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Workforce entry preferences among final-year dental students in Malaysia: public or private sectors?

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Abstract

Limited job opportunities and restricted advancement in Malaysia's public dental sector have prompted graduates to explore private sector employment. This may lead to increased workforce mobility and possible instability across the sectors. This study aimed to investigate the workforce preference among the public and private final year undergraduate dental students in Malaysia. A validated questionnaire was disseminated in a cross-sectional study using stratified sampling methods among final year dental students in Malaysia. Chi-square test and multinomial regression were performed to determine factors related to workforce entry preference of the students. In multinomial regression, the public sector was set as the reference group versus the private and both sectors. SPSS version 26 was used for data analysis, with a p-value set less than 0.05. A total of 204 final year dental students' session 2022/2023 across 13 dental schools in Malaysia were recruited in the study. The majority of respondents have a high preference to work in both public and private oral health services at the same time (public = 58.5% vs private = 43.9%). Multinomial regression analysis showed that public university students had 83% lower odds (OR = 0.17; 95% CI = 0.05, 0.58; p= 0.005) of preference to work in private sectors compared to private university students. In conclusion, the majority of the final year undergraduate dental students preferred to work in both public and private sectors, with more students in the public institution preferring to work in government sectors. To ensure a seamless provision of oral healthcare services, the Ministry of Health Malaysia should come out with an efficient solution in regards with the issues of limited placement of new dental graduates in Malaysia.

Keywords: *dental, entrepreneur, government, Malaysia, workforce preference*

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Introduction

The projected target for dentist-to-population ratio in Malaysia is 1:4000 by the year 2020 (Oral Health Programme Malaysia, n.d.). As of June 2020, the dentist-to-population ratio in Malaysia is at 1:2816 (Ministry of Health Malaysia, 2021). The surplus of dentists in the country is mostly contributed to by the increase in dental graduates from local and international universities. There are currently 13 universities in Malaysia that offer basic dental degrees: six are run by the government and seven are from private institutions.

As a result of the increase in the number of new dental graduates, there has been a noticeable rise in the number of dental officers entering the Ministry of Health (MOH) as government dentists. In the year 2012, there were 514 new dental officers registered in the MOH (Oral Health Division Malaysia, 2013). Ten years later, in the year 2022, a total of 1,401 new dental officers joined the MOH (Oral Health Programme Malaysia, 2023). The remarkable increase in the number of newly registered dentists has led to a shortening of the compulsory service duration from three years to only one year in order to cater to the huge number of newly registered dentists.

Malaysia implements a two-tier health care system consisting of a universal and comprehensive care under the primary care of the public and private sectors (Chua & Cheah, 2012). The Dental Act of 1971 stipulated that all new dental officers must undergo a compulsory service that can only be performed in the government sector; thus, the government sector became the predominant employer of dentists in the country. However, with the implementation of the Dental Act of 2018, it has now allowed new dental graduates to serve in the private sector for their compulsory service starting in the year 2022. Currently, a freshly graduated dental officer can choose to work with the government/public or the private practice after a year of compulsory service (Oral Health Programme Malaysia, 2020). With a circular allowing government-employed dental officers working in private practices as a locum dentist off-duty, it has now become a choice of preference in the dental workforce (Ministry of Health Malaysia, 2006; Puryer & Patel, 2016). It instigates the future dental graduates to work in both sectors, private and public dental health services simultaneously, for better job security and stability in the future (Santos *et al.*, 2013).

However, there is an increase of almost 20% of dental officers who decided to leave the government sector between 2017 and 2021 in Malaysia (Oral Health Programme Malaysia, 2022). This is most probably due to the policy changes made by the government from a compulsory service to a contract basis for the dental graduates registered from 2017 onwards. Only half of the contract dental officers were offered a permanent post (Ministry of Health Malaysia, 2021). Due to the uncertainty in their future career pathway, new dental graduates must make a bold decision of either waiting for a permanent position in the government sector or securing a job in the private sector before the end of their compulsory service contract. Understanding the possible factors contributing to the change of workforce preferences among recent dental graduates may be important to prevent interrupted provision of dental services.

