THE EXPERIENCES AND CHALLENGES IN REFERRING AND MANAGING PATIENTS IN SPECIALIST PREVENTIVE DENTAL CLINIC IN ALOR SETAR, KEDAH, MALAYSIA

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Abstract
The establishment of a preventive dental clinic in Alor Setar, Kedah, managed by dental public health (DPH) specialists, by the Oral Health Programme, was due to positive findings in the National Oral Health Survey for Adults 2010. The clinic focuses on improving oral health status in Malaysia by targeting high-risk individuals. Since its inception, no assessments have been conducted. This study explored the perception of dental personnel with experience managing the preventive clinic in Alor Setar, Kedah. It also explored the perception of dental personnel with and without experience in referring cases to the clinic. Twenty-three dental personnel working in government dental clinics in Alor Setar, Kedah, and 11 dental personnel managing the clinic were interviewed face-to-face or via phone based on their preferences. The in-depth interviews were conducted using validated semi-structured questionnaires with domain patient management, resources, training, and suggestions. The sessions were digitally recorded before transcribed verbatim and analysed thematically using NVivo software. Eight dental personnel interviewed had experienced referring cases, while 15 admitted not referring due to their poor understanding of the referral criteria and patients' refusal. Identified cases referred include quit smoking and poor oral hygiene cases. Patient's willingness to change and unmanageable cases emerged as factors influencing referral. Clinicians referring cases admit that the preventive clinic improves patient management. The managers, consisting of dentists, DPH specialists, and dental surgery assistants, identified low attendance, lack of referrals, and unfollowed cases as the clinic's challenges. Improvement in oral hygiene and motivation was observed in some patients. Despite the difficulties and barriers encountered in managing and referring patients, there were beneficial improvements observed in patients' oral health habits.

***Keywords**:* Dental Public Health, Preventive Dentistry

Introduction

The term "prevention is better than cure" could best be implied in dentistry as it is known to everyone that preventive management is less expensive than restorative treatment (1). The dental profession embraces the concept that, with early intervention, it is possible to reduce or eliminate future oral diseases (2). Therefore, oral health preventive programmes should be supported as they are needed alongside curative approaches to reduce oral illnesses (1) and thus improve the oral health status of any population by reducing the onset of diseases among the target community (3). To support preventive dentistry, the Oral Health Programme Ministry of Health Malaysia established a preventive dental clinic in 2019, focusing mainly on providing clinical prevention, behavioural modification, health promotions, and tobacco cessation programmes (4). The preventive clinics are known as the Dental Public Health Specialist Unit (DPHSU), as they are managed by a team led by the Dental Public Health (DPH) Specialist. This preventive clinic represents a shift in the

Malaysian DPH specialists' job responsibilities, as previously, DPH specialists were primarily accountable for the managerial and administrative aspects of oral health organisations at the local, state, and national levels (4). However, these changes prove that the DPH speciality plays an important and dynamic role in the current complex oral health care system, parallel to the medical public health speciality (4).

The 2010 National Oral Health Survey of Adults (NOHSA) findings provide insight into the complexity of oral health in Malaysia, which shows that 88.9% of adults in Malaysia had dental caries (treated and untreated), 94% had periodontal disease, 54.1% required dental caries treatment, and 87.2% required periodontal treatment (5). This high percentage of treatment needs indicates a need to increase the population's awareness of the importance of early dental prevention and oral hygiene care. Consequently, the establishment of DPHSU can be viewed as the appropriate course of action at present in an effort to meet this need. As a pilot project, the clinic was set up as a unit in the Dental Specialist Clinic in Alor Setar, Kedah. It focuses on clinical prevention and complements the needs of other specialities in providing preventive and rehabilitative care to their patients (4).

This study used qualitative methods to explore the dentists' and dental specialists' experiences and challenges in referring patients to the Malaysian model preventive dental clinic managed by DPH specialists in Malaysia. It also explores the experiences and challenges of all managers who had experience working in the preventive clinic. Since the establishment of this clinic, no study has been done to evaluate its inception.

Materials and Methods

Data collection

This study included 23 dental clinicians from 13 primary dental clinics and 5 dental specialist clinics in Alor Setar. Dentists and dental specialists with more than two years of working experience and still doing clinical work were included, while full-time dentists who only do managerial work in the clinic were excluded. In-depth interviews were conducted using a validated semi-structured questionnaire (Table 1). A purposive sampling technique was used, where interviews were conducted until saturation was achieved. Saturation was reached when no new theme emerged from the interview.

In-depth interviews were also conducted with 11 clinic managers, including dental surgical assistants (DSAs), dentists and DPH Specialists with experience working at the clinic, were also interviewed using a different set of validated semi-structured questionnaires (Table 2). Due to the status of DPHSU as a newly established unit, a census sampling approach was employed, where all clinic managers were included despite the relatively limited number of participants. DSAs were deemed clinic managers in this study because they manage the clinic, mostly conducting their tasks in treatment rooms, where they deal directly with patients and dentists. The recruitment processes are explained in Figure 1. During the informed consent, participants were told that their participation in the research was voluntary, and they could withdraw at any time if they felt so.

