ORIGINAL ARTICLE

The Factors Influencing Acceptance of Teledentistry by Dentists in the Public Dental Service

Harathi Dorairaja[1,2], Basaruddin Ahmad[1], Azzirawani Ariffin[1], Mohd Zulkarnain Sinor[1], Khuzaimah Kamarazaman[1]

[1] Dental Public Health Unit, School of Dental Sciences, Universiti Sains Malaysia, Health Campus, 16150 Kubang Kerian, Kelantan, Malaysia
[2] Oral Health Programme, Ministry of Health Malaysia, Level 5, Block E10, Federal Government Administrative Centre, 62590 Putrajaya, Malaysia

ABSTRACT

Introduction: The "Virtual Dental Clinic" (VDC), a pilot teledentistry initiative by Malaysia's health ministry during COVID-19, aimed to address limited healthcare access, long waiting times, and clinic congestion while providing safer environments. However, its post-pandemic success is uncertain due to unclear acceptance by Public Dental Service (PDS) dentists. The study aimed to assess the factors influencing the acceptance of teledentistry among PDS dentists. **Materials and Methods:** A cross-sectional study was conducted online in April 2024. Participants were recruited using the chain-referral sampling method by distributing a Google Form link via email and social media to the researchers' professional contacts, who then extended the invitation. After consenting, the participants completed a questionnaire on socio-demographics, knowledge, experience, acceptance, perceived capabilities, usefulness for dental practice and patients, and challenges related to teledentistry. Associations were examined using logistic regression at a 5% significance level. **Results:** The majority of the 562 participants were female (83.3%), general dental practitioners (89.5%), and aged 24-34 years (65.1%). Only 25.4% had prior teledentistry knowledge, and 52.7% accepted it. Teledentistry acceptance was significantly associated with PDS dentists' qualification (OR:0.44), perception of teledentistry's capabilities (OR:1.3), usefulness for practice (OR:1.2) and patients (OR:1.1), and usage challenges (OR:1.3) ($p< 0.05$). **Conclusion:** Malaysian PDS dentists generally accept teledentistry for its potential to strengthen dental service by improving communication, education, accessibility, time management, and reducing healthcare costs but were concerned about setup expenses, application awareness, patient readiness, diagnosis accuracy and data entry errors; addressing these may improve acceptance and ensure teledentistry success in Malaysia.
Malaysian Journal of Medicine and Health Sciences (2026) 22(1): 1-7.doi:10.47836/mjmhs.v22.i1.1513

Keywords: Health technology, Teledentistry, Public dental service, Oral health, Healthcare access

Corresponding Author:
Basaruddin Ahmad, PhD
Email: basaruddin@usm.my
Tel: + 609 - 7675829

INTRODUCTION

Teledentistry involves the use of information technology in communication systems to deliver dental health services (1). It can be applied as a real-time synchronous interaction between a patient and a dentist at different locations via online audio-visual telecommunications or asynchronously, where information is stored and forwarded or accessed by a patient at their convenience (2).

The introduction of teledentistry in the United States in 1989 demonstrated its potential for accessible and affordable dental care (3). This led to its rapid growth in public health, particularly serving underserved communities. Focusing on early detection, timely treatment, dental education, and high-quality care within local communities, teledentistry aimed to address dental care barriers (4). This potential fueled its rapid adoption in countries like Australia, Saudi Arabia, and Rwanda, driven by advancements in communication and health technology (5–7). The COVID-19 pandemic further accelerated the global uptake of teledentistry, especially in Southeast Asia, primarily for online consultations, dental screenings, and patient follow-ups (8,9).

In Malaysia, the Ministry of Health (MoH) introduced a teledentistry initiative trial called Virtual Dental Clinic (VDC) during the COVID-19 pandemic, following limited access to dental services during the movement control order (10). Four (4) dental clinics in the Federal Territory of Kuala Lumpur and Putrajaya were selected for the VDC Proof of Concept (PoC), which commenced in November 2022 and ended in April 2023. Led by public dental officers and dental specialists, the VDC then served as a medium that linked dentists and patients to address emergency dental issues, monitor treatment

progress and provide oral health education (10). This teledentistry service mainly catered to patients who had already received primary or specialist dental treatment and required continuous monitoring (11). The success of teledentistry relied upon the availability of smartphones with digital cameras and cellular network reception that allow effective triage via video consultations without the need for a visit to the clinic and dentist-patient contact (12). Other advantages of teledentistry include improving patients' experience by saving time and money on transportation, reducing clinic congestion, eliminating waiting rooms, and improving access to those from remote areas.

