Patient satisfaction and experience for virtual consultation services in the Malaysian government health clinics: A review

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ABSTRACT

Introduction: Virtual consultation (VC) has emerged as a vital mode of healthcare delivery, particularly accelerated by the COVID-19 pandemic. The Ministry of Health (MOH) has progressively implemented VC services across government health clinics in Malaysia, guided by national digital health strategies. As VC becomes integral to primary care, evaluating patient satisfaction and experience becomes essential to ensure service quality. Despite the global availability of various tools, a lack of validated instruments remains in the context of Malaysian primary care, particularly in Malay. This narrative review aims to identify existing instruments used to assess patient satisfaction and experience with VC, evaluate their relevance and psychometric robustness, and highlight gaps in measurement, particularly for public primary care in Malaysia.

Materials and Methods: A systematic search was conducted using PubMed, employing a comprehensive search strategy combining MeSH terms and text words related to "patient satisfaction," "patient experience," "surveys and questionnaires," and "telemedicine." The search was restricted to English-language publications involving adult populations and returned 876 articles. After applying the free full-text filter, 397 articles were screened. Title and abstract screening yielded 83 potentially eligible studies, from which only eight were found to involve original development or adaptation of relevant instruments and were included for further analysis.

Results: Among the seven included studies, most questionnaires were focused primarily on domains related to usability and acceptability, such as interface ease, access, and convenience. However, few instruments addressed core components of clinical care quality, including communication, diagnostic confidence, care continuity, and coordination. Furthermore, none of the reviewed questionnaires underwent complete validation and reliability assessment within the context of Malaysian primary care. Four studies were conducted in Malaysia; however, these either lacked robust validation processes or focused solely on acceptability. Additionally, no tools were validated in Malay or tailored specifically to the cultural and healthcare delivery context of Malaysia's government clinics.

Conclusion: The findings reveal a significant methodological gap in assessing patient satisfaction and experience with VC in Malaysian primary care. Existing tools largely derive from models focused on technology usability or service acceptability, with limited attention to the clinical dimensions of virtual care. Instruments such as the Telemedicine Satisfaction Questionnaire (TSQ), the Telemedicine Usability Survey (TUS) and the Service User Technology Acceptability Questionnaire (SUTAQ) offer partial frameworks but lack comprehensive validation or contextual adaptation. In Malaysia, while efforts have been made to develop VC-related surveys, these are insufficiently validated and often lack specificity for primary care. Moreover, tools currently in use do not capture the broader service quality domains emphasised by frameworks like SERVQUAL or Picker's Patient Experience Principles.

As VC services expand in Malaysian public healthcare, there is an urgent need to develop and validate culturally appropriate, linguistically accessible, and psychometrically sound questionnaires to assess patient satisfaction and experience. These instruments must integrate both technological usability and the core clinical components of healthcare delivery. Such efforts are essential to guide quality improvement and ensure that VC services align with patients' needs and expectations in the primary care setting.

KEYWORDS:
Virtual Clinic, Virtual Consultation, Telemedicine, Patient Satisfaction, Patient Experience

INTRODUCTION

Background of Virtual Consultation

Virtual consultation (VC) is a method of delivering healthcare services through live and interactive clinical consultations and treatment planning between healthcare providers and clients.[1] This is a relatively new concept in healthcare which uses technology and multimedia to improve accessibility. It allows healthcare professionals to remotely evaluate, diagnose and provide treatment recommendations to patients. Patients can communicate with healthcare providers using devices such as smartphones, tablets, or personal computers, while providers can use their preferred devices for consultations.[2]

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In the 21st century, digital health advances and mobile applications have further integrated telemedicine and VCs into the healthcare system. Patients began receiving medical advice, diagnoses and treatment plans from home using smartphones and computers, enhancing access to care and enabling continuous medical monitoring.[3] The COVID-19 pandemic in 2020 accelerated the adoption of these technologies, reducing in-person contact and ensuring that medical care continued without risking exposure to the virus. This period highlights the critical role of telemedicine in public health emergencies, solidifying its importance in health.[3]