Development of the semi-structured questionnaires

The questionnaires were developed based on 5 phase approaches; the first phase, the method of semi-structured interviews, was considered appropriate for this study as it investigated people's perceptions and opinions (6). Next, the questions were formulated using methodological guidance and input from the team's experienced qualitative researchers. The semi-structured interview guide and questions were developed to comprise core questions linked to the study topics and possible follow-up questions before being validated by two experts and pre-tested by a group of dentists. All interviews were conducted face-to-face or via phone, based on the participants' preferences. Only interviews with DSAs were conducted in Bahasa Melayu, while others were conducted in English. Each interview session was recorded with the participants' permission using a digital voice recorder. The recording was then transcribed verbatim by the researcher and a freelance transcriber. Transcriptions in Bahasa Melayu were translated into English before being analysed.

Data analysis

Thematic analysis was utilised to analyse the qualitative data following the six phases (7). Utilising NVivo Plus, themes and subthemes were discerned.

Table 1: Semi-structured questionnaire used during in-depth interviews with clinician with or without experience in referring patient to DPHSU.

	Main Questions	Probing Questions
1.1	Have you referred a patient to DPHSU before?	Yes (Move to question 1.2-1.7) No (Move to question 1.8)
1.2	What type of referral have you made?	Tobacco cessation? Dietary advice? Behavioural modifications? Others – state
1.3	Why did you refer the patient?	Do you feel that you are not an expert who can give the relevant advice? Did the patient request the referral? Do you think the patient needed an appropriate referral to the DPHS for further dental care?
1.4	Do you think there has been any improvement in your patients after the DPHSU has managed them?	Such as: Improvement in patient's oral hygiene? Does the patient stop smoking? Are the patients more motivated, more compliant, and easier to manage?
1.5	How does it help to improve the management of your patient?	Is your patient more motivated after the referral? Does it improve the oral hygiene of your patient?
1.6	How did you manage the patient before the DPHSU was set up?	Did you manage the patient by yourself?
1.7	Do you have any suggestions to improve the referral process to DPHSU?	
1.8	What are the reasons for not referring your patients?	Is it because there are issues in the referral process? I could handle the patient myself! The patients that I managed did not need any referral. The patients did not want to be referred. Other reasons? Please explain.

Table 2: Semi-structured questionnaire used during in-depth interviews with the clinic managers.

	Main Questions	Probing Questions
1.1	Nyatakan jenis pesakit yang dirujuk ke klinik tersebut. What type of patients has been referred to this unit?	Adakah untuk berhenti merokok? Is it for tobacco cessation? Adakah untuk kaunseling diet? Is it for diet counselling? Adakah untuk modifikasi tingkah laku? Is it for a behavioural modification session? Lain-lain. Sila jelaskan, Others. Please explain
1.2	Nyatakan jenis rawatan yang diberikan kepada pesakit. What type of treatment did you carry out for your patients?	Rawatan pencegahan, Preventive treatment Rawatan berhenti merokok? Is it for tobacco cessation? Modifikasi tingkah laku?, Behavioural modification Lain-lain, Others
1.3	Nyatakan masalah yang dihadapi ketika anda menguruskan / membantu menguruskan pesakit di UPPKA? What are your problems and challenges when managing patients in the DPHSU?	Kekurangan bahan / latihan? Not enough materials / training? Pesakit tidak memberi kerjasama? Patient not cooperating?

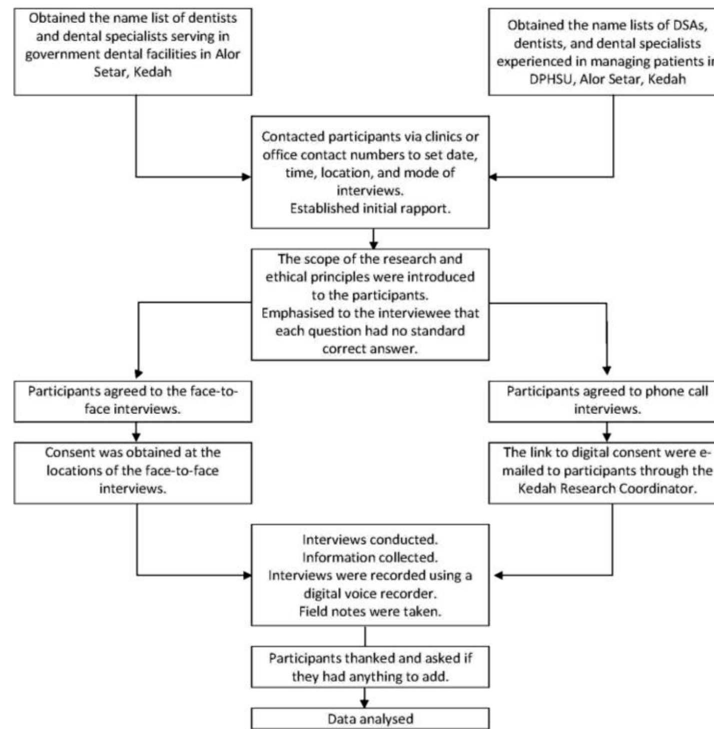

Figure 1: Participant's recruitment process.

