

Knowledge, attitude, practices, awareness, and confidence (KAPAC) among general dental practitioners on basic periodontal examination (BPE)

Nur Zety Mohd Noh¹, Wan Nur Syamimie Wan Ismail², Wan Nur Izzati Wan Maznan², Sobrina Mohamed Khazin³, Yunita Dewi Ardini⁴

¹Department of Restorative Dentistry (Periodontics Unit), Kulliyah of Dentistry, International Islamic University Malaysia, Kuantan, Pahang, Malaysia

²Kulliyah of Dentistry, International Islamic University Malaysia, Kuantan, Pahang, Malaysia

³Department of Restorative Dentistry (Endodontics Unit), Kulliyah of Dentistry, International Islamic University Malaysia, Kuantan, Pahang, Malaysia

⁴Department of Paediatric Dentistry and Dental Public Health (Paediatric Dentistry Unit), Kulliyah of Dentistry, International Islamic University Malaysia, Kuantan, Pahang, Malaysia

ABSTRACT

Background: General dental practitioners (GDP) are responsible for providing new patients with periodontal screening. However, the knowledge, attitude, practices, awareness, and confidence (KAPAC) of GDP in performing basic periodontal examination (BPE) are still unclear. **Purpose:** This study identified the KAPAC towards performing BPE among GDP. **Methods:** A cross-sectional study was conducted using a self-administered questionnaire, distributed online to Malaysian GDP. The questionnaire consisted of six sections: respondents' demographics, knowledge, attitude, practices, awareness, and confidence in performing BPE. Data were analysed descriptively and Spearman's correlation coefficient test was employed to determine the correlation between knowledge, attitude and practices towards awareness and confidence. **Results:** A total of 137 GDP responded to the questionnaire. Majority of respondents demonstrated good knowledge (73.0%), positive attitude (89.8%) and good practices (75.0%) towards performing BPE. Only 66.4% and 51.8% of respondents had high awareness and confidence, respectively. The knowledge and practices of BPE showed a weak positive correlation ($p < 0.05$) with awareness and confidence in performing BPE, with correlation coefficients ranging from $r = 0.211$ to $r = 0.346$. **Conclusion:** A moderate to good level of KAPAC is found among GDP towards BPE. Patient oral health outcomes would benefit from a greater focus on periodontal screening education and practice. Further emphasis should be placed on the importance of periodontal screenings for patient care.

Keywords: clinical competence; dental examination protocol; KAP; periodontal screening; primary dental care

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Correspondence: Nur Zety Mohd Noh, Department of Restorative Dentistry (Periodontics Unit), Kulliyah of Dentistry, International Islamic University Malaysia, Kuantan Campus, 25200 Kuantan, Pahang, Malaysia. Email: zety_noh@iiu.edu.my

INTRODUCTION

Oral health entails the measures toward ensuring a disease-free oral cavity.¹ The maintenance of oral health is considered the first step in building a healthy lifestyle for the prevention of systemic diseases.² Nevertheless, oral health is greatly influenced by diverse factors including individual attitudes, food habits, environment, social behaviour, and genetic make-up. The changing lifestyle patterns in recent times contribute to the increasing population of people who focus less on good oral hygiene maintenance.³ Improper oral health practices may lead to the accumulation of

plaque and calculus, thereby precipitating issues such as dental caries and periodontal disease. These events further compromise the individual's ability to preserve general well-being. Therefore, a bidirectional association exists between oral and general health.^{4,5}

The connection between oral and general health reflects that both dentists and general practitioners have the responsibility to manage oral health issues.⁶ While dentists are trained professionally to diagnose and treat oral diseases, the knowledge and awareness of general health practitioners regarding oral health examination and management are not well understood. For instance,

previous studies revealed that medical professionals and students lacked good knowledge of issues relating to oral health,⁷ whereas contradicting results were reported in studies conducted in Turkey and Jordan among medical professionals and the general population.^{8,9}

Knowledge, attitude, and practices (KAP) are essential elements in assessing the quality of medical care.^{10,11} Integrating awareness and confidence with KAP (Figure 1) into everyday clinical practice enhances a healthcare provider's effectiveness, enabling them to make a significant impact on patients' lives.^{10,12}

Although it is challenging to prevent, control and eliminate periodontitis, a periodontal screening is an important and necessary procedure to prevent significant and irreversible dental-related problems. Regular periodontal screenings and regular dental examinations are vital to prevent subclinical or undiagnosed periodontal diseases from progressing. General dental practitioners (GDP) conduct periodontal screening and facilitate the identification of early markers of periodontal disease, as well as perform early intervention to prevent the development of severe cases.

