



## Simulated Patient Perceptions of Telemedicine Medical Interviews: Extending the Calgary–Cambridge Framework in Digital Consultations

Leila Mona Ganiem<sup>1\*</sup>, Wawang Setiawan Sukarya<sup>2</sup>, Ade Solihat<sup>3</sup>, Rafika Hani<sup>4</sup>

<sup>1,4</sup>Universitas Mercu Buana, <sup>2</sup>Universitas Muhammadiyah Prof. Dr. Hamka, <sup>3</sup>Universitas Indonesia

leila.mona@mercubuana.ac.id<sup>1\*</sup>  
wawangsetiawansukarya@gmail.com<sup>2</sup>  
ade.solihat@ui.ac.id<sup>3</sup>  
rafika.hani@mercubuana.ac.id<sup>4</sup>

---

### ARTICLE INFO

**Keywords:**  
Calgary–Cambridge Framework; Doctor–Patient Communication; Medical Interview; Simulated Patient Perception; Telemedicine Consultation

**Article History:**  
**Received:** 3/24/2026  
**Revised:** 6/22/2026  
**Accepted:** 6/25/2026

---

### ABSTRACT

**Background:** Telemedicine has transformed healthcare delivery by enabling remote doctor–patient interaction; however, digitally mediated consultations may alter communication processes and reduce relational engagement during medical interviews. Existing communication frameworks such as the Calgary–Cambridge model were originally developed for face-to-face consultations and may require adaptation for telemedicine contexts.

**Objective:** This study aimed to examine how communication processes unfold across telemedicine consultations using the Calgary–Cambridge framework as an organizational structure, and to identify emergent communication challenges from the perspective of simulated patients.

**Method:** A qualitative descriptive design involving 30 first-year medical students acting as simulated patients across 120 telemedicine consultations in Indonesia. Data were collected through structured post-consultation reflections and an interview with a telemedicine platform coordinator. Thematic analysis was conducted inductively, with consultation stages serving as sensitizing categories for data organization.

**Result:** Six emergent communication themes were identified: (1) relational deficit, (2) modality mismatch, (3) diagnostic risk, (4) information asymmetry, (5) limited patient involvement, and (6) unresolved communication. Consultations tended to prioritize biomedical information exchange over relational communication. Simulated patients responded more positively when doctors demonstrated explicit verbal empathy, comprehensive information gathering, adaptive use of voice or video communication, clear explanations, and supportive consultation closure. In contrast, reliance on text-based interaction, limited explanation, and physician-centered decision-making negatively affected participant experiences.

**Conclusion:** Telemedicine consultations reshape doctor–patient communication and require contextual adaptation of the Calgary–Cambridge framework. Effective telemedicine communication requires stronger emphasis on explicit rapport-building, modality management, structured verbal clarification, and facilitation of patient participation within digitally mediated healthcare interactions.

---

### How to cite this article:

Ganiem, M, L., Sukarya, S. W., Solihat, A., Hani, R. (2026). Simulated Patient Perceptions of Telemedicine Medical Interviews: Extending the Calgary–Cambridge Framework in Digital Consultations, 11(1). 426-440. <https://doi.org/10.51851/jmis.v11i1.960>

---

This article is licensed under aCreative Commons Attribution-ShareAlike4.0 International License ©2026 by Leila Mona Ganiem.

---

## INTRODUCTION

Telemedicine refers to the use of information and communication technologies to provide healthcare services remotely, enabling doctors and patients to interact without direct face-to-face contact. The rapid expansion of telemedicine has transformed healthcare delivery worldwide by improving accessibility, reducing geographical barriers, and supporting continuity of care, particularly following the COVID-19 pandemic (Alvandi, 2017; Nguyen et al., 2024). Beyond improving healthcare access, telemedicine has also reshaped the nature of doctor–patient communication because clinical interactions are increasingly mediated through digital platforms rather than physical encounters (Ganiem, 2020). In the Indonesian context, ICT and social media function are critical platforms for facilitating social engagement and marketing communication in the digital era, suggesting that digitally mediated interactions—whether for commerce, social purposes, or healthcare—require attention to both technological affordances and user reception patterns (A. Mulyana et al., 2020). As telemedicine becomes more integrated into healthcare systems, understanding how communication operates within digitally mediated consultations has become increasingly important because communication remains central to trust building, patient engagement, treatment adherence, and overall healthcare quality (Effendi et al., 2024; Orlando et al., 2019).

From a health communication perspective, doctor–patient interaction involves not only the exchange of biomedical information but also relational processes that shape empathy, trust, and patient participation (D. Mulyana & Ganiem, 2021). Within clinical encounters, the medical interview functions as the primary mechanism through which physicians gather information, establish rapport, negotiate treatment decisions, and provide explanations to patients (Cole & Bird, 2022). However, communication processes in telemedicine consultations differ substantially from conventional face-to-face interactions because digital environments often limit nonverbal cues, reduce interpersonal presence, and increase reliance on technology-mediated interaction (Nguyen et al., 2024; Pinedo-Torres et al., 2023). Culturally resonant, emotionally engaging communication—exemplified by Indonesian television entertainment—is more effective than purely informational discourse, a principle equally applicable to telemedicine where affective and relational dimensions enhance patient receptivity to medical information (Briandana et al., 2026). These conditions may influence how patients interpret empathy, clarity, responsiveness, and involvement during consultations.