Codes were systematically scrutinised and organised into overarching topics, then subdivided into smaller themes based on the study questions. This involved coding in both open and closed formats to identify recurring motifs. Iterative examination and adjustments led to the emergence of new draft themes. A theme coding scheme was devised and independently assessed by two evaluators, contributing to heightened inter-rater reliability. The results of the independent coding assessments were then compared and integrated to formulate a final coding structure, which underwent a review by two assessors (NRY, BAS) with no suggested changes. Member checking was implemented to ensure the data collection process's trustworthiness and credibility.

Results

Characteristics of participants

The 23 clinician interviews involved 13 dentists and 10 dental specialists in government facilities in Alor Setar, Kedah, Malaysia. The 13 dentists represented the 13 primary dental clinics in Alor Setar. In contrast, the ten dental specialists interviewed represented the five specialities operating in the Alor Setar: oral maxillofacial, paediatric dentistry, restorative dentistry, orthodontic and periodontic. Two dental specialists from the speciality listed participated in the interviews. Table 3 showed that of the 23 participants, 8 (34.8%) had experience referring cases to the specialist preventive dental clinic, while 15 (65.2%) did not have such experience. Of 10 dental specialists, 4 had experience referring cases to the clinic, while 6 did not.

Interviews were also conducted with 11 dental personnel in the DPHSU who have experience managing patients. Table 4 describes the details of the clinic managers.

All themes that emerged from the interviews are tabulated in Table 5

Clinicians who never refer

Only 8 of 23 participants had experienced referring cases to the clinic, while 15 never did. The clinicians who never sent patients to DPHSU identified four themes for not referring: patients' refusal, no

patients to be referred, clinicians not understanding the referral criteria, and no time to refer. A dentist from a primary care clinic described that her patients refused to be referred for further management in the DPHSU as they had low awareness of preventative care and preferred curative care. Some patients declined referrals because the DPHSU was too far away from their homes. Patients from remote areas refused to be referred to DPHSU because they expected the appointment at the speciality centre to take longer. No patients to be referred were mentioned by 5 participants as a reason not to refer a case. A clinician from the primary dental clinic said she had no patient who fit the referral criteria stated in the guidelines.

A paediatric dentistry specialist claimed that most of her patients required management in the hospital setting; hence, she had no reason to refer to DPHSU.

"…there are no suitable cases which require referral to the DPH specialist clinic... as I am a paediatric dental specialist, and we treat mostly medically compromised patients. Most of them received multidisciplinary treatment approaches in the hospital base, where they had appointments with the paediatrician and neurologist. So, some of these patients need treatment in hospital-based rather than a non-hospital-based speciality."

Nine participants admitted that they did not understand the referring criteria or the scope of the clinic and hence never referred any patient to the clinic.

"I do not know other patients that can [be] referred to this clinic.".

"I know the existence, but I never refer. I do not know the scope of the clinic."

Busyness was a factor described by clinicians in avoiding referring cases. A dentist blamed her clinic's high number of patients as a deterring factor.

"Frankly speaking, I do not have sufficient time to ask patients and refer them. We have so many patients, and asking [for] further history is impossible because we cannot finish on time if we do that."

Fifteen clinicians without the experience of referring patients were asked how patients who required preventive management were managed. Twelve participants admitted they managed the patients by themselves. Some dentists in primary care attempted to manage patients who intended to quit smoking based on the knowledge they had learned during undergraduate study and referred the patients when they failed.

"With our knowledge, we will enforce their oral hygiene."

"If a patient intends to quit smoking, I will try to conduct the 5A. I will refer if [I] fail."

However, some admitted that they did not take any action on patients who needed to be given preventive treatment.

"We conduct tobacco cessation intervention in the school under the KOTAK programme, but we do not go beyond that because we do not get approval from the children to talk to their parents or inform them. So, we leave [it] as such and will continue the intervention the following year."

Clinicians with referral experience

When clinicians with referral experience were questioned about the patients, they typically referred, a recurring theme was the referral of patients exhibiting both poor oral hygiene and smoking habits.

"I used to refer the adult patients for smoking cessation."

"Most of the cases are related to poor oral hygiene motivation. We had a few patients, and we called them for [a] few visits for oral hygiene motivation, but we did not see any good progress."

Patients' interest in changing their habits was described by 5 clinicians when considering a referral to DPHSU.

"I refer because the patient is interested in undergoing a smoking cessation program."

Specialists in the non-hospital-based setting claimed they were spending too much time managing oral hygiene rather than the treatment they specialised in. Hence, the decision was made to refer patients to DPHSU so that they could focus on giving specialised treatment.

"We do not see any good progress. So, we felt it was taking much of our appointment slots on this oral hygiene issue rather than our active restorative procedure. We also can save our slots rather than spending on oral hygiene instruction all the time, and then we can proceed with our management once the patient has completed the management with DPHSU."

The clinic's location was convenient for the patients as they could attend two appointments on the same day.

"Public health is our neighbour, so it is easier when sometimes the patient comes, and they have both appointments. So, they have [an] appointment with us, and then they will also have [an] appointment with the DPH. So, it is quite a good thing for the patient because they do not have to come at a different time for their appointment, making it easier. So, one day, they can spend their time in the clinic to see us, the orthodontist and the DPH for appointment fillings or oral hygiene reviews."

The themes that emerged when asked about reasons for their referrals to the clinic included "patients showing interest in change," clinicians not spending much time on further management of preventive cases, and the nearby location of DPHSU. Six clinicians stated that before DPHSU existed, they managed patients who needed preventative measures. A clinician said that she was inexperienced when giving patients quit smoking counselling.

