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## Zooming Towards Rapid Qualitative Research for Implementation Science

Varsha Vedapudi

*University of Toledo*, [varsha.vedapudi@rockets.utoledo.edu](mailto:varsha.vedapudi@rockets.utoledo.edu)

Mary Byrnes

*University of Michigan*

Ted Skolarus

*University of Chicago*

*See next page for additional authors*

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## Zooming Towards Rapid Qualitative Research for Implementation Science

### Abstract

Optimal implementation research and practice often relies on rapidly performing, analyzing, and interpreting qualitative work such as interviews. Performing interviews in person and with traditional approaches to transcription can present substantial burdens, including logistics of in-person meetings, and the cost and time of both conducting and transcribing interviews. Recent advances in language processing technology coupled with technocultural shifts largely due to the COVID pandemic have decreased barriers to rapidly conducting qualitative implementation science work. In this viewpoint, we describe how using Zoom™ for videoconferencing with Otter.ai automated transcription allowed for rapid qualitative work in a qualitative implementation science study, and how this combination of technologies could facilitate further rapid qualitative work in the future.

### Keywords

videoconference, Implementation Science, Clinical Trials, rapid, transcription

### Authors

Varsha Vedapudi, Mary Byrnes, Ted Skolarus, and Kristian Stensland

## Zooming towards Rapid Qualitative Research for Implementation Science

Varsha Vedapudi  
Mary Byrnes  
Ted Skolarus  
Kristian Stensland, MD\*

### Abstract

Qualitative research serves a critical role in improving our understanding and delivery of healthcare. However, there are multiple barriers to the efficient practice of qualitative research, including conducting interviews. Advances in language processing technology, coupled with technocultural shifts spurred by the COVID pandemic, present opportunities to overcome many of these barriers. In mid-2021, we assessed the acceptability and application of implementation outcomes to the process of designing and implementing cancer clinical trials as perceived by physician stakeholders using semi-structured interviews. We were able to expand our interviews as we found remote interviews with automated rapid transcription provided by Zoom™ through the Otter.ai platform to be efficient, highly accurate, and inexpensive. Thus, we were able to engage stakeholders from multiple specialties and perspectives. All interviews were conducted by a single interviewer via Zoom between July and September 2021. We found numerous benefits to video conference interviews with AI transcription, including addressing logistical barriers, improving on audio-only remote options, and cost and efficiency of transcription. Technological advances could improve the pace and cost-efficiency of general qualitative research that may be particularly valuable to implementation science and practice.

**Keywords:** qualitative research; implementation science; videoconferencing; automated rapid transcription; Zoom

\* Corresponding author may be reached at [kstens@med.umich.edu](mailto:kstens@med.umich.edu)

### Introduction

Qualitative research serves a critical role in improving our understanding and delivery of healthcare. When applied to implementation science and practice, qualitative methods hold particular importance in identifying barriers to and facilitators of evidence-based practice (Damschroder et al., 2009). This critical step allows for tailoring interventions to contexts, meeting the needs and preferences of key stakeholders, and guiding adaptation to optimize successful implementation of evidence-based practice. In some cases, rapid

context assessment is critical as the need for implementation is time-sensitive. For example, assessing context for optimal rollout of vaccines early in the COVID pandemic was needed as soon as possible (Finney Rutten, et al., 2021). Indeed, increasing the speed of context assessment even by seemingly short intervals has the potential to save lives.

However, there are multiple barriers to the efficient practice of qualitative research, including conducting interviews. The traditional format of in-person interviews presents barriers of geographic restriction, finding acceptable and accessible physical

space, and increased time demands secondary to travel and scheduling issues. Even once interviews are completed, the process of transcribing, analyzing, and interpreting interview data can be expensive, difficult, and time-consuming.

Advances in language processing technology, coupled with technocultural shifts spurred by the COVID pandemic, present opportunities to overcome many of these barriers. Specifically, the use of videoconferencing platforms with automated transcription could substantially decrease the cost and increase the speed and efficiency of qualitative implementation science work. Herein, we describe our use of these technologies in a qualitative study of healthcare providers, relative advantages over existing methods, and considerations for use of videoconferencing in rapid qualitative implementation science work.

