ORIGINAL ARTICLE

A Study on Parental Acceptance Towards the Use of Dental Therapists in Malaysian Private Sectors

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ABSTRACT

Introduction: The objective of this study was to assess parental acceptance and factors that influenced their perceptions towards the use of dental therapists in providing treatment to children in private dental practice settings. **Methods:** A cross-sectional study was conducted on randomly selected parents of 11-year-old schoolchildren in Selangor using a self-administered structured questionnaire. The survey consisted of three sections: socio-demographic characteristics, dental service utilisation and parental acceptance towards dental therapists in providing seven types of preventive and operative dental procedures. **Results:** The response rate was 83.1%. Overall, most parents regarded dental therapists providing dental care to their children in private dental care settings as acceptable, particularly on preventive treatment, namely 'seeking advice on oral hygiene care' (87.8%) and 'applying topical fluoride' (83.2%). In the multivariate analysis, younger parents and those who had preferences over private sectors were most likely to accept at least four dental procedures to be rendered to their children by dental therapists. Overall, respondents who were younger (OR = 1.40, 95% CI = 1.62, 1.92), lived in urban locality (OR = 1.77, 95% CI = 1.28, 2.45) and had a recent dental visit (OR = 1.51; 95% CI = 1.10, 2.07) were more likely to have an overall positive perceptions towards dental therapists. **Conclusion:** Most parents regarded dental therapists providing care to their children in private dental settings as acceptable and this was associated with their age, place of residence and past dental experiences.

Keywords: Social acceptability, Dental therapists, Parental perceptions, Schoolchildren, Private dental sectors

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INTRODUCTION

Dental therapists were introduced to the Malaysian dental workforce in 1948. They predominantly work in school dental services, similar to their colleagues in New Zealand (1) and Australia (2). Their job scopes were previously covered under the Dental Act 1971 where they were allowed to provide simple dental care under the supervision of dentists to children aged 17 years and below, in public settings only (3). Their main clinical roles include deriving diagnoses, scaling and polishing, simple fillings, extraction of deciduous teeth, application of topical fluoride and fissure sealants, and oral health education. In the more than seven decades since their introduction, dental therapists have achieved significant milestones in their work.

Recent legislative changes allow Malaysian dental therapists to undertake defined duties to children up to 18 years old and to work in private settings under the direct supervision of a dentist (4). The expansion in place of practise and age restriction entitle dental therapists to diversify their scope of practise as well as enhance their career pathway, despite the fact that their dental tasks remain almost similar as in the previous Dental Act. Literature suggests that there was a high degree of dentists' (5,6) and patients' (7,8) acceptance on the expanded task of dental therapists, but there were also reports of negativity by the dentists towards their employment in the general practice (9). Dental therapists have been deemed a hazard in the profession by a few professional dental bodies (10). There were only two local studies which had assessed dentists' acceptance towards the employment of dental therapists in the private setting, and the findings show a high acceptance level (11,12). However, the studies was carried out long before the new legislation was proposed, and it was observed in media reports that a number of dentists had

asked for the Dental Act amendment to be reviewed after it was unveiled (13).

A new intervention introduced in the health care delivery system is only meaningful if it is accepted by the target population and viable if implemented in a community setting (14). In applied behaviour research, the term social validity is used to refer to the social importance (e.g. presence of minimal clinical changes) and social acceptability (the desirability of the intervention from the society's perspectives) (15). Issues of social acceptability towards dental therapists delivering dental care to the public have been studied, although not extensively. Studies on the adult population in the United Kingdom show a high social acceptability towards dental therapists, although a slight majority were positive only if the treatment cost was lower (16,17). However, dental therapists conducting procedures on children were regarded as less acceptable by the same studies' respondents. These aforementioned studies were mostly conducted on participants who had received treatment from the dental therapists. Meanwhile, a survey conducted in the United States reported that almost half of the respondents indicated that they would be comfortable being treated by a dental therapist, but this feedback was from respondents who had never heard of or experienced care by a dental therapist (18).

The two aforementioned local studies that assessed the acceptance of the roles played by dental therapists on children in Malaysia was based solely on the dentists' perceptions on the dental therapists' job scopes in public settings (11,12). It is essential to assess whether the dental therapists' expansion of roles to private settings, as stipulated in the new Dental Act, fit the community values, mainly of the potential clients. Therefore, this study aims to assess parental acceptance towards the employment of dental therapists in private practices and to determine factors that influence their perceptions.