On a separate matter, family and colleagues showed to have a major influence on the dental undergraduates' career preference. They may decide to work in public or private sectors either of their own voluntary will or by coercion from family members (Yousuf *et al.*, 2019). Furthermore, parents of dental undergraduates who worked in the dental fraternity showed a strong influence on their children's career pathway (Halawany *et al.*, 2017). Having a family with an entrepreneurial background somehow may instil the interest and motivation among the new graduates to venture into the private sector while gaining informal learning of business skills (Georgescu & Herman, 2020).

The new policy of dental practitioners' recruitment in Malaysia provides a new dimension of career motivation, intention and preference among dental undergraduates. With the looming uncertainty in the future career pathway in the public dental service, it may lead to them having different views in regards of their career options (Che Musa *et al.*, 2020). Understanding the contributing factors that may influence their career decisions may provide useful insights into the current trend of workforce preferences among the new dental graduates. Thus, this study aims to investigate the workforce entry preferences and their contributing factors among the public and private undergraduate final year dental students in Malaysia.

Materials and Methods

Study design

This is a cross-sectional questionnaire survey conducted between October 2022 and January 2023. A total of 204 final year dental students' academic session 2022/2023 from both private and public universities in Malaysia (6 public and 7 private universities) voluntarily gave their consent to participate in this study. A stratified random sampling was executed in obtaining the sample from both institutions, with a ratio of private to public university of 1:1. An ethical approval was obtained from the Research Ethics Committee of Universiti Sains Islam Malaysia [USIM/JKEP/2022-192].

Data collection tools and procedures

A pre-test questionnaire was validated by content and face validity, showing an excellent score of >0.80 before it was distributed to all the respondents using Google Form via WhatsApp application. Necessary corrections and changes were made prior to the validity process. The questionnaire was divided into two sections. The first part consists of questions focusing on the career preferences*: What is your career plan post-graduation?* The answer options include "joining public sector", "joining private sector" and "joining both sectors". Questions on the factors that may contribute to the student's career preference, such as *"Do you have any entrepreneurial intentions?"* with a binary answer of "No" or "Yes", were also asked. Other questions are exhibited in Table 2. The second part of the questionnaire consists of questions related to the working preference that could influence the students' career preference (Refer to Table 3). The outcome of the career preference in the future will be either to work in the public, private or both sectors. A question on a post-graduation specialty choice was also asked to identify their specialty preference. The response provided was ranked from the highest to lowest number, arranged by sex and types of institution based on frequency. Tied responses with equal percentage were assigned the same rank, and the subsequent ranks were modified to reflect the tied position.

Statistical analysis

The analysis of the data was performed using IBM SPSS Statistics for Windows, Version 26.0. Armonk, NY: IBM Corp. Descriptive analysis was performed to describe the outcome and independent variables between both private and public universities. A final multinomial logistic regression was performed to indicate the factors associated with the outcome of career preference on the choosing to join either the public, private or both sectors for future career, with the public sector as the reference group. Factors in the analysis were considered statistically significant at the 95% confidence interval ($p<0.05$).

Results

Table 1 exhibits the sociodemographic characteristics of participants from both private and public universities. The mean age of participants was 23.8 and 23.2 for private and public universities, respectively. The majority of the students were female in both institutions, and most of them are single. In the private university, Chinese

were the majority (45.9%) while in the public university, Malay ethnic was the majority (96.2%). Both private and public universities stated that they have entrepreneurial intentions about 60.2% and 62.3% respectively. The majority of private university students stated that they have entrepreneurial family members compared to those in public universities (57.1% vs 49.1%). Students from both institutions claimed that mostly their family members' backgrounds are not in the dental field, have anticipated education debt, intend to undertake postgraduate studies and prefer to specialise in a specific field of dentistry (Table 2).

Figure 1 exhibits the career preferences of the dental students in both institutions. Most of the private university students intended to join the private sector, compared to the students in public universities who intended to join both sectors for their future career.

Table 1. Sociodemographic factors according to institutions (private vs public).

Sociodemographic characteristics	Private university (98 [48%])	Public university (106 [52%])
	n (%)	n (%)
Age (years in mean)	23.8 (SD=1.51)	23.2 (SD=0.66)
Gender		
Male	25 (25.5)	19 (17.9)
Female	73 (74.5)	87 (82.1)
Ethnicity		
Malay	28 (28.6)	102 (96.2)
Chinese	45 (45.9)	3 (2.8)
Indian	22 (22.4)	1 (0.9)
Others	3 (3.1)	0 (0.0)
Marital status		
Single	97 (99.0)	105 (99.1)
Married	1 (1.0)	1 (0.9)

Table 2. Contributing factors to career preference among public and private dental students.

