Title

Certified Nurse-Midwives' Experiences of Telehealth in Clinical Practice: A Constructivist Grounded Theory Study

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Certified Nurse-Midwives' Experiences of Telehealth in Clinical Practice: A Constructivist Grounded Theory Study

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DISSERTATION

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Dedication and Acknowledgements

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Contributions

The text of this dissertation is, in part, a reprint of the following article:

Golden, Bethany N., Shaimaa Elrefaay, Monica R. McLemore, Amy Alspaugh, Kimberly Baltzell, and Linda S. Franck. “Midwives’ Experience of Telehealth and Remote Care: A Systematic Mixed Methods Review.” *BMJ Open* 14, no. 3 (March 1, 2024): e082060. https://doi.org/10.1136/bmjopen-2023-082060.

Chapter 3, “Adapting Midwifery Theory to Accommodate Telehealth Care Delivery”, has been prepared for publication and submitted for peer review to a professional journal by Bethany Golden, Amy Alspaugh, Linda S. Franck, Kimberly Baltzell, and Monica R. McLemore. “Virtual Adaptation: CNMs’ Experiences of Telehealth Use: A Constructivist Grounded Theory Study” has also been prepared for publication by Bethany Golden, Amy Alspaugh, Monica R. McLemore, Kimberly Baltzell, and Linda S. Franck.

Certified Nurse-Midwives' Experiences of Telehealth in Clinical Practice: A Constructivist Grounded Theory Study

Bethany N. Golden

Abstract

Background: Midwifery theory does not adequately address the profession's increasing reliance on telehealth to offer patients full spectrum care throughout their lifespan. Worldwide, midwives' concerns about remote care include the lack of touch/smell and basic vital signs like blood pressure readings, the quality and length of the visits, the quality of relationship-building with the patients, and the lack of privacy. Certified nurse-midwives (CNMs) in the United States (US) have found benefits in telehealth, such as a reduction of the barriers to healthcare access and greater flexibility for patients and providers. Yet, there remains a lack of conceptual clarity in midwifery theory that fully situates telehealth within reproductive and sexual health clinical practice.

Methods: This dissertation study is a qualitative research study to advance midwifery conceptual knowledge of telehealth integration in clinical care with a more expansive understanding of midwives' role in sexual and reproductive health care beyond pregnancy. The aims of this dissertation were: 1) to synthesize the existing quantitative, qualitative, and mixed methods studies of midwives' experience of telehealth worldwide; 2) to propose a relevant starting point using existing technology and midwifery theory to guide the conceptual investigation of this phenomenon; and 3) to explore CNMs' lived experience of telehealth in order to generate a new theory.

Results: The primary findings of the mixed method systematic review of midwives' experience of telehealth included: 1) perceiving gains and losses when integrating

telehealth into clinical practice; 2) balancing increased connectivity with workload; 3) challenges with building relationships via telehealth; 4) centering some patients while distancing others; and 5) experiences of telehealth by age and professional experience.

A theoretical basis was explored for midwifery telehealth care provision and research by conceptually analyzing key constructs from the Hierarchy Model for the Means and Targets of Midwifery (HMMTM) and the Technology Acceptance Model 2 (TAM2). The constructs were combined and modified, resulting in the Midwifery Acceptance of Telehealth (MAT), a proposed model that uses a reproductive justice lens. MAT provided relevant sensitizing concepts for use in defining initial domains of interest to aid qualitative data collection.

The overarching theory that emerged from the study findings describes the ongoing process of virtual adaptation directly influences CNMs' experience of telehealth. The theory delineates the learning process of modifying and transferring skills, knowledge, behaviors, attitudes, and values to patient visits outside of a physical clinical setting. It links this process to midwives' experience of telehealth as enhancing or disrupting responsive care and connectivity. Telehealth use is perceived by CNMs as promoting connectedness and person-centered care as virtual adaptation progresses. In contrast, when the pace of virtual adaptation is slower, CNMs perceive telehealth use as falling short with concerns about impeding connectivity with patients while causing delays in care, anxiety about missing critical clinical data, and less professional satisfaction. Nevertheless, CNMs continue to value in-person interactions and perceive telehealth as increasing healthcare access for those unable to receive care in traditional clinic settings.

Conclusion: The findings of this dissertation research provide conceptual insights into a major ongoing shift in clinical practice and midwifery theory. By normalizing technology as a common and essential way to stay connected, midwives integrate telehealth to respond to their patient's needs while learning specific strategies to adapt their practice. This dissertation advances and modernizes the conceptual understanding of midwives' clinical experience by including the reality of telehealth use and care throughout the lifespan.

Table of Contents

List of Figures

List of Tables

List of Abbreviations

ACNM = The American College of Nurse-Midwives

CMs = Certified midwives

CNM = Certified nurse-midwife

CNMs = Certified nurse-midwives

CPMs = Certified professional midwives

CGT = Constructivist grounded theory

HMMTM = Hierarchy Model for the Means and Targets of Midwifery

HMO = Health Maintenance Organization

IDN= Independent Delivery Network

MAT = Midwifery Acceptance of Technology model

MMAT = Mixed Method Appraisal Tool

PICO = Population, Intervention, Comparison, Outcome

PRISMA = Preferred Reporting Items for Systematic Reviews and Meta-Analyses

REDCap = Research Electronic Data Capture

SARS-CoV-2 = Severe acute respiratory syndrome-related coronavirus 2

TAM = Technology Acceptance Model

TAM2 = Technology Acceptance Model 2

WHO = World Health Organization

Chapter 1

Introduction

Background

Problem statement

Midwifery is widely recognized as an evidence-based approach to reducing maternal mortality and reproductive health disparities globally.[1] In the United States (US) healthcare context, both state and federal policies have expanded the practice of and invested millions in the development of the certified nurse-midwifery workforce as a policy solution to improve these health outcomes.[2–4] The members of the workforce are simultaneously adapting to telehealth in their clinical practice.[5]

Notably, midwives' have embraced the use of telehealth as a complementary and integrative hybrid model to in-person visits.[5–7] Moreover, midwives, like many health professionals worldwide, rapidly adapted their clinical practice during the public health response during the severe acute respiratory syndrome-related coronavirus 2 (SARS-CoV-2) pandemic, commonly referred to as the COVID-19 pandemic, by increasing their use and reliance on telehealth.[5,8–15] With this major shift in care, how continued telehealth use will impact practice and anticipated outcomes in midwifery care remains unknown.

Gaps in knowledge

The majority of midwives' experience of telehealth has been studied in the context of the COVID-19 pandemic, yet much remains known outside of the urgent response.[5,9,12,14,16] Often, findings are consolidated without distinguishing the type of obstetric provider, resulting in few studies that just focus exclusively on midwives' experiences.[7,17] Furthermore, perinatal care remains the focus of many recent

telehealth studies, limiting our understanding of midwives' contributions to other forms of reproductive health services.[5,7,18–20]

A lack of knowledge exists about how certified nurse-midwives (CNMs) convey and enact the professional core values (i.e., supportive presence, relationship building, and a patient-centered approach to decision-making)[21,22] in clinical practice via telehealth to patients across the lifespan. Yet, the professional organization, the American College of Nurse-Midwives (ACNM), has endorsed blending traditional in-person care with telehealth for providing primary, sexual, reproductive, perinatal, and newborn care.[23] It is recommended that this form of care should be customized based on patient preference, risks and benefits to the patient, and access to technology.[23] Concerns remain about whether telehealth decreases or increases barriers to equitable care for the most marginalized groups, even though valued by the profession. Particularly whether telehealth impedes access for those who speak languages other than English, those who lack consistent insurance coverage, housing, and access to digital resources, and those most impacted by racism, poverty, mental illness, and addiction[11,16,23–25]. Without an existing theoretical framework, current research lacks conceptual clarity about how midwives perceive telehealth impacting clinical practice in its entirety.

Purpose of the study and specific aims

The purpose of this dissertation is to advance the theoretical understanding of midwives' experience of telehealth and seek conceptual clarity about how midwives perceive its use impacting clinical practice. The aims of this dissertation are 1) to synthesize the existing quantitative, qualitative, and mixed method studies of midwives'

experience of telehealth worldwide; 2) to propose a relevant starting point using existing technology and midwifery theory to guide the conceptual investigation of this phenomenon; and 3) to explore CNMs' lived experience of telehealth to generate new theory that is more inclusive of all reproductive and sexual health services offered in clinical practice.