Malaysia has been at the forefront of adopting telemedicine, with the Ministry of Health Malaysia (MOH) launching a Telemedicine Blueprint in 1997. This ambitious initiative aimed to use technology and multimedia capabilities to improve medical services nationwide, laying the groundwork for future digital healthcare innovations.[4] In line with this vision, the Malaysian Strategic Plan on Digitalization for 2021-2025 included a crucial second strategy to expand access to virtual initiatives. This strategy highlights the government's dedication to improving healthcare accessibility through digital means, ensuring that more patients can benefit from virtual consultations and other telemedicine services.[5]

Virtual Consultation in the Government Health Clinics Of Malaysia

In 2021, the World Health Organization (WHO) released findings that reinforced the importance of virtual consultations as a key aspect of primary care, allowing medical professionals to offer remote and efficient consultation services.[6] This approach is implemented worldwide, including in Malaysia. The MOH has actively integrated telemedicine services into its healthcare delivery model. It recognises the potential of digital technology to enhance patient care. In 2019, five health clinics nationwide introduced a proof-of-concept for virtual consultations. This pilot project aimed to test the viability and effectiveness of VCs in the public healthcare system.[1] As the COVID-19 pandemic unfolded, the MOH expanded telemedicine to 35 additional clinics nationwide, adapting to the new normal and demonstrating the scalability of virtual health services in a crisis.[1] By 2022, the initiative had expanded significantly, with 230 health clinics offering telemedicine services (Table I). This represents a substantial increase in the infrastructure and resources supporting virtual healthcare, both in urban and rural settings.[1]

The number of people using VC services has increased significantly, showing that more people in Malaysia are trusting and relying on virtual health consultations. In 2019, there were 3,101 registered users of these services. By the end of December 2021, this number had surged to 29,311, indicating the Malaysian public's rapid and robust adoption of VCs.[7-8]

Furthermore, the range of services provided through VC has expanded since its introduction in 2019. The services offered include outpatient care for non-communicable diseases, such as stable diabetes mellitus (DM), as well as for communicable diseases like tuberculosis (TB) through directly observed treatment, short-course (DOTS). Additionally, laboratory findings are part of the services provided. Maternal and child health services encompass booking consultations, antenatal follow-ups, and family planning consultations that do not require physical examinations. Pharmacy services include smoking cessation counselling, medication adherence counselling, and various medication-related consultations. Other virtual services available include occupational therapy interventions that can be conducted online, individual or group physiotherapy sessions, dietetic consultations focused on food preparation, and specialised services for conditions such as gestational diabetes mellitus (GDM).[1]

Understanding the Importance of Patient Satisfaction and Experience in the Light of Expanding Virtual Consultation Services in Primary Care

As VC services expand, assessing patient satisfaction and experience is crucial, just as it is with all healthcare services. The Agency for Healthcare Research and Quality (AHRQ) defines patient experience as encompassing the full range of interactions within the healthcare system, including medical care and administrative services. It is a key element of healthcare quality, measured by aspects highly valued by patients, such as timely appointments, accessible information and effective communication with providers.[9] Evaluating patient experience fosters shared decision-making, enhances patient-doctor communication and identifies service gaps, ultimately leading to better-individualised care and improved health outcomes.[10]

On the other hand, patient satisfaction is a highly subjective measure closely linked to a patient's expectations and perceptions of their care experience. Factors such as personal beliefs and the information provided to them before and during care can influence satisfaction levels. Patient satisfaction is an individual reaction to the healthcare experience and can be influenced by various factors, such as the attitude of healthcare providers, the facility's environment and care outcomes. Due to its subjective nature, improving patient satisfaction can be more challenging.[9] Patient satisfaction is a vital component in healthcare, as it serves as a key indicator of quality, encompassing aspects such as communication with providers and efficiency of services. High satisfaction was associated with better adherence to treatment plans and improved clinical outcomes. Additionally, it can impact patient retention and referrals and reduce the risk of medical malpractice claims. For healthcare providers, patient satisfaction is a vital measure that affects health outcomes, as well as operational and relational aspects of care delivery.[11]