"I think I am not pro in giving the quit cessation programme. I only advise the patient to reduce cigarette smoking because of the side effects. I told them that if they do not want to quit smoking, it will affect their periodontal management."

Five clinicians described the referral process to DPHSU as simple and hassle-free, where they can directly contact the dentist in charge and explain the cases they plan to refer.

"We will verbally inform the in-charge officer about our plan to refer [a] case. And then, we will pick up the referral form prepared by the clinic, and the patient will get their appointment from the clinic."

"I will call the clinic, talk to the permanent officer, and present the case. If she said the case is suitable for referral, I would refer it to DPHSU."

Eight participants who had referred patients were questioned about the effects of DPHSU management on their patients, and all participants described the positive impact of the clinic's management on their patients' oral health behaviour. Patients had improved oral hygiene behaviour and were more concerned about oral health.

"There were improvements in oral health condition[s]. The patient's oral hygiene is better compared to the last time. In terms of oral hygiene, plaque score has reduced, and I think there was a huge reduction in the pocket depth."

"When he came over, he was like a different person, and he appreciated his oral health more than before. So, I think there is success in modifying the patient's behaviour."

All clinicians suggested giving dentists awareness to improve referrals. The referral would increase if dentists were given awareness of the referral criteria. *"Increase awareness among dentists and specialists on the criteria to refer.*

"When the new dentist comes for attachment in our state, we should have a short session introduction to the dental specialities in Negeri Kedah. During the orientation, we explained the guidelines, referral criteria, how to refer, what not to, and where to refer."

Besides that, patients should be given awareness of preventive dentistry.

"Maybe give awareness to the patient as the patient only wants treatment and not to be referred to other specialities. Do awareness to the public in the primary care to increase awareness of the clinic."

The clinic's managers

All clinic managers described managing patients with a smoking habit and with poor oral hygiene.

"The periodontic unit referred this patient. The periodontist advised him to stop smoking to improve his gum problem…"

"Most of my patient comes from the ortho unit, as they require oral hygiene management before having

fixed appliances. So, to fulfil the criteria, they must be referred, and we must first manage the oral hygiene part. Then only we can pass it back to them."

Every patient referred was examined and diagnosed on their first visit.

"On the first visit, we usually will do an Examination and Diagnosis. We looked into the patient's mouth and considered their oral hygiene, plaque score assessment, and dental and medical history. It is just like the general approach. I need to do some saliva assessment of saliva properties. For example, we do pH saliva and buffer tests. Then, caries risk assessment, and we also need to do a diet analysis. "

After a thorough examination, the dentist will consult a DPH specialist about the treatment plan.

"I will suggest what kind of treatment we can provide [the] patient. We will discuss this first to give the patient [a] rough idea of his treatment plan. So, there is [a] discussion with the patient, and then we will discuss it with [the] specialists. Sometimes, [the] specialist will alter the treatment plan depending on the last discussion. Normally, the specialist will come and assist us."

However, the dentist would proceed with managing the patient if the DPH specialist were not around to discuss the treatment plan.

"I have some treatment plan that has not been presented or discussed with them yet. However, since we need to spend more time on that, I will start with what I can manage. Maybe the treatment plan will be discussed in [the] next visit. Only then do we rediscuss and try to get the specialist's opinion and approval. So, we do the urgent thing first. I will not wait that long; I will start with whatever I can do."

Eight participants described giving dental health education to patients in the management. Seven participants mentioned conducting smoking cessation, diet counselling, and oral hygiene instructions to the patient.

When discussing the challenges in managing the preventive clinic, the clinic managers described Patient Factors and Operator Factors. Patient factors include 'patients fail to attend DPHSU,' 'patients' low awareness,' and 'low number of cases'.

"Except for a few patients that fail to attend. Usually, when we contact them, they will inform [us] that they want to discontinue the treatment here. It was their choice…"

"He still does not understand the reasons he was referred. Usually, [the] patient referred here does not understand the main purpose why they were referred because, usually, DPHSU does not have active treatment intervention. Usually, it is more like counselling and a maintenance phase like that. The purpose of being referred was not explained clearly. So, the patient [is] usually reluctant to get treatment from the DPH..."

Operator factors were the problems and challenges that arose from the clinic managers' side. These included the clinic managers' busy schedule, inability to follow up with the patients, and lack of training. DPH specialists were working with tight schedules, juggling clinical and administrative work, hence unable to focus on the clinic.

"It is quite challenging. It is quite difficult because it is quite challenging. Because I have administrative work in the office as the Senior Dental Officer, and some meetings need to be attended."

Dentists with visiting status admitted they could not follow up on the same patients due to the roster, where they needed to wait for a few weeks until the following attachment. Hence, they could not see the outcome of the patient they had managed.

"...the officer who attached rotates every five weeks, so sometimes we can follow up our new case, new case patient."

The clinic managers admitted they were untrained in some skills like behavioural management. They also mentioned that a few areas in the clinic's management need clarifications, as it is still new, like the standard tools to measure anxiety and define case completion.