## Methods

### **Case Study: Semi-structured Interviews with Physician Clinical Trial Stakeholders Description of Index Study**

In mid-2021, we designed a study to assess the acceptability and application of implementation outcomes to the process of designing and implementing cancer clinical trials as perceived by physician stakeholders using semi-structured interviews (Stensland, et al., 2023). Whereas we designed our study with a small number of interviews, we were able to expand our interviews as we found remote interviews with automated rapid transcription provided by Zoom™ through the Otter.ai platform to be efficient, highly accurate, and inexpensive. As a result, we were able to engage stakeholders from multiple specialties and perspectives, significantly enhancing the depth of our results. All interviews were conducted by a single interviewer (KDS) via Zoom

videoconferencing between July and September 2021 and were roughly 45 minutes in duration. Verbal consent was obtained prior to interviews. Interviews were recorded and transcribed, then manually corrected by two coders (KDS, VV) (Stensland, et al., 2023). These two coders met after every 2-3 interviews to code and discuss results. In discussion, both coders agreed on the advantages of the feature in reducing transcription turnaround times, reducing logistical and geographical barriers and facilitating rapid qualitative research. These discussions also led to the expansion of the size of the interview cohort.

### **Description of Zoom™ and Otter.ai**

Zoom™ is a common videoconferencing application offering recording to the Cloud with automated transcription as part of an Enterprise subscription. Once recorded to the Cloud, an AI service (Otter.ai) is used to transcribe meeting audio and generate a text transcription including participant usernames and timestamps with the transcribed text (Figure 1). Multiple studies have utilized this natural language processing feature to transcribe interviews, especially post-pandemic (French, et al., 2023; Plett, et al., 2023; Voorheis et al., 2023).

### **Interview Invitation and Consent**

We invited participants to be interviewed via email with a description of the study. At the start of the interview, the interview purpose was explained to the participant and their consent to participate and be recorded was obtained. Recording was then started, and participants had to actively click accept in the Zoom™ meeting to consent for recording.

## Figure 1

### *Sample of unedited AI transcription from an interview*

202

00:27:33.990 --> 00:27:48.270

Interviewer: Sure, and then similarly in those just sort of your your huge basket of eligible patients, how do you consider eligibility criteria when you're looking into the eligible population or when you're trying to design a trial.

203

00:27:49.440 --> 00:28:00.180

Interviewee 1: I mean like let's say you have a basket that you think you had 100 and sort of thinking about the criteria designing and then sort of reflecting on how that filter how many of those that's going to catch.

204

00:28:00.420 --> 00:28:01.050

Exactly.

205

00:28:02.280 --> 00:28:04.170

Interviewee 1: I don't think that's done very scientifically.

206

00:28:06.120 --> 00:28:16.050

Interviewee 1: I think that we are become personally as a bias between sort of towards making trials more.

207

00:28:17.850 --> 00:28:19.530

Interviewee 1: reflective of the patients, we treat.

208

00:28:20.880 --> 00:28:33.660

Interviewee 1: But I do recognize that when, especially when you're talking about multi drug combinations and the addition and and sort of trials that are developed design was some sort of short and intermediate term toxicity, you know.

209

00:28:35.250 --> 00:28:42.810

Interviewee 1: Those things those disease characteristics, those are comorbidities those relative contraindications tend to make their way into it.

210

00:28:44.130 --> 00:28:58.320

Interviewer: And can be very tricky so and then next have you started to talk about this a little bit before with the sort of you know, patients being willing to enroll on a trial particular in you know things that are.

211

00:28:59.280 --> 00:29:07.950

Interviewer: Maybe more acceptable to them as a way to put it, how do you evaluate that when you're looking, or is there a way to.

## Interviews and Transcription Metrics

We performed 15 semi-structured one-on-one interviews with physicians at our institution via Zoom™. All interviews were conducted by the same interviewer (KDS). Interviews lasted 24-53 minutes.

We calculated time needed until availability of the recording and transcript from the end of the interview until email notification for video or transcript availability. The length of transcription time was only available for 10 interviews, as the duration between interview completion and transcription availability time was recorded only after the first 5 interviews were completed. The average time until video availability was 13 minutes (range 9-22 minutes), and average time until transcript availability was 24 minutes (range 14-36 minutes). We did not formally record the time necessary for correcting the automated transcriptions, but this anecdotally took minimal additional time (i.e., < 20 minutes per interview transcript). Most transcription errors were cancer domain specific. For example, common errors were short-hand drug names (e.g., “pen broke” instead of “pembro,” short-hand for pembrolizumab), abbreviations (e.g., “eye and tee” instead of “I&D,” “peers” instead of “PRC,” “veil” instead of “VAIL”), and proper nouns (e.g., “robot” instead of “Rogel”).

