Specialist–Primary Care Provider–Patient Communication in Telemedical Consultations

RICHARD L. STREET, JR., Ph.D.,1 E. JAY WHEELER, M.D., Ph.D.,2 and WILLIAM T. McCaUGHAN, Ph.D.3

ABSTRACT

The use of videoconferencing enables a primary care provider and patient at one location to confer with a specialist at a distant site. Although this encounter may benefit all parties, this arrangement may also pose potential communication problems. This investigation analyzed the verbal content in typical telemedical consultations in an effort to identify patterns of talk that could affect quality of care, the specialist–primary care provider relationship, and future utilization. From the video archives of the Texas Tech Telemedicine program, 26 consultations were selected for analysis. These cases met inclusion criteria (e.g., English was spoken, the consultation was at least 10 minutes long, etc.). Four types of verbal responses were studied—information-giving, questions, controlling utterances (e.g., directives, recommendations, disagreements), and partner-centered talk (e.g., showing support, asking for another’s opinion). The specialist was the most dominant communicator in terms of asking questions, displaying controlling behavior, and generally talking more than the other participants. Patients were the least active participants, and they also received the least amount of information. Group discussion was limited. Each interactant tended to talk to one participant at a time with most of the conversation occurring between the specialist and primary care provider. Differences in the way these specialists, primary care providers, and patients communicated with one another may have important implications for quality of care and future utilization of telemedicine. Future research should examine the relationship between these patterns of interaction and outcomes of care.

INTRODUCTION

Telemedicine represents a valuable resource for delivering health-related services to remote underserved areas. Although telemedicine can increase access to medical care (for a review, see ref. 1), there has been little scrutiny of how telemedicine influences the quality and process of care. Of interest in this investigation is the use of interactive videoconferencing technology to conduct consultations between a primary care provider (e.g., family physician, nurse practitioner) and patient at one location and a consulting specialist at another location.

Teleconsultations offer advantages for all participants. The specialist would benefit both

1Department of Speech Communication, Texas A&M University, College Station, Texas.
2Department of Health Services Research and Management, Texas Tech University Health Sciences Center, Lubbock, Texas.
3Division of Outreach and Extended Studies, Texas Tech University, Lubbock, Texas.
the patient (in terms of providing an accurate diagnosis, more effective treatment) and the primary caregiver (in terms of gaining new knowledge and learning new techniques). Furthermore, the specialist would benefit from seeing interesting cases, as well as have the satisfaction of helping those in isolated areas. A recent study in Britain found that hospital specialists, general practitioners, and patients all were generally satisfied with their teleconsultations.

On the other hand, teleconsultations involving three people may greatly complicate the communicative exchange. For example, instead of two participants (physician and patient), there are three. Instead of one professional relationship (physician-patient), there are three (referring provider/consulting physician, consulting provider/patient, and referring provider-patient). This situation increases the likelihood of uncertainty, frustration, and unmet expectations with respect to who controls the encounter, what information is of importance, and who is responsible for making medical decisions.

These issues are explored here by analyzing qualitative and quantitative characteristics of the communication that occurs among referring providers, consulting providers, and patients during teleconsultations. These communicative exchanges are likely to affect quality of care, future utilization of telemedicine, and rapport between referring and consulting providers.

COMMUNICATION IN TELECONSULTATIONS

The three-party teleconsultation is different from the traditional medical consultation in at least two important ways, the presence of a second provider and the mixing of face-to-face and mediated communication.

Two clinicians and patient

The typical medical consultation unfolds in a fairly orderly fashion beginning with the patient’s presentation of a health concern, followed by the physician’s questions and examination of the patient, and concluding with discussion of the diagnosis and recommendations for treatment. Although the physician typically assumes (and is granted) control of the interaction, many patients also will be active and influential participants by asking questions, expressing concerns, and sharing their opinions. Because there are just two participants, the provider and patient will generally focus their attention on each other.

The presence of the second provider may alter the pattern of interaction in several ways. For example, it may primarily be a consultation between the primary care provider and consulting physician with the patient physically present to answer questions and be examined if necessary. Or, the interaction may be a consultation between the specialist and patient with the primary care provider present to provide background information and medical history, only. Or, the consultation may entail a group discussion in which the three participants share their unique perspectives and opinions to reach an appropriate and mutually acceptable medical decision.

