Practical strategies for qualitative inquiry in a virtual world

Emma C. Schlegel[1,2], **Judith A. Tate**[1,3], **Rita H. Pickler**[1,2], **Laureen H. Smith**[1,2]

[1]College of Nursing, The Ohio State University, Columbus, Ohio, USA

[2]Martha S. Pitzer Center for Women, Children and Youth, The Ohio State University, Columbus, Ohio, USA

[3]Center for Healthy Aging, Self-Management and Complex Care, The Ohio State University, Columbus, Ohio, USA

Abstract

Aim: The aim of this article is to provide practical strategies for maintaining methodological rigour in executing a virtual qualitative study. Strategies are based on evidence from existing research about virtual qualitative methods and on the strategies used by the authors to convert a planned in-person qualitative, grounded theory study to an entirely virtual grounded theory study during the COVID-19 pandemic. The study began in-person in September 2019 and was converted to virtual in March 2020. Virtual data collection was completed in September 2020.

Design: This article provides a case exemplar of virtual adaptations made to a study underway when the pandemic rendered all in-person research impractical and potentially dangerous.

Data sources: The strategies discussed are based on our own experiences and the supporting theoretical assumptions of qualitative research, specifically grounded theory methods.

Implications for nursing: Nursing scholars conducting qualitative inquiry may find these strategies helpful in continuing research activities during periods of limited access to the phenomena or persons of interest. Furthermore, these strategies allow nursing scholars to conduct rigorous, in-depth research without geographical limitations, providing greater possibilities for international collaborations and cross-institution research.

Conclusion: Despite novel challenges, methodological adaptations that are carefully planned and purposeful allow qualitative and non-qualitative scholars to continue research activities in a fully virtual manner.

Impact: This case exemplar and discussion provide practical strategies for qualitative scholars to consider while planning new studies or converting an in-person study to a virtual one. Despite the in-person nature of in-depth qualitative inquiry, a historic pandemic and a changing research environment require qualitative researchers to adapt to virtual methods while still conducting high

Correspondence: Emma C. Schlegel, 1355 Bogue St, East Lansing, MI, 48824, USA. Schleg24@msu.edu.
Present address
Emma C. Schlegel, College of Nursing, Michigan State University, East Lansing, Michigan, USA

quality, methodologically rigorous research. Qualitative scholars can use the strategies presented here to continue rigorous qualitative inquiry despite limited access to phenomena or persons.

1 | INTRODUCTION

The coronavirus 2019 [COVID-19] pandemic (Centers for Disease Control & Prevention, 2020; Ghebreyesus, 2020) resulted in near virtual exclusivity, wherein individuals across the globe were confined to their homes except to conduct essential activities (e.g. traveling to the grocery store). Scholars needed to adapt to virtual, contact-free modes of interacting with students and research participants. Virtual exclusivity threatened to derail funded research studies, tenure progression and the advancement of scholarship. The projected duration of the pandemic ranged from months to years (Scudellari, 2020), and although in-person scholarship and research resumed in months in some places, uncertainty remains about re-emergence of the coronavirus or other pandemic-causing illnesses. Thus, even though often unplanned, astute qualitative and quantitative researchers should consider the benefits of recruitment, enrolment, and data collection options that do not require in-person interaction. This case exemplar and subsequent discussion focuses on virtual methods of performing qualitative research.

2 | BACKGROUND

Broadly, qualitative inquiry occurs via a co-creation of meaning by the participant and researcher and acknowledgement of values-based conceptualizations and the presence of multiple realities (Creswell & Poth, 2016). Traditionally, the co-creation of results has required detailed discussions between the researcher and participant and, often recurrent, in-person observations of the studied phenomenon. Participant observation, the basis of qualitative inquiry including grounded theory methods (Charmaz, 2014; Corbin & Strauss, 2008; Glaser & Strauss, 2009), involves a researcher meticulously observing processes and actions as they occur in real-time; in-person observation is critical. Qualitative inquiry also involves interviewing, traditionally in-person, often with multiple sessions or as a prolonged interaction in a place of interest (Creswell & Poth, 2016; e.g. while the participant walks through their neighbourhood). Because qualitative methods have depended on in-person data collection to capture both context and participant voice, questions have arisen about how qualitative researchers should adapt when data collection options are restricted to pixelated images of research participants. Further, questions arise about how qualitative researchers can ensure rigour when they are not able to closely observe the phenomena of study or fully engage as researcher-as-instrument.