However, the successful implementation of teledentistry initiatives depends on user understanding and acceptance, particularly among dental professionals who are directly involved in delivering the service (13). Currently, a limited understanding of user readiness and acceptance of teledentistry services hinders effective planning of future service provision and curriculum development in this field (14), especially among Malaysian dentists. This study aimed to determine the factors related to capability, usefulness for dental practice and patients, and usage challenges of teledentistry that can influence the acceptance of teledentistry among Malaysian Public Dental Service (PDS) dentists. The findings of this study can enhance our understanding of the challenges faced by PDS dentists, thereby informing the development of effective strategies and plans for nationwide teledentistry implementation in future.

MATERIALS AND METHODS

Ethical approval was obtained from the Ethical Review Board of University Sains Malaysia (Reference No. USM/JEPeM/KK/24010079) and the Malaysian Research and Ethics Committee (Reference No. 24-00387-8QH). A cross-sectional study was carried out on the general and specialist dental practitioners (dentists) who are actively serving in the MoH of Malaysia. Those who were retiring in the year 2024 were excluded. The sample size was calculated based on 71% prevalence of teledentistry acceptance in Mandall et al. (15), at a 95% confidence level and a 5% margin of error; the study required 316 respondents.

A chain-referral sampling method was employed to recruit participants. This efficient approach has the potential to reach a large and geographically dispersed sample relatively quickly, especially when a readily available sampling frame is lacking due to factors like frequent staff changes and decentralized services such as in the MoH. This pragmatic method addressed logistical and data accessibility challenges within the study's time and budget constraints (16).

Data collection was conducted online for three weeks in April 2024. Recruitment was done by distributing the invitations to the researchers' professional contacts via email and social media. The first wave of invitations was sent to the heads of the dental health service administrators, who then extended it to the dentists under their administration throughout the country. Two weeks later, the second wave of invites was sent to another three dentists in all 14 states and federations in the country. The invitation directed the respondents to the Google Form. After providing their consent, the participants completed a five-minute questionnaire which collected information on their background, experience with internet use, and perception towards teledentistry.

The background information included age, gender, qualification (general dental practitioner or dental specialist), work experience and location of practice. Other general information included the time spent on internet use, opinions relating to the suitable type of dental service, previous experience, and knowledge, as well as intention to use teledentistry. The acceptance of teledentistry was assessed by asking, "Would you accept to be part of the teledentistry if it is implemented at your workplace in the future?" The response was recorded as "Yes", "I don't know" or "No". The latter two were combined for analysis as 'No' to dichotomize the variables and lower the accuracy bias.

The perception towards teledentistry was adopted from Chaudhary et al. (17) and underwent face validation by ten dental professionals with minor changes. Only four domains relevant to the present study sample were used. First was the perception of the capability of teledentistry to improve practice, and it was assessed using five items concerning the accuracy of diagnosis, shortening the waiting list, improvement in peer communication, enhancing the guidelines and advice, and providing a safe atmosphere for practising dentistry. Second, the perception of the usefulness of teledentistry for a dental practice was assessed using five items concerning enhancement to clinical training and education, expenses for a dental practice, length of treatment time, start-up expenses, and provision of accurate diagnostic information.

Third, the perception of the usefulness of teledentistry for patients was assessed using seven items relating to cost savings, dentist-patient communication, patient education, avoiding unnecessary travel to the clinic, monitoring of patient condition, convenience, and usefulness for remotely residing patients. Lastly, the perception of the challenges in using teledentistry was assessed using five items relating to patient privacy, trust in teledentistry equipment, difficulty in using teledentistry equipment, data entry mistakes, and the lack of awareness of teledentistry benefits and applications.