The mediated communicative environment

The telemedical consultation also may be affected by the hybridization of face-to-face and mediated communication. Face-to-face interactions typically are more spontaneous, faster-paced, and more free-flowing than are videoconference interactions. Face-to-face participants are in close proximity, share a visual field, have access to nonverbal behaviors, and do not experience signal delay in their exchange. In contrast, interactions conducted over interactive video are characterized by more formality, longer conversational turns, and more explicit turn-taking. For example, rather than using falling intonation or gaze to end a speaking turn (common turn-taking cues in face-to-face interaction), interactants using interactive video typically switch speakers by directing a question to another participant or by simply being silent following the end of their turn.

How might the mixing of face-to-face and mediated interaction affect communication in
teleconsultations? On the one hand, it might induce more active interaction between the primary care provider and the patient and lesser interaction with the distant specialist. On the other hand, if the participants expect the specialist to assume an active role in the consultation, then the media environment may actually make it easier for the specialist to control the interaction. For example, the patient and primary caregiver would have to work out taking their respective turns when talking to the specialist. The specialist, however, could talk to either the patient or primary care provider and, by so doing, determine which of the two spoke next.

Research questions

This investigation assesses the patterns of communication occurring in teleconsultations, focusing on four types of verbal behavior—questions, information-giving, controlling responses (e.g., directives, recommendations, suggestions), and partner-centered responses (e.g., reassurance, praise, asking for another’s opinion). These behaviors were chosen because of their potential impact on the participants’ satisfaction with the consultation, patients’ adherence to physicians’ recommendations, and rapport between the primary care provider and specialist.10–12 Specifically, two questions were addressed: (1) What is the distribution of talk (e.g., who speaks to whom and how often) in teleconsultations involving a consultant, primary care provider, and patient? (2) What patterns of question asking, information giving, controlling behavior, and partner-centered responses characterize these consultations?

METHODS

Research setting and participants

The consultations were selected from the Texas Tech Telemedicine program’s video archive of teleconsultations. The program links rural clinics and correctional health care facilities in West Texas to the four campuses of the Texas Tech Health Science Center. It offers a variety of clinical and educational services, including, access to numerous specialties, electronic transmission of images (e.g., X-rays, sonograms), and continuing medical education. Informed consent was obtained from a number of participants to videotape their interactions for educational and research purposes.

A convenience sample of 26 consultations from three rural facilities was selected for this analysis. The selection of cases was based on four criteria: (1) all participants spoke English, (2) the patient was physically and mentally capable of participating in the interaction (i.e., the patient was not unconscious or mentally disabled), (3) the consultation was at least 10 minutes in length, and (4) the content was primarily talk between the participants, as compared to extensive diagnostic and surgical procedures. Although the video archive does have more recordings, most of them were not relevant for this study. First, several were from correctional facilities and outside the scope of this analysis. Second, a number of the recordings were of diagnostic or surgical procedures where the distant specialist guided the primary care physician through the procedure. The sample of consultations in this study took place over a 2-year period between 1994 and 1996.

The consultations selected for analysis here fit the traditional model of a teleconsultation in which a patient and primary care provider at a community clinic or hospital visited with a specialist at the tertiary care center. Each consultation included one of five primary care providers (3 physicians and 2 physician’s assistants), as well as one of 20 consulting physicians from diverse specialties (e.g., neurology, endocrinology, orthopedics, dermatology). In general, the primary care providers had more experience participating in teleconsultations than did the specialists. This was reflected in this sample as well. One primary care physician participated in 15 of the 26 consultations whereas the remaining four primary care providers participated in one to five consultations. Only three specialists participated in more than one consultation, with one physician participating in four. Of the 26 adult patients, 15 were female, approximately one-third were Hispanic, and 6 were parents of pediatric patients.
The technology

At the rural clinic, the videoconference equipment consisted of a modular audio/video system with attachments for microphones and other medical devices (e.g., an otoscope). The videoconferencing equipment at the tertiary care center allowed the specialist to send and receive audio and video transmissions to and from the rural clinic. For most of the consultations, open microphones with echo cancellation were used at both sites. In a few consultations, an open microphone was maintained at the rural clinic and a push-to-talk microphone was used by the specialist. Signal transmission consisted of a network of T1 lines from the clinics to the various campuses of the Texas Tech Health Science Center.