MATERIALS AND METHODS

This was a cross-sectional study on parents of public schoolchildren aged 11-year-old in the state of Selangor. This age group was chosen on the assumption that they have adequate exposure to the school dental therapist services. They were also selected as they were not part of any main national examinations, making it easier to gain school and parental permission to engage them in research. However, Malaysians under the age of 18 are considered incapable of giving medical consent nor capable of making higher-order decisions related to their health care (19). Hence, parents were invited to act as proxies for their children in this study. Only parents of Malaysian schoolchildren were included. Children who had been away from school or on an extended medical leave were excluded as they might have missed treatment provided by the dental therapists in the school setting.

The minimum sample size required was 960, calculated based on the expected prevalence of acceptance towards the use of dental therapists in the UK (20), a margin of error of 5%, 95% confidence interval, 20% probability of non-response, and a design effect of 2 (21). This study employed a multistage sampling method, as illustrated in Figure 1. Only schools with a total enrolment of 1500 or more schoolchildren were included, and after stratification by location, only 17 schools in the urban cluster and five schools in the rural cluster complied with the inclusion criteria. In the next stage of sampling, five schools and two schools were randomly selected to ensure representativeness and better logistic management. The weightage was based on the distribution of the population in urban and rural areas in Malaysia (22). A total of 30 children were randomly selected from these selected schools and their parents were invited to participate in the study.

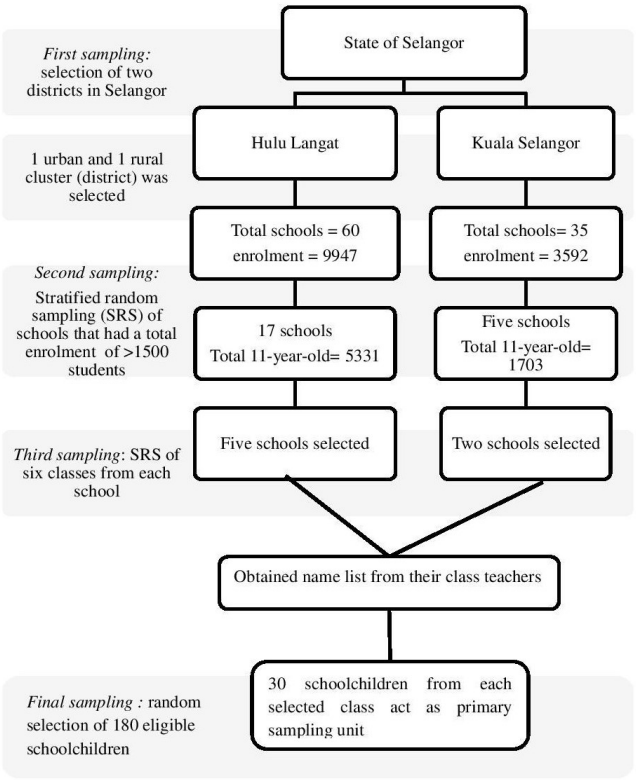

Figure 1: Flowchart of the process of the multistage stratified random sampling method

A self-administered questionnaire was developed based on literature review and experts' opinion was used to guide the development. The questionnaire consisted of two sections. The first section consisted of questions on (i) parents' sociodemographic profile (age, gender, ethnicity, educational level, total household income and locality [rural/urban]); (ii) their dental utilization trends (public-private preference and previous dental visits); and (iii) their perceptions of their own teeth and gum. The response options for the latter included 'poor', 'fair', 'good', 'very good', and 'do not know'. The second section assessed parental acceptability of treatment provided by dental therapists to their children in private

settings across seven type of procedures namely; (i) 'seeking advice on oral hygiene care'; (ii) 'applying topical fluoride gel and paste'; (iii) 'to have a simple cavity filled'; (iv) 'to pull out milk teeth'; (v) 'to get an injection to make their teeth and gums go numb'; (vi) 'to have protective coat [fissure sealant] done' and (vii) 'to apply topical fluoride gel and paste'. Respondents were asked to indicate their acceptance level on a 4-point Likert scale, which ranged from 1 = completely agree, to 4 = completely disagree. The respondents were also asked on whether, as a whole, they'd be comfortable and would regard dental therapists providing dental treatment to their children as acceptable. The questionnaire was developed in the English language, and it was forward translated to the Malay language by two professionals and native users of both languages. It then underwent a face and content validation by two dental public health specialists. The final draft was pre-tested on ten parents attending the paediatric dental clinic in the Faculty of Dentistry, University Malaya via face-to-face interviews. No amendment was made as the questionnaire was reported to be clear and concise. The questionnaire was distributed to the selected schoolchildren through their class teachers. The children were requested to hand over the questionnaire to their parents. The class teachers assisted by informing the parents about this study and collected all the completed questionnaires.