Contributing factors	Private university		Public university	
	No	Yes	No	Yes
	n (%)	n (%)	n (%)	n (%)
Do you have any entrepreneurial intentions?	39 (39.8)	59 (60.2)	40 (37.7)	66 (62.3)
Do you have any entrepreneurial family members?	42 (42.9)	56 (57.1)	54 (50.9)	52 (49.1)
Do you have any family members in dentistry?	72 (73.5)	26 (26.5)	86 (81.1)	20 (18.9)
Do you have any anticipated education debt?	45 (45.9)	53 (54.1)	35 (33.0)	71 (67.0)
Do you intend to undertake postgraduate studies in the next 5 years?	34 (34.7)	64 (65.3)	37 (34.9)	69 (65.1)
In the longer term, would you like to specialise in a field of dentistry?	16 (16.3)	82 (83.7)	24 (22.6)	82 (77.4)

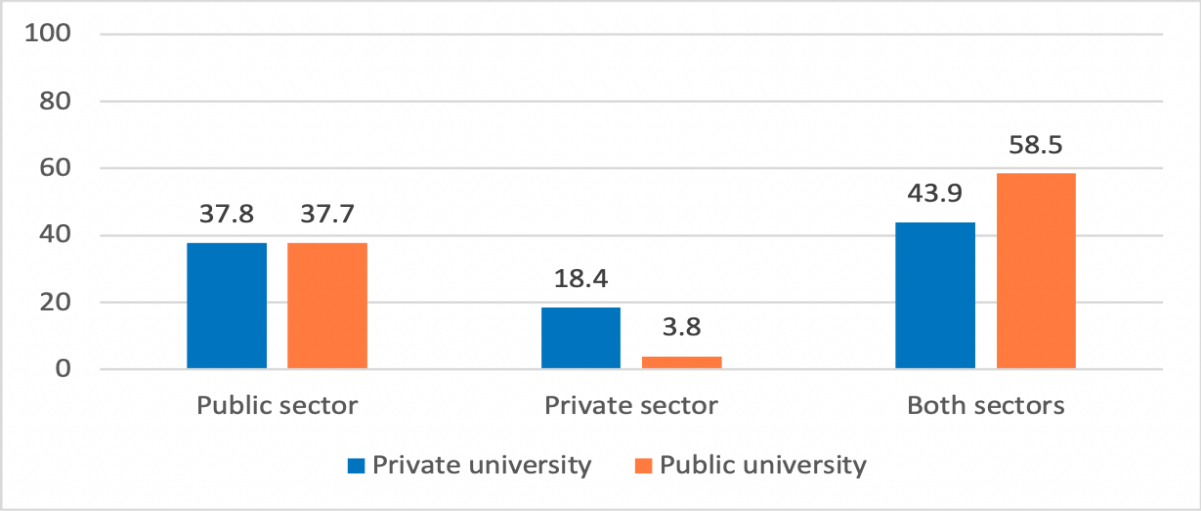

Figure 1. Career preference among dental students in Malaysia between institutions (private vs public).

Table 3 dictates factors that influence the students' career preference. Flexible working hours was one of the most significant factors among students who preferred the private sector (78.6%, p=0.003). Although not significant, students felt that employment benefits such as annual leave, sick pay and maternity leave had a high influence on their career preference across sectors respectively (p=0.937); public (73.1%), private (72.7%), both (70.2%). On the other hand, working in solo practice had less influence on their career preference (p=0.605); public (23.2%), private (26.3%), both (30.5%).

Table 3. Factors associated with preference to work in the public or private sector using the chi-square test.

Preferences	n	Career intentions			p-value
		Public	Private	Both	
		n (%)	n (%)	n (%)	
Working in solo practice	183	16 (23.2)	5 (26.3)	29 (30.5)	0.605
Fixed salary services	167	23 (39.7)	8 (40.0)	28 (31.5)	0.122
Flexible working hour	158	21 (30.0)	11 (78.6)	31 (41.9)	0.003
Benefit in terms of income and salary	117	21 (42.9)	6 (66.7)	40 (67.8)	0.103
Employment benefits (e.g., annual leave, sick pay and maternity leave)	84	19 (73.1)	8 (72.7)	33 (70.2)	0.937
Financial inducement (e.g., bonuses)	146	31 (58.5)	8 (47.1)	43 (56.6)	0.803
Family commitment	139	30 (55.6)	10 (62.5)	48 (69.6)	0.201
Debt accrued as student's loan	166	15 (24.2)	9 (45.0)	28 (33.3)	0.273
Working in high-quality environment	129	27 (55.1)	9 (64.3)	45 (68.2)	0.567
Working part time job	152	24 (40.7)	8 (44.4)	31 (41.3)	0.855

Table 4. Multinomial regression analysis for the association between workforce preference and its related factors among dental students in Malaysia.