The consultations were structured so that the patient and primary care provider sat side by side and could see and hear the specialist on their video monitor. The specialist’s monitor showed the patient and primary care provider sitting together. The videotapes were recorded from the perspective of the specialist. That is, viewers could see and hear the primary care provider and patient but only hear the specialist.

Verbal behavior coding

Verbal behaviors: The “utterance” (e.g., a simple sentence, an independent clause, nonrestrictive dependent clause, multiple predicate) served as the unit of analysis for coding. Based on our previous work, four types of utterances were coded for each interactant. Questions consisted of interrogatives that solicited information and clarification on health issues. Information-giving included statements of fact, observations, descriptions, and explanations that related specifically to health. Controlling responses included utterances that attempted to influence the other person’s attitudes, beliefs, or behavior (e.g., directives, opinions, recommendations, suggestions, disagreements). Partner-centered responses consisted of verbal acts that showed concern for or interest in a conversational partner’s beliefs, opinions, feelings, or situation. These included statements of reassurance, support, praise, asking for the partner’s opinion, agreeing with a partner’s recommendation, and other forms of interpersonal sensitivity. Utterances not falling within these four categories (e.g., social conversation, greetings) were placed in a fifth category, other.

Speakers and receivers: In an interaction involving two people, there is little question of who is speaking to whom. However, in a three-person exchange, talk can be directed to either or both partners. Thus, for each utterance, coders also made judgments as to the intended audience of a speaker’s utterance (i.e., interactant B, C, or both). Coders made these decisions based on common turn-taking and speaker-listener cues, such as whether the speaker talked to someone by name or title, who was asked the question, tone of voice, gaze, use of technical language, and whether the speaker’s comment was in direct response to the previous speaker’s utterance.

The coding process: Discourse analysis traditionally is a labor-intensive process that requires transcribing entire interactions to obtain text for coding. As a result, researchers are using more efficient, presumably adequate sampling techniques where only a portion of the interaction is transcribed and coded. The sampling procedure in this analysis consisted of using the first 10 minutes of each consultation to represent the entire consultation. This assumes that the pattern of talk occurring during the first 10 minutes will not differ significantly from that of the entire interaction. Although certain topics are more likely to be discussed in the beginning (e.g., the patient’s symptoms) and others toward the end of the consultation (e.g., treatment recommendations), another study has indicated that the conversational elements in this study (i.e., questions, information-giving, etc.) are apt to occur at any time during the interaction.

Two coders (graduate students in health communication) participated in five 1-hour training sessions. To verify reliability in coding decisions, 10 randomly selected transcripts were coded independently by each coder. Coding decisions were sufficiently consistent with respect to categorizing utterances into specific categories (Cohen’s kappas ranged from 0.82 to 0.98), as well as to who was the recipient of an utterance (kappa = 0.92). Having established
consistency in their coding decisions, each coder completed the coding task by taking half of the remaining 16 transcripts and independently coding them.

Data analysis

Interestingly, the coders observed very few instances where a participant’s utterance was perceived to be directed to both of the other interactants (an issue addressed later). For example, the specialist almost always talked to either the referring provider or the patient, but rarely to both at the same time. As a result, ANOVAs were performed on each type of verbal behavior with the independent variable being six levels of “speaker-receiver” combinations—specialist to referring provider, specialist to patient, referring provider to specialist, referring provider to patient, patient to specialist, and patient to referring provider.