As depicted in previous studies, basic periodontal examination (BPE) constitutes a rapid screening procedure for periodontal disease. Generally, BPE is conducted using a WHO probe, which features a 0.5 mm ball tip and a black band located between 3.5 to 5.5 mm. The British Society of Periodontology has outlined five BPE codes, namely codes 0, 1, 2, 3, and 4.¹³ The results of a BPE can assist the GDP in determining the necessary extent of examination, enabling the selection of the most appropriate treatment for the patient. Therefore, by conducting BPE in every new patient, GDP play pivotal roles in periodontal disease prevention and management.

Periodontal disease is highly reported in Malaysia with a prevalence of 94.5% in the adult population,¹⁴ thus imposing a significant economic burden on the healthcare system in

the country.¹⁵ Periodontitis patients in Malaysia require regular supportive periodontal care and therapy to maintain their periodontal health and prevent the recurrence of infection.^{16,17} Previous studies have recognized periodontal screening as a common practice and skill.^{18–21} Additionally, Malaysian studies on BPE have only primarily focused on the frequency of periodontal screening, familiarity of GDP with BPE, and dental students' knowledge and competency in BPE.^{5,22} Therefore, the specific objectives of this study were to assess the level of KAPAC, and the correlation between knowledge, attitude, and practices (KAP) towards awareness and confidence among GDP in Malaysia, as there is still a dearth of information regarding KAPAC of GDP in performing BPE.

MATERIALS AND METHODS

A cross-sectional study was conducted between May 2023 to December 2023 involving general dental practitioners (GDP) in Malaysia. The study population comprised of GDP throughout Malaysia. Ethical approval was obtained from the IIUM Research Ethics Committee (IREC 2023-037) prior to the commencement of the study. The following eligibility criteria were used in recruiting the respondents; 1) Malaysian dentists, 2) dentists registered with the Malaysian Dental Council, and 3) practising dentists in Malaysia. Meanwhile, undergraduate students, Malaysian dentists practising abroad, and dental specialists were excluded. The sample size was calculated using G*power software version 3.1.9.7. With an effect size of 0.3 and 90% of power, the minimum sample size was 109. With the expectation of a 10% non-response rate, the minimum sample size was increased to 120 GDP.

A structured, close-ended, and self-answered questionnaire was adapted from two studies by Idham Abu Hassan et al¹² and Nibali et al²³ as a data collection

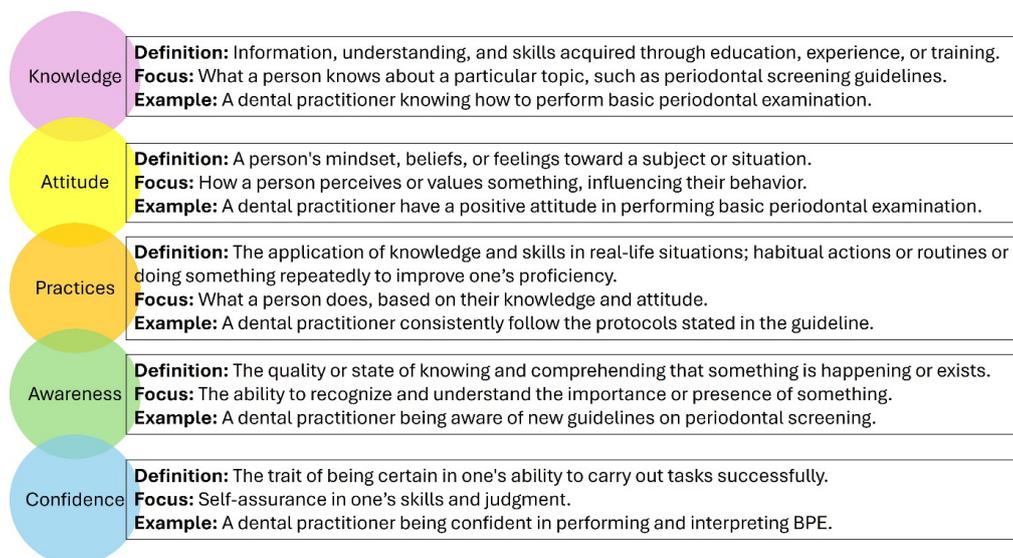


Figure 1. Distinctions between knowledge, attitude, practices, awareness, and confidence.^{10,12}