Statistical analysis

All statistical analyses were performed using the Statistical Package for the Social Sciences version 22.0 (SPSS; Chicago, IL, USA). Descriptive analysis was conducted on the socio-demographic characteristics and the acceptance prevalence. For analysis purposes, 'Malay' and 'Other' ethnicities were grouped as 'Bumiputera' while 'Chinese' and 'Indian' ethnicities were grouped as 'Non-Bumiputera'. The participants' acceptance for each of the listed dental treatment conducted by the dental therapist was dichotomised into two groups; those who answered 'agree' and 'completely agree' (Likert scales 1 and 2) were grouped into the 'agree to accept' group, while those who chose 'disagree' and 'completely disagree' (Likert scales 3 and 4) were grouped as 'disagree to accept'. Reliability test was performed for the seven items and the Cronbach's alpha was 0.89.

The association between parental acceptance for each of the seven type of dental treatment and the independent variables, namely demographics, patterns of dental service utilisation and perceived oral health status factors, were assessed using both univariate and multivariate analyses. Initially, the selection of potential factors for parental acceptance was made by analysing all the independent variables using the Chi-square test. All variables that had a p-value of less than 0.25 were included in the multivariate analysis (23). Both forward and backward stepwise variable selection methods were used to obtain a preliminary main-effect model. Only variables that had a p-value of less than 0.05 were selected and subsequently analysed further to obtain the preliminary final model. Using multiple logistic regression (MLR), no significant interaction was found, thus they were excluded from the model. The significance of the model was then tested by applying a likelihood ratio test with the maximum likelihood estimate. Fitness of the model was tested using three different methods; the Hosmer-Lemeshow goodness of fit test, the classification table, and the Receiver Operator Characteristic curve. The MLR analysis was carried out by manually selecting all significant independent variables into the equation. The adjusted odds ratio was estimated with a 95% confidence interval. A p-value of less than 0.05 was considered statistically significant.

This study was registered with the National Medical Research Register (NMRR-19-1323-48026) and received ethical approval from the Medical Ethics Committee, Faculty of Dentistry, University of Malaya [MEC: DF CO1905/0005 (P)]. Permission to conduct the study at the selected schools was obtained from the Ministry of Education Malaysia, state education authority, and the respective school headmasters.

RESULTS

A total of 1260 questionnaires were distributed to randomly selected schoolchildren, who were then requested to pass the survey form to their parents. Out of these, 1047 parents agreed to participate and returned the questionnaire, giving a response rate of 83.1%. However, 125 questionnaires were excluded because more than 20% of the items were not completed.

Most of the participants were mothers (62.5%), of Malay ethnicity (92.8 %), and their median age was 41.1 ± 5.5 years (Table I). Almost three-quarters lived in urban area

Table I: Sociodemographic characteristics of the participants (N=922)

Characteristics	n	%
Age		
Median (SD) = 41.1 (5.5)		
Gender		
Male	346	37.5
Female	576	62.5
Ethnicity	859	93.2
Malay	31	3.4
Chinese	23	2.5
Indian	9	1.0
Others		
Educational level		
No formal education & Primary school	81	8.8
Secondary school	308	33.4
College/University	533	57.8
Total household income		
More than RM12,500 (High income)	71	7.7
RM6,201 - RM12,499 (Middle income)	220	23.9
Less than RM6,200 (Low income)	631	68.4
Locality		
Urban	660	71.6
Rural	262	28.4

(71.6%). Most received college or university education (57.8%), but almost 70% were categorised as having a low-income level. A majority of the participants were aware of the presence of a dental clinic near their home (83.4%). However, despite this, about 56% of them had never visited a dentist in the past 12 months (Table II). Most (64.1%) preferred sending their children to the government dental clinic for dental treatment. About

Table II: Pattern and preference of dental service utilisation and perceived oral health status among parents of 11-year-old schoolchildren (N = 922)

Variables	n	%
Dental clinic (government or private) near their house		
Yes	769	83.4
No	107	11.6
Do not know	46	5.0
Preferred dental clinic for their son/daughter's dental treatment		
Government dental clinic	591	64.1
Private dental clinic	285	30.9
Do not know	46	5.0
Ever visited a dentist for the past 12 months		
Yes	407	44.1
No	515	55.9
Perception of the condition of their teeth		
Poor	37	4.0
Fair	389	42.2
Good	421	45.7
Very good	24	2.6
Do not know	51	5.5
Perception of the condition of their gum		
Poor	19	2.1
Fair	318	34.5
Good	489	53.0
Very good	37	4.0
Do not know	59	6.4

87% perceived that the condition of their teeth or gum were 'fair' or 'good'.