To support effective clinical communication, several structured medical interview frameworks have been developed, including the Calgary–Cambridge Guide, the Three-Function Approach, and Patient-Centered Interviewing (Fortin et al., 2018; Kurtz et al., 2005). Among these frameworks, the Calgary–Cambridge model is widely recognized because it integrates both informational and relational dimensions of medical communication through sequential consultation stages such as initiating the session, gathering information, explanation and planning, and closing the consultation. The framework emphasizes patient-centered interaction, empathy, and collaborative communication throughout the medical interview process (Ganiem, 2018). Nevertheless, the model was originally developed for conventional face-to-face consultations and implicitly assumes the availability of direct interpersonal interaction and nonverbal communication (Tsukamoto et al., 2012).

Recent telemedicine studies suggest that digitally mediated consultations may alter communication dynamics in several ways. Research indicates that telemedicine environments can reinforce physician-centered interaction patterns, reduce opportunities for patient participation, and limit relational engagement during consultations (Alboksmaty et al., 2026; Hu et al., 2026). In response to these limitations, healthcare professionals increasingly rely on explicit verbal empathy and strategic modality use, such as shifting from text-based interaction to voice or video communication, to maintain communication clarity and patient engagement (Abou Hashish, 2025). These findings demonstrate that telemedicine communication involves not only

technological adaptation but also changes in interactional structures within medical consultations. Consequently, several scholars have argued that traditional medical communication frameworks require contextual adaptation to remain effective in telemedicine environments (Keshet et al., 2025; Pittmann et al., 2026).

Despite the growing body of telemedicine research, existing studies remain largely outcome-oriented and tend to focus primarily on patient satisfaction, service accessibility, or healthcare efficiency. Limited attention has been given to understanding how communication processes unfold across different stages of telemedicine medical interviews or how established communication frameworks function within digitally mediated healthcare contexts. As a result, there is still insufficient understanding of how communication challenges emerge during telemedicine consultations, particularly in relation to rapport formation, modality selection, shared decision-making, and consultation closure. This limitation highlights the need for more process-oriented research that examines communication experiences throughout the consultation stages rather than evaluating telemedicine solely through outcome-based indicators.

Understanding simulated patients' perceptions of telemedicine communication is therefore essential because patients' experiences provide valuable insights into how communication processes are interpreted and experienced within digital healthcare interactions (Ganiem et al., 2022). Examining these perceptions may help identify communication barriers, relational challenges, and limitations in patient participation that may not be fully captured through satisfaction-based evaluations alone. Furthermore, analyzing communication dynamics across consultation stages can clarify which aspects of traditional medical interview frameworks, particularly the Calgary–Cambridge model, remain applicable and which require adaptation in telemedicine settings. In this context, the present study contributes to telemedicine communication research by applying the Calgary–Cambridge framework to examine stage-specific communication experiences within telemedicine consultations.

Based on this rationale, this study aims to examine communication processes in telemedicine medical interviews by exploring how simulated patients perceive communication across the stages of telemedicine consultations, including initiation, information gathering, explanation and planning, shared decision-making, and closure, as well as identifying emergent communication themes arising from their experiences and examining how these themes relate to the Calgary–Cambridge framework. The Calgary–Cambridge framework is used as a sensitizing framework to organize data collection and initial analysis, while thematic analysis is employed inductively to identify emergent communication themes. The findings are expected to contribute to the improvement of telemedicine communication practices and support the contextual adaptation of medical interview frameworks for digitally mediated healthcare environments.

## METHOD

### Research Design

This study employed a qualitative descriptive design to explore patients' perceptions of communication processes during telemedicine medical interviews. A qualitative descriptive approach was considered appropriate because the study aimed to obtain detailed accounts of participants' communication experiences across different stages of telemedicine consultations without generating formal theory or focusing on lived experience at a deeply phenomenological level (Braun & Clarke, 2022; Creswell & Poth, 2023). The study focused on describing how communication practices were experienced, interpreted, and evaluated by participants within digitally mediated healthcare interactions.

Qualitative inquiry was particularly suitable for this study because telemedicine communication involves complex relational and interactional processes that cannot be adequately captured through quantitative indicators alone. The study sought to examine how patients

perceived rapport formation, information exchange, empathy, participation, and consultation closure during telemedicine encounters. These communication dimensions are context-dependent and socially constructed, making qualitative exploration necessary for understanding how interaction patterns emerge across consultation stages.

Methodologically, the study was guided by the Calgary–Cambridge communication framework as a sensitizing framework for data collection and interpretation. The framework provided structured consultation stages that informed the development of reflection questions and thematic organization. Thematic analysis was then used as the primary analytic strategy to identify recurring patterns and communication themes across consultation experiences. Thus, the qualitative descriptive design provided the overall methodological orientation, while thematic analysis functioned as the analytical procedure for interpreting the data. The study followed the Standards for Reporting Qualitative Research (SRQR) guidelines to enhance transparency and methodological rigor (O'Brien et al., 2014).

### **Participants, Data Sources, and Units of Analysis**

The study involved three interconnected components: participants, data sources, and units of analysis. The primary participants were 30 first-year medical students who acted as simulated patients during telemedicine consultations. Simulated patients are commonly used in medical communication research because they enable standardized consultation scenarios and facilitate consistent evaluation of interactional processes across clinical encounters (Keifenheim et al., 2015; Tsukamoto et al., 2012). In addition, one coordinator from a telemedicine platform participated in a semi-structured interview to provide contextual information regarding institutional communication training practices.

The primary data sources consisted of: (1) written participant reflections generated after each telemedicine consultation and (2) interview data obtained from the telemedicine platform coordinator. The unit of analysis was the communication experience occurring within each telemedicine consultation stage based on the Calgary–Cambridge framework. Because each participant completed consultations with four different doctors across four telemedicine platforms, the study generated 120 consultation reflections in total.