For this dissertation, telehealth is defined as patient and provider interacting with synchronous technologies. This modified World Health Organization (WHO) definition omits asynchronous technologies where health information or patient inquiry is stored and then forwarded to a clinician. This definition of telehealth confirms technologies such as video conferencing, telephone/audio-only, text, and instant messaging as forms of synchronous telehealth.[26]

Organization of the dissertation

The dissertation contains five chapters that develop the theoretical understanding of how certified nurse-midwives experience telehealth in clinical practice. The first chapter reviews the background, purpose, aims, the author's positionality, and the significance of the research. Chapter 2 is a previously published systematic review that synthesized peer-reviewed mixed methods, qualitative, and quantitative studies on midwives' perceptions of telehealth into themes to present the state of research. In Chapter 3, the creation of the Midwifery Acceptance of Technology model (MAT) is presented as a theoretical starting point for qualitative inquiry. MAT is a composite and modification of existing midwifery and technology key conceptual constructs. It serves as a point of departure to begin a qualitative inquiry into certified nurse-midwives' experience of telehealth in California. In Chapter 4, the methodology, design analysis,

findings, and implications of the qualitative research study are described. As is characteristic of constructivist grounded theory's findings, participants' own words are integrated into the initial conceptual findings, seeking to represent and embed their perspectives and voices as an intrinsic part of the analysis to explore social processes.[27] A summary and synthesis of findings from each chapter is reported in Chapter 5, with a presentation of the implications for future research, policy, and practice.

Positionality

My own positionality is acknowledged and fully integrated as an integral part of this dissertation study.[27] As the lead researcher, I am motivated by my beliefs in justice, bodily autonomy, human rights, and the provision of compassionate and informed care. These values are embedded in my work as a CNM, politically active feminist, and novice researcher. I have worked as a certified nurse-midwives for over 20 years and chose this professional path in an attempt to align my values with my daily work. My hope has been and remains to place into practice my commitment to making sure people are informed so they can make the best sexual and reproductive health decisions that are best for their lives.

For the majority of my career, I have provided in-person care in diverse outpatient settings: community health clinics, Planned Parenthood, and private practice caring for pregnant and non-pregnant people in the US. I utilized the telephone daily to share results, fill prescriptions, and triage patients. Besides documenting in the chart, this work was not reimbursed and was rarely recognized as a form of care in my professional settings, but nevertheless required.

In March 2020, I began to provide care via the telephone from my apartment for any and all sexual and reproductive health concerns as part of an emergency measure to reduce the risk of exposure to the COVID-19 virus. Immediately, I noticed that my remote interactions and clinical reality differed from my prior experience providing care in-person. The flow and experience of telehealth encounters were disorienting, at times longer, shorter, more casual, more formal, direct and to the point, or more extensive and intimate. I listened as patients vocalized their needs, frustrations with growing anxiety, and concerns that went far beyond their clinical status. In the background, I heard unrecognizable sounds and voices while I juggled my own domestic distractions. We discussed how we missed interacting in person but were relieved we connected. We lost our telephone connection mid-conversation due to a poor cellular signal and limited data plans, leaving key clinical details unspoken. With health facilities off limits to anyone but patients, we strategized how to obtain childcare in order to be able to obtain access to essential blood draws and medications. Unable to complete a physical exam or obtain basic vital signs, I directed pregnant patients more often to the emergency room for reassurance about their health status. I felt as if I had no other choice. In this context, I was exposed to telehealth.

Herein, I became increasingly conflicted about its role in midwifery practice. Without video conferencing capabilities, I telephoned every patient for every type of visit, no matter the severity of the issues. It was clear that it allowed access for some patients, but at what risk? It often felt inadequate, yet at other moments, it served as an essential lifeline and provided a more relaxed style of care. For many, it seemed that existing barriers to care were perpetuated with telehealth or made worse. For others,

barriers were alleviated by telehealth creating greater convenience. This was carried out without clinical guidelines, training for telehealth, and the lack of clarity about its appropriateness and effectiveness; I knew some health needs would be met while others would not.

Regardless, I participated and witnessed the midwifery profession's practice evolve in real time while struggling to integrate telehealth. Telehealth has changed how midwifery is commonly practiced, from shared physical space in a clinic with known routines and practices to, as another midwife said, "meeting people where they were at." It has created opportunities and challenges, and forces changes and adaptation. Telehealth has progressed since the social and clinical experiments carried out as a response to the pandemic, as providers have acclimated to using it during less urgent times. Research is now underway to determine how to promote high-quality or equitable care. It is through this lens as a practicing clinician that I identified my research area of interest. As I investigated the topic beyond my own clinical experience, it became increasingly clear that the conceptualization of midwifery practice was outdated to describe and understand this phenomenon.

Significance

Midwives' positive reproductive healthcare outcomes are more likely to be maintained in the era of telehealth through directly activating and embedding midwives' deep awareness and perception of their own practice within a theoretical framework. This research advanced conceptual understanding of how midwifery practice with telehealth is evolving to guide future clinical guidelines, care models, training programs, research, and design of technology systems. The study broadened knowledge of how

clinical practice is represented in midwifery theory to be more inclusive of the types of people midwives care for, the range of sexual and reproductive health services they offer, and where and how services are now offered. The acceptance and integration of telehealth use in the US offers the profession and individual CNMs opportunities to re-imagine how to connect and respond to patients' needs more holistically outside of the confines and restraints of physical clinical settings. This dissertation study is a step forward and can serve as a springboard to re-conceptualize what is needed to transform and innovate person-centered care in nurse-midwifery, advancing a new and more equitable form of responsive care to more people's phones, homes, and lives.

References

1. Fund, U. N. P. The State of the World's Midwifery 2021: Building a Health Workforce to Meet the Needs of Women, Newborns and Adolescents Everywhere. (United Nations, 2021). doi:10.18356/9789214030935.
2. Health Resources and Services Administration. Advanced Nursing Education Workforce (ANEW) Program | HRSA. https://www.hrsa.gov/grants/find-funding/HRSA-23-014 (2023).
3. The White House Blueprint for Addressing the Maternal Health Crisis. (2022).
4. Song-Brown Healthcare Workforce Training Programs – Family Nurse Practitioner, Primary Care Physician Assistant, and Midwifery Training Programs. California Grants Portal https://www.grants.ca.gov/grants/song-brown-healthcare-workforce-training-programs-family-nurse-practitioner-primary-care-physician-assistant-and-midwifery-training-programs/ (2022).
5. Kissler, K. et al. Perinatal Telehealth: Meeting Patients Where They Are. Journal of Midwifery & Women's Health **69**, 9–16 (2024).
6. Nelson, G. A. & Holschuh, C. Evaluation of Telehealth Use in Prenatal Care for Patient and Provider Satisfaction: A Step Toward Reducing Barriers to Care. The Journal for Nurse Practitioners **17**, 481–484 (2021).
7. Wu, K. K., Lopez, C. & Nichols, M. Virtual Visits in Prenatal Care: An Integrative Review. J Midwifery Womens Health (2021) doi:10.1111/jmwh.13284.
8. Bradfield, Z. et al. Midwives' experiences of providing maternity care during the COVID-19 pandemic in Australia. Women and Birth **35**, 262–271 (2022).

9. Gemperle, M. et al. Midwives' perception of advantages of health care at a distance during the COVID-19 pandemic in Switzerland. Midwifery **105**, 103201 (2022).
10. Hearn, F., Biggs, L., Wallace, H. & Riggs, E. No one asked us: Understanding the lived experiences of midwives providing care in the north west suburbs of Melbourne during the COVID-19 pandemic: An interpretive phenomenology. Women Birth (2021) doi:10.1016/j.wombi.2021.09.008.
11. Henry, A. et al. Effects of the COVID-19 Pandemic and Telehealth on Antenatal Screening and Services, Including for Mental Health and Domestic Violence: An Australian Mixed-Methods Study. Front Glob Womens Health **3**, 819953 (2022).
12. Jacobsen, K. E., Katon, J. G. & Kantrowitz-Gordon, I. Midwifery in the Time of COVID-19: An Exploratory Study from the Perspectives of Community Midwives. Women's Health Issues **32**, 564–570 (2022).
13. Perrenoud, P., Chautems, C. & Kaech, C. 'Whatsapping' the continuity of postpartum care in Switzerland: A socio-anthropological study. Women Birth (2021) doi:10.1016/j.wombi.2021.06.009.
14. Rousseau, A., Gaucher, L., Gautier, S., Mahrez, I. & Baumann, S. How midwives implemented teleconsultations during the COVID-19 health crisis: a mixed-methods study. BMJ Open **12**, e057292 (2022).
15. Wu, K. K., Phillippi, J., Mueller, M., Lopez, C. & Nichols, M. Telemedicine for Routine Prenatal Care: Use and Satisfaction During the COVID-19 Pandemic. Journal of Midwifery & Women's Health (2024) doi:10.1111/jmwh.13621.

16. Galle, A. et al. A double-edged sword-telemedicine for maternal care during COVID-19: findings from a global mixed-methods study of healthcare providers. BMJ Glob Health **6**, (2021).
17. Jonasdottir, S. K., Thordardottir, I. & Jonsdottir, T. Health professionals' perspective towards challenges and opportunities of telehealth service provision: A scoping review. International Journal of Medical Informatics **167**, 104862 (2022).
18. Smith, D. C. et al. Sudden Shift to Telehealth in COVID-19: A Retrospective Cohort Study of Disparities in Use of Telehealth for Prenatal Care in a Large Midwifery Service. Journal of Midwifery & Women's Health **0**, (2023).
19. Futterman, I. et al. Addressing Disparities in Prenatal Care via Telehealth During COVID-19: Prenatal Satisfaction Survey in East Harlem. American journal of perinatology (2020).
20. Hawkins, S. S. Telehealth in the Prenatal and Postpartum Periods. J Obstet Gynecol Neonatal Nurs (2023) doi:10.1016/j.jogn.2023.05.113.
21. American College of Nurse-Midwives. ACNM Vision, Mission, Core Values_2021. (2021).
22. American College of Nurse-Midwives. Our Philosophy of Care. https://www.midwife.org/Our-Philosophy-of-Care.
23. American College of Nurse-Midwives. Use Telehealth in Midwifery. (2022).
24. Ukoha, E. P. et al. Ensuring Equitable Implementation of Telemedicine in Perinatal Care. Obstet Gynecol **137**, 487–492 (2021).