tool. The questionnaire was modified as necessary to meet the research objectives. The questionnaire covered the following six aspects: respondents' demographics (8 items), knowledge (12 items), attitude (6 items), practices (9 items), awareness (7 items), and confidence (5 items) in performing and interpreting BPE. The items in the questionnaire for knowledge, attitude and practices were presented using multiple choice questions as Yes, No or Not sure options. Meanwhile, items for measuring awareness and confidence level were designed using a five-point Likert scale.

The questionnaire underwent face and content validation to ensure its quality. Face validation, conducted with seven GDP, assessed its feasibility, formatting, readability, and language clarity, achieving 99.5% agreement among evaluators, indicating strong consensus.^{24,25} A scale-level validity index of 0.99 further confirmed its excellent response process evidence, with minor modifications made based on evaluators' feedback. Content validation involved eight periodontists, who verified that the questionnaire effectively addressed the study objectives, resulting in an average content validity index of 0.97.²⁶ Additional minor adjustments were made based on their feedback. The number of evaluators included in the validation were based on recommendations by Yusoff and co-workers.^{25,26}

Test-retest was conducted and distributed to ten GDP within one-week interval to assess the stability and

reliability of the measurement over time. The one-week interval allows for an effective balance between assessing reliability and minimizing potential bias from memory or recent exposure.²⁷ Cronbach's Alpha reliability test was performed, with a value of 0.937 indicating excellent internal consistency. The questionnaire was further modified as necessary. Then, the amended questionnaire was distributed to the participants via Google Forms through dental societies and various online platforms (email, WhatsApp, Facebook, Instagram). Consent of participation was obtained prior to the self-answered questionnaire.

Data were analysed using SPSS software (Version 27.0, IBM, USA). Descriptive analysis was used to summarise the demographic data and to assess the data normality. Spearman's correlation coefficient test was used to determine the correlation between knowledge, attitude and practices (KAP) towards awareness and confidence in performing BPE. A $p < 0.05$ was considered for significant effects.

RESULTS

A total of 137 respondents answered the questionnaire. The age of the respondents ranged between 25 to 42 years old ($SD \pm 3.250$). There were significantly more female respondents (81.0%) compared to males (19.0%). The majority of respondents graduated from local public universities (76.6%), practised in the Ministry of Health (77.4%) and primary dental clinics (89.1%), with a higher proportion working in a workplace located in a suburban area (63.5%). More than half of the respondents had between 6 and 10 years of working experience in dental practice (59.9%). There were 44.5% of respondents who had never referred their periodontal patients to periodontists. Other socio-demographic characteristics are presented in Table 1.

The levels of KAPAC towards performing BPE is depicted in Table 2. It was demonstrated that the respondents

Table 1. General dental practitioners' socio-demographic characteristics (N=137)

Characteristics		n (%)
Age	≤30 years old	45 (32.8)
	31- 45 years old	92 (67.1)
Gender	Male	26 (19.0)
	Female	111 (81.0)
Undergraduate qualification	Local public university	105 (76.6)
	Local private university	7(5.1)
	Foreign university	25 (18.2)
Mode of dental practice	Private practice	20 (14.6)
	Ministry of Defence	5 (3.6)
	Ministry of Higher Education	6 (4.4)
	Ministry of Health	106 (77.4)
Practicing clinic	Primary care clinic	122 (89.1)
	Specialist clinic	15 (10.9)
Area of practicing dentistry	Urban	26 (19.0)
	Suburban	87 (63.5)
	Rural	24 (17.5)
Experience in dental practice (years)	≤5 years	47 (34.3)
	6 - 10 years	82 (59.9)
	11 - 20 years	8 (5.8)
Number of periodontal patients being treated weekly	0 case	4 (2.9)
	≤ 5 cases	44 (32.1)
	6 - 10 cases	38 (27.7)
Number of periodontal referrals to periodontists monthly	≥11 cases	51 (37.2)
	0 case	61 (44.5)
	≤5 cases	70 (51.1)
	≥6 cases	6 (4.4)

