

Patients' attitude toward diabetes mellitus screening in Thai dental clinics

Chanita Tantipoj

Department of Preventive and Social Medicine, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand and

Department of Advanced General Dentistry, Faculty of Dentistry, Mahidol University, Bangkok, Thailand

Narin Hiransuthikul

Department of Preventive and Social Medicine, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand

Sirirak Supa-amornkul

Mahidol International Dental School, Mahidol University, Bangkok, Thailand

Vitool Lohsoonthorn

Department of Preventive and Social Medicine, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand, and

Siribang-on Piboonniyom Khovidhunkit

Department of Advanced General Dentistry, Faculty of Dentistry, Mahidol University, Bangkok, Thailand

Abstract

Purpose – Diabetes mellitus (DM) is an important health problem throughout the world. Association between DM and oral diseases has been reported and dental clinic is indicated to be one of the suitable venues for the screening of DM. The purpose of this paper is to determine patients' attitude toward DM screening in dental clinics.

Design/methodology/approach – The anonymous, self-administered questionnaires of five-point response scale questions were distributed to convenience samples of adult patients (≥ 25 years) attending one of the dental settings. These dental settings were divided into the university/hospital-based dental clinics (encompassing two university-based and five hospital-based dental clinics) or the private dental clinics (encompassing two private, and one special (after office hour) clinic of a faculty of dentistry). The questions could be categorized into three groups regarding importance, willingness, and agreement of DM screening in dental settings. Results are presented as percentage by respondents based upon the number of responses for each question. The favorable outcomes which were defined as responses of either scale of 4 or 5 were also summarized according to dental settings. The χ^2 test for comparison was used to compare the favorable outcomes between the two settings.

Findings – A total of 601 completed questionnaires were collected; 394 from university/hospital-based dental clinics and 207 from two private clinics and a special (after office hour) clinic of a faculty of dentistry. Overall, the majority of respondents in both university/hospital-based and private practice settings felt that it is important to have a dentist conduct a screening (84.8 vs 79.5 percent). The majority of patients in both groups were willing to receive blood pressure examination (95.0 vs 92.0 percent), weight and height measurements (94.7 vs 94.0 percent), saliva/oral fluid investigation (86.4 and 86.9 percent) and finger-stick blood test (83.8 vs 83.9 percent). More than 75 percent of all respondents agreed with diabetes screening in dental clinics.



Originality/value – The majority of respondents supported the screening of DM in dental settings and they were willing to have a screening test by the dentist. Patient acceptance is an important key to be successful in the screening of DM in dental settings.

Keywords Thailand, Attitude, Screening, Diabetes mellitus, Dental clinic, Dental patient

Paper type Research paper

Introduction

Diabetes mellitus (DM) is a complex, chronic illness requiring continuous medical care with multifactorial risk reduction strategies beyond glycemic control[1]. Early diagnosis, treatment, and accompanying lifestyle changes in diet and physical activity may help to prevent or delay the long-term complications of DM. Globally, 285 million people live with DM and an additional 344 million now have impaired glucose intolerance[2]. If this current rate continues, the number of people with DM will climb to 440 million and the number with impaired glucose intolerance will rise to 472 million by the year 2030[2].

Some studies supported the idea of screening for medical conditions including DM in dental settings. Strauss *et al*[3] found 62.9 percent of dental patients without periodontitis and 93.4 percent of those with periodontitis met ADA guidelines for DM screening. Of those with periodontitis, 60.4 percent had seen a dentist in the past two years. In addition, Glick and Greenberg extracted data from the 1999-2000 National Health Survey (NHANES) and found that adult men aged 40 to 85 years who were unaware of their risk of cardiovascular disease (CVD) had not seen a physician within 12 months but had visited a dentist were at increased risk for developing a severe CVD within 10 years and could benefit from early intervention[4]. Subsequently, this study has shown the utility and potential efficacy of screening for medical conditions in a dental setting[4]. These data suggested that the dental visit provides a potential venue for the screening of medical conditions. More importantly, our previous study conducted in Thailand indicated that 33.8 percent of dental patients aged 25 years old and older who attended the dental settings had hyperglycemia defined as a point-of-care HbA_{1c} of ≥ 5.7 [5]. This emphasized the idea of effective screening for DM in dental settings in Thailand.