The researchers did not participate as observers within the consultations and did not intervene during doctor–patient interactions. Instead, participants independently conducted telemedicine consultations as simulated patients and subsequently documented their communication experiences using the structured reflection guide. The role of the researchers was limited to organizing the consultation procedures, collecting participant reflections, conducting the coordinator interview, and analyzing the resulting qualitative data.

First-year medical students were selected as simulated patients because they possessed basic knowledge of medical communication processes while not yet having extensive clinical experience that could substantially shape professional communication habits. This position enabled participants to critically recognize communication elements during consultations while still maintaining the perspective of healthcare service users. However, the researchers also acknowledged that participants' medical educational background could introduce interpretive bias because participants may have been more attentive to communication structure and professional interaction than lay patients. Therefore, throughout this manuscript, the term "simulated patient perceptions" is used rather than "patient perceptions" to avoid overgeneralization. This limitation was considered during data interpretation and is addressed in the study limitations section.

### **Sampling Strategy**

This study used purposive sampling to select participants, telemedicine platforms, and consultation experiences relevant to the research objectives. Four Android-based telemedicine applications widely used in Indonesia were selected because they represented major digital healthcare service providers with active doctor–patient consultation features.

Doctors were not selected individually by the researchers. Instead, consultations were conducted with doctors who were available within the applications at the time participants-initiated consultations. Thus, doctor selection was based on platform availability during routine service operation rather than random assignment or predetermined physician recruitment. This approach was intended to reflect naturally occurring telemedicine communication practices within the selected platforms.

The inclusion criteria for consultations were: (1) synchronous or semi-synchronous telemedicine consultations conducted through the selected applications, (2) consultations involving general medical complaints that allowed interaction across multiple communication stages, and (3) consultations completed entirely within the platform communication system. Consultations were excluded if technical disruptions prevented meaningful interaction, if consultations ended before communication stages were completed, or if participants failed to provide complete reflective documentation following the consultation.

Thematic saturation was assessed collaboratively by two researchers through repeated comparison of newly coded data with existing thematic categories. Because each participant completed four consultations, saturation was evaluated across consultation encounters rather than across individual participants. Saturation was considered achieved when additional consultation reflections no longer produced substantially new conceptual categories, interactional patterns, or interpretive insights, which occurred after approximately 96 consultation reflections.

### **Instrumentation**

Data were collected using a structured reflection guide developed from the stages of the Calgary–Cambridge communication framework. The guide was designed to facilitate participant reflection on communication processes occurring during telemedicine consultations, including session initiation, information gathering, explanation and planning, shared decision-making, and consultation closure.

The instrument development process involved adapting consultation stages and communication indicators from the Calgary–Cambridge Guide into open-ended reflective prompts suitable for telemedicine contexts. The reflection guide was designed to encourage participants to describe communication experiences rather than evaluate clinical competence alone. Sample questions included: “How would you describe the doctor’s introduction at the beginning of the consultation?”; “How effectively did the doctor gather information about your symptoms or concerns?”; “How clearly did the doctor explain the diagnosis or treatment plan?”; “In what ways did the doctor encourage you to ask questions or express concerns?”; and “How would you describe the conclusion of the consultation?”

Content relevance and clarity of the reflection guide were evaluated through expert review involving three specialists in medical communication and qualitative health research. Feedback from the reviewers focused on question clarity, relevance to telemedicine interaction, and alignment with the Calgary–Cambridge framework. Revisions were subsequently made to improve wording precision and ensure consistency between consultation stages and reflective prompts.

Rather than emphasizing reliability in a positivistic sense, the study addressed instrument trustworthiness through methodological consistency, transparent coding procedures, reflexive discussion among researchers, and systematic alignment between the research objectives, data collection instrument, and analytical framework.

### **Procedures and Time Frame**

The study was conducted over a three-month period. Each participant independently conducted telemedicine consultations using the four selected healthcare applications. Participants interacted with doctors through the platforms as ordinary healthcare users following standardized consultation scenarios prepared by the researchers to maintain consistency across consultations.

Immediately after each consultation, participants completed the structured reflection guide to document their communication experiences. In addition, a semi-structured interview was conducted with a telemedicine platform coordinator to obtain contextual information regarding communication protocols and doctor communication training practices within the platform.

Data collection and preliminary analysis were conducted iteratively. Initial coding began concurrently with ongoing data collection to monitor the emergence of themes and communication patterns. Thematic saturation was considered achieved after approximately 96 consultation reflections and the coordinator interview, when additional data no longer produced substantially new conceptual categories, interactional patterns, or interpretive insights related to the consultation stages. Saturation was assessed collaboratively by two researchers through repeated comparison of newly coded data with existing thematic categories. Although thematic saturation had been reached, all 120 consultation reflections were still analyzed to ensure comprehensive representation of communication variations and to confirm the stability of identified themes across the dataset.

The determination of thematic saturation involved iterative coding discussions among the research team. Saturation was confirmed when subsequent consultations consistently reinforced previously established categories without generating meaningful thematic expansion. This process strengthened analytical transparency and methodological rigor.

### **Ethical Considerations**

This study received ethical approval from the Ethics Committee of Universitas Mercu Buana (Ethical Clearance No. 01-1-4/470/F/VI/2026). Prior to participation, all simulated patients were informed about the study objectives, consultation procedures, voluntary nature of participation, confidentiality of data, and their right to withdraw at any stage without consequences. Written informed consent was obtained from all participants before data collection. The use of simulated patients enabled the examination of communication processes in telemedicine consultations while minimizing ethical risks associated with involving real patients. All data were anonymized and used exclusively for research purposes, and no personally identifiable information related to participants, physicians, or telemedicine platforms was disclosed.