The growing body of literature on virtual qualitative methods has demonstrated that qualitative scholars employed ethical and rigorous qualitative inquiry of online phenomena via virtual methods including online interviews, observation of online communities, and collection of qualitative data generated and publicly housed online (e.g. social media;

Davies et al., 2020; Deakin & Wakefield, 2014; Kaufmann & Tzanetakis, 2020). Further, qualitative methodologists have provided in-depth recommendations for virtually performing components of a qualitative study, including analysing electronic survey data (Vaughn & Turner, 2016), conducting virtual interviews via video-calling software (Archibald et al., 2019; Krouwel et al., 2019), and working through the process of designing and implementing a qualitative study using online methods (Salmons, 2014, 2015). Previous methodological authors emphasized the importance of choosing electronic or virtual methods when appropriate. These authors acknowledged the continued importance of in-person data collection when virtual methods may not be appropriate such as when the phenomena of interest is a sensitive topic (Salmons, 2014, pp. 43-44).

Roberts et al. (2021) have created a tool for researchers to use when designing and/or conducting virtual qualitative studies. Their tool was based on the authors' experiences designing a virtual qualitative, case study during the pandemic. In this paper, we use a case exemplar to explain how we virtually converted an entirely in-person grounded theory study while maintaining rigour and trustworthiness. The strategies used to help us maintain methodological rigour add to the body of literature aimed at guiding qualitative scholars continue important work despite limitations on in-person contact. We also discuss potential unforeseen benefits to exclusive virtual qualitative inquiry.

3 | DATA SOURCES

The case exemplar presented is based on the authors' experiences converting an in-person grounded theory study to an exclusively virtual study. The practical strategies presented are based on these experiences and supported by theoretical assumptions of qualitative research and specifically, constructivist assumptions of grounded theory methods (Charmaz, 2014).

4 | DISCUSSION

4.1 | Case exemplar of a grounded theory study

The overall purpose of the original grounded theory study was to examine how emerging adult-aged women (18–25 years) defined and managed their sexual and reproductive health. The planned methods included in-person interviews and focus groups with women from a large, metropolitan area in the United States who were either (a) attending a large, 4-year university, (b) attending a smaller, 2-year community college, or (c) high school graduates living in the metropolitan area but not attending and not graduated from a college or university. The study protocol was approved by the host institution's Social and Behavioral Studies Institutional Review Board (Protocol #2019B0101). All adaptations and amendments described received expedited review and approved.

4.2 | Researcher reflexivity and positionality

The corresponding author (ECS) conducted study interviews and led the study. At the time of the study ECS was a doctoral candidate so ECS's faculty advisor (LHS) served as the official principal investigator (PI) at the host institution's Institutional Review Board. At the time of this study, ECS also worked as a Graduate Research Associate at the host institution and as a registered nurse (RN) on a mother-infant unit in an area hospital. Participants

were aware that the research was being conducted as part of ECS' dissertation work, ECS was a registered nurse, and ECS was doctoral student interested in researching the health of emerging adult-aged women. As lead researcher, ECS' status as a female around the same age as the participants may have contributed to theoretical sensitivity (Charmaz, 2014; Corbin & Strauss, 2008; Glaser & Strauss, 2009) as well as relationship building with study participants (Creswell & Poth, 2016).

4.3 | Converting from in-person to virtual inquiry

The COVID-19 pandemic occurred shortly after the first in-person interviews were conducted. Within a matter of days, the host institution declared a campus-wide emergency, closed its campuses to all but essential activities, and required researchers to cease operation of all non-essential, in-person studies. Students living on campus were sent 'home' while many off-campus students also left the immediate campus area. This sudden disruption of the research program, displacement of potential study participants and continued restriction of in-person activities, necessitated the need to convert from in-person to virtual data collection. The approving IRB required adaptations for virtual delivery, if scientifically sound and feasible. During the adaptation phase, several amendments to the approved protocol were necessary for either temporary or prolonged changes. Regardless of the type of change, all components of the study including recruitment, data collection, participant incentive payment, data analysis and participant follow-up required adaptation or amendment. Table 1 provides a detailed list of COVID-related challenges to the continuation of the planned study methods and the virtual solutions instituted by the study team.

4.3.1 | Recruitment—Study recruitment began in September 2019. Before the pandemic, we recruited by publicly posting paper flyers on the university and community college campuses and in public spaces in the surrounding neighbourhoods. Additionally, community college students received an additional notification about the study in a newsletter delivered to all students via email. Potential participants then contacted the lead researcher (ECS) to complete eligibility screening and schedule an in-person interview or focus group session. By January 2020, three participants had enroled and completed in-person interviews (Table 2) while two eligible women scheduled and subsequently cancelled interviews.