Factors	Workforce preference							
	Private sectors				Both sectors			
	Crude OR (95% CI)	p-value	Adjusted OR (95% CI)*	p-value	Crude OR (95% CI)	p-value	Adjusted OR (95% CI)*	p-value
Age	0.78 (0.50, 1.22)	0.285	0.64 (0.42, 0.99)[a]	0.045	0.88 (0.69, 1.13)	0.320	0.87 (0.66, 1.14)	0.320
Sex								
Male	1.78 (0.62, 5.10)	0.283	1.23 (0.39, 3.87)	0.721	0.90 (0.46, 1.98)	0.897	0.91 (0.43, 1.92)	0.800
Female	1.00		1.00		1.00		1.00	
Types of institutions								
Public	0.21 (0.06, 0.66)[b]	0.008	0.17 (0.05, 0.58)[b]	0.005	1.33 (0.74, 2.41)	0.341	1.16 (0.62, 2.19)	0.645
Private	1.00		1.00		1.00		1.00	
Entrepreneurial intentions								
Yes	2.99 (1.00, 8.91)	0.050	3.87 (1.18, 12.49)[a]	0.025	1.55 (0.85, 2.82)	0.153	1.63 (0.88, 3.02)	0.118
No	1.00		1.00		1.00		1.00	
Entrepreneurial family members								
Yes	0.93 (0.36, 2.39)	0.872	-	-	1.10 (0.61, 1.98)	0.755	-	-
No	1.00				1.00			
Family members in dentistry								
Yes								
No	1.93 (0.67, 5.57)	0.224	2.14 (0.68, 6.68)	0.192	1.23 (0.60, 2.53)	0.584	1.39 (0.65, 2.93)	0.395
	1.00		1.00		1.00		1.00	
Anticipated education debt								
Yes	0.75 (0.29, 1.94)	0.553	0.82 (0.29, 2.27)	0.704	1.44 (0.79, 2.63)	0.240	1.39 (0.75, 2.57)	0.299
No	1.00		1.00		1.00		1.00	
Postgraduate studies intention								
Yes	0.65 (0.25, 1.69)	0.376	-	-	1.13 (0.61, 2.10)	0.705	-	-
No	1.00				1.00			
Specialize in field of dentistry								
Yes	1.28 (0.38, 4.28)	0.694	-	-	1.28 (0.62, 2.67)	0.506	-	-
No	1.00				1.00			

Public sectors as reference category; OR = Odds ratio; 95% CI = 95% Confidence interval

*Model was adjusted (multivariate) for variables age, gender, types of institution, entrepreneurial intention, family members in dentistry and anticipated education debt. Goodness-of-fit model is adequate, X^2=127.46, *df* =130, p=0.547. Nagelkerke R^2= 0.141. No interaction and multicollinearity detected.

[a]p<0.05; [b]p<0.01

Table 4 shows the results of the multinomial logistic regression analysis with the public sector set as the reference group. Types of institution was the only factors significantly associated with workforce preference at the crude level. It was found that public university students had 79% lower odds (OR = 0.21; 95% CI = 0.06, 0.66; p= 0.008) of preference to work in private sectors compared to private university students. After adjusting for other variables, age, types of institution and entrepreneurial intentions were the significant factors of workforce preference. The higher the students' age, the less likely they were to join private sectors (OR = 0.64; 95% CI = 0.42, 0.99; p= 0.045) compared to public sectors. Public university students had 83% lower odds (OR = 0.17, 95% CI = 0.05, 0.58; p= 0.005) of preference to work in the private sector compared to private university students. Students with entrepreneurial intentions had 3.87 times odds (95% CI = 1.18, 12.49; p= 0.025) of working in the private sector compared to those who have no entrepreneurial intention. On the other hand, students in public universities had 1.16 higher odd (95% CI = 0.62, 2.19; p= 0.645) of preference to work in both sectors compared to private university students; however, no significant association was found (p=0.645).