Although there were studies that supported the idea of screening for DM in dental setting, some questions remain unanswered. These questions included: Do patients think that it is important for dentists to conduct chair-side screening? Are they willing to be tested in dental clinic by non-medical personnel? and What are the barriers for screening that the dentist may need to concern? The results of survey studies in the USA, UK, and India have demonstrated that screening for medical conditions including DM is important and that the patients were willing to participate in chair-side screening[6-8]. However, evidence supporting the importance, willingness and agreement of Thai patients to be screened for DM in dental settings is still lacking. Therefore, the objective of this study was to determine patients' attitude toward DM screening in Thai dental clinics.

Materials and methods

Study design

This study is a cross-sectional survey study conducted during February to July, 2015.

Participants

The study participant was a convenience sample of dental patients aged ≥ 25 years who have not been informed that they had DM. We chose 25 years old participants according to our previous study which indicated that 33.8 percent of the dental patients aged 25 years old and older were presented with hyperglycemia[5]. Exclusion criteria were patients not being able to read Thai language or not willing to participate in this study. The sample size was determined using Taro Yamane formula[9] at a confidence interval of 95 percent, an acceptance error of 0.05 and 50 percent drop out. Finally, the required sample size was 600 participants.

Study areas

Since Thailand was composed of six parts including the central, the northern, the northeastern, the western, the eastern and the southern parts, we randomly selected only four parts out of these six parts for the study. These four study areas selected were the northern, the northeastern, the southern and the central parts of Thailand.

The study areas, therefore, were two-academic university-based dental clinics of the Faculty of Dentistry, Mahidol University and the Faculty of Dentistry, Chiang Mai University, five provincial hospitals including Chiangrai Prachanukroh Hospital (Chiangrai province), Sermngam Hospital (Lampang province), Maharat Nakhon Ratchasima Hospital (Nakhon Ratchasima province), Khuandon Hospital (Satun province), and Panarae Hospital (Pattani province), two private dental clinics in Samphanthawong Region, Bangkok and Bang Yai Region, Nonthaburi and one special (after office hour) clinic of the Faculty of Dentistry, Mahidol University. These settings were then divided into the university/hospital-based dental clinics and the private clinics.

Questionnaires

The questionnaire was developed following the review of relevant literature. The content validity of the test was evaluated by three selected experts. All questions were agreed upon by experts with the Index of Item Objective Congruence ≥ 0.5 [10]. Then, the questionnaire was piloted among ten convenience samples at the special clinic of the Faculty of Dentistry, Mahidol University. Upon completion of the pilot questionnaire, each participant was interviewed to gain feedback on the overall acceptability of the questionnaire in terms of length and language clarity. Based on this feedback, some of the questionnaire items were refined. Cronbach's α of 0.84 assessed the internal consistency reliability of the test. These coefficients supported the adequacy of the data and the reliability of the instrument. The final questionnaire comprised of Likert-type questions with a five-point response scale ranging from 1, "very unimportant/unwilling, strongly disagree" to 5, "very important/willing, strongly agree."

The questionnaires were sent to each clinic by the researcher (C.T.). Subsequently, they were distributed by research assistants in each setting. All respondents received an explanation regarding the aim of the study and were given a chance to ask questions to clarify any part which they were unclear.

The questionnaire was primarily separated into demographic data of the participants and the questions related to the attitude toward DM screening in dental clinics. The questions related to the screening could be categorized into three groups, including importance, willingness, and agreement. Questions one and two asked about the importance of screening for medical conditions in dental clinic and how important confidentiality, time consumed for screening, and performance by non-medical professional are to the patients. Questions three and four asked about the willingness of the patients and question five asked about agreement whether the patient would agree to receive any screening in the dental clinic.

Finally, 650 patients were invited to participate in the study. Of these, 611 questionnaires were returned, giving a response rate of 94 percent. In total, 10 out of 611 questionnaires were excluded because they were more than 10 percent incomplete or unclear. Ultimately, 601 questionnaires were analyzed.

Statistical analysis

Descriptive statistics were used to report respondents' socio-demographic characteristics. Results are presented as percentages by respondents based upon the number of responses for each question since not all respondents answered all the questions. The mean score was

based on the average of the responses (on a scale of 1 to 5) for each question. The survey results were also summarized according to dental settings (university/hospital-based dental clinics vs private practice) by a favorable outcome which was defined as a response of either scale of 4 or 5. The χ^2 test for comparison was used to compare the favorable outcomes between the two settings. All analyses were completed using STATA (STATA statistical software, version 14.0).