The responses to these questions were recorded as "Agree" (Score = 0), "Neutral", or "Disagree", and the

latter two were re-categorised as "Disagree" (Score = 1) to derive dichotomous variables for analysis and lower the accuracy bias. Additional measures (scores) were derived for each domain section by adding the scores of the responses, and they were used as a continuous outcome with larger values indicating a greater agreement.

Statistical Analysis

Data from the Google form was downloaded as an Excel sheet and then exported to spv file for analysis. Descriptive analysis was performed to obtain the summary statistics of the variables. Logistic regression analysis was used to test the association between acceptance of teledentistry and each item in the domains (Tables II, III, IV and V) and also each domain (knowledge, experience, capability of teledentistry, usefulness of teledentistry for dental practice, usefulness of teledentistry for patients and challenges in using teledentistry). Multivariate logistic regression using backward modelling was used to determine the domains (scores) associated with acceptance of teledentistry. Analysis was carried out in IBM SPSS Statistics for Windows, Version 27.0. Armonk, NY: IBM Corp and statistical significance was set at 5%.

RESULTS

From 562 dentists who participated, the majority were females (83.3%), general dental practitioners (89.5%), aged 24 to 34 years (65.1%), and had one to five years of working experience (40.6%) in the MoH, Malaysia (Table I). Most participants perceived teledentistry as suitable mainly for Dental Public Health (82.7%), followed by primary dental care (58.5%). Only 25.4% of participants had prior knowledge of teledentistry, and 52.7% were willing to be part of teledentistry if it were to be implemented.

Table I: Summary statistics of the respondent's characteristics (n = 562). (CONT.)

Respondent's Characteristics		Frequency (%)
Sociodemographic		
Age	24–34	366 (65.1)
	35–44	162 (28.8)
	45–59	34(6.1)
Gender	Female	468 (83.3)
	Male	94 (16.7)
Qualification	General dentist	503 (89.5)
	Dental specialists	59 (10.5)
Work experience	1-5 years	228 (40.6)
	6–10 years	181 (32.2)
	11–15 years	105 (18.7)
	>16 years	48 (8.5)
Job relevance		
Work location	Major city/Urban	301 (53.6)
	Remote area/Rural	261 (46.4)
Daily use of the Internet (hours)	<1-4	190 (33.8)
	>4-10	292 (52.0)
	>10	80 (14.2)

CONTINUE

Table I: Summary statistics of the respondent's characteristics (n = 562)

Respondent's Characteristics			Frequency (%)
Sociodemographic			
Type of dental service suitable for teledentistry	Dental Public Health		465 (82.7)
	Primary Dental Care		329 (58.5)
	Oral Pathology and Oral Medicine		182 (32.4)
	Special Care Dentistry		151 (26.9)
	Paediatric Dentistry		118 (21.0)
	Orthodontics		97 (17.3)
	Periodontics		88 (15.7)
	Oral and Maxillofacial Surgery		87 (15.5)
	Restorative Dentistry		87 (15.5)
	Forensic Dentistry		74 (13.2)
Knowledge			
Knowledge on teledentistry	No		419 (74.6)
	Yes		143 (25.4)
Experience with teledentistry		**(n=20)**	
Previous experience	No		542 (96.4)
	Yes		20 (3.6)
Perception about the purpose		Review	14 (70.0)
		Oral health education	13 (65.0)
		Consultation	10 (50.0)
Best platform		Google Meet	16 (80.0)
		Others	4 (20.0)
Acceptance of teledentistry	Yes		296 (52.7)
	No		266 (47.3)

Only a small proportion of dentists in the PDS agreed that teledentistry can provide accurate clinical diagnosis (12.3%) and a greater proportion of them accepted teledentistry (17.2%) (Table II). The acceptance is associated with greater odds of perceiving the capability of teledentistry to provide an accurate diagnosis, shorten the waiting list, enhance guidelines and advice, improve the interaction between peers, and provide a safe atmosphere for practising dentistry ($p<0.001$).