We used these initial recruitment and data collection methods until March 2020, when the state issued a stay-at-home order and the host institution declared a state of emergency. Moreover, because of the continuing pandemic and statewide mandates to limit travel outside the home, the ability to actively recruit via flyers in the community was halted. During this period of virtual exclusivity, recruitment of potential participants required digital access (e.g. smartphone, tablet or computer) and reliance on 'virtual public spaces', such as social media. Social media is a viable tool for recruitment, however the extensive algorithms dictating who can see posted information may bias a sample (Bozdag, 2013; DeVito et al., 2017). Additionally, internet access is not universal (Silva et al., 2018); not all prospective participants may have access to social media or high-speed internet needed for participation. We considered these aspects as part of the revised context of our study as we identified potential solutions.

To address recruitment challenges, the study team heightened its use of electronic services to reach participants. During the pandemic, recruitment for the study included *ResearchMatch*, a US-national health volunteer registry created by several academic institutions and supported by the US National Institutes of Health as part of the host institution's Clinical Translational Science Award (CTSA) program. *ResearchMatch* has a large enrolment of volunteers who have consented to be contacted by researchers about health studies for which they may be eligible. Utilizing this registry, the study team virtually recruited women in the target age range and living within 25 miles of the university. In addition, we emailed university and community college student organization presidents and requested they share study information with organization members. We also created a public Facebook page with study information and began posting study information and a link to the Facebook page on other social media platforms (e.g. local Facebook groups, Facebook newsfeed, NextDoor and Twitter). The study PI also directly contacted potential community gatekeepers via email and text messaging. These emails included a study summary and a recruitment flyer. We identified potential gatekeepers through word-of-mouth information from individuals in the study's lead researcher leader's (ECS) personal and professional network.

Use of *ResearchMatch* was the most successful virtual recruitment strategy. However, the research tool oversaturated the recruitment sample with community college and university students. Somewhat surprisingly, social media did not result in recruitment gains. Word-of-mouth recruitment via email, text message and social media message was the most promising avenue for reaching gatekeepers and community-dwelling participants. Overall interview completion rate of eligible prospective participants was 29.5% (13/44), with an in-person completion rate of 14.3% (3/21) and a virtual completion rate of 43.5% (10/23). Table 2 shows the completion rates by the recruitment group. It is possible that virtual interviews may be more acceptable among emerging adult-aged individuals or when discussing sexual and reproductive health. Heath et al. (2018) reported that face-to-face interviewing was the least preferred interview method among individuals asked to discuss sensitive topics.

Despite the challenges of virtual recruitment, there were benefits, including expanded geographical boundaries, elimination of travel expenses and time to post flyers, elimination of printing costs and elimination of the need for permission to post flyers. In-person recruitment is limited to the distance a PI or study team member is willing and able to travel. Virtual recruitment is not geographically bound other than by the accessibility of broadband internet. Thus, potential participants who may have been geographically excluded from in-person recruiting, were accessible with virtual recruitment methods. Furthermore, because virtual recruitment does not require posting or mailing recruitment materials, the need for printing services or postage is eliminated. Finally, posting printed study information in public spaces oftentimes requires following local government ordinances or permission from owners of public-facing spaces. Although virtual recruitment methods may still require permission (e.g. permission to send study information via email), the time between the request, granted permission, and information sharing is likely to much shorter, especially if requesting permission from large or national organizations. A summary of the challenges, solutions and benefits of virtual recruitment methods is provided in Table 1.

4.3.2 | Data collection—Interviews were conducted using a semi-structured interview guide that addressed three topics related to sexual and reproductive health management, identified during a review of the literature prior to initiation of the study. The interview guide included questions and follow-up probes. During interviews, the lead researcher (ECS) allowed participants to lead the discussion, following the natural flow of conversation while ensuring the three topics were discussed. Women were also encouraged to identify additional topics not discussed during interviews. Additional questions were added to the interview guide as the study progressed and new concepts emerged during data analysis. Data collection and analysis continued until core categories of the emerging theory reached theoretical saturation. Rather than returning transcripts to each participant, a virtual gathering of study participants after completion of data collection allowed the researcher to disseminate study findings, obtain feedback, and obtain member checks of the study's major concepts, categories and substantive theory.

Before restrictions, in-person interviews were scheduled at locations on a university campus or in metropolitan libraries. At the beginning of interview sessions and before each interview began, study procedures, risks, and benefits were reviewed and written informed consent obtained. In-person interview sessions, including consent and participant payment, lasted approximately 60–80 min. Recordings of the in-person interviews ranged from 47 to 54 min ($M = 51$ min; $Mdn = 52$ min). All in-person interviews were recorded using a handheld, digital audio recorder and transcribed verbatim. The original research design also included seven focus group interviews with up to eight participants and an end-of-study in-person gathering. The focus group sessions were planned to occur following personal interviews to collect data on socially negotiated and constructed definitions of sexual and reproductive health.