Overall, most participants (76.4%) regarded dental therapists providing care for their children in private settings as acceptable. Figure 2 shows that the most highly acceptable dental procedures (respondents who agreed or completely agreed) were 'seeking advice on oral hygiene care' (87.8%), 'applying topical fluoride gel and paste' (83.2%) and 'to have a simple cavity filled' (79.8%). The least acceptable dental procedures were 'to pull out milk teeth' (62%) and 'to get an injection to make their teeth and gums go numb' (63.9%).

The significant predictors of parental acceptance for dental treatment provided by dental therapists to their children are reported in Table III. It was observed that the younger parents were more likely to accept almost all the dental procedures listed to be rendered by the dental therapists to their children, except for 'seeking advice on oral hygiene care' and 'to have scaling and polishing done'. Parents who had preferences over private dental sectors were more likely to accept four out of the seven dental procedures which include seeking advice on oral hygiene care (OR = 2.42, CI = 1.41,4.13), simple cavity fillings (OR = 1.97, CI = 1.31, 2.95), fissure sealant (OR = 1.58, CI = 1.11,2.24), and topical fluoride gel and paste application (OR = 2.00, CI = 1.30,3.07). Meanwhile, parents from the urban area and of Bumiputera ethnicity were more likely to accept two out of the seven listed dental procedures. When asked on whether, as a whole, they would accept and feel comfortable towards dental therapists providing care to their children, the results show that respondents who were younger (OR = 1.40, CI = 1.62,1.92), lived in urban locality (OR = 1.77, CI = 1.28, 2.45), and had a recent dental visit (OR = 1.51, CI = 1.10, 2.07) were more likely to have an overall positive perceptions, as compared to their counterparts (Table III).

DISCUSSION

This study aimed to assess parental acceptance towards the expansion of the dental therapist's roles in Malaysia, in light of the introduction of the new Dental Act. The main findings revealed that dental therapists providing treatment to children in private settings were regarded as acceptable to the majority of parents. The results are hardly surprising, as dental therapists have been introduced to the community even before Malaysia gained its independence in 1957. The high acceptance

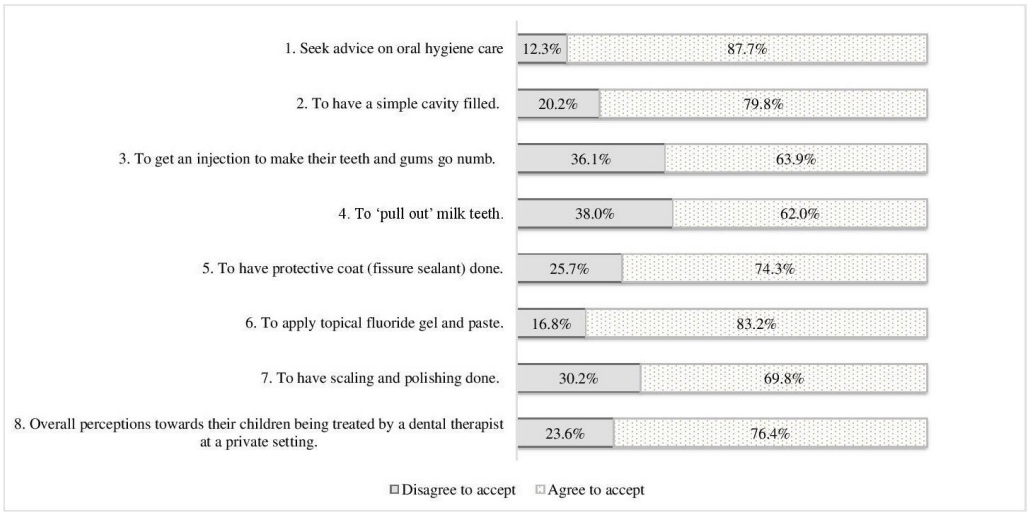

Figure 2: Parental acceptance on the type of dental treatment rendered by the dental therapists in a private dental clinic (N=922)

