

ORIGINAL ARTICLE

FACTORS INFLUENCING THE CHOICE OF DENTAL HEALTHCARE PROVIDERS AMONG GOVERNMENT AGENCIES WORKERS IN KOTA BHARU, KELANTAN

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ABSTRACT

Oral health and dental aesthetics have become increasingly important in contemporary society. However, the public faces a wide range of choices among oral care services and facilities provided by the government and private sectors, which occasionally involve unregistered dental operators. This study aims to evaluate the public's preferences towards the selection of oral healthcare providers in Malaysia. A cross-sectional, online self-administered questionnaire was distributed to the workers in government agencies in Kota Bharu, aged between 18-60 years old from July to October 2017. Questions were primarily close-ended and consisted of 17 questions on demographics, questions on factors associated with the selection of dental service providers in Likert-scale format. Out of the 575 sent individual emails, 236 voluntarily responses were retrieved, of which 45.8% were male and 54.2% were female. The highest percentage of the respondents belongs to the age group of 31 to 40 years. The most important factors that affect the respondents' selection of dental care providers are facilities and equipment in a dental clinic (86%), followed by dentist reputation and working experience (85.1%), and technical competency of a dentist (83.9%). Overall, the respondents demonstrated a positive response towards the selection of oral healthcare providers and dental professions. Addressing the valuable factors in promoting dental services by the registered government and private sectors are essential to developing a secure and efficient oral healthcare system for the public.

Keywords: dentistry, public health, selection factors, preferences, services.

INTRODUCTION

Modern dentistry aims to introduce state-of-the-art technology by adopting the latest techniques in delivering dental services¹. Among the listed dental healthcare providers in Malaysia that are available to the public are private clinics, government hospitals' dental clinics, specialist dental service centers, mobile dental clinics, and dental volunteerism via non-governmental organisations (NGO). The wide range of dental healthcare services offered by both government and private sectors is giving more power to the public to select their preferred service providers. In Kelantan alone, a total of 113 dental clinics was recorded in 2019 with a ratio of 1:11 for dental clinics to population². Similar to other states in Peninsular Malaysia, public dental services are more evenly distributed throughout Kelantan than private dental clinics. The unavailability of private dental services in rural areas is due to the lack of accessible roads or transportation and low population density. A study

performed on measuring the quality of public dental healthcare facilities in Kelantan, however, indicated an overall very low level of satisfaction among the patients, with responsiveness, reliability, and empathy of the dental healthcare providers being the serious problems³.

Patients' perception on oral healthcare services is recognized to bring a substantial impact on the utilisation of dental care services. Oral health and dental aesthetics have become increasingly important in contemporary society. The public faces a wide range of choices among oral care services and facilities provided by the government and private sectors, which occasionally involve unregistered dental operators. Towards the end of the year 2016, there are a total of 7210 registered dental practitioners with valid Annual Practising Certificates in Malaysia⁴. Of these, 63.7% of the dentists were working in the government sector

while the remaining 26.3% were with the private sector⁴. Taking into consideration the population growth, the expected number of new graduates, and the number that retire from practice each year, the desired target of dentist to population ratio (1:3000) is estimated to be achieved by 2018.

The primary goal of dental treatment is to restore the patient's teeth to normal aesthetic, comfort, function, and speech¹. To maximize the safety and quality of the oral care services provided, dentistry in Malaysia takes place within a regulatory framework and all dental practitioners practicing in Malaysia are governed by the Dental Act 1971. Under the Dental Act 1971, every dental practitioner must be registered with the Malaysian Dental Council (MDC) and practitioners are required to obtain an Annual Practising Certificate (APC) to legally practice dentistry in Malaysia. Furthermore, under the Private Healthcare Facilities and Services Act (PHSA) 1998, one would be liable if practicing dentistry on an illegal premise⁵. Additionally, all medical devices must also be registered under the Medical Device Act 2012 which was established to regulate the manufacturing, importing, packing, and marketing process of the devices, along with the safety warranty⁵.