The first adaption in data collection was conversion of the planned in-person interviews to virtual platforms using password-protected Zoom meetings (described below). The use of virtual platforms for group interactions presented unique challenges related to participants' individual situations. Further, the study team decided virtual methods would probably reduce the quality of group interactions and subsequently affect the quality of the focus group data collected. We anticipated this would especially affect the emerging adult-aged participants' discussions of a sensitive topic. Consequently, we amended the overall study design to expand the number of in-person, virtual interviews and eliminate planned focus groups. This change allowed the research team to collect sensitive data from all planned sub-groups and provided more flexibility in data collection for participants and the research team. Virtual interview recordings lasted from 33 to 66 min ($M = 45$ min; $Mdn = 45$ min).

After the virtual conversion, we used an 'institutional' version of Zoom, a video conferencing tool, to conduct interviews. Zoom provided security and privacy measures including encryption, password-protected meetings and the ability to lock a meeting room once all attendees were present (Blum et al., 2020; Zoom Video Communications & Inc., 2016). Zoom was previously shown to be an effective tool for conducting qualitative interviews (Archibald et al., 2019). While interviewing via video conferencing was not as private as an in-person conversation, the security and privacy measures ensured acceptable levels of privacy. Interviews were recorded using the Zoom platform, creating an audio-

visual file and an audio-only file. Participants were informed that Zoom generated both file types and that the audio-only file alone would be saved long-term on an encrypted research drive via a virtual private network (VPN) at the PI's university. While the audio-visual file was not saved long-term, the PI was able to review the file prior to securely discarding it to facilitate generation of a post-interview memo and field notes. The decision to discard the audio-visual file maintained a similar level of anonymity as was afforded with in-person data collection of vocal data only. Each participant also had the option to participate using the audio-only Zoom feature; one of the 10 virtual participants opted to do so.

Challenges associated with at-home virtual interviews included limited opportunities for participant observation, the potential for a breach in privacy by other household members, the potential for at-home distractions during the interview, and internet safety and reliability concerns. The natural flow of conversation and ability to read non-verbal cues was disrupted by using virtual methods to conduct interviews. Moreover, delays in internet video, lagging audio and in general poor video quality made some interviews slightly awkward, increasing the chance that some important non-verbal cues were missed. However, as the use of virtual interviews increased, the lead researcher (ECS) felt less awkward with the process.

To address concerns about privacy and distractions, prior to and at the beginning of each interview session, participants were instructed to find a space in their home that afforded privacy from other household members where they would feel comfortable discussing sensitive matters. Participants' and the researcher's pets created most distractions during virtual interviews, and in all cases the distraction ceased in a matter of minutes. On only one occasion was there any disruption from another member of the household, during which a significant other could be heard off screen for a moment.

While challenges related to privacy and at-home distractions were not prevalent during the study, technological challenges were common. Technical difficulties and internet disruptions were a consistent issue. Poor internet connections created difficulties on several occasions with joining or launching the virtual meeting. On a few occasions, internet disruptions created audio-visual lagging, in which either the participant or researcher video or audio froze or was disabled completely. Participants remained patient during these disruptions. If it had occurred that a participant did not have high-speed internet, we could have used telephone interviews. Taking this action would have required careful documentation; different interview methods can result in unexplainable data variations. Although we did not encounter this situation, additional potential technological challenges may include ensuring access to secure and reliable tools for electronic data collection and increased administrative time to coordinate electronic collection of demographic data and regulatory documents.

Despite challenges, virtual data collection provided opportunities for qualitative inquiry in our study. Virtual data collection via video conferencing software allowed the researcher to gain a glimpse into the home of study participants and make observations of their home environment without having to be physically present. The lead researcher (ECS) observed objects, lighting and activity in the backdrop of each interview—much like the popular pandemic-era social media account, *@ratemyskyperoom* (Room Rater, n.d.) that rated the backdrops of at-home television interviews delivered via video conferencing

software. Observations of this sort provided insight into the daily lives of participants. Virtual data collection also reduced participant burden and potentially increased willingness to participate, because virtual participation did not require travel to an interview site or researcher access to the home. Additionally, travel costs including costs for parking and time spent traveling, were eliminated. Table 1 provides a summary of the challenges, solutions and benefits of virtual qualitative data collection.

4.3.3 | Data analysis—Qualitative analysis requires interpretation of words and images wherein the researcher is the instrument (Pezalla et al., 2012), often working in isolation. It is not uncommon, however, for teams of scholars to work together on coding and interpreting qualitative data, requiring rigorous processes of creating codebooks with standard definitions, performing coding comparisons, and meeting regularly to facilitate agreement on coding and data interpretation. Considerations for virtual team data analysis included selection of a communication method between team members (email, Dropbox, etc.) and a qualitative data analysis software (QDAS) or word processing software, cost of QDAS licenses for each team member, security of data storage and data sharing, ability to incorporate visual interpretations of data, and determination of the minimum amount of data to be shared across team members for effective analysis. NVivo 12 Pro (QSR International Pty Ltd., 2018) was the QDAS of choice for data management during this study.