### **Data Analysis and Reflexivity**

The data were analyzed using thematic analysis following the six-stage procedure proposed by Braun and Clarke (Braun & Clarke, 2022): (1) familiarization with the data through repeated reading of participant reflections and interview transcripts; (2) generation of initial inductive codes; (3) clustering related codes into preliminary themes; (4) reviewing and refining themes through collaborative analysis; (5) defining and naming themes; and (6) interpreting thematic relationships across consultation stages.

The coding process proceeded in two phases. First, inductive coding was conducted without predefined categories to allow emergent communication themes to arise directly from the data. After initial inductive codes were generated, the Calgary–Cambridge consultation stages were used as a sensitizing framework to organize how these themes manifested across different parts of the consultation. Thus, themes were derived inductively, while their presentation across consultation stages was deductively structured.

Coding was conducted independently by two researchers using iterative comparison procedures. After initial coding, the researchers compared coding outputs to identify areas of similarity and discrepancy. Coding disagreements were resolved through analytic discussion, re-examination of original excerpts, and refinement of code definitions until interpretive consensus was achieved. Rather than calculating statistical intercoder reliability, the study prioritized collaborative interpretive agreement consistent with qualitative inquiry principles.

To strengthen trustworthiness, the study applied the criteria of credibility, dependability, confirmability, and transferability. Credibility was enhanced through iterative engagement with the data, peer debriefing, and triangulation between participant reflections and coordinator interview data. Dependability was supported through documentation of coding decisions and thematic development processes. Confirmability was strengthened through reflexive discussions among the researchers regarding potential interpretive assumptions and analytical decisions. Transferability was addressed by providing detailed descriptions of the research context, participants, consultation procedures, and telemedicine settings.

Researcher reflexivity was considered throughout the analytical process. The researchers recognized that their academic backgrounds in communication and healthcare studies could influence interpretation of telemedicine interaction patterns. To minimize interpretive bias, coding discussions involved continuous reflection on analytical assumptions, repeated reference to participant narratives, and collaborative review of emerging themes to ensure that interpretations remained grounded in the data.

## RESULTS AND DISCUSSION

### Participant and Consultation Characteristics

A total of 30 first-year medical students participated in this study as simulated patients. Each participant conducted four telemedicine consultations using four different Android-based telemedicine applications widely used in Indonesia, resulting in 120 consultation reflections. In addition, one telemedicine platform coordinator participated in a semi-structured interview. This interview served primarily as contextual information regarding institutional communication practices and training procedures; it did not function as a source of thematic development.

The consultations involved general medical complaints commonly addressed in telemedicine settings, including minor respiratory symptoms, digestive complaints, skin conditions, headaches, and general health concerns. Consultation interactions were conducted primarily through chat-based communication, although some consultations progressed to voice calls or video calls depending on the doctor's communication approach and clinical assessment needs.

**Table 1. Participant and Study Characteristics**

Characteristics	Description
Number of participants	30 simulated patients
Age range	18–21 years
Gender distribution	18 female, 12 male
Prior telemedicine experience	22 participants (73%) had used telemedicine at least once
Telemedicine platforms	4 Android-based applications
Total consultations	120
Consultation mode	Primarily chat-based; 38 escalated to voice/video calls
Additional informant	1 telemedicine platform coordinator (contextual information only)
Consultation focus	General non-emergency medical complaints
Unit of analysis	Communication experiences across consultation stages

### Emergent Communication Themes

The thematic analysis identified six emergent communication themes: (1) relational deficit, (2) modality mismatch, (3) diagnostic risk, (4) information asymmetry, (5) limited patient involvement, and (6) unresolved communication. The Calgary–Cambridge consultation stages (initiating session, gathering information, explanation and planning, shared decision-making, closing session) served as contextual categories to understand how each theme manifested across different parts of the consultation. Table 2 presents the relationship between emergent themes and consultation stages.

**Table 2. Emergent Themes Across Consultation Stages**

Emergent Theme	Definition	Consultation Stages Most Affected
Relational deficit	Absence of empathy, greetings, or attentive responses	Initiating session, Closing session
Modality mismatch	Text-only communication when voice/video needed	Information gathering, Explanation
Diagnostic risk	Insufficient history-taking without physical exam	Information gathering
Information asymmetry	Minimal explanation, unclear reasoning	Explanation and planning
Limited patient involvement	Doctor-dominated decisions without patient input	Shared decision-making
Unresolved communication	Abrupt ending, ignoring follow-up questions	Closing the Session

### Theme 1: Relational Deficit

Participants consistently reported that the absence of interpersonal engagement negatively affected their consultation experience. Relational deficit was most apparent during session initiation and closure. A participant stated:

"The doctor immediately asked about my symptoms without introducing himself, so the interaction felt cold and impersonal" (P08).

Conversely, when doctors provided polite greetings, self-introductions, and supportive closing remarks, participants perceived the consultation as more professional and trustworthy. Relational deficit was not limited to a single stage but manifested most strongly during the opening and closing of consultations.

### Theme 2: Modality Mismatch

Although most consultations began as text-based chat, participants valued when doctors-initiated voice or video calls to clarify complex symptoms. Modality mismatch occurred when text-only communication persisted despite clinical or interactional needs for richer communication channels.

"When the doctor switched from chat to video call, it became easier to explain my condition and ask questions" (P21).

Reliance exclusively on text-based interaction was associated with reduced diagnostic confidence and perceived lack of physician attentiveness. Participants perceived modality escalation as a sign of attentiveness and clinical seriousness. Voice and video communication were considered more effective for clarifying symptoms, reducing misunderstanding, and strengthening interaction quality.