Table 3: Characteristics of participants according to type of speciality and speciality and referral experience

Type of Speciality	Speciality	Number of Participants	Referral Experience	
			Yes (%)	No (%)
Primary Dental Clinic	Primary Care	13	4 (30.7%)	9 (69.3%)
Hospital Based	Oral Maxillofacial	2	0 (0%)	2 (100%)
	Paediatric Dentistry	2	0 (0%)	2 (100%)
Non-Hospital Based	Restorative Dentistry	2	1 (50%)	1 (50%)
	Orthodontic	2	2 (100%)	0 (0%)
	Periodontic	2	1 (50%)	1 (50%)
TOTAL		**23**	**8 (34.8%)**	**15 (65.2%)**

Table 4: Characteristics of Dental personnel with experience managing patients in the preventive clinic

Positions	Number of Participants	Status in DPHSU	
		Permanent	**Visiting**
Dental Public Health Specialist	3	0	3
General Dentists	6	1	5
Dental Surgery Assistants	2	2	0
Total Participants	11	3	8

Table 5: Theme emerged from interviews with clinicians without referral experience

Domain	Theme	Verbatim
Reasons for not referring to DPHSU	Patients' refusal (n=8)	"I think patients' awareness [is] still low. My clinic is a health promotion clinic, and we have [a] preventive team. When they see a patient who smokes, they want to give advice, but the patient still says they do not have time to commit. They [only] come for tooth extraction." (Clinician 13, primary care) "So far, I do not have patients who want to go and [have been] motivated enough to be referred. They say the clinic is quite far." (Clinician 11, primary care) "Patients in the rural areas are not keen to go to [the] specialist clinic. They said it [was] going to take a long time to be referred. Patients are busy and cannot commit." (Clinician 16, primary care)
	No patients to be referred (n=5)	"In the outpatient department, the number of patients that fit the criteria is less. I rarely see patients that need [a] referral to DPHSU in Kota Setar." (Clinician 1, primary care) "…there are no suitable cases which require referral to the dental public health specialist clinic... as I am a paediatric dental specialist, and we treat mostly medically compromised patients. Most of them received multidisciplinary treatment approaches in the hospital base, where they had appointments with the paediatrician and neurologist. So, some of these patients need treatment in hospital-based rather than a non-hospital-based speciality." (Clinician 9, Pediatric Dentistry Specialist Clinic)
	Clinicians Not understanding the referral criteria (n=9)	"I do not know other patients that can [be] referred to this clinic." (Clinician 1, Primary Care) "I know the existence, but I never refer. I do not know the scope of the clinic." (Clinician 15, primary care)
	No time to refer (n=10)	"We do not have time to do anything beyond that now beyond the chief complaint." (Clinician 1, primary care) "Frankly speaking, I do not have sufficient time to ask patients and refer them. We have so many patients, and asking [for] further history is impossible because we cannot finish on time if we do that." (Clinician 13, Primary Care)
How Clinicians Manage The	Manage by themselves (n=12)	"With our knowledge, we will enforce their oral hygiene." (Clinician 7, Oral Maxillofacial) "If a patient intends to quit smoking, I will try to conduct the 5A. I will refer if [I] fail." (Clinician 3, Primary Care)
Patients When They Were Not Referred	Do not do anything (n=2)	"For tobacco cessation we are asked to conduct the session ourselves, but we feel difficult to do it…" (Clinician 1, Primary Care) "We conduct tobacco cessation intervention in the school under the KOTAK program, but we do not go beyond that because we do not get approval from the children to talk to their parents or inform them. So, we leave [it] as such and will continue the intervention the following year." (Clinician 2, Primary Care)

Table 6: Theme emerged from the in-depth interviews conducted on the clinician with referral experience

Domain	Theme	Verbatim
Case referred	Patients with the habit of smoking (n=6)	"I used to refer the adult patients for smoking cessation." (Clinician 18, Primary Care) "Actually, I've referred one patient for smoking cessation clinic…" (Clinician 19, Primary Care)
	Patients with poor oral hygiene (n=3)	"Most of the cases [referred] are related to poor oral hygiene motivation. We had a few patients, and we called them for [a] few visits for oral hygiene motivation, but we did not see any good progress." (Clinician 6, Restorative Dentistry) "The type of patient in my experience that [I] have referred were a patient who had cleft lips and palate patient that need oral motivation, oral hygiene motivation and then also that needs restoration or fillings. And then a quite a few of them that are cleft lips patient have poor oral hygiene. So, by referring to the dental health public specialist, they can review them periodically. And then after when their restoration is done, or their oral hygiene maintain, then they will refer back to me..." (Clinician 10, Orthodontic)
Reasons of referral	Patients interested to change (n=5)	"I refer because the patient is interested in undergoing a smoking cessation program." (Clinician 4, Primary Care) "I referred if the patient is willing to be referred and if they are available on the appointment date." (Clinician 18, Primary Care)
	Spend too much time (n=4)	"We do not see any good progress. So, we felt it was taking much of our appointment slots on this oral hygiene issue rather than our active restorative procedure. We also can save our slots rather than spending on oral hygiene instruction all the time, and then we can proceed with our management once the patient has completed the management with DPHSU." (Clinician 6, Restorative Dentistry "Sometimes we can only spend about a few minutes like a maximum of 15 minutes… because we cannot spend every 15 minutes to do oral hygiene motivation among patients that need braces orthodontic treatment." (Clinician 10, Orthodontic)
	Location of DPHSU (n=3)	"Public health is our neighbour, so it is easier when sometimes the patient comes, and they have both appointments. So, they have [an] appointment with us, and then they will also have [an] appointment with the dental public health. So, it is quite a good thing for the patient because they do not have to come at a different time for their appointment, making it easier. So, one day, they can spend their time in the clinic to see us, the orthodontist and the dental public health for appointment fillings or oral hygiene reviews." (Clinician 10, Orthodontic) "I can always speak to the dental public health officer or specialist, one to one because they are pretty near to us. So, we can directly contact each other anytime compared to primary health care." (Clinician 10, Orthodontic)
Referral process	Easy (n=5)	"We will verbally inform the in-charge officer about our plan to refer [a] case. And then, we will pick up the referral form prepared by the clinic, and the patient will get their appointment from the clinic." (Clinician 6, Restorative Dentistry) "I will call the clinic, talk to the permanent officer, and present the case. If she said the case is suitable for referral, I would refer it to DPHSU." (Clinician 19, Primary Care)
Impact on Patient After Being Managed by DPHSU	Positive Impact (n=6)	"There were improvements in oral health condition[s]. The patient's oral hygiene is better compared to the last time. In terms of oral hygiene, plaque score has reduced, and I think there was a huge reduction in the pocket depth." (Clinician 5, Periodontic) "When he came over, he was like a different person, and he appreciated his oral health more than before. So, I think there is success in modifying the patient's behaviour." (Clinician 6, Restorative Dentistry)