RESULTS

Overview

The means and standard deviations for each type of utterance for each participant are presented in Table 1. Prior to conducting analyses related to the research questions, we tested the assumption that the talk in the first 10 minutes would not differ significantly from that of the entire interaction. To do this, the 10 interactions that were coded by both coders were transcribed in their entirety, and the remaining portion coded. For each data set (i.e., the 10-minute sample and the complete interaction), proportions were computed as a ratio of each type of utterance by a specific speaker (e.g., the specialist) to a specific receiver (e.g., the patient) to the total number of utterances produced in that interaction. Statistical comparisons indicated that in no case did the proportion of a specific type of speaker-receiver utterance (e.g., specialist’s questions to the patient, the primary care providers’ information to the specialist) in the 10-minute sample differ significantly from the proportion of the corresponding speaker-receiver utterance observed in the entire interaction. Thus, for these data, the distribution of speaker-receiver utterances that occurred in first 10 minutes was representative of those of the entire interaction.

<table>
<thead>
<tr>
<th>Speaker/utterance</th>
<th>Patient</th>
<th>Message receiver</th>
<th>Specialist</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Primary care provider</td>
<td></td>
</tr>
<tr>
<td>Total utterances</td>
<td>22.9 (27.4)</td>
<td>33.7 (24.7)</td>
<td>—</td>
</tr>
<tr>
<td>Information giving</td>
<td>10.8 (18.4)</td>
<td>20.1 (14.1)</td>
<td>—</td>
</tr>
<tr>
<td>Questions</td>
<td>8.3 (10.1)</td>
<td>3.9 (3.3)</td>
<td>—</td>
</tr>
<tr>
<td>Controlling utterances</td>
<td>3.3 (6.6)</td>
<td>9.3 (10.2)</td>
<td>—</td>
</tr>
<tr>
<td>Partner-centered responses</td>
<td>0.50 (0.94)</td>
<td>0.42 (0.85)</td>
<td>—</td>
</tr>
<tr>
<td>Other</td>
<td>0.54 (2.4)</td>
<td>2.0 (3.4)</td>
<td>—</td>
</tr>
<tr>
<td>Primary care provider</td>
<td></td>
<td></td>
<td>30.7 (26.4)</td>
</tr>
<tr>
<td>Total utterances</td>
<td>6.4 (8.5)</td>
<td>4.8 (6.6)</td>
<td>24.1 (28.6)</td>
</tr>
<tr>
<td>Information giving</td>
<td>3.5 (7.9)</td>
<td>3.0 (3.8)</td>
<td>20.3 (24.5)</td>
</tr>
<tr>
<td>Questions</td>
<td>1.9 (2.8)</td>
<td>0.38 (0.89)</td>
<td>0.69 (1.2)</td>
</tr>
<tr>
<td>Controlling utterances</td>
<td>0.58 (1.0)</td>
<td>1.3 (2.8)</td>
<td>3.2 (6.2)</td>
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<td>0.15 (0.54)</td>
<td>0.00 (0)</td>
</tr>
<tr>
<td>Other</td>
<td>1.2 (2.3)</td>
<td>0.42 (0.90)</td>
<td>1.1 (2.1)</td>
</tr>
</tbody>
</table>

*These means represent averages per consultation for the first 10 minutes of the interaction. The total number of utterances coded in the data set was 3409.
Research question 1

The first research question addressed differences in the amount of talk each participant contributed to the interaction, and to whom the talk was directed. The distribution of utterances varied significantly across the different speaker-receiver combinations ($F = 8.01, p < 0.001$). As can be seen in Figure 1, the majority of talk in these consultations occurred between the specialist and primary caregiver (mean = 70 utterances/consultation, 53% of the total utterances). The specialist and patient also conversed with some degree of regularity (mean = 49 utterances per consultation, 37% of total utterances). Very little talk occurred between the primary care provider and patient (mean = 12 utterances/consultation, 9% of the utterances). The most active communicator was the specialist, who accounted for 45% of the utterances spoken and who talked significantly more (mean = 59 utterances/consultation) than did the primary caregiver (mean = 42 utterances). Patients were the least active participants, producing only 23% of the total utterances (mean = 30 utterances).

Research question 2

The second question was concerned with differences in the patterns of question-asking, information-giving, controlling utterances, and partner-centered responses that occurred in these consultations.