Table 2. Levels of knowledge, attitude, practice, awareness, and confidence of respondents in performing and interpreting basic periodontal examination

Domains	Level	n (%)
Knowledge	Good	100 (73.0)
	Poor	37 (27.0)
Attitude	Positive	123 (89.8)
	Negative	14 (10.2)
Practices	Good	90 (75.0)
	Poor	30 (25.0)
Awareness	High	91 (66.4)
	Low	46 (33.6)
Confidence	High	71 (51.8)
	Low	66 (48.2)

Table 3. Responses to questions related to knowledge, attitude, and practices, and their levels towards performing BPE

Knowledge-related questions	Responses, <i>n</i> (%)		
	Correct	Incorrect	Not sure
1. Nabers probe is used to perform BPE.	103 (75.2)	27 (19.7)	7 (5.1)
2. BPE is assessed according to quadrants.	73 (53.3)	64 (46.7)	0 (0.0)
3. BPE is performed on all teeth except at the third molars unless the first and/or second molars are missing.	116 (84.7)	14 (10.2)	7 (5.1)
4. BPE is performed by “walking” the probe around the teeth in the gingival sulcus.	126 (92.0)	11 (8.0)	0 (0.0)
5. The symbol (*) indicates the presence of tooth mobility.	122 (89.1)	9 (6.6)	6 (4.4)
6. BPE can be used around the implant.	52 (38.0)	48 (35.0)	37 (27.0)
7. Code 1 indicates the presence of calculus and overhang restorations.	123 (89.8)	9 (6.6)	5 (3.6)
8. Code 2 indicates the presence of orthodontics brackets close to the gingival margin.	68 (49.6)	56 (40.9)	13 (9.5)
9. Code 3 indicates a probing depth of less than 3.5mm.	115 (83.9)	18 (13.1)	4 (2.9)
10. Code 4 indicates a probing depth of more than 5.5mm.	128 (93.4)	6 (4.4)	3 (2.2)
11. Simplified BPE can be performed on children aged 7 years old.	56 (40.9)	44 (32.1)	37 (27.0)
12. Simplified BPE is performed on index teeth in a mixed dentition.	70 (51.1)	20 (14.6)	47 (34.3)
Attitude-related questions	Responses, <i>n</i> (%)		
	Yes	No	Not sure
1. Do you think BPE is a compulsory examination that you need to perform on new patients?	119 (86.9)	15 (10.9)	3 (2.2)
2. Do you think BPE is an effective tool for periodontal screening?	135 (98.5)	1 (0.7)	1 (0.7)
3. Do you think performing BPE helps in the early detection of periodontal diseases?	136 (99.3)	0 (0.0)	1 (0.7)
4. Do you think BPE is difficult to conduct?	22 (16.1)	110 (80.3)	5 (3.6)
5. Do you think BPE is time-consuming?	72 (52.6)	64 (46.7)	1 (0.7)
6. Do you think performing BPE in adolescents aged 17 years old is necessary?	101 (73.7)	26 (19.0)	10 (7.3)
Practices-related questions	Responses, <i>n</i> (%)		
	Yes	No	Not sure
1. Do you perform BPE in your clinic?	119 (86.9)	18 (13.1)	0 (0.0)
2. Does your clinic have a CPITN or WHO probe?	116 (94.3)	6 (4.9)	1 (0.8)
3. Do you perform BPE on every new patient?	91 (74.0)	31 (25.2)	1 (0.8)
4. Do you perform BPE prior to definitive dental treatment (i.e., orthodontics, prosthodontics, restorative dental treatment)?	86 (69.4)	34 (27.4)	4 (3.2)
5. Do you inform patients about the treatment needed based on the BPE results?	111 (89.5)	9 (7.3)	4 (3.2)
6. Do you perform six-point pocket charting if a patient is presented with BPE codes 3 and/or 4?	48 (38.7)	72 (58.1)	4 (3.2)
7. Do you take appropriate radiographs for sextants with BPE code 3 and/or 4?	36 (29.0)	88 (71.0)	0 (0.0)
8. Do you treat patients with BPE code 3 or 4?	81 (65.3)	40 (32.3)	3 (2.4)
9. Do you provide an appropriate periodontal referral if a patient is presented with BPE code 4?	107 (87.7)	11 (9.0)	4 (3.3)