Before the onset of the COVID-19 pandemic, the research team regularly communicated via electronic mail and utilized password-protected file folders on an encrypted 'research' drive housed on a secure network at the host institution. If working from home, members of the research team accessed data stored on this secure network via VPN. Communication about data analysis occurred via either an in-person meeting in a faculty office space or a secure, password-protected meeting on Zoom. Virtual methods of communication and data sharing continued during the pandemic. The PI utilized biweekly Zoom meetings with individual study team members to review data analysis progress. During these meetings, the lead researcher (ECS) generally 'shared' her computer screen to review specific data codes, coding structure and progression of model generation and modification. Individual meetings with team members allowed more detailed discussion of the analysis. In addition, the PI held quarterly meetings with the entire study team to discuss study updates, provide overviews of emerging concepts derived inductively, and examine the latest version of the study model.

Throughout the data collection and analysis process, theoretical and methodological memos were included in the data analysis and documentation of research decisions (Charmaz, 2014; Creswell & Poth, 2016). These memos became especially important during the virtual conversion. To ensure the conversion did not affect data collection and subsequent interpretation, the lead researcher (ECS) relied on theoretical memos and constant comparison of the in-person and virtual data. This continuous and cyclical process of interpretation and comparative analysis contributed to methodological rigour and trustworthiness.

Constant comparison of the data also assisted in theoretical sampling decisions. Original recruitment plans intentionally excluded health clinics to avoid recruitment of only women actively seeking healthcare; as we intended to explore processes of health promotion and

risk reduction in all stages, including those that occur prior to seeking healthcare. However, as we collected data, we noted that most women in the study had interacted with the healthcare system at some point. Based on this observation, slow recruitment, and the emerging theory, we decided to recruit women from health clinics. Unfortunately, due to COVID-19 pandemic limitations we were not able to gain access to health clinics in the surrounding area.

Furthermore, using theoretical sampling methods, we also decided to cease recruitment of women from the university recruitment site. We had reached the point that no new insights were being gained from the data collected in interviews with women attending the university and that only slight differences were noted between university women and women from the community-college and the community. Thus, we shifted recruitment efforts to focus on women from the community-college and the community. Theoretical memos and methodological memos allowed us to monitor changes in data collection and analysis and identify strategies for theoretical sampling before, during and after the study's virtual conversion.

During the pandemic, a student research assistant (RA) also assisted with coding data. The RA accessed the study data and QDAS from home via a secure remote desktop connected to the host institution's private network. The PI and RA met weekly via Zoom to review inter-coder reliability and to discuss inconsistencies in code definitions (ex. underlying meaning/process of coded content) and coding methods (ex. length of coded passages, inclusion/exclusion of interviewer speech in codes). The lead researcher (ECS) and RA utilized separate QDAS files to code data, with the lead researcher working from the principal QDAS file and the RA working from an up-to-date copy of the primary file. After discussing individually coded data, the lead researcher (ECS) merged the RA's file with the primary QDAS file, allowing the lead researcher to make final analytic decisions about code definitions and coding methods.

Additional considerations for conducting virtual data analysis included secure data storage and sharing. These considerations required systems-level solutions, such as choosing a secure platform for sharing data between research team members, connecting to secure, encrypted and private networks from decentralized locations—including home, and granting access to said networks to all team members internal and external to the primary institution. Table 1 provides a summary of considerations for virtual data analysis.

4.4 | Additional solutions for virtual qualitative inquiry

In the process of identifying and implementing solutions for continuation of this qualitative study in a virtual environment, we identified several additional solutions that we were unable to implement due to limitations on time or resources. We present these additional solutions and benefits as they may be of use for future qualitative scholars. Table 1 shows these additional considerations and solutions, as well as information about study logistics (i.e. participant incentive payment and study follow-up). First, another potential, virtually exclusive recruitment tool that was not implemented is the allocation of funds for targeted or sponsored social media posts. This technique could potentially offset the social media algorithms, harnessing them instead for the benefit of study recruitment. Facebook, for

example offers varying levels of advertisement, allowing targeted posts to users with specific demographics in specified geographic regions (Facebook, n.d.). Advertisement of this sort does not directly contact Facebook users; instead, content is published on users 'feed' or Facebook homepage. These posts show up as sponsored content that potential participants can choose to engage with or not. This digital technology is akin to posting a printed flyer on a community bulletin board; the researcher has some control over who sees the post, even though not directly contacting potential participants.