Questions and information-giving: There was a significant speaker-receiver effect ($F = 10.16, p < 0.001$) with respect to who asked questions and to whom questions were directed (see Fig. 2). Specifically, the specialist asked over 70% of the questions in the first 10 minutes of these exchanges (mean = 12 questions/consultation), addressing twice as many questions to the patient (mean = 8 questions/consultation) than to the primary care provider (mean = 4 questions). Although patients received the most questions (mean = 10 questions/consultation), they only asked on average one question per interaction. The primary caregiver also asked few questions, averaging 2.5 and 1.5 questions to the specialist and patient, respectively.

Information-giving was relatively equally distributed among the specialist, primary care provider, and patient (means = 31, 27, and 23 utterances, respectively) (see Fig. 3). However, there were significant differences when considering to whom the information was provided ($F = 7.59, p < 0.001$). The specialist received the most information, averaging 45 utterances (55% of the total information given) per consultation followed by the primary caregiver who received about 23 utterances (28% of the information). The patient received the least amount of information overall (mean = 14 utterances/consultation, 17% of the information-giving responses). The specialist and primary caregiver tended to provide information to each other more often than to the patient.
Control of the interaction: There was a significant speaker-receiver effect in controlling utterances ($F = 6.90, p < 0.001$). The specialist was by far the most assertive interactant, producing 63% of the controlling responses (mean = 13/consultation). Most of these assertions were directed at the primary care provider (mean = 9/consultation) (see Fig. 4). The primary care provider and patient, on the other hand, only occasionally exerted control during the encounter (see Fig. 4).

Partner-centered responses: Partner-centered responses included statements showing concern, respect, support, and interest in a conversational partner’s feelings, beliefs, and opinions. These rarely occurred in these interactions as each participant averaged less than one such response per consultation (see Fig. 5). Partner-centered responses did not differ across the various speaker-receiver combinations ($F = 1.90, p = 0.1$).

DISCUSSION

This investigation examined the communicative exchange among specialists, primary care providers, and patients. Although exploratory and descriptive in nature, the findings suggest that the communication in this type of teleconsultation differs from the more traditional physician-patient interaction and in ways that could have a significant impact on the quality and utilization of telemedicine.

The dominance of the specialist

Perhaps not surprisingly, the specialist was the most dominant communicator in these consultations. The specialist produced significantly more utterances than the other two participants. Most of this difference was due to the frequency with which the specialist asked questions and exerted control. The specialist also was the most often spoken to, by both the patient and referring provider. These findings are consistent with those of Whitten and Allen who reported that the majority of telemedicine participants believed the consulting physician makes most of the decisions.

On the one hand, when a specialist is called upon to provide an opinion in a given case, both referring provider and patient probably expect the specialist to take control of the interaction to help solve the patient’s problem. If the specialist meets these expectations, then all the participants would be pleased. On the other hand, if the referring provider and/or patient also wish to be active participants in this process, then a specialist who exerts too much control may create tension or disappointment. However, this issue was not addressed in this research. Others have reported differences of opinion between referring and consulting physicians regarding who is managing the case and the value of the referring physician’s findings and diagnosis. Nonetheless, because the success of the referral process depends in large part on trust between referring and consulting physicians, it is imperative that both parties not only express their expectations in this situation, but also demonstrate mutual respect of and appreciation for the other’s expertise and efforts on behalf of the patient.

Limited patient participation and patient-centered communication

Although the doctor tends to be the source of authority in the traditional, face-to-face
physician-patient consultation, patients do participate with some regularity and contribute on average to about 40% of the talk that occurs in this setting. However, of the total number of utterances produced in these teleconsultations, only 23% were made by patients. This suggests that teleconsultation may restrict patient involvement in the encounter. Moreover, patients rarely asked questions or asserted a perspective or an opinion (see Table 1), thereby suggesting a diminished role in the care process.

Limited patient participation may be due to several factors. First, the presence of an additional medical expert may unintentionally limit patient involvement. For example, the clinicians present will likely want to exchange information and opinions with each other, thereby, perhaps inadvertently, leaving little time or opportunity for the patient to express views or ask questions. Second, patient participation is also related to cultural and demographic variables. Patients who are more active communicators in medical consultations tend to be college-educated, middle to upper income, and middle-aged. However, people who live in these areas of rural West Texas tend to be older, poorer, and have less formal education compared to their urban and suburban counterparts.