25. Zhang, D. et al. Disparities in telehealth utilization during the COVID-19 pandemic: Findings from a nationally representative survey in the United States. J Telemed Telecare **30**, 90–97 (2024).
26. World Health Organization. Global Diffusion of eHealth: Making Universal Health Coverage Achievable: Report of the Third Global Survey on eHealth. (World Health Organization, Geneva, 2016).
27. Charmaz, K. C. Constructing Grounded Theory. (SAGE Publications, Thousand Oaks,2014).

Chapter 2

Midwives' Experience of Telehealth and Remote Care:

A Systematic Mixed Methods Review

Introduction

The World Health Organization (WHO) recommends using telehealth and other digital interventions for their potential to increase access and strengthen healthcare systems.[1] The pace of telehealth utilization accelerated in an effort to reduce the risk of transmission among patients and healthcare workers during the COVID-19 pandemic.[2,3] As part of a global response, many sexual and reproductive health providers in Europe, Australia, Asia, Africa, and the United States quickly integrated diverse telehealth models and utilized remote technologies to continue providing essential services.[4,5] Concurrently, as telehealth transformed clinical practice and provider-patient interactions, WHO maintained the urgent need to invest in the midwifery workforce and midwifery-led models and promote midwifery leadership in health systems worldwide.[6,7] Midwives were identified as “pivotal” to meet the 2030 Sustainable Development Goals.[6] The focus on midwives’ vital contributions is evidenced in part by cross-cultural studies that demonstrate midwifery-led care improves health outcomes, decreasing pre-term births, cesarean sections, and medical interventions while maintaining patients’ experience.[6,8–11]

Systematic reviews are needed to examine the research on midwives’ experience, perception, and acceptability of telehealth in relation to their full scope of clinical practice. Midwifery models of care worldwide vary due to unique cultural, social, and political environments with localized characteristics and constraints by setting.[12] Yet, the model is rooted in the relational aspect between the person seeking care and the midwife.[13] Midwifery has been traditionally practiced in person. Understanding midwives’ experiences of telehealth will highlight which transferrable skills and adaptive

strategies are needed to uphold key facets of care that promote positive health outcomes as it evolves in the telehealth environment. Therefore, the aim of this systematic review is to summarize and synthesize the existing evidence on how midwives experience, perceive and accept providing sexual and reproductive health care at a distance using telehealth. The main question for this systematic review is: how do midwives experience clinical practice at a distance when participating in telehealth?

Methods

The search strategy was informed by the aims of the review and Population, Intervention, Comparison, Outcome (PICO) statements.[14,15] The systematic search strategy was designed for five electronic databases: PubMed, CINHAL, PsychInfo, Embase, and the Web of Science. MESH terms and keywords were applied for each concept in the PICO.[14] Definitions and PICO inclusion and exclusion criteria for articles published between January 1, 2010, and Aug 22, 2022, are shown in Table 2.1. The search start date corresponds with the World Health Organization's first definitions of telehealth and telemedicine (WHO, 2010), and the end date is when the literature search was completed. Reference lists of the selected studies and literature reviews were searched manually. (Supplementary Materials)

Patient and public involvement None

Data collection management

The results of the search strategy were compiled and managed using Covidence systematic review software (Veritas Health Innovation, Melbourne, Australia). Articles were selected for eligibility by applying the inclusion and exclusion criteria at three steps in the screening process: title review, abstract review, and full-text review. Two

reviewers independently screened articles at the abstract and full-text levels by using the software's voting system: "yes," "no," or "can't tell" and convened to reach an agreement for inclusion or exclusion. Special attention was given at the full-text review step to double-checking the studies' characteristics and comparing author names to ensure studies with the same datasets were not included. The reviewers resolved conflicts by engaging in open discussion to understand each other's rationales and presenting evidence to reach a consensus for inclusion.

Data collection

Data collection and extraction began with reviewing each identified study for key data items. Key data items were organized in a spreadsheet and included author/publication date/journal, setting for data collection, purpose/aim, sample method, stated method/design, theoretical/concept framework, findings/outcomes, model of technology/comparator, and strengths and limitations. For quantitative studies, measurement tools (validated or non-validated), statistics, and results were also extracted. For studies that reported the telehealth experience of multiple types of providers, such as physicians and nurses, only the data pertinent to midwives was extracted. If needed, lead authors were contacted for additional data and clarification regarding findings specific to midwives. The systematic review protocol was developed in accordance with PROSPERO guidelines but was conducted in partial fulfillment of a PhD course and, therefore, was not permitted to be registered.

Appraisal of the quality of studies

Using the Mixed Method Appraisal Tool (MMAT) version 2018, the two independent reviewers appraised the quality of the studies[17,18]. Reviewers

independently assessed each article and then convened to determine consensus. The reviewers discussed all disputed criteria and presented evidence from the study for their assessment, and then they reached an agreement on their final decisions. For reporting purposes, in addition to the appraisal descriptions, metrics are used to indicate low/medium/high-quality studies.[19] Due to the dearth of published studies available for this review, the MMAT appraisal was used to assess quality but did not determine exclusion.[20]

Data analysis

To integrate the findings from the diverse study designs in the final sample, a convergent approach of transforming quantitative results to qualitative results was used, as recommended by JBI Manual for Evidence Synthesis.[21,22] Quantitative data was extracted and then "qualitized" as written text. [22] Findings from qualitative studies were extracted verbatim and combined with the newly transformed "qualitative" results derived from the quantitative findings, allowing for a narrative interpretation.[22] Collectively, the findings were combined, sorted into groups, and pooled into themes. The extracted key data items were also identified and compiled to create categories and collapsed for synthetization.[22]

Results

Search results

The search strategy yielded 6,486 article titles. After removing duplicates, 3,840 titles were screened, and 176 titles remained for abstract review. The two reviewers independently screened the abstracts, which resulted in 30 articles. One study was identified from bibliographies of three systematic reviews. Thirty-one full-text articles

were reviewed separately by the two reviewers, and 21 were excluded. Ten full-text studies were ultimately included in this review (see Figure 2.1). Three lead authors were contacted for additional data and clarification regarding findings specific to midwives.[23–25]

Selected studies: Design type, settings/services and aims

The ten studies meeting the review inclusion/exclusion criteria represented the views of 3,354 midwives regarding telehealth in their midwifery practice. Of the ten selected studies, three studies reported the telehealth experience of multiple types of providers (physicians, nurses, midwives); therefore, only data pertinent to midwives was extracted.[23–25] Tables 2.2 and 2.3 show the characteristics of each included study and Table 2.4 displays the key thematic findings for each study. The study designs can be broadly categorized as qualitative (n=4)[24,26–28], quantitative (n=1)[29], quantitative with content/thematic analysis (n= 2)[23,30], quantitative with descriptive analysis (n=1) [31], and mixed methods (n=2)[25,32]. The settings of nine studies were Australia (n=4)[25,26,29,31], England (n=1)[28], France (n=1)[32], Switzerland (n=2)[24,30], and the United States (n=1)[27]. One large worldwide study conducted a thematic analysis of open-ended survey questions about telehealth and reported with exemplar quotes from midwives in Nigeria, Costa Rica, Norway, Uganda, Kenya, Bangladesh, Germany, the United States, Nepal, France, and Argentina.[23] The settings of clinical telehealth services differed widely across the studies: antenatal/pregnancy-related, birth, and postpartum (n=8)[24–31] plus gynecology, family planning, and abortion (n=2)[23,32].

The telehealth mode for connecting with patients also varied across the studies: telephone only (n=2)[28,29], telephone and videoconferencing (n=3)[25,26,31] instant

messaging only (n=1)[24], and all modalities plus text (n=3)[23,30,32]. A single study used dedicated software[32], and one study did not specify the mode of telehealth[27]. Notably, three studies that explored midwives' perceptions of telehealth for labor triage and postpartum care were conducted prior to the COVID-19 pandemic by phone or instant messaging service.[24,28,29] Nine studies (n=10) were approved by Institutional Review Boards or Ethics Committees, and one research study was exempt (n=10).[30]

The complete MMAT quality appraisal results are reported. (Supplemental Material) Five studies scored 80% achieving high quality[26–29,32] and the other five studies scored 60% achieving medium-quality[23–25,30,31]. Issues in quantitative studies ranged from sampling methods that were not representative of the target population[29,31], lack of indicators of low non-response bias[23,31], the need for a greater explanation of the high non-response rate[30], and limited information about the development of measurements[23,30]. Qualitative studies were negatively assessed for narrow thematic definitions in the analysis compared to presented data[26], insufficient data presented to substantiate a principal finding[28], lack of appropriate methods for a stated qualitative approach[27], and lack of a clear qualitative approach with inadequate discussion of positionality[24]. Each of the quantitative and qualitative components of the mixed methods studies were strong when assessed independently; however, the lack of integration of data[25] and insufficient explanation of divergences between qualitative and quantitative data[32] negatively impacted the scores of these studies.