## Results

### Benefits of Videoconferencing and AI Transcription

We found numerous benefits to video conference interviews with AI transcription, including addressing logistical barriers, improving on audio-only remote options, and cost and efficiency of transcription.

## Addressing Logistical Barriers

First, by performing all our interviews remotely, we were able to facilitate interview times and address geographic limitations more easily. We eliminated commute time and freed up otherwise unavailable times. For example, our physician interviews took place during gaps in clinical care, while commuting to or from work, and from home. Remote interviews also removed other barriers to participation, such as one participant who had their child at home during the interview.

## Overcoming Barriers of Physical Space

These issues highlight a major potential increase in accessibility for remote interviews. Participants can select a physical space in which they feel secure, private, and comfortable to speak at length. For some topics, many of the barriers to participation in research overlap with the barriers to participating in interviews and overcoming these barriers will be critical to gaining insight into improving implementation. For example, studying access to clinical trials would require engaging people who may face the same barriers to participating in interviews as they do for participating in clinical trials, and performing remote video conference interviews could allow their perspectives to be heard.

## Advantages over Phone-only Interviews

Many of the benefits of videoconferencing also apply to audio only (i.e., telephone) interviews. However, there are distinct advantages to adding video. First, the addition of non-verbal communication adds emphasis and context to statements (Chang, et al., 2021; Irani, 2019; Koivunen & Saranto, 2018). For example, visible frustration through gestures like eye rolls or shrugs add necessary emphasis and contextual clues to

otherwise potentially ambiguous statements. Recording video of the interviews also permitted re-review of these cues during transcription correction and coding of the interviews. Similarly, during the conduct of interviews, seeing visual responses to questions, or emphases during verbal responses, allowed for more targeted follow-up and tailoring of interviews to individual participants. This also may encourage interviewees to continue speaking on a topic when the interviewer can provide non-verbal cues to continue, such as continued eye contact, nodding, or other cues, as well as enhancing rapport as has been observed in telehealth visits (Chang, et al., 2021). As a result, interviews may contain more complete or in-depth information on certain subjects.

### **Advantages of Automated Transcription**

In addition to these benefits, automated transcription facilitates the rapid transcription and coding of interviews. For our project, transcription with Zoom™ and Otter.ai was included with our university Zoom™ enterprise subscription. The cost for transcribing our 660 minutes of audio over 15 interviews would have increased substantially if we used a third-party service. Additionally, our transcripts were available on average 24 minutes after interview completion. This allowed for blocking time to perform and code interviews all in one session, with rapid turnover and reflection on interviews.

### **Potential Drawbacks**

There are some downsides to videoconference interviews. The enthusiasm for inclusion through videoconference must be tempered by access to technology and tech literacy to ensure inclusion of representative perspectives, similar to considerations necessary when expanding access to

telehealth for other healthcare (Nevedal, et al, 2021; Vindrola-Padros & Johnson, 2020). Additionally, some potential interviewees may be less likely to participate if video is required, similar to observations of telehealth with video versus phone only visits (Chang, et al., 2021). This can be mitigated by turning off video and still maintaining the transcript functionality. There is also loss of interviewer control over the physical environment for interviews that could influence responses to questions. For example, some of our interviews were conducted while interviewees were on their commute to work, which could potentially affect the quality of our data collection as interviewees could more easily be distracted while performing other tasks concurrently. Whereas automated transcription was included as part of our University Zoom enterprise subscription, this subscription may be cost-prohibitive for some researchers. Although we were unable to find free options for automated transcription, with the rapid pace of technological advances a low-cost or free option may soon be available. Lastly, there are specific limitations to the use of AI transcription, such as the lack of reading emotion, pauses, or gestures. Ultimately, AI transcription does not replace a human coder, but may facilitate more rapid work.