### Theme 3: Diagnostic Risk

Participants expressed greater diagnostic confidence when doctors conducted thorough symptom exploration, including chronology, medication history, and supporting images. Diagnostic risk emerged as a theme because telemedicine lacks physical examination; participants relied heavily on the quality and thoroughness of verbal questioning to assess physician attentiveness.

"I felt more confident when the doctor asked detailed questions about my symptoms and medication history" (P14).

In contrast, brief closed-ended questioning and premature diagnostic closure created perceptions of insufficient assessment. Participants interpreted comprehensive questioning as evidence that the doctor was carefully assessing their condition, partially compensating for the absence of physical examination.

#### **Theme 4: Information Asymmetry**

Clear explanations of diagnosis, causes, treatment plans, and warning signs were strongly associated with positive participant evaluations. Information asymmetry occurred when physicians possessed and conveyed minimal information while patients remained uncertain.

"The explanation was very brief, and I was simply told to visit the hospital without understanding why" (P05).

Participants valued transparency even when diagnostic uncertainty was acknowledged. Explanations that included possible alternative diagnoses and reasoning behind recommendations were perceived as honest and patient-centered. Insufficient explanatory communication was interpreted as dismissive, particularly because telemedicine consultations already limited opportunities for direct clinical reassurance.

#### **Theme 5: Limited Patient Involvement**

Shared decision-making was rarely observed in the consultation data. Limited patient involvement emerged as a distinct theme where consultations followed physician-centered patterns; treatment decisions were made without inviting patient input, exploring preferences, or confirming agreement.

"The doctor decided everything without asking whether I agreed with the treatment plan" (P19).

This theme was identified inductively and appeared across multiple consultations regardless of the specific clinical complaint. Participants reported that when doctors actively involved them in discussing treatment options, their satisfaction and perceived consultation quality increased. However, such instances were infrequent in the dataset.

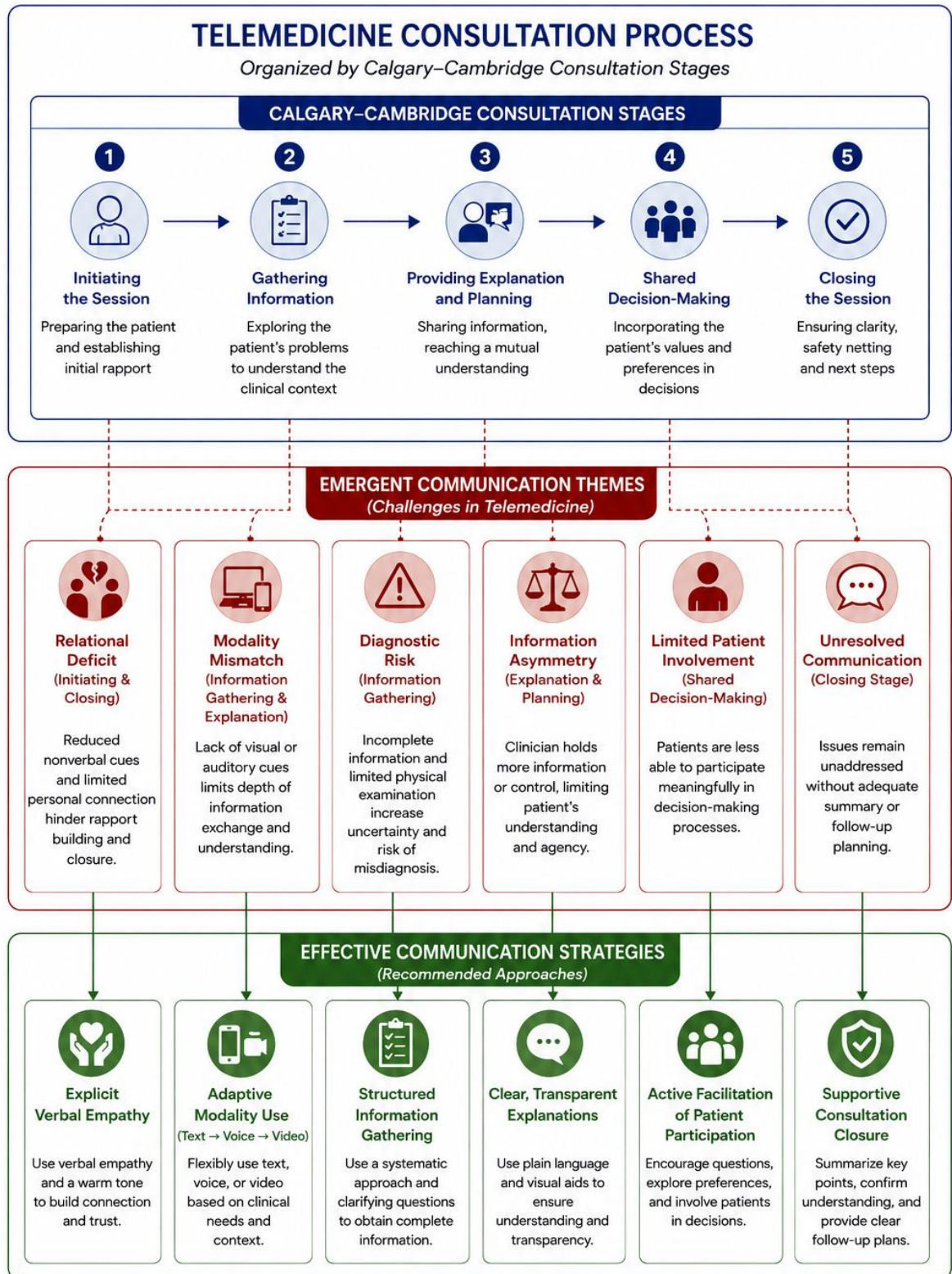
#### **Theme 6: Unresolved Communication**

Consultation closure significantly influenced participants' overall evaluation of telemedicine encounters. Unresolved communication occurred when consultations ended abruptly, when follow-up questions were ignored, or when physicians failed to confirm patient understanding.