Table II: The association between the capability of teledentistry to improve practice and acceptance

	Acceptance Frequency (%)		Crude Odds Ratio	95% CI (Lower, Upper)	p-value
	Yes (n=296)	No (n=266)			
Provide accurate diagnosis [Yes, n = 69 (12.3%)][a]	51 (17.2)	18 (6.8)	2.9	(1.63,5.05)	<0.001
Shorten the waiting list [Yes, n = 368 (65.5%)][a]	232 (78.4)	136 (51.1)	3.5	(2.40,5.00)	<0.001
Enhance guidelines and advice [Yes, n = 365 (64.9%)][a]	235 (79.4)	130 (48.9)	4.0	(2.78,5.84)	<0.001
Improve interaction between peers [Yes, n = 318 (56.6%)][a]	205 (69.3)	113 (42.5)	3.1	(2.16,4.31)	<0.001
Provide a safe atmosphere for practising dentistry [Yes, n = 368 (65.5%)][a]	263 (88.9)	167 (62.8)	3.5	(2.40,5.00)	<0.001

[a]number and percentage of participants who responded "Agree"

Very few participants perceived that teledentistry could provide adequate diagnostic information (19.2%) (Table III). Teledentistry acceptance was also associated with greater odds of perceiving the usefulness of teledentistry in enhancing clinical training and education, reducing costs for a dental practice, setting up expenses, and providing accurate diagnostic information (p<0.05).

Table III: The association between the usefulness of teledentistry for dental practice and acceptance

	Acceptance Frequency (%)		Crude Odds Ratio	95% CI (Lower, Upper)	p-value
	Yes (n=296)	No (n=266)			
Enhance clinical training and education [Yes, n = 330 (58.7%)][a]	212 (71.6)	118 (44.4)	3.2	(2.23,4.49)	<0.001
Reduce costs for dental practice [Yes, n = 335 (59.6%)][a]	215 (72.6)	120 (45.1)	3.2	(2.27,4.59)	<0.001
Increase patient treatment time [Yes, n = 356 (63.3%)][a]	184 (62.2)	172 (64.7)	0.9	(0.64,1.27)	0.5
Too expensive to setup [Yes, n = 402 (71.5%)][a]	224 (75.7)	178 (66.9)	1.5	(1.06,2.22)	0.02
Provide adequate diagnostic information [Yes, n = 108 (19.2%)][a]	74 (25.0)	34 (12.8)	2.3	(1.46,3.55)	<0.001

[a]number and percentage of participants who responded "Agree"

The study participants also perceived teledentistry as useful for patients but lacked confidence in it being convenient and well-received by patients (42.3%) (Table IV). The acceptance was associated with greater odds of lowering the treatment cost, improving dentist-patient communication, patient education and monitoring, preventing unnecessary travel to the dental clinic, providing convenient service for patients, and catering to the needs of remotely located patients (p<0.001).

Table IV: The association between the usefulness of teledentistry for patients and acceptance

	Acceptance Frequency (%)		Crude Odds Ratio	95% CI (Lower, Upper)	p-value
	Yes (n=296)	No (n=266)			
Lower patient's cost [Yes, n = 367 (65.3%)][a]	233 (78.7)	134 (50.4)	3.6	(2.52,5.26)	<0.001
Improve dentist-patient communication [Yes, n = 304 (54.1%)][a]	187 (63.2)	117 (44.0)	2.2	(1.56,3.06)	<0.001
Patient education [Yes, n = 475 (84.5%)][a]	270 (91.2)	205(77.1)	3.1	(1.89,5.06)	<0.001
Prevent unnecessary travel to the dental clinic [Yes, n = 469 (83.5%)][a]	273 (92.2)	196 (73.7)	4.2	(2.56,7.03)	<0.001
Monitoring the patient's condition [Yes, n = 398 (70.8%)][a]	244 (82.4)	154 (57.9)	3.4	(2.32,5.02)	<0.001
Convenient and well-received by patients [Yes, n = 238 (42.3%)][a]	170 (57.4)	68 (25.6)	3.9	(2.74,5.63)	<0.001
Useful for patients in remote areas [Yes, n = 323 (57.5%)][a]	197 (66.6)	126 (47.4)	2.2	(1.57,3.11)	<0.001

[a]number and percentage of participants who responded "Agree"

Additionally, most participants did not perceive teledentistry to be challenging to use, but there were concerns regarding data entry mistakes (56.0%), lack of awareness about the benefit of teledentistry and its application as a barrier (76.3%) (Table V). Accepting teledentistry is associated with lower odds of perceiving it as violating patient privacy, making data entry mistakes, lacking trust and having difficulty using the equipment (p<0.05).