Second, a potential solution to address limitations on physical meetings in the participants' social environment is for the researcher to discuss the environment in which the phenomenon occurs with the participant. While the researcher cannot directly observe the environment, the researcher can at least gather information on context via participants' perceptions of their environment.

Third, it is possible for the researcher to conduct robust triangulation of the collected data by seeking additional members of the group or community to provide their interpretations of the environment. By conducting triangulation, the researcher gets closer to direct observation of the environment and context.

Finally, the researcher can conduct repeat interviews with participants, a practice that is familiar to qualitative researchers. At each repeat interview, the researcher can ask similar questions about the phenomenon's context to gain an understanding of the participant's interpretation of their environment over time, rather than a single snapshot.

5 | IMPLICATIONS FOR NURSING

The strategies presented in this paper may assist nursing scholars in conducting qualitative inquiry and continuing research activities during periods of limited access to the phenomena or persons of interest. Furthermore, these strategies allow nursing scholars to conduct rigorous, in-depth research without geographic limitations, providing greater possibilities for international collaborations and cross-institution research.

Research has historically been limited by physical proximity. Over time virtual capabilities have introduced the opportunity to recruit individuals from a broad range of regions and countries and to collect data from a distance. This broadened reach also presents challenges related to identifying an institutional review board of record, data storage and sharing, bias based on broadband and internet access and limitations on researchers' capacity to follow-up on adverse events. Future work to identify the likelihood of these challenges and strategies to mitigate harm would significantly contribute to the growing body of literature on virtual qualitative inquiry.

The strategies we presented are drawn from our singular experience, although they are supported by other scholars' past efforts to conduct rigorous virtual qualitative inquiry (Archibald et al., 2019; Deakin & Wakefield, 2014; Kaufmann & Tzanetakis, 2020; Krouwel et al., 2019; Roberts et al., 2021; Salmons, 2015). In the future, systematic exploration of the effects of virtual methods on the quality of qualitative inquiry would add to the growing body of literature-based primarily on case exemplars. Scholars motivated to explore

this topic should consider simultaneously using virtual and in-person methods to explore their research aims and questions; this approach would allow the scholar to compare the use of in-person and virtual data collection and interpretation. The researcher would need to carefully document their processes and procedures, perhaps through the use of detailed methodological memos.

6 | CONCLUSION

While qualitative research has traditionally involved in-person proximity to study participants, the distancing requirements of COVID-19 pandemic allowed us to add to a growing body of literature supporting the effectiveness of virtual approaches. We found we were able to maintain our study aims and conduct data collection virtually. With creative problem-solving for challenges unique to virtual studies, we maintained our study rigour and uncovered benefits of and alternative ways to gather rich, qualitative data. Out of the uncertainty and disruption brought on by environmental change, virtual strategies provide opportunities to continue social connections, person-to-person interactions and business processes. For researchers, virtual processes allow qualitative research to continue while providing a new context for understanding participant experiences.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

REFERENCES

Archibald MM, Ambagtsheer RC, Casey MG, & Lawless M (2019). Using zoom videoconferencing for qualitative data collection: Perceptions and experiences of researchers and participants. International Journal of Qualitative Methods, 18, 1609406919874596. 10.1177/1609406919874596

Blum J, Booth S, Gal O, Krohn M, Len J, Lyons K, Marcedone A, Maxim M, Mou ME, O'Connor J, Rien S, Steele M, Green M, Kissner L, & Stamos A (2020). E2E encryption for zoom meetings (No. 3). Zoom Video Communications, Inc.

Bozdag E (2013). Bias in algorithmic filtering and personalization. Ethics and Information Technology, 15(3), 209–227. 10.1007/s10676-013-9321-6

Centers for Disease Control and Prevention. (2020). Coronavirus Disease 2019 (COVID-19). U.S. Department of Health and Human Services. https://www.cdc.gov/coronavirus/2019-ncov/prepare/pregnancy-breastfeeding.html

Charmaz K (2014). Constructing grounded theory. Sage.

Corbin J, & Strauss A (2008). Basics of qualitative research: Techniques and procedures for developing grounded theory (3rd ed.). SAGE Publications.

Creswell JW, & Poth CN (2016). Qualitative inquiry and research design: Choosing among five approaches. SAGE Publications.

Davies L, LeClair KL, Bagley P, Blunt H, Hinton L, Ryan S, & Ziebland S (2020). Face-to-face compared with online collected accounts of health and illness experiences: A scoping review. Qualitative Health Research, 30(13), 2092–2102. 10.1177/1049732320935835 [PubMed: 32667257]

Deakin H, & Wakefield K (2014). Skype interviewing: Reflections of two PhD researchers. Qualitative Research, 14(5), 603–616. 10.1177/1468794113488126

DeVito MA, Gergle D, & Birnholtz J (2017). "Algorithms ruin everything": #RIPTwitter, folk theories, and resistance to algorithmic change in social media. Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems, 3163–3174. 10.1145/3025453.3025659

Facebook. (n.d.). Facebook ads. Facebook for Business. https://www.facebook.com/business/ads

Ghebreyesus TA (2020, 3 11). WHO Director-General's opening remarks at the media briefing on COVID-19—11 March 2020. World Health Organization. https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020

Glaser BG, & Strauss AL (2009). The discovery of grounded theory: Strategies for qualitative research. Transaction Publishers.