Suggestion to improve the referral	Awareness of the referral criteria to dentist (n=12)	"Increase awareness among dentists and specialists on the criteria to refer." (Clinician 3, Primary Care) "When the new dentist comes for attachment in our state, we should have a short session introduction to the dental specialities in Negeri Kedah. During the orientation, we explained the guidelines, referral criteria, how to refer, what not to, and where to refer." (Clinician 9, Pediatric Dentistry)
	Awareness on preventive to patient (n=3)	"Maybe give awareness to the patient as the patient only wants treatment and not to be referred to other specialities. Do awareness to the public in the primary care to increase awareness of the clinic." (Clinician 11, Primary Care) "... increase more awareness or like we can tackle this problem most of the committee doesn't know that we can actually refer certain cases to the public health. They are more to treatment. Mean not to the prevention part. So, so I think we should increase more awareness on that part. Because most of the committee they only know that when they are in pain. When they have a toothache... They only want to go to dentist just to treat the pain itself..." (Clinician 1, Primary Care)

Table 7: Theme emerged from clinicians who never refer according to domain

Domain	Theme	Verbatim
Managed Cases	Smoking Habit (n=10)	"The periodontic unit referred this patient. The periodontist advised him to stop smoking to improve his gum problem…" (Clinic Manager 11)
		"…the first one is a patient that needs to stop his smoking habit…" (Clinic Manager 2)
	Poor Oral Hygiene (n=9)	"Most of my patient comes from the ortho unit, as they require oral hygiene management before having fixed appliances. So, to fulfil the criteria, they must be referred, and we must first manage the oral hygiene part. Then only we can pass it back to them." (Clinic Manager 11)
		"...And then another one usually is for…to change the habit…oral health habit…[They] usually were referred by orthodontist…" (Clinic Manager 7)
Management Conduct on Patient	Examination & Diagnosis (n=11)	"On the first visit, we usually will do an Examination and Diagnosis. We looked into the patient's mouth and considered their oral hygiene, plaque score assessment, and dental and medical history. It is just like the general approach. I need to do some saliva assessment of saliva properties. For example, we do pH saliva and buffer tests. Then, caries risk assessment, and we also need to do a diet analysis. " (Clinic Manager 7)
		"So… for the first session we usually examined everything. We check [their] plaque score, asked them about their daily diet…" (Clinic Manager 11)

	Present to Specialist (n=7)	"... I will suggest what kind of treatment we can provide [the] patient. We will discuss this first to give the patient [a] rough idea of his treatment plan. So, there is [a] discussion with the patient, and then we will discuss it with [the] specialists. Sometimes, [the] specialist will alter the treatment plan depending on the last discussion. Normally, the specialist will come and assist us." (Clinic Manager 2)
		"... I have some treatment plan that has not been presented or discussed with them yet. However, since we need to spend more time on that, I will start with what I can manage. Maybe the treatment plan will be discussed in [the] next visit. Only then do we rediscuss and try to get the specialist's opinion and approval. So, we do the urgent thing first. I will not wait that long; I will start with whatever I can do." (Clinic Manager 7)
Challenges faced by clinic managers	Patient's Factor (n=11)	"Except for a few patients that fail to attend. Usually, when we contact them, they will inform [us] that they want to discontinue the treatment here. It was their choice…" (Clinic Manager 6)
		".... He still does not understand the reasons he was referred. Usually, [the] patient referred here does not understand the main purpose why they were referred because, usually, DPHSU does not have active treatment intervention. Usually, it is more like counselling and a maintenance phase like that. The purpose of being referred was not explained clearly. So, the patient [is] usually reluctant to get treatment from the DPH..." (Clinic Manager 3)
	Clinic managers' busy schedule (n=3)	"It is quite challenging. It is quite difficult because it is quite challenging. Because I have administrative work in the office as the Senior Dental Officer, and some meetings need to be attended." (Clinic Manager 8)
		"DPH specialist... their commitment is more to the administrative parts... sometimes, [it] can be... quite challenging. because, uh, they sometimes clash with meeting [or] courses... so, to arrange appointments with them, we need to do it carefully…" (Clinic Manager 10)
	Unable to follow up with the patients (n=4)	"...the officer who attached rotates every five weeks, so sometimes we can follow up our new case, new case patient." (Clinic Manager 3)
		"It is difficult for us to see the same patient again. Because we are only doing attachment once a week, every Tuesday, this Tuesday, it might be my turn. And next week, someone else will see the patient." (Clinic Manager 2)