Furthermore, despite their interconnectedness, the AHRQ emphasises the differences between patient satisfaction and patient experience. Both are vital for healthcare providers to develop and implement quality improvement strategies. High-quality care delivery relies on assessing both factors, which inform service enhancements, patient care protocols, and strategic planning for organizations.[9]

Questionnaire as The Best Method to Assess Patient Satisfaction and Experience

Assessing and evaluating patient satisfaction and experience is a complex process due to the latent nature of satisfaction. It is an unobservable variable that cannot be directly measured with a single question. A multifaceted approach is necessary to capture the full scope of patient satisfaction and experience.[20] The evaluation encompasses several domains that interact and contribute to overall satisfaction and experience, as stated in Table II.

To obtain a comprehensive understanding of patient satisfaction and experience, questionnaires are often utilised. They are considered the most effective method for this purpose.[21] However, the creation of such questionnaires is not a straightforward task. It is important to adhere to a systematic and evidence-based process when developing, validating, and ensuring the reliability of these questionnaires. This involves measures such as providing content validity, testing the instrument's reliability, conducting pilot studies, and potentially utilising factor analysis to confirm the questionnaire's structure. By employing such a rigorous development process, healthcare providers can guarantee the acquisition of precise, reliable, and all-encompassing data on patient satisfaction and experience, which can then inform quality improvement initiatives within the healthcare system.[22]

Hence, this review evaluates the existing literature on patient satisfaction and experience concerning VC services, which is relevant to government health clinics in Malaysia. Specifically, it identifies gaps and limitations in currently available questionnaires, emphasising validity, reliability, and suitability for primary care.

MATERIALS AND METHODS

The literature search was conducted exclusively in the PubMed database to identify studies examining patient satisfaction in telemedicine using validated survey instruments. The search strategy incorporated Medical Subject Headings (MeSH) and text word terms to enhance both sensitivity and specificity. The search query included combinations of terms related to patient satisfaction—such as "Patient Satisfaction"[Mesh], "patient satisfaction", "Patient Experience", and "consumer satisfaction"—coupled with terminology indicative of measurement tools, including "Surveys and Questionnaires"[Mesh], "questionnaire*", "survey*", "questionnaire development", "instrument development", "scale development", and "instrument validation". These were further combined with terms reflecting telemedicine contexts, such as "Telemedicine"[Mesh], "Telehealth", "video consultation", "virtual consultation", "video visit", "virtual visit", and "teleconsultation". Filters were applied to restrict results to English-language studies involving adult populations. This targeted strategy included studies relevant to developing, validating or adapting survey instruments that assess patient satisfaction with VC services.

RESULTS

The systematic search initially yielded 876 articles from the PubMed database. After applying the free full-text filter, 397 articles were available for further assessment. Title and abstract screening of these records narrowed the pool to 83 studies that appeared to align with the inclusion criteria of addressing patient satisfaction in adult telemedicine contexts using survey or questionnaire-based instruments. Following a comprehensive full-text review, eight studies were identified as specifically reporting on the original development or adaptation of relevant instruments. These eight studies were subsequently included in the analysis for this narrative review. Table III presents a summary of the key points extracted from the papers.

DISCUSSION

Overview of Questionnaires and the Domains Related to Virtual Consultation Services

Studies have been conducted in foreign countries that may offer valuable insights into this research topic, despite the limited number of questionnaires used globally for VC services. Among these are six commonly employed questionnaires designed to evaluate patient satisfaction and experience in VC settings.[31]