Table 4. Responses to questions related to awareness and confidence, and their levels towards performing BPE

Awareness-related questions	Responses, <i>n</i> (%)				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. Detecting early signs of periodontal diseases is important as a dentist.	5 (3.6)	0 (0.0)	0 (0.0)	28 (20.4)	104 (76.9)
2. BPE is an essential periodontal disease screening tool for every patient.	5 (3.6)	0 (0.0)	3 (2.2)	28 (20.4)	101 (73.7)
3. BPE plays a crucial role in the planning and management of periodontal disease.	6 (4.4)	0 (0.0)	1 (0.7)	30 (21.9)	100 (73.0)
4. BPE helps provide earlier intervention to periodontal patients.	5 (3.6)	0 (0.0)	2 (1.5)	26 (19.0)	104 (75.9)
5. BPE should be performed prior to definitive dental treatment (orthodontics, prosthodontics, restorative dental treatment).	6 (4.4)	0 (0.0)	12 (8.8)	31 (22.6)	88 (64.2)
6. Simplified BPE is available for children and adolescents.	7 (5.1)	13 (9.5)	44 (32.1)	26 (19.0)	47 (34.3)
7. Other periodontal screening tools available besides BPE.	11 (8.0)	8 (5.8)	49 (35.8)	26 (19.0)	43 (31.4)

Confidence-related questions	Responses, <i>n</i> (%)				
	Not confident at all	Slightly confident	Somewhat confident	Fairly confident	Completely confident
1. Confidence in knowledge of BPE.	1 (0.7)	5 (3.6)	15 (10.9)	74 (54.0)	42 (30.7)
2. Confidence in performing BPE.	1 (0.7)	4 (2.9)	10 (7.3)	63 (46.0)	59 (43.1)
3. Confidence in scoring BPE.	0 (0.0)	6 (4.4)	9 (6.6)	61 (44.5)	61 (44.5)
4. Confidence in interpreting BPE code.	0 (0.0)	6 (4.4)	14 (10.2)	57 (41.6)	60 (43.8)
5. Confidence in deciding on further management for every BPE code	1 (0.7)	5 (3.6)	27 (19.7)	57 (41.6)	47 (34.3)

Table 5. Correlation between knowledge, attitude and practices scores towards awareness and confidence scores of GDP in performing BPE

Attribute	Awareness scores			Confidence scores		
	Mean ± SD	<i>r</i>	<i>p</i>	Mean ± SD	<i>r</i>	<i>p</i>
Knowledge	8.41 ± 2.046	0.211	0.013*	8.41 ± 2.046	0.346	<0.001*
Attitude	4.27 ± 0.743	0.001	0.994	4.27 ± 0.743	-0.169	0.048*
Practice	6.48 ± 1.550	0.274	0.002*	6.48 ± 1.550	0.306	0.001*

SD: standard deviation, *r*: Spearman’s correlation coefficients, **p*<0.05

have good knowledge (73.0%), positive attitude (89.8%), and good practices (75.0%) in performing BPE. For awareness and confidence in performing and interpreting BPE, only 66.4% and 51.8% had high scores respectively. The frequency distribution of questions and responses related to KAPAC are tabulated in Table 3 and 4.

The majority of the respondents correctly answered the knowledge questions regarding the instruments used to perform BPE (question 1), the criteria for performing BPE (questions 2 and 3), and the BPE technique (question 4). However, the majority of the respondents incorrectly answered and were unsure about the use of BPE on implants (question 6) and on children aged 7 years old (question 11). Only 51.1% of respondents correctly answered that simplified BPE is performed on the index teeth in a mixed dentition (question 12; Table 3).

The attitude of the respondents was assessed through six questions. More than 85% of the respondents believed that BPE is an effective tool for periodontal screening and helps to detect early periodontal diseases (questions 1 and 2). However, BPE was considered difficult to conduct by 16.1% of respondents and time-consuming by 52.6% (questions 4 and 5). A total of 73.7% of respondents believed that BPE is necessary for adolescents aged 17 years old (question 6; Table 3).