Common themes across study findings

Five major themes with subthemes were found from the synthesis of the findings from the ten studies. In addition to the descriptions below, a matrix of themes, their definitions, and subthemes is provided in Figure 2.2.

Integrating telehealth in clinical practice during the COVID-19 pandemic and beyond: Perceived gains and losses

Telehealth as an essential tool for the COVID-19 pandemic

Seven studies found telehealth was both imposed on and implemented by midwives during COVID-19 to reduce the risk of transmission of infection.[23,25–27,30–32] It was considered a solid and essential tool for healthcare delivery during the pandemic,[23,25,26,30,32] but described as inferior to face-to-face visits and physical contact.[23,26,32] However, some midwives perceived telehealth as personally beneficial as it enabled them to continue to work[30,32], to reduce their risk of infection[30], to maintain an income, and to create a better balance between their personal lives and work during the pandemic.[32] The possible role of telehealth post-pandemic as a hybrid model with in-person was viewed positively by midwives in two studies.[26,31]

Concerns about the practice of midwifery going remote

For many midwives, sharing physical presence with patients was deemed as essential for midwifery.[23,26,30,32] Midwives were concerned about making errors in remote assessments and/or inadequately addressing certain health issues.[24] Being unable to complete a physical assessment during virtual visits created anxiety.[31] Midwives perceived there was insufficient data comparing maternal outcomes between in-person prenatal care and telehealth visits to justify telehealth adoption in routine

practice.[25] Some midwives perceived no advantage to using telehealth for remote treatment.[30]

Benefits and disadvantages of incorporating telehealth into clinical practice

In one study, midwives found telehealth convenient and easy to use[32], whereas in three other studies, midwives reported struggling with the technology.[23,25,32] Interrupted internet access in remote areas, lack of equipment, and larger infrastructure issues were also reported to impede telehealth use.[23,25–27] Midwives who opted out of using telehealth perceived it as having little benefit or cited provider or patient preference for in-person.[31] Some midwives preferred the telephone over other forms of telehealth.[24,30,32] In one study, some midwives experienced financial hardship as a result of using telehealth, having to personally cover the cost of internet access, resulting in the inability to follow up with patients.[23]

Balancing increased connectivity with little training and workload

Lack of training, guidelines, and protocols

Prior to the COVID-19 pandemic, only three studies investigated midwives' experience of delivering care via telephone and text.[24,28,29] Managing labor via the telephone without formal training has been a requirement for midwives for decades and often goes unrecognized as part of their daily workload.[28,29] During the COVID-19 pandemic, concerns about the lack of adequate training to effectively manage pregnancy-related health issues persisted.[23,26] Following strict guidelines for remote consults was perceived as potentially detrimental for some patients. In one study, some

midwives felt that the use of telephone checklists led to less customized care and some to “fall thru the cracks”.[28]

Interacting with patients with greater frequency impacts workloads

Two studies reported that midwives used telehealth to maintain connection and that it increased the frequency of interactions with patients[24,32], and three studies reported that it increased the midwives’ workload in both hospital and community-based midwives[24,26,29]. Midwives who worked in the community with postpartum mothers in Switzerland felt conflicted by wanting to be available via instant messaging applications (apps) to patients but not the additional workload it required.[24] They were challenged by being placed in a new role as gatekeepers for the health system, receiving requests for help accessing health and social services outside of their scope of practice[24]. Whereas midwives in another study reported a benefit of decreased workload from using telehealth. Positive views about telehealth decreasing workload were associated with age 39 and younger, professional experience of 14 years or less, and reimbursement for telehealth services.[30] Midwives in England reported that telephone triage consultations served as a means of regulating the workload on maternity wards for other midwives.[28]

Challenges with building relationships via telehealth

Telehealth both disrupts and enhances interaction with patients

Three studies reported that midwives perceived that telehealth was an obstacle to creating relationships with patients, instead creating a feeling of distance.[23,26,32] Some midwives in two studies perceived limitations to telephone interactions specifically, such as lacking the ability to visualize non-verbal cues and read body language.[23,26] This was

reported as particularly troubling when caring for non-native speakers, complicated by difficulty using interpreter services.[23,26] However, midwives in one study who used continuity of care models with ongoing patient relationships felt that telehealth created more opportunities to interact and bond with patients and their families.[27]

Identified strategies for remote inter-personal communication

One pre-COVID-19 pandemic study explored midwives' perspectives on what was necessary to deliver care well over the telephone and identified the following attributes: robust communication and intuition to accurately assess the patient's health situation; thorough coverage of the medical history and clinical symptoms; and awareness of the patient's geographical distance from in-person care.[28] When speaking to patients, clear expectation setting, logical advice, and an agreed upon and confirmed summary of the plan were cited as necessary to confirm mutual understanding.[28] In-person care for patients who called three times or sounded distressed was advised.[28] No other studies reported best practices for telehealth in midwifery.

Centering some patients while distancing others

Perceived benefits and appropriate telehealth services for patients

In two studies, midwives perceived successful telehealth as defined by patients: when patients' needs were met, and patients were satisfied with the outcomes.[28,32] Midwives cited telehealth benefits for patients as reducing the need for childcare and transportation, reducing geographical distance [27], promoting greater self-care[30], and improving continuity of care and access[24–26,32]. Childbirth preparation[23], postpartum[23–25], and lactation consultations[23,25] were considered appropriate telehealth services.

Telehealth was seen as a means of overcoming patients' isolation and loneliness, as well as an essential life-saving service for antepartum, postpartum[23,32], managing labor, and abortion during the pandemic[23].

Perceived barriers and inequities for patients

Midwives in two studies perceived that patients felt less cared for with telehealth because of shorter visits and less time to answer patients' questions.[25,26] Midwives reported financial barriers to telehealth for patients who lack access to internet service[23,27], or phones or video-conferencing technology[23]. Some midwives reported patient distrust of receiving care via telehealth, especially vulnerable populations concerned with interfacing with government agencies.[23] Four studies reported midwives' concerns about the lack of privacy and safety for patients, in particular, the potential harms caused by screening for intimate partner violence and mental health via telehealth.[25–27,31]

One study found that telehealth exacerbated patient distrust, stereotyping, and bias among some midwives. Examples included questioning patients' ability to pass on relevant clinical data when directly asked, stereotyping of those who overused the telephone consultations as frequent fliers, and biases that patients lie about their health issues so as to be seen in person.[28]

The experiences of telehealth by age and professional experience

One study found that midwives who had more years of professional experience and older age reported increased rates of confidence in managing labor remotely than younger and less experienced midwives. The study also found that anxiety about telehealth was more often experienced by midwives with fewer years of professional

experience and those who worked in urban/regional areas compared to those who worked in rural/remote areas.[29] Another study found that midwives with less professional experience also perceived more ongoing advantages of telehealth than those with more professional experience. The study also found that midwives who were reimbursed via telehealth were more likely to perceive advantages following the COVID-19 pandemic than those who were not.[30]

Discussion

This review examined research on midwives' experience, perceptions, and acceptance of telehealth in delivering full-scope sexual and reproductive care to patients. Overall, the findings suggest that midwives are conflicted about telehealth and its impact on clinical practice, balancing advantages and disadvantages to service delivery, workload, patient interactions, and health equity.

The concerns expressed by midwives regarding lack of adequate training, technology skills, and equipment are consistent with findings from prior research where diverse types of healthcare providers also report concerns about the use of telehealth in clinical care delivery. In the review by Wu et al. (2020), negative experiences of virtual prenatal visits for prenatal providers and nurses commonly resulted from discomfort with technology, inadequate training, and technical difficulties.[33] Similarly, in a recent scoping review examining telehealth services, "technology and support" and "technological knowledge and training" were reported among the three greatest challenges of using telehealth for physicians, nurses, therapists, social workers, and other staff from diverse specialties.[34] To realize WHO recommendations of developing more midwifery-led models of healthcare and telehealth use to strengthen healthcare

systems, this research suggests that further work is needed so midwives are adequately trained and equipped to integrate telehealth into practice.