The increase in awareness of oral healthcare, along with the hype of dental esthetics has now become a popular topic among all disciplines of dentistry in Malaysia. However, not only the qualified and registered dentists have acquired the attention but also the upsurge of misconduct among non-qualified personnel who offers dental services without a license and proper knowledge. Among the popular services provided by these non-qualified operators includes nano-teeth whitening, dental bracket fixation, and denture implantation⁶. The issue of flourishing illegal dental practitioners in Malaysia had raised the alarm among the public. Malaysia Ministry of Health (MOH) has released an official statement to warn the public against the illegal dental services provided by unqualified dentists. However, little did the public know about the importance of proper screening and diagnostic approaches before undergoing any esthetics treatment plan involving dental procedures.

The procedures performed by these non-qualified personnel have been reported to cause have led to more serious dental problems such as redness and bleeding gums, difficulty in biting and chewing, rotten teeth, teeth mobility, and further dental complications which subsequently need to be rectified by the dental specialist team^{7,8}. Malaysian Association of Orthodontists claimed that up to 85% of victims who had fake braces done by untrained or illegal orthodontists suffered irreversible damage and such problems were undetected because they were asymptomatic until the patients' periodontal

problems worsen or reach the end-stage⁹. The complications may worsen due to the compromised infection control of the unqualified practitioners and their premise, which led to the high risk of the patient being infected with HIV, Hepatitis B, Hepatitis C, and probably airborne diseases such as Tuberculosis¹⁰.

This issue raised the concerns from Malaysian Dental Council as the public's misperceptions, and lack of correct knowledge regarding the braces constructions and attractions by the appealing low-price- dental services may result in more severe or even incurable problems in the future. Hence, the huge responsibility to combat the trend of visiting illegal dental practices lies heavily in future generations of dental healthcare professionals. It is important to identify determinants in the selection of dental care providers among patients for the improvement of dental services in Malaysia. Therefore, this study aims to assess the factors associated with the selection of dental healthcare providers in Malaysia. The data gathered will potentially provide further information on understanding public needs and improving the current practice in dental healthcare services.

METHOD

Sampling Method and Subject Recruitment

This is a cross-sectional study using an online questionnaire as a survey tool. The questionnaire was uploaded to Google Form and made accessible online through an active hyperlink. The potential respondents were voluntarily recruited to fill up the online questionnaire which will be circulated through their email addresses. The sampling included all workers listed in the staff directories, as accessed through the official websites of the government agencies (accessed on 13th of May, 2021). Briefly, the official website for each agency was browsed through to obtain the staff directories in which a list of 575 verified emails was compiled. Based on the sample size table from Krejcie Morgan (1970)¹¹, the minimum required sample size for this study was at 231. The target population included government agency workers, aged 18 to 60, from the 10 listed government agencies in Kota Bharu, Kelantan (as listed below):

1. Jabatan Pembangunan Persekutuan Kelantan
2. Jabatan Pembangunan Wanita Kelantan
3. Jabatan Kesihatan Negeri Kelantan
4. Jabatan Belia Dan Sukan Negeri Kelantan
5. Jabatan Alam Sekitar Negeri Kelantan
6. Jabatan Tenaga Kerja Negeri Kelantan
7. Jabatan Kebudayaan Dan Kesenian Negara (JKKN) Kelantan
8. Pejabat Jabatan Pertahanan Awam Negeri Kelantan

- 9. Pejabat Kementerian Pelancongan dan Kebudayaan Malaysia Negeri Kelantan
- 10. Pejabat Risda Negeri Kelantan

Subject criteria

The inclusion criteria included working adults aged 18 to 60 with Malaysian nationality who were registered as permanent workers in all the listed government agencies (as above). The exclusion criteria were USM staff, workers in a private company and non-governmental organizations, and respondents who had no access to the questionnaire.

