not keep you under pressure and on-call.

3.3.2 Regression Analysis

The regression analysis was conducted where the six factors were regressed along a series of demographic predictor variables. The purpose of this analysis was to assess the impact of gender (male/female), age group (18- 20 years, 20- 25 years and 25- 30 years), nationality (Saudi/non-Saudi), marital status (married/single), effect of mother's and father's occupation and the current education status of an individual i.e. whether he is in his preclinical years or is a recent dental graduate. Table 9 shows the significance level of each variable with the factors generated after combining 19 motivational factors.

Table 9: Regression analysis

	Factor 1: Job and Financial security	**Factor 2: Encouragement by people**	**Factor 3: Good profession**	**Factor 4: Family encouragement**	**Factor 5: Interaction with dentists**	**Factor 6: Relaxed job**
Gender	0.431	0.143	0.006*	0.667	0.858	0.007*
Age	0.230	0.559	0.034*	0.605	0.018*	0.650
Nationality	0.616	0.680	0.342	0.883	0.009*	0.231
Marital status	0.342	0.248	0.243	0.093	0.112	0.255
Mother's occupation	0.181	0.497	0.007*	0.325	0.173	0.196
Father's occupation	0.570	0.102	0.346	0.111	0.034*	0.019*
Educational status	0.232	0.001*	0.243	0.010*	0.550	0.163

*Significant

The above findings show that gender is a statistically significant predictor of factor 6 (p-value 0.007) keeping in view the effect generated by other variables as it was in univariate analysis. Similarly, age group affected the items present in Factor 3 (0.034) and 6 (0.018). Interaction with other dentists was significantly influenced by the nationality of the participants (0.09) while educational status predicted Factor 2 (0.001) and 4 (0.010) components. This is in line with the initial analysis done without controlling for the effect of other variables where clinical years were significantly associated with family and other people's encouragement towards dentistry as it being a flexible job type. Maternal occupation was found to be an important influential factor for family encouragement (0.007) while father's occupation predicted the choice of dentistry after interaction with dentists (0.034), like relaxed job (0.019). However, marital status was not found to be significantly associated with any identified factor.

4. DISCUSSION

Our results provide the baseline for the understanding of different motivational and influencing factors among the dental students and recent graduates of Saudi Arabia. We have also obtained the effect of a variety of predictor variables which usually contribute to the decision of future career choices among these individuals. The importance of PGDE can hence be understood. Therefore, the students should be

provided with all possible means for appropriate guidance and confidence to make tough decisions whether to start practicing or to continue with specialization. This is the first study which has systematically examined gender differences in addition to other socio demographic factors and their effects on motives and influences in the choice of dental specialty using a multi-institution sample.

Our study participants especially males (17.4%) preferred to pursue oral maxillofacial surgery which was followed by restorative and cosmetic surgery (15.9%) and Orthodontic, dentofacial orthopedics (15.9%). Aldlaighan [14] concluded that Orthodontics preceeded by Prosthodontics were the preferred specialties among male students studying dentistry [14]. While Ashri et al [19] found that prosthodontics and orthodontics were the most desired dental subspecialties among Saudi university students [19]. A recent study by Hassan [20] also showed that the most popular career choice among Saudi male students were oral maxillofacial surgery (20.1%) demonstrating no major changes in the choice of subspecialty among male students.

However, in 2014 the most demanding field of dentistry was operative dentistry (23.4%) among girls followed by Pediatric Dentistry [20]. In our study, 15.7% favored oral maxillofacial surgery which was followed by pediatric surgery (15.38%) whereas; the most wanted dental subspecialty among females was found to be Orthodontics in 2012 [15].

The international data reveals that a study from India found the leading choice of dental specialty was oral surgery followed by orthodontics while, 11.7% percent wanted to pursue research in dentistry [21] while another study stated restorative and aesthetic dentistry as preferred choices for pursuing dental career [22]. Regarding the future career options, Canadian students intended to practice orthodontics as an associate in the private sector while females wanted to work as a civilian dentist in the public sector [23]. These outcomes are consistent with two other studies [24, 25] which mentioned about the interest of females towards working in public dental careers as compared to males which is comparative with the Iranian students [26].