Ethical consideration

This study was approved by the Institutional Review Board of the Faculty of Medicine, Chulalongkorn University (Reference Number: 388/2005), Committee on Human Rights to Human Experimentation of the Faculty of Dentistry/Faculty of Pharmacy, Mahidol University (MU-DT/PY-IRB 2013/010.1902), Ethics Committee of the Maharat Nakhon Ratchasima Hospital and Ethics Committee of the Chiangrai Prachanukroh Hospital. The other hospitals recognized the review of these ethical committees. All respondents signed informed consents which were attached to the questionnaires before they started to participate in this study.

Results

Overall, 601 respondents were included in this study: 394 from the university/hospital-based dental clinics and 207 from private practice. Table I depicts the demographic data of the respondents. The majority of the respondents were female (69.3 percent) and average age was 45 (mean \pm SD: 45.02 \pm 13.96) years old. Approximately one-third of the patients were 25-34 years old in both groups (32.7 vs 28.4 percent). More than half of the respondents had bachelor degree or higher (53.0 percent) and were married (59.8 percent). About a quarter of the respondents worked for government (26.0 percent) and more than half reported no medical illness (52.7 percent).

Comparing the data from the university/hospital-based and the private clinics, it was revealed that education ($p < 0.001$), marital status ($p = 0.001$), occupation ($p = 0.007$), and household income ($p = 0.025$) were significantly different between the two groups.

Table II shows patients' attitude regarding the importance to chair-side DM screening in dental clinics. It is indicated that the vast majority of respondents felt it was very important or somewhat important for the dentist to conduct DM screening during the dental visit (83.0 percent). Among potential barriers specified, most of the respondents felt confidentiality was very important or somewhat important (83.8 percent) followed by the duration of screening (75.3 percent), and fewer respondents thought that it was very or somewhat important that the screening was not done by a medical doctor (61.7 percent).

Table III demonstrates that most respondents would be very willing or somewhat willing to provide the information regarding height and weight (94.5 percent), blood pressure measurement (93.9 percent), saliva sample (86.5 percent), and finger stick blood (83.9 percent) for the screening. However, the more invasive the technique, the less willingness was revealed. The percentage of respondents who answered "not sure" when the finger-stick blood was requested was 10.9 percent compared to 8.9 percent of saliva sample/other oral fluids, 4.0 percent of height and weight and 4.3 percent of blood pressure measurement. In addition, most respondents would like the dentist to conduct DM screening and monitoring that yield immediate results and would be satisfied if the dentist refers them to see the physician for a proper diagnosis and treatment.

Finally, Table IV indicates that most patients (81.4 percent) agreed to have DM screening in the dental clinics.

We further analyzed patients' attitude toward DM screening according to the type of the clinics the patients attended. There were 394 and 207 patients who attended the university/hospital-based dental clinics and private practice clinics, respectively.

Characteristics	Total	Patient group		p-value
		University/hospital-based clinics	Private clinics	
<i>Gender (n = 599)</i>				
Male	184 (30.7)	129 (32.8)	55 (26.7)	0.123
Female	415 (69.3)	264 (67.2)	151 (73.3)	
<i>Age (n = 586)</i>				
25-34	183 (31.2)	126 (32.7)	57 (28.4)	0.515
35-44	114 (19.5)	79 (20.5)	35 (17.4)	
45-54	111 (18.9)	68 (17.7)	43 (21.4)	
55-64	125 (21.3)	80 (20.8)	45 (22.4)	
65-79	53 (9.0)	32 (8.3)	21 (10.5)	
<i>Education (n = 599)</i>				
None and primary education	68 (11.4)	56 (14.3)	12 (5.8)	< 0.001
Secondary education	213 (35.6)	151 (38.5)	62 (30.0)	
Bachelor degree and higher	318 (53.0)	185 (47.2)	133 (64.3)	
<i>Marital status (n = 600)</i>				
Single	195 (32.5)	106 (26.9)	89 (43.0)	< 0.001
Married	359 (59.8)	255 (64.9)	104 (50.2)	
Separated	46 (7.7)	32 (8.1)	14 (6.8)	
<i>Occupation (n = 597)</i>				
No occupation	49 (8.2)	34 (8.7)	15 (7.3)	0.007
Laborer	31 (5.2)	23 (5.9)	8 (3.9)	
Agriculturists	49 (8.2)	39 (10.0)	10 (4.9)	
Government officer	155 (26.0)	110 (28.1)	45 (22.0)	
Private office	87 (14.6)	45 (11.5)	42 (20.5)	
Trader	113 (18.9)	75 (19.1)	38 (18.5)	
Others	113 (18.9)	66 (16.8)	47 (22.9)	
<i>Household income (n = 589)</i>				
Living comfortably	318 (54.0)	193 (50.0)	125 (61.6)	0.025
Coping	237 (40.2)	170 (44.0)	67 (33.0)	
Difficult	34 (5.8)	23 (6.0)	11 (5.4)	
<i>Smoking status (n = 587)</i>				
Never smoke	512 (87.2)	334 (86.8)	178 (88.1)	0.835
Former smoke	43 (7.3)	30 (7.8)	13 (6.4)	
Current smoke	32 (5.5)	21 (5.5)	11 (5.5)	
<i>Medical history (n = 588)</i>				
No	310 (52.7)	207 (53.8)	103 (50.7)	0.485
Yes	278 (47.3)	178 (46.2)	100 (49.3)	