Table 5 dictates orthodontics and endodontics as the most preferred specialities ranked by the final year dental students according to sex and type of institutions. The least preferred by the students were oral radiology, forensic odontology and oral pathology and oral medicine.

Table 5. Specialty preference ranking based on gender and type of institutions (n=171).

Sex				Specialty	Type of institution			
Male		Female			Public		Private	
Rank	n (%)	Rank	n (%)		Rank	n (%)	Rank	n (%)
1	11 (25.6)	1	31 (24.1)	Orthodontics	1	22 (30.1)	1	20 (20.4)
2	10 (23.3)	2	25 (19.5)	Endodontics	2	16 (21.9)	2	19 (19.4)
3	6 (13.9)	4	16 (12.5)	Oral surgery	5	5 (6.8)	3	17 (17.3)
4	5 (11.6)	5	13 (10.2)	Periodontics	4	11 (15.1)	6	7 (7.1)
4	4 (9.3)	7	6 (4.7)	Prosthodontics	7	1 (1.4)	5	9 (9.2)
6	3 (6.9)	3	21 (16.4)	Paediatrics Dentistry	3	13 (17.8)	4	11 (11.2)
6	2 (4.7)	6	7 (5.5)	Conservative	6	2 (2.7)	6	7 (7.1)
8	2 (4.7)	9	2 (1.6)	Implantologist	11	0 (0.0)	8	4 (4.1)
9	0 (0.0)	8	3 (2.3)	Dental Public Health	7	1 (1.4)	9	2 (2.0)
9	0 (0.0)	11	1 (0.8)	Oral radiology	7	1 (1.4)	11	0 (0.0)
9	0 (0.0)	9	2 (1.6)	Forensic Odontology	11	0 (0.0)	9	2 (2.0)
9	0 (0.0)	11	1 (0.8)	Oral Pathology Oral Medicine	7	1 (1.4)	11	0 (0.0)

Discussion

The findings from this study revealed the career preferences of the public and private final year dental undergraduates in Malaysia. Due to the recent changes in the policy of dentist recruitment in the country, the new dental graduates are facing an unprecedented situation. Previously, all new dental graduates were ensured a permanent post in the government sector, which provided financial stability. However, the increased number of dental graduates each year has warranted a new approach to cater to the surplus of dentists.

Healthcare reform made by the Ministry of Health (MOH) has somehow coerced dental graduates to venture into the private sector. With the uncertainty of their future position in the government sector, many of them are willing to take whatever is offered on the table (Iskandar, 2023). The new dentists felt insecure and anxious working as contract dental officers with no guarantee of being absorbed as permanent dentists in the government sector. The possibility of not being employed as permanent dental officers in the government sector was the main cause of their worry and concern, as it may affect their financial stability in the future (Parkaran, 2024). Thus, the MOH should take into consideration the provisional health care delivery and services, including prospective jobs for future dental graduates.

The majority of the students in this study preferred to work in both sectors, which would promise a higher income generated (Batyrbekova *et al.*, 2022). This finding could be attributed to them having to pay the educational loan incurred throughout their students' years. Most dental students would anticipate educational debt from a government-funded scholarship or educational loan institution to pursue the dentistry course. Government-funded students are bonded to work in the public sector, whereas those who are self-funded are free to join the private sector after graduation. Hence, to lessen the burden, they will have to work harder for extra income or work in the private sector for a higher payroll in order to pay off their educational debt during studies and achieve work-life balance (Nashleanas *et al.*, 2014; Che Musa *et al.*, 2016). A recent study found that students desire dual-sector careers that optimise earnings, flexibility and societal contributions (Riad, 2025). This choice also reflects recognition of both sectors as well as system flexibility that allows part-time work in public institutions alongside private practice (Lukandu *et al.*, 2023; Che Musa *et. al.*, 2024).