We also studied the influencing factors for choosing dental specialty in our study population where the future pay scale and cost of living as well as the location of the program were the most chosen options. Around 23% respondents described program location as an influencing factor [27] where our results lead to similar conclusion. A single institution study from Unites States reported the possession of specific dental skills, intellectual content, and challenging diagnostic problems were found to be influencing factors [28]. A comparative investigation between medical and dental students presented the findings that dental students had significantly higher odds of getting more inspired by professional security and status, steady working hours, independence and opportunities for self-employment [29].

While according to another study factors related to family, colleagues or teachers influenced them in the dental profession [30].

It is also evident from our findings that around half of the students are interested in continuing their post-graduation from an international institute which was also reported previously among Saudi male dental students who specified to study in USA, UK, KSA and Sweden [14]. Many of the students (68.6%) also acknowledged that they chose dentistry by their own. Similarly, in a study conducted for first year dental students, 73% showed self-motivation [31]. Many similar findings were obtained from previous literature when compared to our study showing that many of the influencing and motivating factors have remained same irrespective of the number of years and location.

The motivational factors were grouped together in our study along with identifying six other factors. This technique was also used by another study [22] which via factor analysis identified 4 factors namely people, money, flexibility and business; the items within this study were similar to ours. One more study from India identified five factors namely influence, profession, flexibility, remuneration, and versatility [32]. The strong motivational factors as evaluated by our study included were 'job security and financial benefits', 'family encouragement', 'influence of friends and colleagues', flexibility and independence', 'interaction with other dentists', and 'dentistry being a good profession'. These basic findings are consistent with other research reporting these dimensions [27, 31, 33-36]. Previously, when the effect of other variables was not adjusted, helping people and earning money were found to be the two most selected motivational factors among males and females respectively which showed statistically significant associations while after controlling for the factors, both the gender was found inclined towards dentistry being a relaxed job with no on-call pressures and emergency cases. This can be accounted to the fact that males are the bread earners and so have the responsibility of meeting the financial needs of the family while females remain more involved in taking care of the family, children and household [37].

However, flexible working hours and relaxed working environment was also one of the motivation demonstrating significant outcomes for the students and recent graduates. In line with previous studies, students prefer working in government service rather than the private divisions [38-40] as reflected by our study. Another study conducted in India demonstrated that mother's and father's occupation status was also considered as a strongest influential factor for their children to adopt dentistry as a profession [41]. Similar findings were also reported in other studies where parents' interest and their motivation were discussed [21, 42].

4.1 Strengths and Limitations

One of the strengths of this study is that it is the first study providing a generalizable data from multiple sources and several institutions across Riyadh, Saudi Arabia to examine motives as a set of

factors, rather than as individual items. Although national data includes work done on similar topic, but this study has stratified and controlled various predictors for the choice of dental specialty in addition to the identification of certain influencing and motivating factors for decision making. Statistically significant associations after adjusting the effects of variables such as gender, age group, level of education, marital status and parents' occupation were obtained. Furthermore, we can now have an absolute snapshot regarding the career preferences and related factors hence making it easier to understand the needs of the gender, age group or class etc. while designing post-graduation counseling programs.

Few limitations were identified as with any questionnaire-based survey, possible bias in transferring knowledge or reporting might occur while filling a questionnaire on social media.

In addition to this, future plans for students in preclinical years might change as they grow further in their careers. The influencing and motivational factors need follow ups to verify the most prompting factors.

5. CONCLUSION

The study was conducted to report the key findings that show significance, the effect of covariates and inter dependence of variable as well as their mutual effect. The study participants showed inclination towards studying in international programs for their post-graduation with both males and females interested in pursuing career in oral maxillofacial surgery working as preferably a civilian dentist in the public sector. Future salary as professional specialist and cost of living expenses were found to be influencing majority of the respondents. Moreover, the chief motives for dental PGDE as explored in 6 factors included financial stability and job security, dentistry being a caring profession, influences by people, family encouragement, experiences with other dentists and flexibility and job availability.

5.1 Recommendations

Considerable time and effort should be devoted towards the provision of appropriate guidance and counseling for dental PGDE students so that they can get a clear idea about the available options for their PGDE. Proper mentoring through alumni platforms could be of help in this scenario. It should be taken into notice that many of the students select few dental sub specialties and others are left unnoticed hence bearing with minimal workforce. Therefore, even distribution should be targeted towards the demand and supply of the dental subspecialties as well as the areas where these specialists are required. Hence, encouraging undergraduates to continue careers in accordance with national policies established for the improvement of graduate and PGDE programs is warranted in future.

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