Table I.
Demographic characteristics of all respondents

We also depicted only favorable outcomes including the attitudes of the patients with somewhat/very important, somewhat/very willing, and somewhat/strongly agree to be further analyzed according to the base of the patients. According to Table V, it was found that patients from the university/hospital-based clinics were significantly concerned about the importance of confidentiality, time consumed, and screening not done by the physician more than that of the private clinics. In addition, the number of the patients with the willingness to let the dentist conduct DM monitoring and refer the patients for a consultation with a physician was significantly higher in the university/hospital-based clinics compared to the private clinics.

Discussion

Since there were some studies that encouraged dental care professionals to screen for medical conditions including DM in dental clinics[4, 11], we conducted this study to investigate the patients' attitude toward screening for DM in dental settings. It was found that most patients perceived the importance of the screening, were willing to be screened, and agreed that screening for DM should be applicable in dental clinic.

Questions	Total	Very unimportant n (%)	Somewhat important n (%)	Not sure n (%)	Somewhat important n (%)	Very important n (%)	Mean ± SD
1. How important do you think it is for you that your dentist screens your medical conditions that you are unaware of?	587	6 (1.0)	32 (5.5)	62 (10.6)	217 (37.0)	270 (46.0)	4.21 ± 0.91
2. If your dentist wanted to conduct DM screening during your dental visit, how important are the following to you							
2.1 Confidentiality	578	12 (2.1)	37 (6.4)	45 (7.8)	224 (38.8)	260 (45.0)	4.18 ± 0.97
2.2 Time consumed	564	10 (1.8)	46 (8.2)	83 (14.7)	258 (45.7)	167 (29.6)	3.93 ± 0.96
2.3 Not done by medical doctor	556	12 (2.2)	41 (7.4)	160 (28.8)	192 (34.5)	151 (27.2)	3.77 ± 1.00

Table II. Patients' attitude regarding the importance to chair side DM screening in dental clinic (each question might have different total number of correspondents)

Questions	Total	Very unwilling n (%)	Somewhat unwilling n (%)	Not sure n (%)	Somewhat willing n (%)	Very willing n (%)	Mean ± SD
3. How willing would you be to provide the following samples or information to your dentist for the purpose of screening for select medical conditions?							
3.1 Blood pressure measurement	580	4 (0.7)	6 (1.0)	25 (4.3)	151 (26.0)	394 (67.9)	4.59 ± 0.69
3.2 Height and weight	578	5 (0.9)	4 (0.7)	23 (4.0)	161 (27.9)	385 (66.6)	4.59 ± 0.68
3.3 Saliva sample/other oral fluids	573	14 (2.4)	12 (2.1)	51 (8.9)	179 (31.2)	317 (55.3)	4.35 ± 0.91
3.4 Finger stick blood	576	15 (2.6)	15 (2.6)	63 (10.9)	171 (29.7)	312 (54.2)	4.30 ± 0.95
4. How willing would you be to let a dentist do each of the following during a dental appointment							
4.1 Conduct DM screening that yield immediate results	582	7 (1.2)	10 (1.7)	55 (9.5)	226 (38.8)	284 (48.8)	4.32 ± 0.81
4.2 Conduct DM monitoring that yield immediate results	578	6 (1.0)	12 (2.1)	61 (10.6)	208 (36.0)	291 (50.4)	4.33 ± 0.83
4.3 Refer you for a consultation with a physician	575	5 (0.9)	9 (1.6)	48 (8.4)	188 (32.7)	325 (56.5)	4.42 ± 0.78

Table III. Patients' attitude regarding the willingness to chair side DM screening in dental clinic (each question might have different total number of correspondents)