Table V: The association between the challenges of using teledentistry and acceptance

	Acceptance Frequency (%)		Crude Odds Ratio	95% CI (Lower, Upper)	p-value
	Yes (n=296)	No (n=266)			
Violation of the patient's privacy [Yes, n = 140 (24.9%)][a]	63 (21.3)	77 (28.9)	0.7	(0.45, 0.98)	0.04
Data entry mistakes [Yes, n = 315 (56.0%)][a]	148 (50.0)	167 (62.8)	0.6	(0.42, 0.83)	0.002
Cannot trust teledentistry equipment [Yes, n = 106 (18.9%)][a]	34 (11.5)	72 (27.1)	0.4	(0.22,0.55)	<0.001
Difficult to use teledentistry equipment [Yes, n = 74 (13.2%)][a]	22 (7.4)	52 (19.5)	0.3	(0.20,0.56)	<0.001
Lack of awareness of teledentistry benefits and applications [Yes, n = 429 (76.3%)][a]	234 (79.1)	195 (73.3)	1.4	(0.93,2.03)	0.1

[a]number and percentage of participants who responded "Agree"

In this study, using the scores, the bivariate logistic regression analysis showed that acceptance was associated with all four domains of perception of teledentistry, qualification, age and knowledge (p<0.01). The multivariate analysis showed that the perceived capabilities, usefulness for dental practice, usefulness for patients, challenges in using teledentistry and dentists' qualification remained significantly associated with the acceptance of teledentistry after adjusting for the other two factors (Table VI).

Table VI: Factors associated with the acceptance of teledentistry among dentists in public dental service

Variables	Mean (SD)	Bivariate Logistic Regression			Multivariate Logistic Regression		
		Crude Odds Ratio	95% CI (Lower, Upper)	p-value	Adj. Odds Ratio	95% CI (Lower, Upper)	p-value
Capability	2.95 (2.11)	1.7	(1.483, 1.839)	<0.001	1.3	(1.166, 1.533)	<0.001
Usefulness for Dental Practice	4.44 (1.85)	1.6	(1.455, 1.829)	<0.001	1.2	(1.070, 1.400)	<0.01
Usefulness for Patient	3.09 (2.73)	1.4	(1.307, 1.533)	<0.001	1.1	(1.030, 1.256)	0.01
Challenges in using teledentistry	5.80 (2.14)	1.4	(1.310, 1.579)	<0.001	1.3	(1.157, 1.437)	<0.001
Qualification		0.5	(0.252, 0.807)	<0.01	0.5	(0.201, 0.998)	<0.05
Knowledge on VDC		2.0	(1.335, 2.933)	<0.001	1.4	(0.868, 2.285)	0.2
Age		0.7	(0.505, 0.886)	<0.01	1.0	(0.646, 1.472)	0.9
Gender		1.5	(0.940, 2.319)	0.1			
Work experience		0.9	(0.714, 1.010)	0.1			
Location of the main job		0.8	(0.596, 1,158)	0.3			
Daily general-purpose use of the Internet (in hours)		0.9	(0.708, 1.166)	0.5			
Experience with the teledentistry		2.2	(0.815, 5.681)	0.1			

DISCUSSION

This study found that the majority of dentists in the public service in Malaysia are willing to accept the implementation of teledentistry and the acceptance is associated with the PDS dentist's qualification, perception of its capability to improve service, usefulness for dental practice and patients, and anticipated challenges.

Replacing the physical presence of a patient at a clinic with a teledentistry can benefit both the patients and service providers (4,5,9,17). The finding from this study showed that dentists in the PDS agreed that teledentistry would be advantageous for the patients through reduction of waiting time at the clinic before being attended to by the dentist for consultation, post-operative review and oral health education. It also helps avoid unnecessary travel and its hassles, save on the travelling cost and time, particularly for patients residing in remote areas where access to healthcare is an issue (18).