Data collection

The survey was conducted between July and October 2017. Permission to conduct the survey was obtained from all the respective organisations prior to the conduct of the study. A list of email addresses of potential participants was obtained from each respective organisation. The online questionnaire was emailed to all potential participants alongside study information and an informed consent form. Participation was entirely voluntary. A reminder email was sent to the potential participants after 2 weeks. Emails were sent to the potential respondents fortnightly and updated accordingly. All the respondents were informed about the aims and objectives of the study. Those who were not willing to participate were excluded from the study. Informed consent was filled up by the respondents

if they agree to take part in the study. Throughout the four months, 236 responses were gathered.

Research Tool

The questionnaire was constructed and modified from a few established papers^{12,13,14}. The questionnaire consisted of 25 close-ended questions, divided into two parts in Likert-scale format to address discrete response items. The first part consisted of 7 demographic questions regarding respondents’ age group, gender, monthly income, and dental treatment history. The second part included 11 questions regarding the public attitude in the selection of dental care providers. The questionnaires were prepared both in English and Bahasa Malaysia to enable completion and to improve the respondents’ understanding of the questions (see Appendix). A preliminary study was conducted with 10 supporting staff from Universiti Sains Malaysia, which comes from the excluded group. A brief explanation was given to the pilot test group, followed by question distribution, refinement, and validation. From the pilot study, an ambiguous question was either removed or paraphrased. The Time taken to complete the questionnaires and the level of difficulty were also assessed. The reliability of the questionnaires was further tested using Cronbach’s Alpha to assess the internal consistency between questions in each part. The result is shown in Table 1 and shows that the construct had a high index of reliability¹⁵.

Table 1: Cronbach' Alpha for the construct.

Variables	Number of Items	Cronbach's Alpha
Factors	11	0.812

Ethical approval

The study was approved USM Ethical Committee Board (USM/JEPeM/17040206).

Statistical analysisData collected were entered and analysed through MS Excel and SPSS version 22.0 (IBM Corp, Armonk, NY, USA). Categorical data were presented as a percentage. Descriptive statistics were used to summarise the socio-demographic characteristics of subjects in comparison with attitudes and perceptions in the selection of dental care providers. Further correlation test was conducted using Fisher’s Exact test to analyse the relationship among variables.

RESULTS

Demographic dataThe demographic background of the respondents is as shown in Table 2. Out of the

575 questionnaires distributed, a total of 236 voluntarily responses were received which gave a response rate of 41.0%. From the total respondents, 108 (45.8%) were males and 128 (54.2%) were females. Most of the respondents were in the age group of 31-40 years (39.8%), 22% were in the age group of 18-30 years, 21.3% were from the age group of 41-50 and 16.5% were in the age group of 51-60 years. Almost all (99%) of the respondents had a monthly income of more than MYR 1000 in which 39.41% had an income between MYR 1000 to MYR 3000, 40.25% had an income between MYR 3001 to MYR 5000, 16.1% had an income between MYR 5001 to MYR 10,000 and 3% had a monthly income of more than RM10,000. Individuals aged 31-40 years old, with an income range between RM1000 - RM5000 made up the highest percentage of respondent

Table 2: Demographic data of the respondents

Variables	Percentage (n=236)
Age	
18 - 30	22.0%
31 - 40	39.8%
41 - 50	21.6%
51 - 60	16.5%
Gender	
Male	45.8%
Female	54.2%
Monthly Income (MYR)	
<1,000	1.3%
1,000 - 3,000	39.4%
3,001 - 5,000	40.3%
5,001 - 10,000	16.1%
>10,000	3.0%
Time of last dental visit	
<1 year ago	44.5%
Between 1 to 2 years ago	18.6%
>2 years ago	36.4%
Never	0.4%
Choices of dental service providers	
Private dental clinic & hospital	54.0%
Government dental clinic & hospital	42.7%
Mobile dental clinic	3.0%
Non-qualified dental operators	0.3%

Dental visit and reason

From the aspect of dental history, the duration of the last dental visit, reasons for dental visits, and choices of dental service providers were investigated. Approximately 44.5% of the respondents recorded their last dental visit less than a year ago, 36.4% of respondents recorded their last visit more than two years ago, and 18.6% of the respondents visited the dentist between one to two years ago. However, about 0.45% of the respondents reported never having received any dental treatment. In terms of reasons, the respondents demonstrated various issues of visiting the dental clinics (Figure 1). The top three reasons for dental visits are, toothache (46%), a dental clinic for a routine dental check-up (25%), and oral preventive care (16%), whereas the least popular reasons, were for tooth whitening (7%), denture construction (5%), and braces construction (2%).