The two most commonly utilised questionnaires in the field of Telemedicine are the Telemedicine Usability Survey (TUS) and the Telemedicine Satisfaction Questionnaire (TSQ). The TUS is designed to evaluate the usability experience of patients. While it claims to have content validation from previous studies, no published articles have been found to date that demonstrate the items have undergone psychometric analysis for construct validation.[32] On the other hand, the TSQ claimed to have been thoroughly validated through content, construct validation and reliability analysis. However, the exact values of the Content Validation Index (CVI) and Face Validation Index (FVI) were not reported, and there was no further breakdown of satisfaction domains.33 According to Gohari et al., the next is the Service User Technology Acceptability Questionnaire (SUTAQ), which was devised by Hirani et al. in 2016 to assess the patient acceptance of technological processes and devices across several domains, including enhanced care, increased accessibility, privacy and discomfort, care personnel concerns, substitution, and satisfaction. This questionnaire was developed systematically, and its reliability was analysed.[31]

Attkisson and Greenfield developed the Client Satisfaction Questionnaire (CSQ). This questionnaire was created in 1996 when VC services were still in their infancy and not widely accessible. Despite being among the top six questionnaires for VC services, the items were designed for general healthcare services. The CSQ consists of 8 items that have been validated and tested for reliability.[32] Gohari et al. also mentioned in their systematic review that another questionnaire was developed earlier in 1988 by Chin et al., with a broader scope related to telehealth services. The Questionnaire for User Interaction Satisfaction (QUIS) encompasses overall satisfaction, user satisfaction regarding the screen, terminology, and information, as well as learning

Table I: Summary of Number and Percentage of Government Health Clinics Providing Virtual Consultation Services According to State and Urban/Rural Status

State	Number of Health Clinics in Rural Areas Providing VC	Percentage of Clinics in in Rural Areas Providing VC	Number of Health Clinics in Urban Areas Providing VC	Percentage of Clinics in Urban Areas Providing VC	Overall Percentage of Health Clinics in the state Providing VC
Perlis	2	40%	1	13%	23%
Kedah	8	27%	11	33%	30%
Pulau Pinang	3	21%	6	29%	26%
Perak	2	8%	20	31%	25%
Selangor	2	8%	34	61%	45%
Wilayah Persekutuan	0	0	5	21%	21%
Negeri Sembilan	7	24%	6	29%	25%
Melaka	2	18%	12	55%	42%
Johor	13	16%	4	24%	17%
Pahang	1	2%	16	34%	19%
Terengganu	10	34%	10	43%	38%
Kelantan	14	15%	2	17%	16%
Sarawak	4	2%	13	32%	8%
Sabah	9	10%	13	59%	20%
MALAYSIA	77	12%	153	39&	22%

Table II: Summary of Differences between Patient Experience and Patient Satisfaction[12-19]

Aspects	Patient Experience	Patient Satisfaction
Definition	Objective measurement of healthcare interactions from the patient's perspective (what happened)	Subjective evaluation of care received based on patient expectations and perceptions (how patients feel about the care provided)
Measurement Approach	Objective: typically assesses the frequency and consistency of specific interactions or events	Subjective: typically assesses patients' perceptions and judgments against their expectations
Domains / Dimensions	- Communication (clarity, empathy) - Responsiveness (promptness) - Respect for patient preferences - Physical comfort and environment - Coordination and continuity of care - Emotional support - Access to care and information	- Fulfilment of expectations - Perceived quality of care - Overall contentment - Perceived value for cost - Likelihood to recommend services - Attitudes toward healthcare providers
Basis of Evaluation	Actual events and interactions	Personal values, expectations, and emotional reactions
Reliability and Validity	More reliable due to specific and measurable criteria	Less reliable due to subjective and personal variability
Influencing Factors	Provider-patient interactions, organisational processes, service delivery standards	Patient expectations, previous experiences, personal values, emotional state, cultural factors - SERVQUAL Model
Common Tools for Measurement	- CAHPS (Consumer Assessment of Healthcare Providers and Systems) - Picker Patient Experience Questionnaire (PPE-15) - NHS Patient Experience Framework	- Patient Satisfaction Questionnaire (PSQ-18) - Press Ganey Surveys
Utility in Quality Improvement	Directly identifies actionable areas for improving healthcare delivery	Reflective; identifies overall perceptions, less specific actionable feedback
Impact on Healthcare Outcomes	Strongly correlated with clinical outcomes, patient safety, and care continuity	Correlated with patient loyalty, compliance, and provider reputation

and system capabilities. This questionnaire has been validated, and its reliability has been tested.[31] Last but not least, the systematic review also touched on the System Usability Scale (SUS) questionnaire developed by Brooke et al. in 1986. This questionnaire aims to assess the patient usability of the general electronic systems, which do not focus on VC per se, as the service was still in its early stages when this questionnaire was developed. This questionnaire consisted of 10 items with no specific domains and underwent content and construct validation, followed by a reliability analysis.[31]