This review found that midwives commonly have concerns that telehealth is inferior to in-person visits, particularly with respect to physical assessment, missed clinical signs, errors, and assessment of patient safety.[23,24,26,32] Studies in the present review found that physical presence in an in-person patient-midwife interaction was a "hallmark" characteristic of midwifery.[23,26,32] The review by Penny et al. (2018) supported these findings and similarly noted that registered nurses and midwives are particularly challenged by not being co-located or being able to see patients in person. In-person contact is an important part of their traditional practice and a feature that added value to their practice for many nurses and midwives.[35]

A prominent theme of this review, "Centering Some Patients, While Distancing Others," described how midwives viewed telehealth as benefiting some patients and disadvantaging others. Advantages included reducing the need for childcare and transportation and overcoming geographical distance to improve access[27] and continuity of care[26]. In the review by Wu et al. (2020), prenatal patients reported similar advantages for virtual prenatal visits, except for improved continuity of care, even though the most preferred model of care.[33] Reducing geographical distance and travel time was also reported as beneficial for patients by healthcare providers, nurses, and patients in various specialties in the review by Jonasdottir et al. (2022).[34]

Shorter visits with less time for patients' concerns is a newer finding about midwives' experience of telehealth and is significant for clinical practice because it could impact individualized patient-centered care and relationship building, all of which are

necessary for improving care.[36] In the present review, midwives perceived disadvantages of telehealth for patients such as shorter visits with less time for patients' concerns[25,26], financial barriers for those who lack internet access or devices[23,27], lack of privacy for patients, dangers of remote domestic violence and mental screening[25–27,31], and the creation of greater distrust for those already concerned about interacting with institutions or being recorded[23]. The review by Penny et al. similarly reported that midwives and nurses had concerns about patient safety and privacy with videoconferencing[35], while Wu et al. (2020) reported the need for reliable internet access and the potential financial burden of remote equipment needs for prenatal visits like remote dopplers and blood pressure devices[33].

Another new finding of this review is that some midwives questioned patients' honesty, intentions, and ability to self-report, and stereotyped patients who they perceive as overutilizing services when triaging by phone.[28] These experiences can be understood as stigmatizing and perpetrating mistrust with patients. Telehealth, combined with various forms of bias and concerns about privacy, has the potential to deepen mistrust between providers and patients.[37] To avoid replicating health inequities and discriminatory practices when using telehealth in reproductive health, further investigations are needed to fill this gap and understand how midwives contribute, perpetuate, and alleviate forms of inequities via telehealth, including multi-level racism and other forms of discrimination based on ethnic, gender, poverty, physical ability, and sexual orientation.

Strengths and limitations

The strengths of this review include its relevance to current and future telehealth use by providing an emergent understanding of the topic. Five out of the ten studies were published in 2022, and three more since 2020. Two reviewers participated in the study selection process at abstract and full-text levels, minimizing selection bias and increasing reproducibility compared to a single reviewer.[38] The majority of studies were published in 2022 and beyond, offering emergent insights into telehealth. Rigorous study selection by two reviewers minimizes bias, enhancing reproducibility[37]. Notably, a strength of this review is the inclusion of pre-pandemic telephone midwifery services, shedding light on midwives' experience of decision-making and conducting clinical practice over the telephone, such as how to communicate with patients to create mutual understandings, the appropriate conditions of when to offer in-person visit and revelations about midwives' own bias[27]. As audio-only services expand and midwives adapt to new telehealth formats, these findings pave the way for future research inquiries.

However, limitations entail that a small number of studies meet inclusion and exclusion criteria and a lack of intervention studies. Methodological weaknesses in quantitative, qualitative, and mixed-methods studies were identified in the appraisal of quality. None of the cross-sectional surveys were conducted with validated tools or randomized samples, making it difficult to reproduce or meta-synthesize quantitative results. Differences in healthcare delivery systems, standards of care, practice settings (e.g., home, clinic, and hospital), reimbursement, and scopes of practice impede the comparability and transferability of findings within and between low- and high-resourced

countries. While quality appraisal and review stages involved two reviewers, synthesis was done by one researcher, limiting cross-validation. Only studies published in English were included, creating gaps in our understanding that may be explained or explored in other cultural and linguistic contexts.

This review is unique in that it examines midwives exclusively and the full scope of their clinical practices. In prior research and reviews, midwives' experiences of telehealth were combined with those of other healthcare professions, such as nurses and physicians, even though practices and clinical responsibilities differ.[33,34,39] As recognized by the WHO, midwives often occupy a different role with different training and responsibilities than other healthcare professionals in most health systems, making their experience relevant to growing the workforce.[6] Midwives' telehealth experience is often studied within the discrete confines of their telehealth practice that relates to perinatal care.[24,26–31,40]

Future research

Future research is necessary to deepen our understanding of how midwives experience sustaining telehealth in clinical practice as the public health emergency wanes. Additional research is needed to separate midwives' experience with the COVID-19 pandemic and their initial experience of telehealth, which occurred simultaneously for many, with their actual experience of ongoing use. How midwives experience the next wave of telehealth models will impact critical issues for the midwifery workforce, such as reimbursement, professional satisfaction, and workload.

Implications

The findings identified in this review serve as a starting point for understanding midwives' experience of providing care remotely. As midwifery gains prominence as a public health solution worldwide, much remains unknown about how midwives have adapted their practice to integrate telehealth for ongoing use, what types of training are deemed necessary to re-tool and prepare the workforce, and how telehealth impacts their workload. Identifying and exploring both the challenges midwives encounter and the strategies they use to meet reproductive health needs, build relationships, and assess patients remotely will inform clinical guidelines for clinical and administrative leaders and future training programs for midwifery educators. Healthcare policymakers and public health experts can harness these experiences to build midwifery care models in concert with telehealth to offer more meaningful, professionally satisfying, and equitable use of technology in the delivery of sexual and reproductive healthcare. This area of research is fast-moving, with new evidence that will require an updated systematic review.

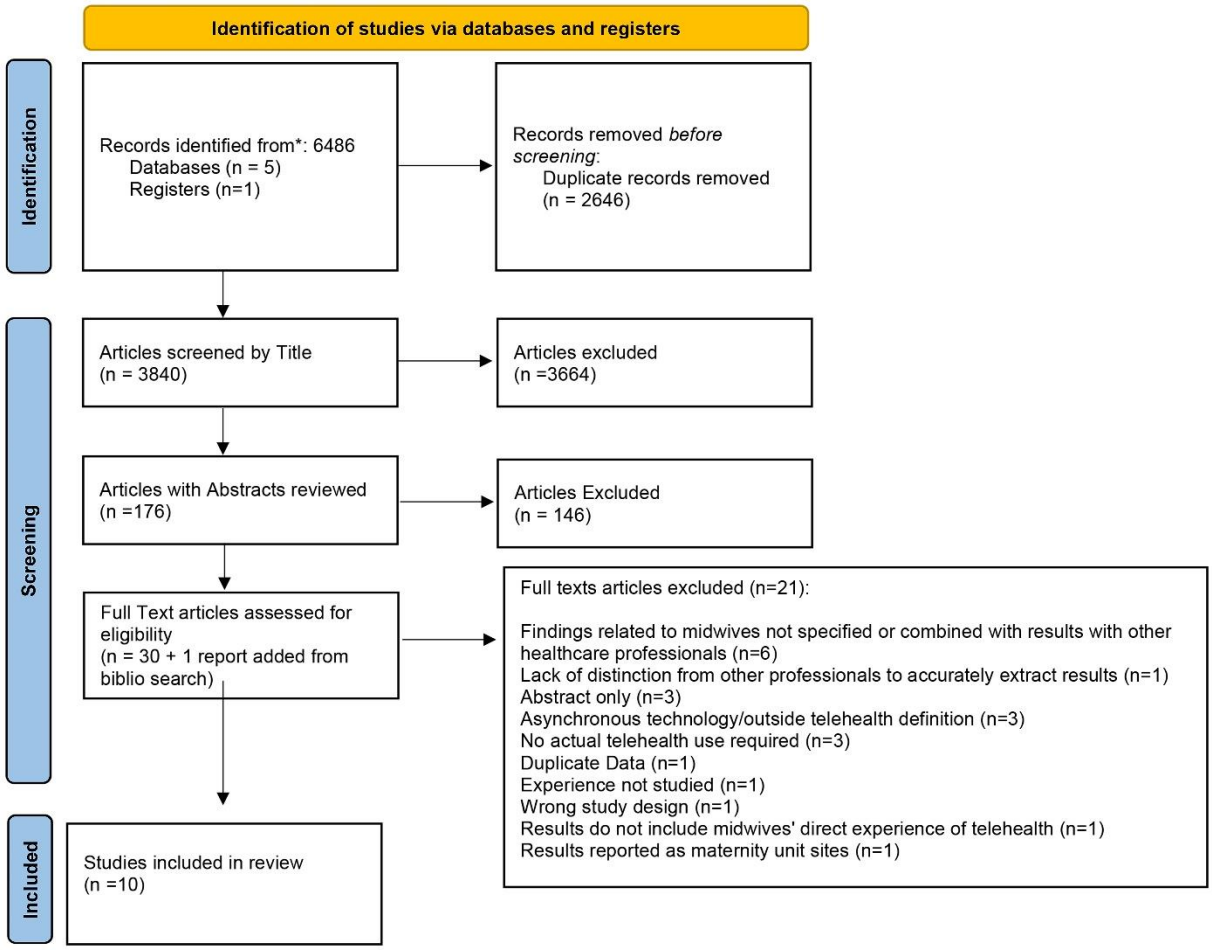

Figure 2.1 Flow diagram for the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (adapted from Page et al. 2021)