Discussion

The primary barrier to dentists and specialists referring patients to the DPHSU is patients' resistance to such referrals. Research describes that patients' preferences and demands for specific types of care significantly influence the treatment decisions made by practitioners (8). In many cases, patients seek dental care primarily for curative procedures to address immediate issues, such as operative dental care and relief from pain and discomfort. A previous study by Jaafar et al. (9) found that patients often decline referrals for preventive measures, expressing a preference for treatment focused on addressing specific complaints, such as extractions, restorations, or pain management. Therefore, recognising the patient's perspective and preference for immediate relief from dental problems is essential. In light of this, some researchers have suggested the importance of ongoing patient education to emphasise the benefits of preventive measures (10).

Another common barrier to effective referrals was the lack of familiarity among practitioners with the referral criteria and the scope of work at the DPHSU. To address this challenge, ongoing training and education are recommended to promote increased referrals to the clinic. A research conducted on factors affecting referral systems highlights the importance of continuous education for general practitioners to enhance the referral process (11). Additionally, it is vital to prioritise preventive dentistry in education to update dentists' knowledge and attitudes regarding preventive dental care (12). Consequently, educating and training dentists on referral criteria and the referral process can increase referrals and raise awareness of the benefits of preventive dentistry.

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Clinicians encounter various considerations when referring their patients to a DPH specialist. This research reveals that insufficient time for conducting further investigations before initiating a referral process is one of the primary factors inhibiting referrals from clinicians in primary care. The demands of a busy caseload often leave clinicians with limited time for additional assessments and referrals, as they must attend to many patients. This finding aligns with previous research that characterises the referral process as a stressful endeavour, often avoided by clinicians when faced with a heavy workload and numerous other responsibilities (13). It also shows how the primary care in the Ministry of Health acts as the gatekeeper to specialist care, similar to the National Healthcare System, which helps regulate waiting times for secondary care by slowing down the referral rate, which also helps control costs (14).

Many dentists possess basic training skills for tobacco cessation, as tobacco dependence is incorporated into the undergraduate curriculum for dental students (15). Additionally, they may have received training as part of their continuing education. Consequently, in this research, some clinicians in primary care try to assist their patients in quitting smoking. Notably, clinical practice guidelines for tobacco dependence were developed in collaboration with experts from various medical fields in 2003, emphasising the role of practitioners in referrals (15). However, this study reveals that some clinicians acknowledge not taking further action to aid patients in tobacco cessation after their initial encounter. This inaction may stem from their lack of awareness regarding various treatment options for smoking cessation (16).

The findings of this research demonstrate the dependence of patient attendance at the DPHSU on referrals. Therefore, enhancing the referral process's effectiveness can significantly increase the caseload at the DPHSU. Several factors play a pivotal role in determining the effectiveness of referrals, including general practitioners' continuous training and skill development in identifying patients who require referral to DPH specialists (11). Equally crucial is developing and implementing standardised referral guidelines and structural forms (11).

Despite lacking referrals, the DPHSU received cases from primary dental clinics and non-hospital-based specialities, including orthodontics, restorative dentistry, and periodontics. A study conducted on preventive services in a hospital in Saudi (17) underscored the importance of primary care and preventive services. In the study, the researcher described the crucial role of the screening process in primary care, especially in identifying various chronic diseases. This explains why referrals were mainly made from primary care in this research.

A study reveals that referrals from primary care to the preventive clinic predominantly centred around smoking cessation, a phenomenon attributed to the systematic patient recall system within the dental setting (18). Another study conducted in Malaysia concluded that dentists in primary care are typically the first to assess patients, deciding whether to

continue treatment or refer them to specialists (19). Notably, the National Health and Morbidity Survey 2015 Report on Smoking Status Among Malaysian Adults revealed that approximately 22.8% of Malaysians aged 15 years and above were smokers, indicating a high prevalence compared to developed countries like Singapore (16%) and Australia (12.8%) (20). Hence, referring smokers to specialists can enhance tobacco cessation counselling and enable primary care dentists to allocate more time to other patients (21).

In this study, the periodontic and restorative dentistry specialities also encounter patients with smoking habits. Existing evidence highlights smoking cessation's positive impact on periodontal therapy (22) and fixed restorative treatment (23). While most periodontists acknowledge the benefits of quitting smoking with periodontal treatment, they often allocate less than five minutes to counsel patients on smoking behaviour (19). This time constraint is mainly attributed to the extensive time required for focused periodontal therapy (19). Furthermore, the limited time for counselling may stem from the rising prevalence of periodontal disease(5). Studies have demonstrated that personalised tobacco cessation sessions can be highly beneficial, improving the outcomes of nonsurgical periodontal treatment (5).