Table III: Multiple logistic regression findings for the factors associated with the parent's acceptability of care provided by the dental therapist in a private dental clinic towards their child (N = 922)

Dependent variable	Explanatory variables OR [95% confidence interval]							
	Sociodemographic factors				Dental service utilisation factors		Perceived oral health status factors	
	Younger parents	Urban	Mothers	*Bumiputera*	Had visited dentist in the past 12-months	Preferred private dental clinic	Good teeth condition	Good gum condition
Seek advice on oral hygiene care						2.42*** [1.42,4.13]		
To have a simple cavity filled.	1.65** [1.17,2.32]					1.97*** [1.31,2.95]	2.04* [1.07,2.90]	
To get an injection to make their teeth and gums go numb.	1.61*** [1.21,2.14]	2.94*** [2.17-3.98]						
To 'pull out' milk teeth.	1.42** [1.10,1.92]			2.44** [1.10-1.92]				2.83** [1.39,5.78]
To have protective coat [fissure sealant] done.	2.42*** [1.75,3.35]			1.99* [1.10,3.59]		1.58* [1.11,2.24]		
To apply topical fluoride gel and paste.	1.62* [1.12,2.32]					2.00** [1.30,3.07]		
To have scaling and polishing done.		2.18*** [1.60-3.00]	0.01** [0.50,090]					
Their overall perceptions towards having their children being treated by a dental therapist at a private setting.	1.40* [1.62,1.92]	1.77** [1.28-2.45]			1.51* [1.10,2.07]			

***p < 0.001; **p < 0.01; *p < 0.05

Variables tested in the model and not found to be statistically significant with total household income factor.

level reported is possibly due to the participants' personal experiences in receiving care from a dental therapist themselves through school dental services. The possible positive experiences gained may have translated to their willingness to allow dental therapists to provide dental care to their children as well. Past experiences of health care have been shown to be related to future acceptance and satisfaction (24). A high degree of social acceptance on the expanded role of dental therapists has also been observed elsewhere (16,18,20) but the acceptability of dental therapists providing care to children in these studies was nevertheless low.

Participants in this study regarded dental therapists providing both preventive and restorative dental care for their children as highly acceptable. The acceptability of dental therapists rendering invasive clinical procedures, for examples extractions of deciduous teeth and provision of a local anaesthetic, was high at more than 60% each. Ever since dental therapists were introduced to the Malaysian dental workforce, they have been legally allowed to perform invasive dental treatment such as dental fillings, extraction of primary teeth and giving infiltration anaesthesia on children up to 17-years-old. Parents in this study may be familiar with the job scopes of dental therapists, which explain why most of them would accept dental therapist providing invasive treatment to their children. This contradicts studies conducted in the UK (16,17,20) where study participants were concerned with the dental therapists' competencies and qualifications. A review of the global literature on dental therapists have indicated that they are technically competent and are able to operate safely and appropriately within their defined scope of practise (1). Another systematic review conducted by Galloway et al. (25) concluded that although studies included in their analysis were of poor quality and were predominantly published in the 1970s, the positive evidence on the competency of dental auxiliaries were consistent. However, the conclusion was based on a combined assessment of the expanded duty dental assistant, dental hygienist, expanded duty dental hygienist and dental therapist who have different job scopes and training. Nevertheless, studies have confirmed that when dental therapists or auxiliaries are trained on undertaking a wide range of clinical duties for both preventive and restorative care, their performance is comparable to dentists and dental students (1,25).

The poor acceptance towards dental therapists may change through dentists' influence and support (16). Dental therapist who are trusted by dentists to perform specific dental treatment or procedures will be more likely to gain patients' automatic trust and confidence. Nevertheless, as a professional class of health providers, dentists understandably would want to protect their profession from disrepute. Dentists have voiced their fear that dental therapists would be obsessed with power with the expansion in their roles. Under the new Dental Act, all dental therapists need to register annually with the Malaysian Dental Council (4). These regulations will restrain dental therapists from overstepping the boundaries put in place by legislation.