### **Implications for Implementation Science**

Whereas these technological advances could improve the pace and cost-efficiency of general qualitative research, these benefits may be particularly valuable to implementation science and practice (Damschroder, et al., 2021). Specific contexts may have different determinants requiring implementation mapping specific to those contexts, and perhaps for participation in implementation research itself (Fernandez, et al., 2019). For example, rural areas may have decreased access to

healthcare and science, such as clinical trials (Ellis, et al., 2019; Stensland, et al., 2021). These populations also may be less accessible to researchers for similar reasons and may benefit from remote qualitative work.

In addition to the benefits of remote qualitative work, there are specific advantages of enhanced transcription to implementation science and practice. An often-quoted statistic of the 17-year gap between the development of a medical advance and its adoption in practice highlights the general time lag in medicine that implementation science seeks to shorten (Morris, et al., 2011). The time spent gathering in-depth supporting data to map and design interventions to improve the adoption of evidence-based practices contributes to these delays. For some interventions, there is a general need to speed implementation to optimize benefits to patients. In urgent and emergent situations, however, the ability to perform rapid implementation cycles could save lives. During the vaccine rollout phase of the COVID pandemic, for example, rapid context assessment could facilitate the rapid identification of barriers and facilitators of vaccine acceptance and development of strategies to overcome them, leading to more rapid deployment and uptake of the highly effective COVID vaccines (Finney Rutten, et al., 2021). Building infrastructure for rapid implementation science, including rapid context assessment, could facilitate the efficient response to crises with rapid yet rigorous implementation science approaches.

Other less emergent settings also may benefit from rapid qualitative work. Relevant to the content of our example semi-structured interviews, the process of designing clinical trials and selecting sites is highly complex (Stensland, et al., 2022). By the time a clinical trial protocol is designed and approved, there is a limited time frame to

select and implement sites. Once enrollment has begun in a trial, the time frame is on the order of months, not years. As such, context assessment for clinical trial sites must be as rapid as possible, particularly when enrollment sites have already been activated. Approaches like automated transcription through remote interviews could facilitate the structured analysis of clinical trial site contexts and targeted strategies to improve trial conduct, as opposed to the currently less rigorous, often haphazard application of untailed trial site selection and enrollment improvement strategies (Nevedal, et al., 2021).

### **Future Directions and Conclusion**

The videoconference boom could greatly increase the accessibility and efficiency of qualitative work for implementation science. Better understanding differences in acceptability, expression, and response to videoconference versus in-person qualitative, and how this relates to identifying determinants and tailoring strategies, will be necessary. These methods can be integrated into rapid frameworks to streamline the process of implementation from context assessment through tailoring of implementation strategies to optimally improve the delivery of evidence-based practice (Koivunen & Saranto, 2018; Morris, et al., 2011). Moving forward, advances in sociotechnical infrastructure, such as videoconferencing platforms for qualitative work, can facilitate more rapid, cost-effective, and logistically simple implementation science.

### **Implications for Health Behavior Research**

Zoom has been studied for research in ethnographic and journalism studies, but its application within implementation science,

particularly for rapid context assessment, has been under-described. Specifically, implementation scientists may find it especially valuable to use Zoom interviews with auto-transcription for time-sensitive issues where identifying and overcoming barriers to implementation rapidly are critical, such as in emergency settings like emergent vaccine rollouts, or to allow for more efficient scale up to many sites like clinical trial site selection. Our documentation of Zoom auto-transcription in expediting the interview analysis timeline may serve as a roadmap for practitioners to apply these concepts in many other contexts. In a quickly changing healthcare landscape, using implementation science to guide evidence-based practice offers a promising path forward, and using new technologies to streamline research processes could help optimize and accelerate both science and care delivery.

### **Ethics Approval**

We collected no protected health information and did not involve patients; our study was deemed exempt from review by our institutional review board (HUM#00198397).

### **Conflict of Interest**

Varsha Vedapudi reports no funding or conflicts of interest. Dr. Skolarus is funded by NIH/NCI R37-CA222885. Dr. Stensland is supported by NIH/NCI F32-CA264874, NIH K12-DK111011, and NIH/NCI P30-CA-046592.

### **Discussion Question**

Our study indicates the potential of harnessing newly available technologies such as automated transcription in reducing logistical and geographical barriers in

qualitative research. How might diversity, equity and inclusion (DEI) in qualitative research be positively impacted as some of these barriers are reduced?

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