Heath J, Williamson H, Williams L, & Harcourt D (2018). "It's just more personal": Using multiple methods of qualitative data collection to facilitate participation in research focusing on sensitive subjects. Applied Nursing Research, 43, 30–35. 10.1016/j.apnr.2018.06.015 [PubMed: 30220360]

Kaufmann M, & Tzanetakis M (2020). Doing Internet research with hard-to-reach communities: Methodological reflections on gaining meaningful access. Qualitative Research, 20(6), 927–944. 10.1177/1468794120904898 [PubMed: 33281502]

Krouwel M, Jolly K, & Greenfield S (2019). Comparing Skype (video calling) and in-person qualitative interview modes in a study of people with irritable bowel syndrome – an exploratory comparative analysis. BMC Medical Research Methodology, 19(1), 219. 10.1186/s12874-019-0867-9 [PubMed: 31783797]

Pezalla AE, Pettigrew J, & Miller-Day M (2012). Researching the researcher-as-instrument: An exercise in interviewer self-reflexivity. Qualitative Research, 12(2), 165–185. 10.1177/1468794111422107 [PubMed: 26294895]

QSR International Pty Ltd. (2018) NVivo (Version 12). https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home

Roberts JK, Pavlakis AE, & Richards MP (2021). It's more complicated than it seems: Virtual qualitative research in the covid-19 era. International Journal of Qualitative Methods, 20, 16094069211002960. 10.1177/16094069211002959

Room Rater [ratemyskyperoom]. (n.d.). Tweets [Twitter page]. Retrieved September 15, 2020, from https://twitter.com/ratemyskyperoom

Salmons JE (2014). Qualitative online interviews: Strategies, design, and skills (2nd ed.). SAGE Publications.

Salmons JE (2015). Doing qualitative research online. SAGE.

Scudellari M (2020). How the pandemic might play out in 2021 and beyond. Nature, 584(7819), 22–25. 10.1038/d41586-020-02278-5 [PubMed: 32760050]

Silva S, Badasyan N, & Busby M (2018). Diversity and digital divide: Using the National Broadband Map to identify the non-adopters of broadband. Telecommunications Policy, 42(5), 361–373. 10.1016/j.telpol.2018.02.008

Vaughn P, & Turner C (2016). Decoding via coding: Analyzing qualitative text data through thematic coding and survey methodologies. Journal of Library Administration, 56(1), 41–51. 10.1080/01930826.2015.1105035

Zoom Video Communications, Inc. (2016). Zoom security guide. Author. https://zoom.us/docs/doc/Zoom-Security-White-Paper.pdf

TABLE 1

Challenges, solutions and benefits of virtual enquiry based on a case exemplar

Recruitment

Challenges	• Recruiting participants virtually
	• Building new community relationships and identifying gatekeepers without the ability to meet in-person
	• Reaching participants without a digital footprint (no email accounts, no social media accounts)
	• Certain virtual methods of recruitment disappear after a single instance (email, social media post), unlike a physical recruitment flyer which stays in place for an extended period
Solutions	• Use of professional and personal network to share information about the study via word of mouth (family, friends, peers, mentors, coworkers)
	• Identify institutional and community groups and organizations with members who align with intended participant demographics for theoretical sampling
	• Identifying virtual gatekeepers (community organization/group leaders)
	• Increase direct virtual communication with potential gatekeepers, community organizations and group leaders to facilitate contact with potential participants
	• Use of email to contact group or organization leaders and ask that they share study information with members
	• Use of social media (Facebook, Nextdoor, Twitter, Instagram, TikTok) and social media groups
	• Use of college/university student newsletters
	• Use of ResearchMatch
	• Use Facebook advertising capabilities to target study population if in the budget
Benefits	• Recruitment does not have geographic boundaries
	• Virtual recruitment may reach populations that would have been missed using other methods of recruitment
	• Recruitment message can be shared easily (forwarding emails, sharing social media posts) with savvy social media use