From the survey questions, the data gathered also identified the selection of choices for dental service providers among the respondents. The majority of the respondents, reported highest preference to

seek dental treatment from the private dental clinics or hospitals (54.0%), followed by government dental clinics and hospitals (42.7%), whereas only 3.0% of the respondents opted for mobile dental clinics (organized by government clinics) and 0.3% reported seeking dental treatment from non-qualified dental operators. The list of factors that might influence a patient’s selection of a dental healthcare provider is presented in Table 3.

From the 11 factors listed in the questionnaire, the top three identified factors which recorded a high percentage of agreement from the respondents, on the selection of dental care providers were facilities and equipment in a dental clinic (86%), dentist reputation, and working experience (85.1%), and technical competency of the dentist (83.9%). Meanwhile, the three factors that least influence the respondents’ selection of dental service providers were the cost of dental services (66.9%), recommendations from others (56.4%), and information from mass media (42.8%).

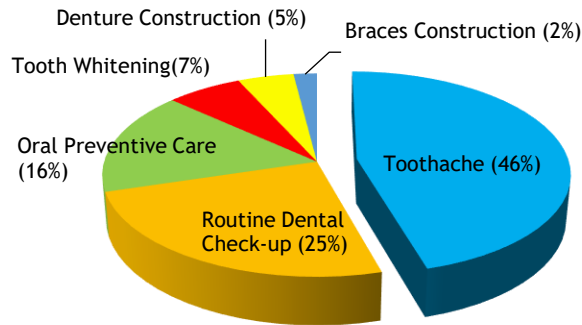


Figure 1: Reason for past dental visit (n=236)

Table 3: Factors affecting patients’ selection of dental health care providers:

List of factors	Percentage (N= 236)		
	Agree	Neutral	Disagree
Facilities and equipment used	86.0%	6.4%	7.6%
Reputation and working experiences of the qualified dental practitioners	85.1%	8.1%	6.8%
Technical competence of dental practitioners	83.9%	8.1%	8.0%
Reasonable appointment time and duration	81.8%	10.1%	8.1%
Efficient front desk service	81.3%	11.0%	7.7%
Previous dental treatment experience	80.1%	12.7%	7.2%
Interpersonal and communication skill of dental practitioners	77.9%	14.4%	7.7%
Location and distance from my residential area	72.5%	17.4%	10.1%
Cost of dental services	66.9%	17.8%	15.3%
Recommendation from others	56.4%	28.0%	15.6%
Information from mass media	42.8%	36.0%	21.2%

Further assessment was made to investigate any correlation between the different demographic backgrounds and factors associated with the selection of dental service providers. Only two parameters were selected from the demographic background for this purpose, which were the age group and monthly income. Table 4 and Table 5 showed the detailed analyses of different age groups and monthly income groups, against factors associated with the selection of dental service providers. The highest percentage of agreement was recorded by the 31-40 years old group, with the predominant factor affecting their preferences is the facilities and equipment use in dental clinic (p-value = 0.071). On a similar note, the monthly income group of RM1000-RM3000 agreed with a similar factor in dental service preferences. However, the data showed no statistically significant correlation between any of the listed factors with age and monthly income. Hence, it is postulated that age and income status do not have a significant role in determining the respondents’ preferences in selecting the dental service provider.