For instance, in Bangladesh, Hoque et al. conducted a study to assess the level of satisfaction among psychiatric patients who received VCs. The researchers utilised a questionnaire based on the e-Servqual and Technology Acceptance Model. Although the study reported reliability among the questions (Cronbach's alpha = 0.87), no validation processes were mentioned.[27] Furthermore, the intraclass consistency should also be reported to enhance the understanding of internal consistency within each questionnaire domain. On the other hand, in Saudi Arabia, Abdulwahab et al. researched patients who had experienced virtual services from Outpatient Departments (OPDs) and Pharmacies in a hospital. The researchers adapted the Patient Satisfaction Questionnaire (PSQ-18) and TSQ satisfaction questionnaires, presumably into Arabic, but did not carry out validation or reliability assessments.[28] Furthermore, Arrighi-Allisan et al. assessed patient satisfaction with VCs in the Otolaryngology Department of a United States hospital. The researchers modified the Press Ganey Survey for their study, but the modifications were not validated, raising concerns about the

Table III: Paper Related to the Development, Validation or Adaptation of Patient Satisfactionand/or Experience Questionnaire for Virtual Consultation Services

Country	Authors	Questionnaire Items	Study Population	Language	Validity & Reliability
Malaysia	Hassan et al.,[23]	Satisfaction	Patient using SLT (Virtual-Conventional-Hybrid)	Developed in English & Translated to BM	No validation or reliability outcome was reported
Malaysia	Othman et al.,[24]	Satisfaction	Mental Health patients using VC	English & Malay	No proper validation & reliability test reported
Malaysia	Tan et al.,[25]	Acceptability & Usability (UTAT)	Patient and caregiver attending Outpatient Geriatric Clinic HKL	English	Unsure of the Validation & Reliability process
Malaysia	Jusof et al.,[26]	Acceptability	VC patients in KK Percint 18, Putrajaya	Malay	No proper validation & reliability test reported
Bangladesh	Hoque et al.,[27]	Satisfaction	Psychiatric patients using VC	English	Originally developed. No Validation parameters reported
Saudi Arabia	Abdulwahab et al.,[28]	Satisfaction-adapted PSQ-18 and TSQ	The patient had experience with virtual services from OPD & Pharmacy	English	No validation & reliability parameters were reported
United Kingdom	Murthy et al.,[29]	Experience	Patient of VC for oral care services	English	No validation & reliability outcomes reported
USA	Arrighi-Allisan et al.,[30]	Satisfaction using Press Ganey Survey	Patient of VC Otolaryngology Department	English	Adaptation of the Press Ganey Survey was not validated

relevance of the findings. The original Press Ganey Survey was designed for traditional health services.[30]

Research Conducted on Patient Satisfaction and Experience for Virtual Consultation Related to Outpatient Services in Malaysia and the Issues Identified

All the above questionnaire versions in Malay were unavailable based on searches in PubMed and other open-access databases, indicating the high possibility that they were not translated into Malay or validated for the Malaysian population. However, the Technology Acceptance Model Questionnaire (TAM) was translated and validated by Husin et al. in 2022. However, this questionnaire is meant only for healthcare providers.[33]

Several studies have been conducted in Malaysia regarding VC services or telemedicine, and the findings can be accessed through free-text databases such as PubMed, ScienceDirect, and Web of Science. In 2023, Hassan et al. did a study to compare the satisfaction of recipients of conventional speech-language therapy (C-SLT), speech-language teletherapy (SLTT), and hybrid speech-language therapy (H-SLT) among the patients and caregivers using their services. A questionnaire was developed based on an existing questionnaire in English and validated by five language speech therapists. The content was adjusted and translated into Malay using the forward and backwards translation process. Experts commented on the high comparability between the languages, with a mean ($\bar{x}$) of 4.7 and a standard deviation (s) of 0.26. However, despite having five expert panels, no results on content and construct validation outcomes were mentioned.[23] They should also report the range of the difference for a better understanding of the comparability.