In the multivariate analyses, younger parents and respondents who preferred going to the private dental sectors were more likely to accept dental therapists providing at least four out of seven dental procedures to their children in private settings. The former were also more likely to have an overall positive perception

towards dental therapists. Similarly, a study in the UK reported that their younger participants were more willing to accept their child's teeth being cared for by a dental therapist (17). As younger mothers have been reported to be more likely to use the internet in assessing dental related information (26), they probably have the recent knowledge and awareness towards the availability and professional competencies of the dental therapists. In addition, the young respondents in the current study may still remember their recent encounters with the dental therapists at their schools, which explain the reasons they were more receptive towards the use of dental therapists in the private sector. The younger Malaysian population also have been reported to be dental attendees in private settings (27), and it is not surprising that they were comfortable with the prospect of the dental therapists' new roles. The acceptance of people in the older age group towards the use of auxilliaries in the general health care has not been overwhelming (28). This is probably due to them having an unclear picture about the role and capability of the dental therapists, which consequently restrict access to the dental workforce (17).

Respondents in our study who reported preferences over private sectors were more supportive towards the expansion of dental therapists' roles on children in the private settings. This contradicts with previous studies (16,20) that reported people with public service perceptions were found to be more willing to accept care provided by dental therapists as compared to those who had preferences over private service. The latter were reported to possibly have a standpoint of a consumer who prefers to be treated by a dentist if the cost for treatment is unaltered (16). Acquiring dental care from the private dental settings may meet some people's personal expectations and they may want their children to also experience the same level of care. The availability of private dental clinics offering extended hours of operations and the shorter waiting times for certain dental procedures as compared to the public dental clinics may partly induce parental positive acceptance (29). Furthermore, private service users are, at most times, able to access health care sooner (30), which gives parents some flexibility in arranging dental appointments for their children, a criteria which may be deemed more important than the type of workforce providing dental care.

Parents who lived in the urban areas were two times more accepting of a dental therapist to administer local anaesthesia and performing scaling and prophylaxis as part of curative and preventive dental care; and as a whole, they have indicated that they were comfortable and would accept the idea of a dental therapist providing care for children in the private settings. A study conducted in an urban academic setting in Malaysia reported that patients from the urban area preferred to seek curative and preventive treatment compared to the relief of pain and discomfort (31). The easy accessibility to an abundant number of clinics near their town (32) with adequate public transport facilities in an urban area may have an influence on access to dental services (33,34). Furthermore, people living in cities are more likely to procure dental treatment, in particular restorative work, as they place more weight on the essentialness of getting dental care in comparison with rural dwellers (35). This indirectly should inform private dental practitioners that uncomplicated dental care could be delegated to a mid-level provider while they can focus more on complex dental treatment. In our setting, dental therapist is being introduced to complement and to team up with a dentist in managing the oral health care of the population and they were concentrating on providing care to the schoolchildren at the public sectors. With the newest expansion of the current Act, a dental therapist can serve in the private sector under the supervision of a dentist to increase the accessibility of care and choice of services that can be widely spread across Malaysia.

Most of the proxies who participated in this study were mothers. The finding is consistent with other studies where mothers have been shown to be more responsive to taking part in research, and they play a more critical role than fathers in child development (36,37). However, our findings show that mothers were less likely to accept the new roles of the dental therapists, particularly on them performing scaling and prophylaxis to children in a private dental clinic. Dental fear is one of the barriers found among antenatal mothers in Malaysia in utilising dental services (38) and this could be the reason for the low level of acceptance among mothers in this study.

The high response rate obtained in this study was mostly due to the support given by the class teachers who actively encouraged the parents to fill up and return the questionnaires. Almost three-quarters of the respondents lived in the urban area, and this ratio nearly reflects the population of 11-year-old schoolchildren in Selangor (39). The Malay population was overrepresented in the study compared to other ethnicities. This is probably due to the randomly selected schools in this study being all Malay-medium national schools hence less reflective of the Malaysian population. The survey questions used in this study were developed to obtain information as precisely as possible from the parents as the proxy. However, like any other self-administered surveys, the element of bias may be present as the respondents tend to provide an answer which is favourable to the interviewer's expectations. Despite the limitations, the study successfully obtained a relatively large number of respondents which would increase the validity of the findings.

CONCLUSION

This study demonstrated that most parents in Malaysia accepted the prospects of dental therapists providing

treatment to their children in the private dental settings. Younger parents and those who had preferences over private dental clinics were more likely to accept higher number of dental procedures provided by dental therapists to their children. Having an overall positive perception towards dental therapist was significantly explained by being younger, living in urban areas and having had a recent dental visit. These findings might inform the providers especially private dental practitioners about the employability of dental therapists in their practices and may provide insights into the type of dental treatment that can be incorporated into their team to serve their patients in the future.

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