The result from the present study showed that a high percentage of respondents prefer to opt for private dental services (54%) rather than the government dental services (42.7%). This finding contradicts an earlier study which reported that more Malaysian adults especially of Malay ethnicity and rural residents attending public dental clinics than private facilities ¹⁶. Among the possible reasons which may contribute to the contradictory findings is due to the differences within the two study populations. The present study was conducted among the workers in the Kota Bharu, a city in comparison to the rural residents, which may directly reflect the respondents’ preference of going to private facilities. The availability of private clinics are more abundant in the cities as compared to rural areas may also influence the preference. Among the relevant factors which lead to the public’s selection of the private facilities are the much shorter waiting time, reasonable services fees, and convenient hours of getting treatment ¹⁶.

Table 4: Comparison between age groups against the factors of selecting dental service providers

List of factors	Percentage of agreement (n=236)					*p-value
	Aged 18-30	Aged 31-40	Aged 41-50	Aged 51-60	Total	
Facilities and equipment used	18.6	35.2	17.8	14.4	86.0%	0.071
Reputation and working experiences of the qualified dental practitioners	19.0	33.1	18.2	14.8	85.1%	0.347
Technical competence of dental practitioners	18.2	34.7	16.6	14.4	83.9%	0.084
Reasonable appointment time and duration	18.3	32.2	17.3	14.0	81.8%	0.939
Efficient front desk services	18.2	32.3	18.1	12.7	81.3%	0.670
Previous dental treatment experiences	19.0	30.5	17.4	13.2	80.1%	0.525
Interpersonal and communication skill of dental practitioners	15.7	33.9	16.4	11.9	77.9%	0.154
Location and distance from residential area	17.4	29.2	15.3	10.6	72.5%	0.444
Cost of dental services	16.1	28.4	13.1	9.3	66.9%	0.560
Recommendation from others	12.3	23.7	12.8	7.6	56.4%	0.457
Information from mass media	11.4	16.5	9.4	5.5	42.8%	0.213

*Chi-Square Tests. P-value was calculated from Fisher's Exact Test (Confidence level 0.01)

Table 5: Comparison between monthly income against the factors of selecting dental service providers

List of factors	Percentage of agreement (n=236)					Total	*p-value
	Less than RM1,000	RM1,000 - 3,000	RM3,000 - 5,000	RM5,000 - 10,000	More than RM10,000		
Facilities and equipment used	1.2	32.7	35.6	13.6	2.9	86.0%	0.772
Reputation and working experiences of the qualified dental practitioners	1.2	31.8	35.6	14.4	2.1	85.1%	0.653
Technical competence of dental practitioners	0.8	32.2	34.4	14.4	2.1	83.9%	0.426
Reasonable appointment time and duration	0.8	31.3	32.8	14.4	2.5	81.8%	0.781
Efficient front desk services	0.8	32.3	31.7	14.4	2.1	81.3%	0.539
Previous dental treatment experiences	1.2	30.9	32.6	13.2	2.1	80.1%	0.949
Interpersonal and communication skills of dental practitioners	0.8	32.2	29.7	13.1	2.1	77.9%	0.900
Location and distance from residential area	1.2	28.7	28.7	11.8	2.1	72.5%	0.421
Cost of dental services	1.2	27.9	27.6	9.4	0.8	66.9%	0.271
Recommendation from others	0.8	21.2	25.1	8.9	0.4	56.4%	0.280
Information from mass media	0.8	17.4	17.5	5.9	1.2	42.8%	0.283

Chi-Square Tests. P-value was calculated from Fisher's Exact Test (Confidence level 0.01)

DISCUSSION

As presented in this study, the top three factors affecting patients' selection of dental care providers among the government agencies workers

were facilities and equipment in a dental clinic (86%), dentist reputation and working experience (85.1%), and technical competence of dentist (83.9%). This finding is not surprising as patient satisfaction is not solely influenced by the quality

of dental treatment but also depends on the facilities and staff behaviour¹⁷. The office layout and dimension, neatness, and comfortability of the waiting area may also contribute to the patients' satisfaction^{18,19}. Moreover, modern equipped dental clinics significantly increased patients' satisfaction with the dental services^{20,21}. While this study does not explicitly measure patient satisfaction but rather looks at factors influencing selection of service provider, it can be assumed that reason for service provider selection is a proxy measure of satisfaction.