Apart from that, pursuing a career as a private dental practitioner was relatively higher among the dental students at private universities compared to their counterparts. The explanation could be that mostly the students enrolled in private institutions are those from a higher economic background (Cheng *et al.*, 2022). In addition to that, having family members who are entrepreneurs themselves could have influenced the dental students to have entrepreneurial intention (Georgescu & Herman, 2020). Their entrepreneurial background acted as the motivation to open their own private practice, and the students viewed the family members as role models (Williams & Williams, 2012). According to Gujrati *et al.* (2019), family financial status has a major influence on the students' entrepreneurial intentions, which triggered their motivation to work in the private sector. The lack of support from low-income families could be a possible factor that hinders the students' motivation to venture into private practice (Cavalcante *et al.*, 2022).

From this study, both students from private and public universities stated that they have entrepreneurial intentions, which are in line with other similar studies (Yusoff *et al.*, 2015; Ministry of Higher Education, 2020; Khairuddin *et al.*, 2023). This finding gave the impression that dental graduates are willing to work in the private sector to enhance their entrepreneurial skills before embarking on their own dental clinic. However, although many of them expressed their entrepreneurial intentions, they still prefer to work in the public sector.

According to Che Musa *et al*. (2015), job security, altruistic attitude and having more time for family were some of the reasons they preferred to work in the public sector. The concept of altruism was highly regarded by Brazilian dental students, showing a general understanding that the purpose of dentistry is to provide oral health promotion and prevention, in which the majority of them preferred working in the public sector (Costa *et al.*, 2012).

Besides that, flexible working hours were the sole element that affected students' intentions for their career preferences, particularly those who decided to work in the private sector. While studies have acknowledged the impact of flexible hours on career preferences, most have shown a significant relationship with gender (Rashid *et al.*, 2013; Halawany *et al.*, 2017). As most respondents in our study were female, this could be the possible explanation why they would prefer to have flexible working hours in order to care for their families (Puryer & Patel, 2016; Scott *et al.*, 2020). Financial stability and flexible work schedules are important factors in making career choices, as reported in another study in Kenya (Lukandu *et al.*, 2020).

Additionally, most of the dental undergraduates in this study would prefer to pursue postgraduate training for career advancement, financial stability and work-life balance (Puryer & Patel, 2016; Che Musa *et al.*, 2016). This finding is similar to the studies among dental students in Saudi Arabia and Iran (Dastjerdi *et al.*, 2012; Al-Hallak *et al.*, 2018). From this study, the most and least preferred specialties are in agreement with other reported studies (Puryer & Patel, 2016; Halawany *et* al., 2017; Siddiqui *et al*., 2022). It is found that female students chose specialisation training as a need despite discouraging factors such as towering cost and extensive duration (Naz *et al.*, 2022). More opportunities for scholarships are provided in the government sector, whilst those working in the private sector must apply for educational loans to further their specialist training (Che Musa *et al.*, 2016). Similarly, Siddiqui *et al.* (2022) reported that most students would choose government institutions if they were to pursue specialisation training.

Furthermore, this study also found that the higher the students' age, the less likely they were to join the private sector. This is most probably due to the age factor and family commitment, as people become less inclined to switch jobs and prefer to settle for job security and stability, including becoming less interested in joining the rat race (Finegold *et al.*, 2002). Females mostly favoured a work-life balance compared to men (Batyrbekova *et al.*, 2022). Nevertheless, the age range of this sample is quite small; thus, the findings should be interpreted with caution and further investigation is needed to confirm the association.

There are some limitations in the present study. The students involved in this study only cover 30% of the total final year dental students in Malaysia, consisting of Malay, Chinese, Indian and other ethnicities. The unbalanced distribution of ethnicity between the public and private tertiary institutions could have influenced the result. Not only that, as this study involved self-reporting questionnaires, it came with its own possible biases that may affect the findings. Nevertheless, in contrast to previous findings by Che Musa *et al.* (2016), this study offered a distinct perspective on the current undergraduates' career preference after a change was made in the employment of dental health workers.

Conclusion

The majority of the dental undergraduate students in Malaysia preferred to work in both public and private sectors. Dental students in public institutions mostly preferred to work in the government sector. Dental undergraduate students who have entrepreneurial intentions were most likely to choose working in the private than the public sectors. Flexible working hour is the main determining factor that influences the final year dental students' intention to choose the private sector as their career preference. As for the implications, a win-

win solution in regards with the work placement and job posting among new dental graduates should be conceived to entice and retain the dental officers serving in the public sector. Realising the entrepreneurial intentions among dental graduates, the academic institution may consider including a course on private practice management in the dental curriculum, as early exposure to those who are keen to open their own private dental practice after graduation.

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