Themes	Subthemes	Defintion of Theme	Bailey	Bradfield	Jacobsen	Galle	Gemperle	Hearn	Henry	Perrenoud	Rousseau	Sigby
			2019	2022	2022	2020	2021	2021	2022	2022	2022	2014
			Australia	Australia	United States	Multi National	Switzerland	Australia	Australia	Switzerland	France	England
Integrating Telehealth in Clinical Practice During Covid-19 and beyond: Perceived Gains and Losses		Midwives experienced advantages and disadvantages to their practice by caring for patients remotely during the height of the pandemic and beyond.										
	Telehealth as an Essential Tool for the COVID-19 Pandemic					X	X	X	X		X	
	Concerns about the Practice of Midwifery Going Remote			X		X		X	X	X	X	
	Incorporating Telehealth into Clinical Practice				X	X	X	X	X	X	X	
Balancing increased connectivity with little training and workload		Increased frequency of contact with patients causes variation in the volume of work as midwives managed without appropriate training to integrate telehealth into their practice										
	Lack of Training, Guidelines and Protocols		X			X		X				X
	Interacting with Patients with Greater frequency Impacts Workload.		X				X	X		X	X	X
Challenges with Building Relationships via Telehealth		Missing elements of in-person care and communication challenge relationship building with patients over telehealth, especially for those midwives who function in systems without continuity of care. Limited strategies for building relationships via telehealth exist, that are inclusive of midwives' experience of remote care.										
	Telehealth disrupts and enhances interaction with patients					X			X	X	X	
	Identified Strategies for remote inter-personal communication.											X
Centering some patients while distancing others		Midwives experience telehealth as having broad range of implications for patients from improving accessibility for some while creating new barriers for others.										
	Perceived benefits and appropriate telehealth services for patients				X	X	X	X	X	X	X	X
	Perceived barriers and inequities for patients			X	X	X		X	X	X		X
The experiences of telehealth by age and professional experience		Age, Professional, and additional factors, like location and reimbursement, impacts confidence and anxiety using telehealth and interest in future use and integration.	X				X					

Figure 2.2 Matrix of Themes and Subthemes within included studies

Table 2.1 Operation Definitions & Eligibility Criteria

Midwife	A midwife is a person who has successfully completed a midwifery education programme that is duly recognized in the country where it is located, and that is based on the ICM Essential Competencies for Basic Midwifery Practice and the framework of the ICM Global Standards for Midwifery Education; who has acquired the requisite qualifications to be registered and/or legally licensed to practice midwifery and use the title 'midwife'; and who demonstrates competency in the practice of midwifery." The International Confederation of Midwives (ICM) (12)	
Full Scope Practice	Full scope midwifery practice includes primary care and reproductive and sexual health, such as prenatal and postpartum care, family planning, abortion, menopause, and triage in labor and birth.	
Telehealth	Telehealth is defined for the subject of this review as patient and provider interacting with synchronous technologies. This modified WHO definition omits asynchronous technologies where health information or patient inquiry is stored and then forwarded to a clinician. (16) This review's definition of telehealth confirms technologies such as video conferencing, telephone/audio-only, text, and instant messaging as forms of synchronous telehealth. In published articles, this operational definition of telehealth is often interchangeable with telemedicine. (16)	
Population, Intervention, Comparison, Outcome (PICO):		
Criteria	Inclusion	Exclusion
Population	Midwives as defined by the International Confederation of Midwives	N/A
Intervention	Studies regarding midwives' consultation from a distance include synchronous telehealth virtual visits, videoconferencing, texting, telephone calls, and any technology that permits two-way interaction outside of shared physical space.	Asynchronous technology; Wearable devices; Education and wellness apps, social media, electronic data or electronic health records, no imaging device, no professional development or midwifery education, collection of public health data

Comparison	In-person care visits, telephone triage, or standard of care pre-COVID or post-COVID	N/A
Primary Outcomes	Experience, views, perception, perspective, perspectives, acceptability, unacceptability, satisfaction, dissatisfaction, barriers, adaptability, utilization, lived experience, favorable, unfavorable, meaningful/ unmeaningful, appropriateness/ inappropriateness	N/A
Type of Studies	Quantitative, qualitative, or mixed methods studies: RCTs, non-randomized studies of interventions, observational studies (cross-sectional, case-control, or cohort studies), non-randomized comparator studies, and qualitative studies	Literature reviews, systemic reviews, scoping reviews, historical studies, no quality improvement project or evaluations, discussion papers, case studies, grey literature
Setting	No Restriction	No Restriction
Years of publication	2010-2022	
Publication Type	Peer-reviewed/Full Text Available	Conference proceeds, abstracts, book chapters
Language	English	Non-English

Table 2.2 Characteristics of Qualitative Studies

Study Author (year)	Hearn et al. (2021)	Jacobsen et. al. (2022)
Country/Region or City	Australia, NW suburbs of Melbourne	United States, Seattle
Stated Method	Qualitative	Qualitative
Methodology/ Theoretical Framework	Interpretive phenomenology	Phenomenological Approach
Data Collection/ Timing of Collection	Semi-structured Interviews September and October 2020	Semi-structured Interviews February-April 2021
Aim	To understand the lived experiences of midwives providing care in the suburbs of Melbourne, Victoria during COVID-19	To explore the needs, barriers, and success of community midwifery during COVID-19 and how these experiences can help inform future efforts to sustain community-based midwifery
Sample/ Type of Sampling	n=8 midwives Purposive with a snowball sampling approach	n=11 community midwives Convenience
Setting of Midwifery service	Hospital and Community Settings	Community Settings/ Out-of-hospital births
Mode of Telehealth used	Phone, Zoom, Facetime	Unknown
Type of Care pertinent to the study	Pregnancy-related, Labor and Delivery, Post-partum	Pregnancy-related, Labor and Delivery, Post-partum

Study Author (year) **Country/Region or City**	Spiby et al. (2014) England, The Midlands	Perrenoud et al. (2022) Switzerland, French-speaking region
Stated Method	Qualitative	Qualitative
Methodology/ **Theoretical Framework**	Interpretive phenomenology	Socio-Anthropological Approach with Ethnographic methods
Data Collection/ **Timing of Collection**	Focus Groups and Interviews Date unknown	Field Work and Semi-structured December 2018 - January 2020 (1 part of a larger 3 part study)
Aim	To explore midwives' concerns, experiences, and perceptions of the purpose of telephone contact with women in early labor.	To describe and analyze how community midwives and other health and social care workers and women communicate between postpartum home visits through Instant Message Applications
Sample/ **Type of Sampling**	N=18 midwives Purposive	n= 14 midwives n=6 social workers n=7=nurses n=2=adult n=1= director of institution n=20 immigrant women Purposive
Setting of Midwifery service	Hospital Setting	Community Settings
Mode of Telehealth used	Telephone	Instant messaging, WhatsApp
Type of Care pertinent to study	Labor delivery and triage	Postpartum

Table 2.3 Characteristics of Quantitative Studies, Quantitative Thematic/Content Analysis, Descriptive Analysis, and Mixed Methods

Study Author (year)	Bailey et al. (2019)	Bradfield et al. (2022)
Country/Region or City	Australia, State of Victoria	Australia, nationwide, including urban, regional, rural, and remote areas
Stated Method	Quantitative	Quantitative
Research Design	Cross-Sectional Design 1st phase of an explanatory sequential future mixed methods study	Cross-Sectional Design with Descriptive Analysis
Data Collection	Online non-validated survey Data collected April-September 2017	Online non-validated survey and semi-structured interviews May-June 2020
Data Analysis	Descriptive statistics & Non-parametric statistics: Chi-square, Mann-Whitney U, and Kruskal-Wallis H tests to analyze relationships between variables	Descriptive Statistics Transcripts analyzed with four-stage thematic analysis
Aim	To gather the experiences and practices of midwives in their management of triage.	To explore and describe Australian midwives' experience of providing maternity care during COVID-19 pandemic
Sample/Type of Sampling	n=230 practicing midwives surveyed Purposive	n= 620 midwives (16 of 620 were interviewed) Convenience
Setting of Midwifery Service	Public and Private hospital and practice settings with low-risk, medium risk and high-risk populations	Public and private hospitals, group practices, private practice, and out-of-hospital birth
Mode of Telehealth used	Telephone	Telephone & Videoconferencing
Type of Care pertinent to the study	Labor, delivery, and triage	Antenatal, labor and delivery, postpartum

Study Author (year)	Galle et al.* (2020)
Country/Region or City	Nigeria, Costa Rica, Norway, Uganda, Kenya, Bangladesh, Germany, USA, Nepal, France and Argentina** 71 countries surveyed.
Stated Method **Research Design**	Quantitative Cross-Sectional Design with Thematic Analysis
Data Collection	Online non-validated survey July 5, 2020- September 10, 2020
Data Analysis	Descriptive statistics and qualitative thematic analysis of open-text questions
Aim	To document the experiences with providing telemedicine for maternal and newborn healthcare during COVID-19 among healthcare professionals worldwide
Sample/Type of Sampling	Midwife/nurse-midwife n=257 (25% of Total N) Total N= 1060 Maternal and Newborn Health Professionals Surveyed Nurse n=312 (29%) Obstetrician/Gynecologists n=223 (21%) Neonatologist/pediatrician n=73 (7%) Medical doctor (no specialization)n=126 (12%) Other n=54 (5%) Convenience
Setting of Midwifery Service	Unknown Not specified by midwife in descriptive statistics
Mode of Telehealth used	Telephone & Video conferencing & Text & Instant messaging (WhatsApp)
Type of Care pertinent to the study	Descriptive statistics regarding the type of maternal and newborns for midwives are not specified. Areas represented in thematic data include antenatal, postpartum, newborn care, abortion, childbirth preparation, and labor triage.