"The consultation ended suddenly without confirming I understood the treatment instructions" (P17).

Effective closure included summarizing treatment instructions, explicitly inviting final questions, offering supportive remarks, and confirming patient understanding. Abrupt termination created uncertainty and left participants unsure whether they had correctly understood the medical advice provided. The absence of empathetic closing communication was associated with reduced perceptions of physician attentiveness and weaker therapeutic connection.

The following framework was inductively developed from thematic analysis of patient reflections across telemedicine consultation stages.



**Figure 1. Conceptual framework of telemedicine consultations based on the Calgary–Cambridge consultation model**

Figure 1 maps emergent communication challenges across the Calgary–Cambridge consultation stages and links them to recommended communication strategies. Six themes were identified: relational deficit, modality mismatch, diagnostic risk, information asymmetry, limited

patient involvement, and unresolved communication. Corresponding strategies include explicit verbal empathy, adaptive modality use, structured information gathering, transparent explanations, active patient participation, and supportive consultation closure. Together, these strategies aim to improve communication quality, patient engagement, safety, and patient-centered care in telemedicine consultations.

## **DISCUSSION**

The discussion is organized according to the six emergent themes identified in the Results section, consistent with the study's inductive analytical approach. For each theme, findings are connected to existing literature and implications for adapting the Calgary–Cambridge framework is discussed.

### **Relational Deficit in Telemedicine Consultation**

The finding that relational deficit emerged most prominently during session initiation and closure extends previous research on the importance of relational communication in healthcare (Effendi et al., 2024; Street et al., 2009). However, unlike face-to-face consultations where empathy may be conveyed through nonverbal cues (eye contact, posture, physical presence), telemedicine requires physicians to verbalize attentiveness deliberately (Abou Hashish, 2025). This suggests that the Calgary–Cambridge framework's stages of "initiating the session" and "closing the session" require adaptation to include explicit verbal empathy protocols in telemedicine contexts.

### **Modality Mismatch as a Communication Challenge**

Modality mismatch occurred when text-only communication persisted despite clinical or interactional needs for richer channels. This finding extends previous telemedicine studies that often conceptualize communication technologies as neutral delivery channels (Kruse et al., 2016). The present study suggests that modality selection should instead be understood as part of communication competence in digitally mediated healthcare. Effective telemedicine communication therefore involves not only what physicians communicate, but also how communication modalities are strategically managed. The conventional Calgary–Cambridge framework does not address modality escalation; therefore, telemedicine adaptations should incorporate guidance regarding when clinicians should transition from text to voice or video based on symptom complexity, communication ambiguity, or emotional distress.

### **Diagnostic Risk and the Absence of Physical Examination**

Diagnostic risk emerged because telemedicine consultations lack physical examination. Participants relied heavily on the quality and thoroughness of verbal questioning to assess physician attentiveness and diagnostic credibility. This finding aligns with (Tsukamoto et al., 2012), who demonstrated that thorough history-taking partially compensates for the absence of physical examination. In telemedicine contexts, the "gathering information" stage of the Calgary–Cambridge framework should be adapted to include structured verbal exploration protocols, explicit clarification strategies, and transparent documentation of diagnostic reasoning.

### **Information Asymmetry and Explanatory Communication**

Information asymmetry occurred when physicians possessed and conveyed minimal information while patients remained uncertain. Participants perceived insufficient explanatory communication as dismissive and unhelpful, consistent with findings from Nguyen et al. (2024). The Calgary–Cambridge framework's "explanation and planning" stage assumes shared understanding can be achieved through dialogue; however, telemedicine requires more deliberate verbal summarization, transparent explanation of diagnostic reasoning, and confirmation of patient understanding due to reduced nonverbal feedback.

### **Limited Patient Involvement and Shared Decision-Making**

Limited patient involvement in shared decision-making was a recurrent finding. Telemedicine environments may unintentionally reinforce physician-centered communication patterns, particularly during brief, efficiency-oriented digital interactions. Similar concerns have been identified in previous telemedicine studies (Alboksmaty et al., 2026; Greenhalgh et al., 2020). The Calgary–Cambridge framework's shared decision-making component assumes collaborative discussion occurs naturally; however, in telemedicine, physicians may need to use more explicit participation prompts, confirmation questions, and structured invitations for patient input because opportunities for spontaneous interaction are reduced compared with face-to-face consultations.

### **Unresolved Communication and Consultation Closure**

Unresolved communication during consultation closure created uncertainty about treatment instructions and reduced perceived continuity of care. The "closing the session" stage of the Calgary–Cambridge framework, which in face-to-face settings may rely on nonverbal cues (e.g., standing, reaching for the door), requires explicit verbal closure strategies in telemedicine. These include summarizing instructions, inviting final questions, confirming understanding, and offering supportive remarks.

### **Limitations**

This study has several limitations. First, the participants were simulated patients (first-year medical students) rather than actual patients. Their medical background may have made them more attentive to communication structure than lay patients. Therefore, findings should be interpreted as reflecting the perspectives of individuals with foundational medical knowledge, not the general patient population. Second, the study focused on selected telemedicine platforms in Indonesia, which may limit contextual transferability. Third, the interview with the telemedicine platform coordinator served only as contextual information and did not contribute to thematic development. Finally, communication experiences may vary depending on doctors' communication styles, technological conditions, and consultation contexts.