Questions	Total	Strongly disagree n (%)	Somewhat disagree n (%)	No comment n (%)	Somewhat agree n (%)	Strongly agree n (%)	Mean ± SD
5. Do you agree if there is DM screening in dental clinic?	578	18 (3.1)	27 (4.7)	63 (10.9)	213 (36.9)	257 (44.5)	4.15 ± 1.00

Table IV. Patients' attitude regarding the agreement to chair side DM screening in dental clinic (each question might have different total number of correspondents)

Questions	University/hospital-based clinics	Private clinics	p-value ^a
1. How important it is for you that your dentist screens your medical condition that you are unaware of?	328 (84.8)	159 (79.5)	0.109
2. If your dentist wanted to conduct DM screening during your dental visit, how important are the following to you			
2.1 Confidentiality	326 (86.5)	158 (78.6)	0.015
2.2 Time consumed	295 (80.2)	130 (66.3)	< 0.001
2.3 Not done by medical doctor	238 (65.2)	105 (55.0)	0.018
3. How willing would you be to provide the following samples or information to your dentist for the purpose of screening for select medical conditions?			
3.1 Blood pressure measurement	361 (95.0)	184 (92.0)	0.149
3.2 Height and weight	357 (94.7)	189 (94.0)	0.739
3.3 Saliva sample/other oral fluids	323 (86.4)	173 (86.9)	0.849
3.4 Finger stick blood	316 (83.8)	167 (83.9)	0.975
4. How willing would you be to let a dentist do each of the following during a dental appointment			
4.1 Conduct DM screening that yield immediate results	337 (88.9)	173 (85.2)	0.197
4.2 Conduct DM monitoring that yield immediate results	333 (88.6)	166 (82.2)	0.033
4.3 Refer you for a consultation with a physician	341 (91.2)	172 (85.6)	0.039
5. Do you agree if there is DM screening in dental clinic?	312 (83.7)	158 (77.1)	0.052

Note: ^aSignificant difference at $p < 0.05$

Table V.
Comparison of favorable answers according to type of the clinics

Comparing the data from the university/hospital-based and the private clinics, the respondents in the private clinics were more likely to have higher education. The respondents in the university/hospital-based group were more likely to be agriculturists and government officers, whereas the respondents in the private clinics were more likely to work in the private offices and were government officers. Since in Thailand government officers have some privileges when they go to the university/hospital-based dental clinic, it is expected that the respondents in the university/hospital-based group would be government officers. When the household income between the two groups was compared, respondents in the university/hospital-based dental clinics had to cope with their income more than respondents in the private group.

When the questionnaires were analyzed, 83.0 percent of Thai respondents thought that the screening for medical conditions was somewhat or very important. This might be explained by the fact that some of the dental procedures, especially dental surgery, are affected by systemic conditions. Having undiagnosed DM may affect the wound healing process resulting in delayed wound healing, therefore, this renders screening for DM in dental clinics. Furthermore, some respondents thought that it was very helpful to have screening in dental office since they had no time to go for the regular medical check-up so it would be more convenient if they could have both dental and some items of medical check-up at the same time just like killing two birds with one stone[7]. Since nowadays, most dental clinics have performed blood pressure measurement prior to dental treatment, adding glycemic condition measurement would give even more benefit to the patients and dentists. Comparing this result to a study in the USA, it was found that 94.2 and 76.8 percent of the respondents who attended the outpatient clinics in the New Jersey Dental School or the private dental practices in Newark, New Jersey and Mesa, Arizona, respectively, thought that the screening for medical conditions was somewhat or very important[6]. In another study conducted in India, 84.0 percent of respondents attended five university-based clinics and 77.5 percent from one private clinic perceived the importance of screening for DM in

dental clinic[8]. Additionally, a study in the UK reported that 87.0 percent of patients attending 2 primary care dental clinics and 16 general dental practices in South-West England thought that it was very important that dentists screened patients for medical conditions, such as DM[7]. These data suggested that the majority of dental patients from different parts of the world thought that screening for medical conditions they have not been diagnosed with is important.