With fewer attendees at the clinics, the cost of operation will decline, for example, following the reduction in the need for sterilization of instruments (19). Teledentistry also allows for multi-participant conferencing to discuss cases, thus enhancing collaboration between health professionals, improving patient interaction, and facilitating prompt and well-informed treatment decisions (17). Additionally, there are opportunities for international collaborations that will enable access to new techniques, treatment plans, or advice from experts in the field. The skills and knowledge gained through these interactions are essential for educating patients and continuous professional development of the dentists themselves (5).

The participants also perceived that teledentistry helps in providing a safer atmosphere with lower risks of cross-infection between patients and dental teams (20) and better quality of treatment through longer clinical treatment time for those with a need for physical interventions. With less pressure to shorten an appointment, the counselling time, dentist-patient communication and monitoring of the treatment progress would also improve (21).

Nevertheless, there are areas of concern that need addressing. The capability of teledentistry is limited in providing an accurate diagnosis, which can be influenced by multiple factors such as the quality of equipment to provide high-resolution images (22), the nature of the oral condition itself (15,23) for example, in identifying dental caries which are more accurately diagnosed due to their distinctive discolouration and enamel breakdown (24) and the level of teledentistry diagnostic training for the dentists (6,25). The inability to perform tactile assessments (26) to confirm a diagnosis also means the patient will eventually have to attend physically (27). This could explain the scepticism of the participants in this study, who felt that teledentistry would be an inconvenience and not be well received by some patients, particularly those with low digital literacy and older adults (17) due to the inability to quickly adapt to the technological advancements (28). These could explain the limited practices of online consultation, oral health education, reviews and post-operative follow-ups in a population (11).

One concern of the participants is the expensive setting up cost of teledentistry, which includes the cost of administration, equipment, network, application platform, and types of service provided; however, the use of telescreens, inexpensive smartphones and laptops, and free platforms such as Google Meet can make the practice affordable (10,29). Poor acceptance and resistance to integrating teledentistry as part of

oral healthcare can be due to the lack of awareness of its benefits (5,17), confusion related to subpar literacy in information technology and unfamiliarity with the user interface (30). Therefore, initial training and familiarization of dental personnel are strongly recommended to ensure effective use of teledentistry (31).

To ensure the sustainable adoption of teledentistry in Malaysia, a multi-pronged approach is needed to address the concerns of the study participants, such as increasing awareness through talks, campaigns, and training workshops to increase their understanding and confidence (19) and adopting user-friendly applications that are easy to use (19,30). The managers should select a reliable online meeting application with a stable and high-speed internet network to ensure seamless communication with patients and reduce operational errors and glitches (6). Future efforts should focus on incorporating teledental service training into dental education, establishing clear policies for integrating teledentistry within healthcare systems and conducting research to optimise its use, especially in underserved rural areas (7).

The cross-sectional study design limits the interpretations of the association analysis; the factors may not be the cause for accepting teledentistry in the population. The chain-referral method may not represent the whole public dental services workforce and may introduce non-response bias during recruitment, particularly among individuals who declined participation or were unreachable, and limit the generalizability of the findings. Efforts to minimise non-response bias have been taken by recruiting the samples using two waves with different key informant chain links, the top-down and across-the-board.

This study is the first to report on the perception of public dentists in Malaysia that can be useful to policymakers in planning a teledentistry service in the country.

CONCLUSION

Malaysian dentists in the public service, in general, recognise the potential of introducing teledentistry as part of dental practice. Their acceptance is influenced by the perception that the service is capable of improving the quality-of-service delivery and is useful to both dentists and patients. Their sceptics indicate the need for early preparation and intervention to improve readiness and ensure a successful implementation of teledentistry service in the country.