### **Suggestions for Future Research**

Future research should involve real patients across diverse demographic and clinical settings to compare findings with those from simulated patients. Comparative studies examining text-based, voice-based, and video-based consultations may provide deeper understanding of modality effects. In addition, future research should evaluate the effectiveness of telemedicine-specific communication training programs based on the six themes identified in this study.

## **CONCLUSION**

This study examined simulated patient perceptions of telemedicine communication using the Calgary–Cambridge framework as an organizational structure while identifying six emergent themes inductively: relational deficit, modality mismatch, diagnostic risk, information asymmetry, limited patient involvement, and unresolved communication. The findings demonstrate that telemedicine reshapes doctor–patient interaction toward more information-oriented patterns, requiring contextual adaptation of the Calgary–Cambridge framework that includes explicit rapport-building strategies for opening and closing stages, modality escalation guidance (text → voice → video), structured verbal clarification and transparent reasoning, and deliberate facilitation of patient participation in shared decision-making. Given that participants were simulated patients with medical training rather than actual lay patients, transferability of findings requires further investigation; however, the identified themes provide a foundation for developing telemedicine-specific communication training programs that equip physicians with digital relational competencies alongside clinical communication skills.

## ACKNOWLEDGMENT

The authors would like to express their sincere gratitude to the medical students who participated in this study as simulated patients and contributed their time and reflections during the telemedicine consultations. The authors also thank the telemedicine platform coordinator who kindly provided valuable information regarding the communication procedures and training practices within the platform.

In addition, the authors appreciate the support provided by the affiliated academic institution for facilitating the research process and encouraging scholarly activities related to digital health communication. The insights and cooperation of all participants were essential for the completion of this research.

## AUTHOR CONTRIBUTION STATEMENT

LMG conceptualized and designed the study, developed the research framework, supervised the overall research process, and contributed to writing and critically revising the manuscript. WSS provided methodological guidance on validity, ethics, and structural organization, and reviewed the manuscript for rigor. AS conducted data collection, organized and analyzed the data, and contributed to drafting the manuscript. RH contributed to data analysis, interpretation of findings, and assisted in writing and revising the manuscript. All authors discussed the results, reviewed the manuscript critically for important intellectual content, and approved the final version of the manuscript for publication.

## AI DISCLOSURE STATEMENT

The author used ChatGPT (OpenAI) during the preparation of this work for language editing, text organization, and improving the clarity of academic writing. After using this tool, the author carefully reviewed and edited the content as necessary and takes full responsibility for the accuracy, integrity, and originality of the final manuscript.

## CONFLICTS OF INTEREST

The authors declare that there are no financial, institutional, or personal conflicts of interest that could have influenced the design of the study, the collection and analysis of the data, the preparation of the manuscript, or the decision to publish the results.

## REFERENCES

- Abou Hashish, E. (2025). Compassion Through Technology: Digital Empathy Concept Analysis And Implications In Nursing. *DIGITAL HEALTH*, 11. <https://doi.org/10.1177/20552076251326221>
- Alboksmaty, A., Lunova, T., Darzi, A., & Neves, A.-L. (2026). Communication Challenges And Mitigation Strategies In Primary Care Virtual Consultations: Qualitative Study. *J Med Internet Res*, 28, E79399. <https://doi.org/10.2196/79399>
- Alvandi, M. (2017). Telemedicine And Its Role In Revolutionizing Healthcare Delivery. *The American Journal Of Accountable Care*, 5(1), 1–5. [https://doi.org/10.1007/978-3-030-99457-0\\_1](https://doi.org/10.1007/978-3-030-99457-0_1)
- Braun, V., & Clarke, V. (2022). *Thematic Analysis: A Practical Guide*. SAGE. <https://books.google.co.id/books?id=25lpzgeacaj>