After the potential barriers for the screening were examined, most patients thought that confidentiality was important (83.8 percent) followed by time consumed for the screening (73.7 percent) and the least was whether the test was not done by a physician (61.7 percent) (Table II). The communication between dentists and patients may be needed to ensure that the medical condition of the patients should be confidential. Furthermore, the screening usually does not take a long time and can be done during the time the patients are waiting to be seen by the dentists. Most respondents paid least attention to the importance of the procedure not done by the physician because as long as the screening procedure was performed properly and safely, they were satisfied with it. Comparing our data with other study, one previous study also showed that confidentiality was the most important barrier for the screening. The study of Greenberg *et al.*[6], for example, showed that 94.2 percent of university-based and 82.5 percent of private clinic patients felt that confidentiality was most important followed by time (89.6 vs 80.2 percent) and screening was not done by a medical doctor (67.9 vs 51.5 percent).

For this study, comparing the potential barriers between the two groups of respondents, there was a significant difference in the favorable outcomes between the two groups (Table V). Respondents in the university/hospital-based clinics thought that the issues of confidentiality, time consumed, and screening not done by medical doctor were more important compared to the respondents in private practice settings. This might be due to the fact that respondents in the private clinic group were more likely to be educated, worked in the private office and living more comfortably. They might understand the importance of screening better and had more time to spend for the screening compared to the respondents from the university/hospital-based clinics which composed of more respondents who were agriculturists and government officers. Moreover, respondents in the university/hospital-based clinics had lower household income, therefore, they might be more concerned about their time for working rather than spending time for the screening. Similar trend was seen in a study conducted in the USA in that the respondents who attended the dental school thought that confidentiality, time consumed, and screening not done by medical doctor were more important compared to respondents who attended private clinics[6].

The willingness of the respondents was assessed in questions 2 and 3. Most respondents were willing to provide information or samples for the medical screening (93.9 percent for blood pressure measurement; 94.5 percent for height and weight; 86.5 percent for saliva and 83.9 percent for finger-stick blood). However, when the test became more invasive, the respondents were not sure whether they would comply to give the information or samples (Table III). There was a trend in the reduction of willingness when the respondents were asked whether they would be willing to give saliva or blood samples. Especially when the finger-stick blood was requested, more patients replied that they were not sure if they should give the blood or not (10.9 percent). This might be explained by the fact that patients were unsure whether dentists could perform blood check or were able to interpret the blood results or not. Further study may be needed to investigate this issue. Compared with the US survey among patients and practicing general dentists, more patients reported a willingness to provide finger-stick blood samples than dentists reported a willingness to obtain them (77.3 percent among dental clinic patients, 55.9 percent among private practice patients, and 56.0 percent among dentists)[6]. Data among practitioners in New Zealand suggested that they are less willing than US-based practitioners or patients to obtain/provide finger-stick

blood with a 50.0 percent favorable response rate among recent graduates and 25.9 percent favorable response rate among graduates of greater than 20 years[12]. When comparing finger-stick blood to saliva, more patients would be willing to provide saliva than finger-stick blood. Similar trend was also reported in a study in India wherein reduction of willingness was observed when the saliva and blood samples were requested[8].

Most respondents in both groups were also willing to let the dentist conduct DM screening and monitoring that yield immediate results (Table III). In addition, they would also be willing to have the dentists refer them to their physicians if their blood results were abnormal. This is a good sign of patients' willingness since a lot of diseases are preventable if they are diagnosed earlier. In addition, most patients thought if the dental care service referred them to receive health care service, they would not have to contact health care service by themselves and the referral would result in a smoother and easier handling of their cases[13]. When these questions were analyzed in detail, respondents from the private clinics were less willing to let the dentist conduct DM monitoring that yield immediate results and less willing to let the dentist refer them for a consultation. It is possible that respondents who attended the university/hospital-based clinics were familiar with other departments in the university and hospital therefore they might feel more comfortable to be monitored and referred.

In the last question whether respondents would agree if there is DM screening in dental clinic, the majority of respondents agreed with the idea of having screening in the dental setting.

Several limitations of this study were acknowledged. First of all, the lack of randomization due to convenience sampling followed by the lack of assessment regarding the willingness to be screened if they have to pay for the blood exam. In addition, several parts of the country must be assessed since the data retrieved in this study was limited to only two dental faculties, five provincial hospitals, and two private clinics. The policy to screen for these medical conditions should be supported and encouraged for the whole country since the data from this study indicated that most patients were willing and agree that the screening of these medical conditions especially for DM is important and should be available in the dental settings. Further studies regarding attitudes of the dentists should be performed to investigate if the dentist would be willing or agree that screening for medical condition is important. Moreover, whether dentists have the ability to perform such screening is to be further examined.

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Corresponding author

Siribang-on Piboonniyom Khovidhunkit can be contacted at: siribangon.pib@mahidol.edu

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