Concerning practice-related questions, the majority of the respondents (94.3%) own CPITN or WHO probes in their clinics (question 2). However, only 86.9% performed BPE (question 1) and only 74% performed BPE on every new patient (question 3). 69.4% of respondents performed BPE prior to definitive dental treatment (question 4) and the treatment required based on the BPE was informed to the patients by 89.5% of respondents (question 5). Over half (58.1%) of the respondents did not perform six-point pocket charting on patients with BPE code 3 and/or 4 and 71% did not take appropriate radiographs for further investigations (questions 6 and 7). About 65.3% of respondents treat patients with BPE code 3 or 4 (question 8). However, only 87.7% of the respondents provide an appropriate periodontal referral for code 4 patients (question 9; Table 3).

Most of the respondents recognized BPE as a crucial tool for GDP to detect early signs of periodontal disease, assist in treatment planning and management, and provide early intervention to patients (questions 1 to 5). However, only 53.3% of respondents acknowledged simplified BPE for children and adolescents (question 6) and 50.4% were aware that other periodontal screening tools are available besides BPE (question 7; Table 4).

In contrast, about 54% of respondents were fairly confident regarding their BPE knowledge while only 30.7% were completely confident (question 1). Of the respondents, 43.3% were completely confident in performing BPE, with only 0.7% not confident at all (question 2). Among the respondents, 44.5% were completely and fairly confident in scoring BPE, respectively (question 3). BPE was scored and interpreted without any doubt by any of the respondents (question 4). In total, about 34.3% were completely

confident in determining the next course of action for every BPE code (question 5; Table 4).

Respondents' knowledge and practices were positively correlated with awareness and confidence on performing and interpreting BPE ($p < 0.05$). Meanwhile, a weak negative correlation was observed between respondents' attitudes toward confidence in performing BPE ($r = -0.169$, $p = 0.048$) (Table 5).

DISCUSSION

The first objective of the present study was to assess the level of KAPAC of GDP in Malaysia towards performing BPE. It was postulated that GDP should exhibit better knowledge given their profound experience in performing BPE. The present study revealed a high percentage (73%) of GDP with good knowledge on BPE. This finding aligns with the reports from earlier studies in which over 90% of dentists were reported to be knowledgeable in the diagnosis and treatment of chronic periodontitis.²⁰ These results suggest that GDP who have experience may comprehend the knowledge better than those who are just beginning to learn it.⁵

The present study found that GDP had a positive attitude of 89.8%. Only 16.1% of the respondents believed that BPE is difficult to conduct. It is suggested that the difficulty is due to the technique of BPE that the probe needs to be "walked" around the teeth in the gingival sulcus. Since age is a risk factor for periodontal disease and younger children and adolescents can also be affected by periodontitis,²⁸ 73.7% respondents believed it is essential to perform periodontal screening for them. Furthermore, the simplified BPE recommends that periodontal screening be conducted as early as age 7.²⁹

Good BPE practices were reflected among 75% of the respondents in this study, with 86.9% of respondents performing BPE in the clinic, compared to only 10.9% of GDP in Negeri Sembilan and Penang reported in the previous study.²² However, only 74% of respondents in the present study performed BPE on every new patient. Prior reports also documented that 91.0%, 79.7% and 45.0% of dental practitioners in United Kingdom,³⁰ Victoria,¹⁸ and Turkey²⁰ respectively, performed periodontal probing and screening on all new patients. A recent study also reported that approximately 64.0% of GDP were not conducting routine periodontal screenings.³¹ Considering these trends of periodontal screening, active periodontal disease may be undetected, which may lead to a more advanced stage of the disease over time.

The present study also depicted that among the 86.9% of respondents who performed BPE in the clinic, most of them (87.7%) provided appropriate periodontal referrals to patients with BPE code 4. In addition, Bhat et al.³² reported that 78% of dental practitioners in Hubli-Dharwad referred cases for grafting, ridge augmentation, and implant treatment. Meanwhile, 48.7% of respondents

referred patients to periodontists for treating grade II tooth mobility.³³ This emphasizes the role of GDP at the primary clinics as the increasing complexity of periodontal cases requires a referral to periodontists.³⁴

Additionally, the present study demonstrated that two-thirds of the respondents (66.4%) had high awareness of BPE. Besides routine periodontal screenings and examinations, updating oneself about the nature of periodontal diseases, medical and technical facilities available, workload, payment systems, access to auxiliary services, patient records, continuing professional education, and patient expectations are other factors that can influence professional awareness of periodontal diseases.^{35,36} These updates and improved awareness may stem from educational platforms and exposure to training programmes on the current information relating to BPE.