- Briandana, R., Hesti, S., & Dwityas, N. A. (2026). Green Footprints: Climate Messages In Indonesian Television Entertainment. In *Multidimensional Climate Change Communication In Asia: Culture, Community, And Digital Innovation* (Pp. 31–43). Taylor And Francis. <https://doi.org/10.4324/9781003711865-5/GREEN-FOOTPRINTS-RIZKI-BRIANDANA-NINDYTA-AISYAH-DWITYAS>
- Cole, S., & Bird, J. (2022). *The Medical Interview: The Three Function Approach* (4th Ed.). Elsevier.
- Creswell, J. W., & Poth, C. N. (2023). *Qualitative Inquiry And Research Design: Choosing Among Five Approaches*. SAGE Publications. <https://books.google.co.id/books?id=Pwjmeaaaqbj>
- Effendi, D. E., Handayani, S., Nugroho, A. P., Ardani, I., Fitrianti, Y., Karlina, K., & Latifah, C. (2024). The Significance Of Physician-Patient Communication On Telemedicine Patients' Health Outcomes: Evidence From Indonesia. *Health Communication*, 39(10), 1932–1941. <https://doi.org/10.1080/10410236.2023.2247852>
- Fortin, A. H., Dwamena, F. C., Frankel, R. M., Lepisto, B. L., & Smith, R. C. (2018). *Smith's Patient-Centered Interviewing* (4th Ed.). McGraw Hill / Medical.
- Ganiem, L. M. (2018). *Komunikasi Kedokteran: Konteks Teoretis Dan Praktis* (D. Feirus, Ed.). Kencana Prenadamedia Group. <https://prenadamedia.com/product/komunikasi-kedokteran-konteks-teoretis-dan-praktis/>
- Ganiem, L. M. (2020). Efek Telemedicine Pada Masyarakat (Kajian Hukum Media Mcluhan: Tetrad). *Interaksi: Jurnal Ilmu Komunikasi*, 9(2), 87–97. <https://doi.org/10.14710/interaksi.9.2.87-97>
- Greenhalgh, T., Wherton, J., Shaw, S., & Morrison, C. (2020). Video Consultations For Covid-19. *BMJ*, 368, M998. <https://doi.org/10.1136/bmj.M998>
- Hu, Y., Ngai, C. S. B., & Jiang, R. (2026). Communication Strategies To Promote Patient Engagement In Telemedicine: Systematic Review. *J Med Internet Res*, 28, E85456. <https://doi.org/10.2196/85456>
- Keifenheim, K., Teufel, M., Ip, J., Speiser, N., Lehr, E., Zipfel, S., & Herrmann-Werner, A. (2015). Teaching History Taking To Medical Students: A Systematic Review. *BMC Medical Education*, 15. <https://doi.org/10.1186/s12909-015-0443-x>
- Keshet, Y., Popper-Giveon, A., & Adar, T. (2025). Telemedicine And Patient-Centered Care: The Perspective Of Primary-Care Physicians. *Health*, 29(4), 551–568. <https://doi.org/10.1177/13634593241290190>
- Kruse, C. S., Karem, P., Shifflett, K., Vegi, L., Ravi, K., & Brooks, M. (2016). Evaluating Barriers To Adopting Telemedicine Worldwide: A Systematic Review. *Journal Of Telemedicine And Telecare*, 24(1), 4–12. <https://doi.org/10.1177/1357633X16674087>
- Kurtz, S., Draper, J., & Silverman, J. (2005). *Teaching And Learning Communication Skills In Medicine* (2nd Ed.). CRC Press. <https://doi.org/10.1201/9781315378398>
- Li, Y., Pan, Y., Ding, X., Aierken, A., & Jiang, W. (2023). The Effect Of Training Medical Students In The Community Area In The Midst Of The Covid-19 Pandemic In China: A Community-Based Study. *BMC Medical Education*, 23(1), 517. <https://doi.org/10.1186/s12909-023-04509-5>
- Mulyana, A., Briandana, R., & Rekarti, E. (2020). ICT And Social Media As A Marketing Communication Platform In Facilitating Social Engagement In The Digital Era. *International Journal Of Innovation, Creativity And Change*. *Www.Ijicc.Net*, 13(5), 2020. [https://www.ijicc.net/images/vol\\_13/iss\\_5/13501\\_mulyana\\_2020\\_e\\_r.pdf](https://www.ijicc.net/images/vol_13/iss_5/13501_mulyana_2020_e_r.pdf)

- Mulyana, D., & Ganiem, L. M. (2021). Health Communication: An Intercultural Approach. Prenada Media Grup. <https://Prenadamedia.Com/Product/Komunikasi-Kesehatan-Pendekatan-Antarbudaya/>
- Nguyen, A. D., White, S. J., Tse, T., Cartmill, J. A., Roger, P., Hatem, S., & Willcock, S. M. (2024). Communication During Telemedicine Consultations In General Practice: Perspectives From General Practitioners And Their Patients. *BMC Primary Care*, 25(1), 324. <https://doi.org/10.1186/s12875-024-02576-1>
- O'Brien, B., Harris, I., Beckman, T., Reed, D., & Cook, D. (2014). Standards For Reporting Qualitative Research: A Synthesis Of Recommendations. *Academic Medicine : Journal Of The Association Of American Medical Colleges*, 89. <https://doi.org/10.1097/ACM.0000000000000388>
- Orlando, J. F., Beard, M., & Kumar, S. (2019). Systematic Review Of Patient And Caregivers' Satisfaction With Telehealth Videoconferencing As A Mode Of Service Delivery In Managing Patients' Health. *PLOS ONE*, 14(8), E0221848-. <https://doi.org/10.1371/journal.pone.0221848>
- Pinedo-Torres, I., García-Villasante, E., Gutiérrez-Ortiz, C., Quispe-Sarria, C., Morales-Pocco, K., Cedillo-Balcázar, J., Morán-Mariños, C., & Baca-Carrasco, V. (2023). The Doctor-Patient Relationship And Barriers In Non-Verbal Communication During Teleconsultation In The Era Of COVID-19: A Scoping Review. *F1000Research*, 12(676). <https://doi.org/10.12688/f1000research.129970.1>
- Pittmann, R., Koppel, P. D., & Barrett, D. (2026). Translating Telehealth Communication Research Into Patient-Centered, Implementable Practice. *Journal Of Medical Internet Research*, 28. <https://doi.org/10.2196/93690>
- Shore, J. H., Schneck, C. D., & Mishkind, M. C. (2020). Telepsychiatry And The Coronavirus Disease 2019 Pandemic—Current And Future Outcomes Of The Rapid Virtualization Of Psychiatric Care. *JAMA Psychiatry*, 77(12), 1211–1212. <https://doi.org/10.1001/jamapsychiatry.2020.1643>
- Street, R. L., Makoul, G., Arora, N. K., & Epstein, R. M. (2009). How Does Communication Heal? Pathways Linking Clinician–Patient Communication To Health Outcomes. *Patient Education And Counseling*, 74(3), 295–301. <https://doi.org/10.1016/j.pec.2008.11.015>
- Tsukamoto, T., Ohira, Y., Noda, K., Takada, T., & Ikusaka, M. (2012). The Contribution Of The Medical History For The Diagnosis Of Simulated Cases By Medical Students. *International Journal Of Medical Education*, 3, 78–82. <https://doi.org/10.5116/ijme.4f8a.E48c>