Data Collection

Challenges	• Limited opportunities for participant observation
	• Potential for at-home distractions
	• Potential for breach of privacy if participant lives with family, roommates, or a partner
	• Privacy concerns related to internet safety and protections
	• High-speed internet connectivity issues including lagging video or audio, failure to connect, and video/audio cutting in and out
	• Interviews limited to telephone if participant does not have access to high-speed internet and a video-capable device
	• Documentation of the consent process without participant signature
	• Collection of demographic data without a paper survey
	• Coordinating timing of the consent process, demographic data collection, interview, and participant payment (previously conducted all at once at an in-person meeting)
Solutions	• Utilize institution-sponsored video conferencing service, creating a level of trustworthiness/credibility
	• 'Zoom Rooms' can be locked to non-participants when all participants are present

Recruitment
- The Zoom host has the option to create a password requirement for a Zoom Room
- Zoom conferencing services utilize end-to-end encryption, protecting video/audio data
- Participants may choose to use their name or a pseudonym (important when conducting group video calls)
- Participants may choose to disable their video
- Use institution-sponsored survey software to collect informed consent documentation and any survey data

Benefits
- Reduces travel time and costs for researcher and participant
- The researcher can glimpse into the participants home life (what is in the video background, are there other people present, are there any other distractions)
- Participants, especially young adult women, may feel more comfortable connecting remotely rather than in-person with the researcher—a stranger
- May be easier to reconnect with participants to conduct additional interviews
- Eliminates requirement to purchase a digital voice recorder
- Video conferencing services may provide quick, semi-accurate transcripts for free
- Eliminates physical copies of regulatory documents, all study records can be retained via virtual storage

Incentives

Challenges
- Payment for participation must be sent virtually or via postal service
- Documentation of payment without participant signature
- Avoid fees associated with certain gift cards
- Provide a type of payment that is useful for young adults
- Cash-use discouraged at retailers due to risk of infection transmission

Solutions
- Email or text an electronic gift card directly to participant
- Amazon provides notification when a gift card is received by the recipient (replaces payment receipt)
- No fees associated with an Amazon gift card
- A participant receives an electronic gift card immediately rather than waiting on a mailed payment

Benefits
- A participant receives a form of payment that can be used like cash for many services (food delivery, grocery delivery, clothing, cleaning supplies, entertainment, etc.)
- Electronic-gift card balance does not depreciate with time like other gift card options
- Participant can use electronic-gift card without leaving the house

Data Analysis

Challenges
- Limited access to institutional facilities for physical data storage
- Qualitative analysis done by hand is near impossible to share with a research team if the team is completely virtual
- Unless using a word processing package, qualitative data analysis software is probably required and is not cheap
- Concerns regarding safe data sharing with a research team

Recruitment

Solutions
- Use of institutional virtual private network to remotely connect to an encrypted server for data storage
- Utilize institution's qualitative analysis software package license or license discount
- If a student, utilize student discounts to purchase a personal license for qualitative analysis software
- Utilize a smartphone camera or touchscreen tablet/laptop to add hand-drawn models to study data
- Virtual research team meetings via video conference software that include screen sharing and 'whiteboard' functionality
- If using NVivo, utilize 'copy project' and 'import project' functions to incorporate multiple team members' codes
- Schedule recurring virtual team meetings to discuss data analysis and study progress

Benefits
- Data analysis can be done anywhere
- Collaborating with past mentors after graduation or a job change can continue un-hindered
- Ability to collaborate with world-renowned experts without travel
- Virtual meetings with research team are easy to record and retain as additional data
- Easily conduct coding comparisons using qualitative data analysis software when engaging in team research

Follow-up

Challenges
- Unable to invite participants to a voluntary end-of-study gathering to report out findings

Solutions
- Invite participants to a virtual-end-of-study gathering via a video conferencing software (e.g. Zoom)
- Participants still receive the final report of the findings and can provide valuable feedback

Benefits
- Participants can maintain anonymity by changing their display name and disabling video
- Reduces travel and time burden on participants who wish to participate
- Can easily record the session to retain as additional data
- Participants and research team members can participate in any geographic location

TABLE 2

Recruitment and enrolment before and after COVID-19

Participant status [a]	University		Community college		Community		Unknown	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Contacted study team	20	18	13	17	1	7	1	9
Eligible (% of contacted)	17 (85)	14 [b] (77.8)	3 (23.1)	7 (41)	1 (100)	2 (28.6)	—	—
Declined/lost to follow-up (% of eligible)	8 (47.1)	2 (11.1)	3 (100)	1 (14.3)	—	1 (50)	—	—
Completed Interview (% of eligible)	2 (11.8)	3 (16.7)	—	6 (85.7)	1 (100)	1 (50)	—	—

[a] Pre: Before the onset of COVID-19 pandemic (September 2019–February 2020); Post: After onset of COVID-19 pandemic (March 2020–September 2020).

[b] *ResearchMatch* oversaturated the participant pool with university students, therefore a number of individuals were eligible but were not invited to complete an interview.