Study Author (year) **Country/Region or City**	Gemperle et al. (2021 Switzerland Nationwide
Stated Method **Research Design**	Quantitative Cross-sectional with content/thematic analysis
Data Collection	On-line non-validated survey and open-ended questions
Data Analysis	Descriptive statistics and chi-square test of independence, effect size with Cramer's V, post hoc Bonferroni correction Integrative content analysis
Aim	To explore midwives' perceptions of telemedicine during the COVID-19 pandemic in Switzerland and differences by age, professional experience, and work setting,
Sample/Type of Sampling	N=630 midwives, community and hospital-based Convenience
Setting of Midwifery Service	Work solely in a hospital or community or both.
Mode of Telehealth used	Telephone, Instant messaging (e.g., WhatsApp, online chat), Text/Short message service (e.g., SMS), Videoconference
Type of Care pertinent to the study	Labor & Delivery, and/or Postpartum

Study Author (year) **Country/Region or City**	Henry et al. ** (2022) Australia, Sydney
Stated Method **Research Design**	Mixed Methods Quantitative Survey and Qualitative Braun & Clark thematic analysis
Data Collection	Online non-validated survey and semi-structured interviews Data collected October 2020-March 2021
Data Analysis	Descriptive Statistics Chi-Square with subgroups: Hospital of practice, Type of Professional, Length of time working professionally Thematic analysis
Aim	To assess COVID-19 domestic and family violence, mental health screening, and service provision from a provider perspective, and explore telehealth in antenatal care and the future application of telehealth.
Sample/Type of Sampling	Midwives n= 75 (69% of total N) Interview n=17 interviews 10/17 Midwives 3/17 Obstetric Medical Staff 4/17 Allied health workers (social work, physiotherapy and other) Convenience (survey) Purposive (Interviews)
Setting of Midwifery Service	Three hospital maternity units
Mode of Telehealth used	Telephone and Videoconferencing
Type of Care pertinent to the study	Antenatal & Mental Health Screening

Study Author (year) **Country/Region or City**	Rousseau et al. (2022) France, all regions represented	.* Contacted author for additional survey results for midwives; only published text results are available. Relevant thematic analysis results that were exemplified by midwifery quotes with specific countries represented were added to the review. ** Published survey results were not distinguished by provider type, contacted author, who sent additional survey data for midwives. Relevant qualitative results that were exemplified by midwifery quotes were added to the review. Only published data was used for this review.
Stated Method **Research Design**	Mixed Methods Quantitative Survey and Qualitative Grounded Theory	
Data Collection	Online non-validated survey April 29-May 15, 2020 & Semi-structured interviews by Zoom from May to July 2020	
Data Analysis	Descriptive statistics and univariate and multivariate recession models Inductive content analysis	
Aim	To measure and understand the determinants of the implementation of teleconsultations, and secondary is to understand and measure the determinants for its continued use.	
Sample/Type of Sampling	Independent Midwives n=1491 (22 out of 1491 interviewed) Convenience (survey) Purposive (Interviews)	
Setting of Midwifery Service	Hospitals, maternal welfare agencies, independent and group clinical practice, home	
Mode of Telehealth used	Telephone & Video conferencing (Skype, Zoom, Facetime) & Instant messaging (WhatsApp/Messenger) & dedicated software (Doctolib, Prédis, Covaliaweb, etc.)	
Type of Care pertinent to the study	QUANT: Antenatal, postpartum, early gynecology, group and individual birth prep, family planning, and psychological support QUAL: Antepartum, postpartum, early gyn follow-up, childbirth prep, post-abortion, group and individual	

Table 2.4: Key Themes & Findings by Author

Qualitative Studies		
Study (Author, year)	**Relevant Themes and Subthemes in published study**	**Key Findings pertinent to telehealth**
Hearn et. Al (2021)	Primary theme: Telehealth	Telehealth was experienced by midwives as a method for reducing transmissions of COVID-19. For midwives, whose practice did not include continuity of care, they experienced telehealth as distancing and jeopardizing the creation of meaningful relationships. They experienced shorter visits, higher volume, and less time to meet the needs of patients, especially non-English speakers. Screening for domestic violence and women's safety were concerns when using telehealth. They perceived the practice of midwifery as compromised due to a lack of touch and non-verbal cues. In contrast, midwives, who had ongoing continuity of care and more autonomy in clinical practice, experienced telehealth as a means to increase partnership with the mother and the entire family.
Jacobsen et. al. (2022)	Primary Theme Practice Changes Due to COVID-19 was the primary theme. Subtheme: Telehealth	Community midwives experienced telehealth as a means of increasing equity and reducing access barriers to midwifery care, such as geographical distance from clinics and the need to obtain transportation and childcare. Others experienced the creation of new barriers for those who lack access to the internet and expressed concern about safety and who lack privacy or experience domestic violence.

Study (Author, year)	Relevant Themes and Subthemes in published study	Key Findings pertinent to Telehealth (TH)
Spiby et al. (2014)	Multiple Primary themes: The telephone call; Clinical parameters of assessment; Labor ward busyness; Training for midwives on telephone triage; Success and Unsuccessful calls	Telephone triage for labor is experienced by midwives as requiring specific skills, knowledge, and traits such as effective communication with thorough coverage of medical history and clinical symptoms; knowledge of the patient's geographical location; maintaining friendliness to promote a sense of honesty; offering logical advice with clear expectation setting; creation of mutually understood plan, and confirmation and agreement of plan prior to the end of the call. Midwives questioned patients' ability to pass on relevant data even when directly asked. Midwives criticized patients for being dishonest over the phone and vying to be seen in person. They also named patients "frequent flyers" who overuse the telephone system. Midwives expressed concerns about following strict guidelines and checklists, perceiving them as not customized to the patient. As for specialized training for telephone triage, midwives' perceptions were mixed, some believing the skills to assess should already have been acquired and no further training was needed, whereas others believed the nuisances of assessment are teachable.
Perrenoud et al. (2022)	Primary theme. Telehealth via Instant Messenger Applications (IMA) Subthemes: Use and absence of IMA communication, Difficulty of IMA communication, and differences in IMA communication	Midwives experienced telehealth via IMA as increasing their availability to patients between visits, as well as promoting continuity of care and ongoing connection during the postpartum period. Telehealth was seen as particularly helpful for assessing mental health, postpartum bleeding, and newborn concerns and providing closure for patients with complicated pregnancies and births. Midwives also experienced conflicting feelings about IMA, finding it time-consuming and non-reimbursable. Midwives were concerned about making diagnostic errors, managing health issues outside of their scope of practice, extending their professional role to provide needed, and assuming the role of gatekeepers to the healthcare system due to being accessible 24 hours a day. Midwives perceived clinical clues via IMA, such as frequent usage by patients, may represent anxiety or a

Study (Author, year)	Relevant Themes and Subthemes in published study	Key Findings pertinent to Telehealth (TH)
		need for greater support. Midwives perceived IMA as less utilized by non-English/French speakers.
Quantitative Studies, Quantitative with Content/Thematic Analysis, or Quantitative with Descriptive component		
Bailey et al. (2019)	Primary theme: Telephone Triage in Midwifery practice Subtheme: Level of Confidence and Anxiety with telephone triage is associated with professional experience and age.	The majority of midwives (84%) received no training prior to telephone triage. Higher confidence was reported in those midwives with great professional experience ($p<0.05$) and age ($p<0.01$). 73% (n=151) experienced anxiety in managing triage greater in those with less experience. Anxiety was reported more in metropolitan or regional settings than in midwives working in rural or remote settings.
Bradfield et al. (2022)	Primary theme: Coping with Rapid and Radical Change due to COVID-19 Subtheme: Telehealth	Midwives are unable to complete a full assessment of patients via telephone. The inability to complete an assessment produced anxiety for midwives, especially for domestic violence and mental health screening. Not being able to assess patients' body language via the telephone for screening was experienced as a limitation and a loss of an important clinical tool. Yet, telehealth was also experienced as increasing access to antepartum care and education for some patients.