Othman et al. researched patient satisfaction with VC services for mental health for the Malaysian general population. They developed a questionnaire based on existing questionnaires to evaluate satisfaction based on four domains of satisfaction: communication and rapport, clinical assessment, convenience and equipment, and technical issues. The questionnaire was distributed to the public via the Google Forms online link. Unfortunately, validation and reliability tests were not reported.24 In contrast, Tan et al. focused their study on the acceptability and usability of telemedicine for outpatient geriatric clinic patients and caregivers. They created an English-language questionnaire and employed the Unified Theory of Acceptance and Use of Technology (UTAUT) for validation and reliability. However, the precise details of this process remain undisclosed.[25]

The most pertinent study on this topic was conducted by Jusof et al. in 2023. This study comprised patients who had enrolled in VC services at KK Percint 18, Putrajaya. The study's primary focus was on the acceptability of these services among patients. Three Family Medicine Specialists validated the content development. Validation and reliability testing parameters were not reported.[26]

Summary of the Gaps Identified in Current Questionnaires Related to Patient Satisfaction and Experience for Virtual Consultation Services

Currently, most validated and reliability-tested questionnaires available for assessing patient satisfaction and experience in primary care settings focus predominantly on conventional, face-to-face consultations. This limitation means that the currently used tools may not adequately capture the unique dimensions and expectations associated with VC services, potentially missing critical aspects influencing patient satisfaction in a digital context.

Furthermore, questionnaires designed for VC services still encounter significant challenges in meeting standard validation and reliability criteria. This is partly due to the rapidly evolving nature of telehealth technologies, the lack of established benchmarks and the variability in service delivery models. Consequently, many of these questionnaires lack robust psychometric validation, undermining their effectiveness in accurately reflecting patients' experiences and satisfaction.

On the other hand, reliable and validated questionnaires initially developed for outpatient hospital services have not been adequately adapted for primary care contexts, nor have they been sufficiently tested among the Malaysian population or translated and validated into Malay. This gap limits their applicability and relevance, as cultural nuances, linguistic differences and context-specific factors significantly influence patient perceptions and responses to healthcare surveys.

Finally, there is a notable lack of validated questionnaires that comprehensively address both the infrastructure aspects of VC services and the core components of services. Addressing these elements is crucial to gaining a holistic understanding of patient satisfaction and experience, which can drive meaningful improvements in virtual healthcare delivery. For further explanation on this point, it is important to understand that VC provides different dimensions of patient satisfaction and experience. It should not be based solely on theoretical frameworks for technology acceptance and usability, but also on the key or core component of the services.[34] While standard frameworks for patient satisfaction and experience, such as the Scale for Measuring Consumer Perceptions of Service Quality (SERVQUAL) and the Patient's Experience Framework by Picker's Institute Principles, were originally developed for physical services, there is a need to merge these two domains, the core services related to satisfaction and experience with technology usability and acceptance, into a more relevant framework of patient satisfaction and experience with VC services. Ojasalo explains this understanding and concept well in his manuscript on the E-SERVQUAL Model.[35] These are the aspects often neglected by most questionnaires, which tend to concentrate more on technological or infrastructure aspects when assessing satisfaction or experience with VC services.

Recommendation for Future Directions

Development of a Validated Questionnaire for the Malaysian Context

Developing a validated questionnaire tailored specifically to assess patient satisfaction and experience with VC services in Malaysian primary care settings requires a systematic approach. Initially, a comprehensive literature review should be conducted to identify existing validated instruments and theoretical frameworks such as SERVQUAL, the TAM and Picker's Principles, ensuring comprehensive coverage of patient satisfaction and experience domains. Following this, qualitative methods involving focus groups or interviews with stakeholders, including patients, healthcare providers, and administrators, should be utilised to ensure cultural appropriateness and context specificity. The questionnaire development process would benefit significantly from an expert panel review, comprising clinicians, public health specialists, telehealth experts, and psychometricians, to ensure robust content validity.