Whatever the reason, the lack of patient participation is potentially significant because patients tend to value the opportunity to express their concerns, questions, and opinions when seeking care. Furthermore, patient participation in medical care often contributes to improved post-consultation outcomes such as greater satisfaction with care, greater adherence to treatment recommendations, a stronger sense of control, and overall more successful disease management. To increase patient participation, physicians may need to give patients more opportunities to talk by using partnership-building (e.g., asking for the patient’s opinion or questions) and other patient-centered responses (offering encouragement, showing concern and interest in the patient). These communication strategies would both legitimize and effectively increase patient participation. In this study, however, physicians rarely used these types of responses (see Fig. 5).

However, a patient may not necessarily feel left out in this context because of the unique opportunity to learn something important by listening to the exchange between two doctors. For example, a recent study in a prison environment reported that inmates were very satisfied with their teleconsultations, especially with respect to information exchange.

The absence of group discussion

At the outset, it was speculated that the three-party teleconsultation might take the form of a group discussion in which the participants shared information and opinions to reach a final decision regarding an appropriate therapeutic plan. However, very little group discussion was observed in these encounters. This might be due to the fact that the patient and referring provider sat side-by-side facing a monitor with the specialist as their visual focal point whereas the specialist’s monitor showed both the patient and referring provider. This arrangement may have inhibited group discussion, particularly between the patient and primary caregiver. Also, both the referring provider and patient may have been keen on talking to the specialist than to each other.

Finally, group discussion may have been hindered by linguistic differences among the participants. Clinicians often share a specialized linguistic code (“medicalese”) that allows them to communicate efficiently and coherently about technical issues. Because most patients are not familiar with this terminology, clinicians generally try to use everyday language (in varying degrees) when talking to patients. Consider the two excerpts below taken from consultations in this study.

Specialist to Patient (discussing a skin sore): “I think just use some kind of ointment. Just some kind of ointment to keep it soft, because . . . if it dries with it creviced like that it will slow the healing process, so we don’t want that. And notice the one that is kinda over on the top, on the side of your ankle there? That’s got a little bit of a callous around the edge. Looks like it’s trying to heal up. We want to try to keep that soft. So just take a tube of Neosporin and fill the hole with a dab of Neosporin and put a bandaid on top.”

STREET ET AL.
**Specialist to primary care provider** (discussing a tumor): “Usually with tumors we use the bromocryptine type to make these things shrink away. Uh, normally we start with a low dose of bromocryptine and slowly titrate it up which could cause side effects. So we move it up slowly. Follow the prolactin about every 3 months, try to get the bromocryptine to suppress the prolactin into the normal range and, assuming the prolactin levels stay down, do a follow-up MRI after the levels have been down for 6–12 months. If the lesion goes away you can withdraw the bromocryptine. If the lesion is still there, you can consider a follow-up with the neurosurgeon.”

If a group discussion is needed to address the patient’s health concerns, health care providers will likely need to depend on the skillful use of everyday language.\(^{31}\)

**Directions for future research**

This study has several limitations that may be addressed by future research. First, although we observed significant effects related to the various speaker-receiver combinations, there was considerable variability within these behaviors as evidenced by the large standard deviations reported in Table 1. The small sample in this analysis did not permit an examination of the effects of a number of factors in these exchanges and their outcomes. Future research should employ larger sample sizes. Perhaps more importantly they should rely on probability sampling to enable generalization of findings.

Second, the quality of the patterns of interaction observed in these consultations cannot be determined in the absence of information regarding the participants’ expectations for these encounters, their perceptions of the mediated setting, and the post-consultation outcomes. Future research should investigate these issues if guidelines are to be developed for teleconsultations and other types of interactions involving patients and multiple health care providers. Given their findings and the preponderance of other research on communication in medical encounters, we would hypothesize that eliciting adequate patient participation in the consultation, meeting the participants’ informational needs, having clinicians demonstrate mutual respect and appreciation, and structuring the interaction to facilitate greater communication among all the participants would contribute to quality of care and greater use of telemedicine.

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Address reprint requests to:

Richard Street, Ph.D.
Department of Speech Communication
Texas A&M University
College Station, TX 77843-4234

E-mail: r-street@tamu.edu