REFERENCES

1. Russell Sass. Teledentistry update: Navigating teledentistry during the COVID-19 pandemic (United States) [Internet]. 2020 [cited 2023 Oct 25]. Available from: https://www.dlapiper.com/en/insights/publications/2020/03/teledentistry-update-navigating-teledentistry-during-the-covid-19-pandemic
2. Singh M, Jamwal M. Teledentistry: Role, Scope, and Future Ahead. CHRISMED Journal of Health and Research. 2021;8:139. doi:10.4103/cjhr.cjhr_88_21.
3. Chen JW, Hob-Dell MH, Dunn K, Johnson KA, Zhang J. Teledentistry and its use in dental education. Journal of the American Dental Association. 2003;134. doi:10.14219/jada.archive.2003.0164.
4. Nichols K. Teledentistry Overview: United States of America. J Int Soc Telemed eHealth. 2019;7. doi: 10.29086/jisfteh.7.e9
5. Estai M, Kruger E, Tennant M. Perceptions of Australian dental practitioners about using telemedicine in dental practice. Br Dent J. 2016;220:25–9. doi:10.1038/sj.bdj.2016.25.
6. Al-Khalifa KS, AlSheikh R. Teledentistry awareness among dental professionals in Saudi Arabia. PLoS One. 2020;15. doi:10.1371/journal.pone.0240825.
7. Murererehe J, Uwambaye P, Isyagi M, Nyandwi T, Njunwa K. Knowledge, attitude and practices of dental professionals in Rwanda towards the benefits and applications of teledentistry. Rwanda Journal. 2017;4:39. doi:10.4314/rj.v4i1.6f.
8. Marya A, Venugopal A, Karobari MI, Messina P, Scardina GA, Subramanian AK. The Exponential Rise of Teledentistry and Patient-Oriented Protective Measures in Southeast Asian Dental Clinics: Concerns, Benefits, and Challenges. Int J Dent. Hindawi Limited; 2021. p. 1–6. doi:10.1155/2021/9963329.
9. Soegyanto AI, Wimardhani YS, Maharani DA, Tennant M. Indonesian Dentists' Perception of the Use of Teledentistry. Int Dent J. 2022;72. doi:10.1016/j.identj.2022.04.001.
10. Oral Health Programme. Annual Report 2022 [Internet]. Putrajaya: Ministry of Health Malaysia; 2023 [cited 2023 Nov 23]. Available from: hhttps://hq.moh.gov.my/ohp/images/pdf/1.-penerbitan-utama/annual_rpt/annual_rpt22.pdf
11. Oral Health Programme M of HM. Garis Panduan Pelaksanaan Klinik Pergigian Virtual (KPV) Kementerian Kesihatan Malaysia (KKM) Menggunakan Perkhidmatan Video Conference (VC) Melalui Google Meet. Putrajaya: Ministry of Health Malaysia; 2022.
12. Talla PK, Levin L, Glogauer M, Cable C, Allison PJ. Delivering dental care as we emerge from the initial phase of the COVID-19 pandemic: teledentistry and face-to-face consultations in a new clinical world. Quintessence Int. 2020;51. doi:10.3290/j.qi.a44920.
13. Broens THF, Huis in't Veld RMHA, Vollenbroek-Hutten MMR, Hermens HJ, van Halteren