After developing the initial questionnaire, pilot testing among representative patient populations is critical for assessing clarity, comprehensiveness, and practical applicability. Statistical methods, including item-total correlation and exploratory factor analysis, should be conducted to evaluate item reliability and internal consistency. Subsequently, confirmatory factor analysis (CFA) must be performed to validate the questionnaire's underlying structure. Reliability tests such as Cronbach's alpha and test-retest reliability assessments will further establish the questionnaire's stability. Given Malaysia's multicultural context, a rigorous forward-and-backwards translation process to Malay and other prevalent local languages is essential to guarantee linguistic appropriateness and cross-cultural relevance.

Policy Implications for Enhancing Virtual Consultation Services

Implementing validated instruments for assessing patient satisfaction and experience carries significant policy implications. Firstly, the consistent use of validated tools supports the systematic identification and rectification of service quality gaps, facilitating targeted improvements and promoting patient-centred care. Policymakers can utilise data from these assessments for informed strategic planning, efficiently directing resources towards priority areas such as technology infrastructure, network stability, and digital skills training for healthcare providers.

Furthermore, standardised questionnaires enable benchmarking across clinics, thus encouraging the establishment of uniform service quality standards nationwide. This facilitates regulatory oversight and continuous monitoring, contributing to service accountability and transparency. Policy frameworks should also address ethical and regulatory considerations related to VCs, including patient privacy, data security, consent, digital equity, and literacy disparities.

Finally, validated patient feedback should guide continuous professional development programs. Health authorities should emphasise ongoing training for healthcare providers in effective digital communication, cultural competency, and technological proficiency, ensuring comprehensive and high-quality patient-provider interactions in virtual care settings.

CONCLUSION

The importance, relevance and demand for VC services have noticeably risen in recent years. The MOH in Malaysia has observed a rising trend in the establishment of health clinics that offer VC services, as well as an expansion of the services these clinics provide. Given the increasing use of VCs in primary healthcare, evaluating patient satisfaction and experience is essential to ensure that these services meet patients' needs and provide high-quality care. Despite the importance of evaluating patient satisfaction and

experience, there is a lack of rigorous research and validated instruments specifically designed to measure these aspects for VC services provided by government health clinics in Malaysia. In Malaysia, the development of a self-administered questionnaire must consider the unique cultural, linguistic and social dynamics that characterise the Malaysian population. A self-administered questionnaire is a valuable tool for collecting data efficiently and effectively, particularly in a diverse society where respondents may have varying literacy levels and familiarity with academic language. The design of such a questionnaire should prioritise simplicity and clarity, using layman's terms to ensure that all participants can understand and respond accurately.

The proposed comprehensive framework for assessing patient satisfaction and experience with VC services presents an influential opportunity to shape Malaysia's national digital health policy. Its robust, culturally sensitive approach provides systematic, patient-centred feedback crucial for evidence-based policymaking. By standardizing evaluation methods, Malaysian health authorities can establish clear quality benchmarks for clinics nationwide, enabling comparative performance analysis, transparency and targeted interventions. Significantly, this framework integrates critical clinical care dimensions—such as patient-provider communication, diagnostic confidence, continuity and coordination—alongside technological usability, ensuring telehealth services are both clinically effective and culturally responsive. Embedding this framework into healthcare provider training further enhances telehealth effectiveness and aligns with Malaysia's Digitalization Strategic Plan (2021–2025), promoting sustained improvements in patient outcomes and national healthcare quality standards.

Therefore, there is a pressing need to develop and validate comprehensive patient satisfaction and patient experience questionnaires customised for VC services for the Malaysian population.

CONFLICT OF INTEREST

The authors have no conflicts of interest.

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