This research shows that patients referred by the orthodontic and restorative dentistry specialities often presented with poor oral hygiene, necessitating personalised oral hygiene counselling for effective maintenance. Research indicates that maintaining good oral hygiene can be particularly challenging for individuals undergoing orthodontic treatment with fixed appliances (24). Such patients are at a heightened risk of developing severe complications, including enamel demineralisation, gingival inflammation, and dental caries (24). As a result, it is vital for oral hygiene maintenance to be further emphasised in managing fixed prosthesis cases. In contrast, even meticulously crafted and polished fixed prostheses can encounter issues if patients exhibit poor oral hygiene, leading to dental caries and periodontal problems (25).

Another factor contributing to referring patients with smoking habits was the time constraints faced by dentists in managing patients in the primary care units. This finding is supported by a study by Vaithilingam et al. (19) in Malaysia where dentists admitted having limited time to conduct comprehensive smoking counselling due to the limited time that needed to be spent on examining and treating all patients. Therefore, referring patients to the DPHSU is often preferred. Notably, most referrals for smoking cessation to DPHSU occur when patients express a genuine interest in quitting. A study conducted in 2014 described that considering patients' willingness to change during smoking cessation sessions is paramount, as it is a crucial determinant of the session's success (16).

Specialists in this study have expressed concerns about spending excessive time managing patients' oral hygiene when their primary focus should be specialised treatment. A study by Amoo-Achampong et al. (26) investigated the patterns of response to oral hygiene instructions and identified multiple identifiable patterns that could impact the success and longevity of dental treatments. At the same time, there is limited evidence, particularly in the short term, demonstrating that improved knowledge results in enhanced oral health behaviour; more extensive evidence supports the application of psychological behaviour change models to improve oral hygiene and gingival health. Therefore, the complexity of managing preventive maintenance can divert specialists' attention from their specialised clinical treatments. In such cases, it may be more appropriate to consider referrals to the DPHSU, allowing specialists to dedicate their time and expertise to their specialised clinical work.

In this study, the factors leading to referral were clinic location or accessibility, defined as the distance or travel time between the patient's and the dental clinic location (27). The proximity of the DPHSU to the non-hospital-based speciality clinics within the same facility enhances patient access and convenience, particularly for patients referred from these specialities. Additionally, this proximity fosters improved communication among specialists, facilitating case discussions and coordination. Thorsen (28) explains the vital role of effective communication between practitioners and referrers during the referral process. Conversely, when the DPHSU is situated in a different premise, patients from primary care settings may express reluctance to be referred, citing concerns about the time required for travel.

This finding aligns with the results of a local study, which identified an inverse relationship between healthcare utilisation and the distance patients must travel to access healthcare facilities (29). The cases

managed by the clinic managers include patients for tobacco cessation and poor oral hygiene, which is aligned with the scope of services covered by this clinic as aligned in the guideline (30). Although the cases referred seem to be similar to the dental hygienist's scope of work, most of the cases referred needed behavioural alterations which could be complex. Acquiring the expertise to address these complexities involves training and continuous improvement (31). Hence, referring cases to the clinic could improve the patient's behaviour as DPH specialists have been trained to manage such cases. From the interviews, the clinic managers mentioned the need to reduce the number of patients for appointments daily, which could have resulted from a lack of manpower. A report by American Dental reported that the practice's capacity has decreased by an estimated 11% due to staffing constraints (32). Nonetheless, further research has to be done to determine the true aetiology of this issue.

Conclusions

Dentists and dental specialists face several barriers and challenges when referring cases to the Malaysian model preventive dental clinic. These obstacles include a lack of understanding of referral criteria, clinicians having limited time and patients to refer, and patients resisting referrals. Additionally, the low awareness among patients regarding preventive measures impedes operators from making referrals to the Dental Public Health Services Unit (DPHSU). Clinicians experienced in making referrals to the clinic describe the process as "easy," with cases typically involving tobacco cessation and poor oral hygiene. The factors that led to referral were patients' awareness of changing their habits and the operators' spending too much time managing the patients' habits instead of focusing on their specialist treatment. Furthermore, the location of the clinic plays a role in the referral decision. Clinic managers, on the other hand, identify barriers such as patient-related factors, their own busy schedules, and challenges in following up with patients.

Recommendation

This study was conducted in a single site and only investigated the use of the preventive clinic from the perspective of dentists and dental specialists. A study on the utilisation of preventive clinics for chronic diseases recommended that the evaluation of patient utilisation of the clinic could determine the effectiveness of the preventive measures (17). Hence, considering the patient's perspective in future research could improve the study. Other than that, investigating the effectiveness of the DPHSU could make the research more robust.

While it is crucial to acknowledge that some questions used in the interviews were leading and lacked neutrality, potentially introducing bias into the study, it is also important to note that these questions were formulated by two experienced specialists, underwent validation by experts, and was tested.

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Competing interests

The authors declare that they have no competing interests.

Ethical Clearance

The research obtained approval from the Medical Research and Ethics Committee (MREC) and the Ministry of Health Malaysia (MOH), registered under NMRR ID-22-00512-KGO.

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