AT, Nieuwenhuis LJM. Determinants of successful telemedicine implementations: A literature study. J Telemed Telecare. 2007;13. doi:10.1258/135763307781644951.
14. Alabdullah JH, Van Lunen BL, Claiborne DM, Daniel SJ, Yen CJ, Gustin TS. Predictors of dental students' behavioral intention use of teledentistry: An application of the Unified Theory of Acceptance and Use of Technology (UTAUT) model. J Dent Educ. 2020;84. doi:10.1002/jdd.12304.
15. Mandall NA, Quereshi U, Harvey L. Teledentistry for screening new patient orthodontic referrals. Part 2: GDP perception of the referral system. Br Dent J. 2005;199:727–9. doi:10.1038/sj.bdj.4812969.
16. Dusek GA, Yurova Y V., Ruppel CP. Using social media and targeted snowball sampling to survey a hard-to-reach population: A case study. International Journal of Doctoral Studies. 2015;10. doi:10.28945/2296
17. Chaudhary FA, Ahmad B, Javed MQ, Mustafa S, Fazal A, Javaid MM, et al. Teledentistry awareness, its usefulness, and challenges among dental professionals in Pakistan and Saudi Arabia. Digit Health. 2022;8. doi:10.1177/20552076221089776.
18. Scuffham PA, Steed M. An economic evaluation of the Highlands and Islands teledentistry project. J Telemed Telecare. 2002;8. doi:10.1258/135763302320118915.
19. Maqsood A, Sadiq MSK, Mirza D, Ahmed N, Lal A, Alam MK, et al. The Teledentistry, Impact, Current Trends, and Application in Dentistry: A Global Study. Biomed Res Int. 2021;2021. doi:10.1155/2021/5437237.
20. Tiwari T, Diep V, Tranby E, Thakkar-Samtani M, Frantsve-Hawley J. Dentist perceptions about the value of teledentistry. BMC Oral Health. 2022;22. doi:10.1186/s12903-022-02208-z.
21. Ata SO, Ozkan S. Information technology in oral health care: Attitudes of dental professionals on the use of teledentistry in Turkey. Proceedings of the European and Mediterranean Conference on Information Systems, EMCIS 2009 [Internet]. 2009 [cited 2024 Sep 23]. Available from: https://www.scopus.com/inward/record.uri?partnerID =HzOxMe3b&scp=84857756790&origin=inward.
22. Al-Hashimi I, Schifter M, Lockhart PB, Wray D, Brennan M, Migliorati CA, et al. Oral lichen planus and oral lichenoid lesions: diagnostic and therapeutic considerations. Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and Endodontology. 2007;103. doi:10.1016/j.tripleo.2006.11.001.
23. Flores APDC, Lazaro SA, Molina-Bastos CG, Guattini VLDO, Umpierre RN, Gonзalves MR, et al. Teledentistry in the diagnosis of oral lesions: A systematic review of the literature. Journal of the American Medical Informatics Association. 2020. doi:10.1093/jamia/ocaa069.
24. Golsanamloo O, Iranizadeh S, Jamei Khosroshahi AR, Erfanparast L, Vafaei A, Ahmadinia Y, et al. Accuracy of Teledentistry for Diagnosis and Treatment Planning of Pediatric Patients during COVID-19 Pandemic. Int J Telemed Appl. 2022;2022. doi:10.1155/2022/4147720.
25. Queyroux A, Saricassapian B, Herzog D, Mьller K, Herafa I, Ducoux D, et al. Accuracy of Teledentistry for Diagnosing Dental Pathology Using Direct Examination as a Gold Standard: Results of the Tel-e-dent Study of Older Adults Living in Nursing Homes. J Am Med Dir Assoc. 2017;18. doi:10.1016/j.jamda.2016.12.082.
26. Finch TL, May CR, Mair FS, Mort M, Gask L. Integrating service development with evaluation in telehealthcare: An ethnographic study. Br Med J. 2003;327. doi:10.1136/bmj.327.7425.1205.
27. Nazari NSM, Wafa SWWSST, Baharuddin NA. Teledentistry in the Malaysian Context: Are We There Yet? Archives of Orofacial Sciences. 2022;17:9–19. doi:10.21315/aos2022.1701.RV02.
28. Lee JY, Wong CP, Lee SWH. m-Health views and perception among Malaysian: findings from a survey among individuals living in Selangor. Mhealth. 2020;6. doi:10.21037/mhealth.2019.09.16.
29. Rachapelle S, Legood R, Alavi Y, Lindfield R, Sharma T, Kuper H, et al. The cost-utility of telemedicine to screen for diabetic retinopathy in india. Ophthalmology. 2013;120. doi:10.1016/j.ophtha.2012.09.002.
30. Karen Grace Larsen. 5 Signs You're Using the Wrong Telemedicine Platform [Internet]. 2022 [cited 2024 May 31]. Available from: https://blogs.meditab.com/using-the-wrong-telemedicine-platform
31. Jampani ND, Nutalapati R, Dontula BSK, Boyapati R. Applications of teledentistry: A literature review and update. J Int Soc Prev Community Dent. 2011. doi:10.4103/2231-0762.97695.