The finding that dentist reputation and experience was the second most important reason for service selection was also in line with previous studies which found that dentist reputation plays an important factor in affecting patients' selection of dental care providers^{22,23,24,25}. In terms of working experience, some patients preferred older practitioners as they seem to be more thorough during the service and demonstrated better interpersonal skills compared to younger practitioners²⁶. In contrast, another study indicated that patients prefer younger practitioners with the advantage of new technologies, advanced facilities, and up-to-date techniques^{14,26,27}. Nevertheless, another survey proposed that consumers focus more on the appearance including attire, hairstyle, and wearing nametag rather than the age of the practitioners²⁸. Another study also showed that a high proportion of respondents cited professional competence as the reason for dental satisfaction^{21,29}. Patients are also concerned about the technical skills of the dentist for example in the case of functioning and long-lasting fillings³⁰. Patients' perception of the quality of dental service was the most important influence on their satisfaction^{18,19,21}.

On the other hand, the three factors that had the least influence on the respondents' selection of dental service providers were the cost of dental services (66.9%), recommendations from others (56.4%), and information from mass media (42.8%). Interestingly, some studies proposed that recommendation from a friend or relative is regarded as one of the most important factors in the selection of a dentist^{20,23,24,25}. Friends' and relatives' recommendations were also considered to be one of the important factors in dentist selection (more than 50% of respondents agree on that) in this study but the respondents emphasize more on facilities and dentist' competency. At the same time, prior studies also indicated that advertising was the least important attribute^{18,21,22,24}.

Similarly, other studies also reported that dental charges had some impact on patients' selection of dental services^{12,13}. Even though patients were

aware and concerned about the dental costs, the price was not the main complaint if treatments provided were reasonably proportionate to costs³¹. This reasoning may be applicable to the respondents in the present study as it involves the government staff and working adults who have stable monthly incomes. Among the identified individuals' factors that determine the public selection of dental care providers are; access to dental services, socio-economic status, age, gender, facilities, recommendations from others, influences from mass media, and previous dental experience. On top of that, dental healthcare providers may also directly affect the public choices, in terms of professional techniques, personal communication skills, service cost, the flexibility of appointment time, and average treatment duration^{13,14}.

Due to time and financial constraints, the present study can only cover voluntary participation from 10 government agencies in Kota Bharu, Kelantan. Thus, it is difficult to draw a solid conclusion from this study to represent the whole working-adult population, from other states in Malaysia. Besides, this study only represents a small population of the major city in Kelantan. Hence, the data does not represent the patients from rural areas with different levels of dental services facilities. Therefore, it would be highly recommended that a larger population involving workers from more government agencies, as well as private sectors, be included in future studies to identify the important determinants in influencing patients' selection of oral care providers. By identifying the choices of oral care providers and the current perceptions of Malaysians towards dental care, dental practitioners, business owners, and government policymakers can draw a strategic plan in setting up a dental clinic and improving their services to increase patients' satisfaction. At the same time, dentists are responsible to educate the public regarding the risks of searching for services from illegal oral care providers.

CONCLUSION

Overall, the data gathered from this study provides a better overview of the factors determining selection of oral healthcare service providers in Malaysia from the patient's perspective. The findings of this study indicates that the public may prefer to go to private dental clinics because of the modern facilities, high reputation, and notable competency of the dentist. However, as the selection of dental care providers is multifactorial and complicated, this study was not able to conclusively solicit any correlation between the different demographic backgrounds with the selection of dental service providers. Holding on to

the Malaysian National Health Vision, “A Nation Working Together for Better Health”, regardless of public or private sectors, all dental practitioners should work together with all other parties to develop a secure and efficient oral healthcare system for the Malaysian public.

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Competing Interests

There are no relevant financial or non-financial competing interests to report from all authors.

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