It is notable that only 51.8% of GDP in the present study performed and interpreted BPE with high confidence. While routine periodontal screening is expected to increase competency in patient management, there are contradicting reports in previous studies. For instance, the majority of GDP were confident in diagnosing gingivitis, aggressive or early onset periodontitis, while only a few of them were confident in diagnosing and treating aggressive periodontitis.^{18,31} Differences in the number of patients attended to, level of training, individual competency levels, and availability of facilities and screening tools may influence GDP' confidence in performing BPE.

In order to ascertain the factors that may contribute to the levels of KAPAC among the respondents, correlation analyses were conducted to assess the relationship between knowledge, attitude, and practices (KAP) towards awareness and confidence of GDP in performing BPE. A lack of awareness is a common reason for periodontal treatment failures. According to the KAP health education model, ignorance is the only barrier to making healthy choices.³⁷ Additionally, knowledge directly impacts attitude and practice, while attitudes directly influence actual behaviour.³⁸ The present study revealed a significant positive correlation between knowledge and practices with awareness and confidence. These results suggest that the awareness and confidence of GDP are influenced by their knowledge and practices of BPE. Thus, proper KAP may enhance better awareness and confidence in conducting BPE.

Bhat et al.³² stated that GDP in Hubli-Dharwad examined periodontal status prior to conducting interdisciplinary treatment, followed up on periodontal cases during maintenance and participated in the continuous dental education program on periodontology for better understanding. Their results suggested that GDP in Hubli-Dharwad city possessed sufficient knowledge and an optimistic perspective on periodontal treatment. This event aligns with the present study as 64.2% of respondents were strongly aware that BPE should be conducted before definitive dental treatment, and the procedure was performed by 69.4% of the GDP.

With proper awareness of periodontal health and disease, 89.5% of respondents informed patients about the treatment needed based on the BPE results. It is believed that the knowledge acquired and practices for periodontal screening do affect the awareness of GDP in managing patients. This result also corroborates the finding of earlier studies that confidence increased with knowledge.^{39,40} On the other hand, a negative correlation was observed between the attitude towards BPE and the confidence in performing the procedure. The present finding contradicts the report from a previous study in which having a positive attitude facilitated learning and student confidence.⁴¹

Despite the importance of periodontal screening in patient care, the assessment is often overlooked, thereby resulting in poor assessment of periodontal disease diagnosis and treatment. The prevalence of periodontal disease is expected to increase in the future given the growing population of aged individuals. Hence, the importance of periodontal screening in patient care needs to be emphasised. Addressing the underlying cause of periodontal diseases may assist in improving patients' oral health outcomes via targeted interventions and continuing education initiatives to highlight the significance of periodontal screening. To enhance BPE knowledge and experience, seminars, mini workshops, and hands-on programs can be conducted periodically.

The novelty of this present study lies in the identification of KAPAC on BPE, which has not been investigated in the previous studies. Previous studies primarily investigated on the frequency of performing periodontal examinations and probing, and referral patterns in relation to periodontal screening frequency.¹⁸⁻²¹ Although the minimum sample size was achieved, the main limitation of the study was the difficulty in initially recruiting respondents because of the need for frequent reminders and the nature of online questionnaire distribution. A larger population pool and random sampling are recommended for future studies.

In conclusion, while it is reported that the majority of GDP in the present study perform periodontal screening for their patients, the study reveals a moderate to good level of KAPAC among GDP towards BPE, with room for improvement. A positive correlation exists between knowledge and practice with awareness and confidence in GDP, suggesting that as GDP acquire more knowledge and skills, their awareness and confidence in conducting periodontal examinations increases. It is imperative that more emphasis be placed on the education and practices of periodontal screening among Malaysian dental practitioners in order to improve the KAPAC, as it ultimately contributes to better patient outcomes.

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