Study (Author, year)	Relevant Themes and Subthemes in published study	Key Findings pertinent to Telehealth (TH)
Galle et al.* (2020)	Primary themes: Education and Counseling of women and their families; Reducing or eliminating personal visits; Replacing in-person consultations Subtheme of each: Use of Telemedicine	Midwives found telehealth useful to continue care and decrease the risk of transmission during the pandemic. It was considered a strong alternative for antepartum, postpartum, and group prenatal classes but not a replacement for face-to-face interaction. Personal interaction and engaging in shared physical space were considered important to "being a midwife." Telehealth was perceived as alleviating isolation and saving lives in remote locations. In some countries, midwives were challenged by maintaining strong internet connection, inconsistent electricity supply, and out-of-pocket costs for increased airtime/data, causing impacted follow-up with patients. The lack of non-verbal cues and facial expressions concerned midwives, who were unable to assess patients' status. Midwives experienced telehealth as limiting bonding between midwives and patients. Midwives perceived disadvantages of telehealth for patients who have limited access to telephone or video, who need translation services, and who mistrust being recorded, such as undocumented patients.

Study (Author, year)	Relevant Themes and Subthemes in published study	Key Findings pertinent to Telehealth (TH)
Gemperle et al. (2021)	Primary theme: Midwives' perceptions of the advantages of telehealth beyond the pandemic vary by age, years of professional experience, and reimbursement	55.3% of respondents reported advantages of telehealth beyond the pandemic, such as reducing the workload (31.5% of all respondents), improving healthcare provision (18.9%), and increasing clients' self-care (4.8%). Whereas 44.7% of respondents named pandemic-related advantages or found there to be no advantages at all. Pandemic-related advantages were maintaining a level of care in an exceptional situation (15.9%) or protection from COVID-19 (8.2%). 20.7% of those surveyed reported that there were no benefits or opportunities for telehealth. Midwives aged ≤ 39 years were significantly more likely to report an advantage beyond the pandemic than those aged ≥ 50 ($p < 0.001$). Midwives aged ≤ 39 years and younger were significantly more likely to report reduced workload as an advantage than those aged 40 to 49 years ($p = 0.002$) and those aged ≥ 50 years ($p < 0.001$). Midwives ≥ 50 and older were more likely to indicate protection from COVID-19 as an advantage than midwives aged ≤ 39 years and younger ($p = 0.018$). Midwives with less professional experience tended more often to mention an advantage beyond the pandemic. Midwives with ≤ 14 years of work experience were significantly more likely to report an advantage beyond the pandemic than their colleagues with 15 to 24 ($p = 0.021$) and 25 years and more of work experience ($p < 0.001$). Midwives who had been reimbursed were more likely to mention an advantage beyond the pandemic, such as reduced workload than those who had not. There was a significant correlation between experience with telemedicine and the advantages mentioned (chi-square (5) = 38.2, $p < 0.001$, $n = 414$). Midwives with a positive experience were more likely to mention the maintaining of care ($p = 0.003$) and improved health care provision ($p = .050$) as an advantage than midwives who had had a negative experience, while midwives with a negative experience were more likely to see no advantage in providing telemedicine than their colleagues ($p < 0.001$).

Study (Author, year)	Relevant Themes and Subthemes in published study	Key Findings pertinent to Telehealth (TH)
Key Themes & Findings by Author for Mixed Methods Studies		
Henry et al. ** (2022	Primary Theme: Major change to Care Delivery during COVID-19 Subtheme: Telehealth	Midwives experienced telehealth as inferior to in-person visits but necessary for care delivery during a pandemic. Midwives perceived patients as feeling less cared for via telehealth until they had in-person appointments and were concerned about the lack of personal interaction. The lack of equipment and training impacted midwives' ability to work via telehealth. Telehealth was perceived as a public health system requirement and pandemic response that was not properly evaluated for maternity services or continuity of care models. Midwives had concerns about knowing how telehealth would impact maternal health outcomes, especially for urban/high-risk patients, when compared to the known benefits of engaging in early prenatal care in person. The perceived advantages of telehealth include its appropriateness for postpartum care, patients' convenience, and increased accessibility for those who are geographically distant from hospitals. Midwives were interested in a post-pandemic hybrid model option. Perceived ongoing telehealth would utilize a criteria for telehealth. Telehealth was viewed as more suited for low-risk, multiparous patients who live further from the hospital and not appropriate for patients who have high-risk pregnancies or those who need greater psycho-social support.

Study (Author, year)	Relevant Themes and Subthemes in published study	Key Findings pertinent to Telehealth (TH)
Rousseau et al. (2022)	Primary Theme: Telehealth	Younger age (≤41), female gender, married or living with a partner, or working in a group practice were the determinants of teleconsultation implementation. The need to maintain continuity of care and access to patients, reduce viral transmission, and work and generate income while meeting family needs during a crisis. For those who did not convert to teleconsultation, qualitative data added an explanation: the inability to conduct a clinical exam, inappropriateness of teleconsultation when touch was required, and technical difficulties. Midwives who were satisfied with their technology tool for teleconsultation were significantly more likely than those who were not to continue use. Qualitative findings also confirmed that midwives who wanted to continue teleconsultations found the technology to be easy to use, aligned with society's digital trends and satisfying for their practice and patients. Midwives who did not want to continue to use found human contact was necessary for clinical practice.
* Survey results were a composite of all types of maternal health care providers. The first author contacted the author for additional survey results specific to midwives; only published text results are available. Relevant thematic analysis results that were exemplified by midwifery quotes were added to the review.		
** Published survey results were not distinguished by provider type; the first author contacted the author, who sent additional survey data for midwives. Relevant qualitative results that were exemplified by midwifery quotes were added to the review.		

Table 2.5 Examples of Search

Database: PubMed (MEDLINE) **Date**:1/1/2010- 2/9/2022 results below **Date rerun:** 2/10/22- 8/16/2022: additional 259		
Set #	**Search terms/ keyword**	**Results**
1	(midwives OR midwife OR "Midwifery"[Mesh] OR "Nurse Midwives"[Mesh]) 2010-2022	41,954
2	(telehealth OR telemedicine OR "Telemedicine"[Mesh] OR eHealth OR mHealth OR “mobile health” OR videoconferencing OR videoconference OR "Videoconferencing"[Mesh] OR “mobile app” OR “mobile applications” OR "Mobile Applications"[Mesh] OR app OR apps OR zoom OR “virtual consultation” OR “video consultation” OR “remote care” OR “virtual visits” OR “remote visits” OR “work-from-home” OR “digital technology” OR "Digital Technology"[Mesh] OR remote or telephone or “text messaging” or text OR texting OR “chats” OR “chatting” OR "Computers, Handheld"[Mesh] OR "Cell Phone"[mesh] OR "cell phone")	242,981
3	(experience OR experiences OR views OR view OR viewpoint OR perception OR perceptions OR acceptance OR accept OR accepts OR acceptability OR acceptable OR satisfaction OR dissatisfaction OR barrier OR barriers OR adapt OR adapts OR adaptability OR utilization OR “Lived experience” OR favorable OR unfavorable OR meaningful OR unmeaningful OR appropriateness OR inappropriateness OR perspective OR perspectives OR feasibility OR "Health Knowledge, Attitudes, Practice"[Mesh] OR "Perception"[Mesh] OR "Communication Barriers"[Mesh])	4,266,351
4 Combined	#1 AND #2 AND #3	2,252

Database: Psych INFO, Psych Articles, **Date**: 2/8/2022 1/1/2010 to 2/9/2022 results below **Date rerun**: 2/10/2022-8/16/2022 Additional articles 21		
Set #	**Search terms/ keyword**	**Results**
1	(midwives OR midwife OR midwifery OR "Nurse Midwives")	10,933
2	(experience OR experiences OR views OR view OR viewpoint OR perception OR perceptions OR acceptance OR accept OR accepts OR acceptability OR acceptable OR satisfaction OR dissatisfaction OR barrier OR barriers OR adapt OR adapts OR adaptability OR utilization OR “Lived experience” OR favorable OR unfavorable OR meaningful OR unmeaningful OR appropriateness OR inappropriateness OR perspective OR perspectives OR feasibility)	905,143
3	(telehealth OR telemedicine OR eHealth OR mHealth OR “mobile health” OR videoconferencing OR videoconference OR “mobile app” OR “Mobile applications” OR app OR apps OR zoom OR “virtual consultation” OR “video consultation” OR “remote care” OR “virtual visits” OR “remote visits” OR “work-from-home” OR “digital technology” OR remote or telephone or “text messaging” or text OR texting OR “chats” OR “chatting” OR "cell phone")	93,731
4 Combined	#1 AND #2 AND #3	475

Database: Embase **Date:** 1/1/2010-2022 - 8/17/2022		
Set #	**Search terms/ keyword**	**Results**
1	((digital AND (‘technology’/exp OR technology) or mobile) AND (‘health’/exp OR health) OR ‘telehealth’/exp or ‘telehealth OR ‘zoom’/exp OR zoom OR ‘videoconferencing’/exp OR ’videoconferencing’ OR ‘telemedicine’/exp OR ‘telemedicine OR ‘text messaging/exp‘ OR ‘text messaging’ OR ‘mobile phone’/exp OR ‘mobile phone’) and [2010-2022]py	164572
2	(‘attitude’/exp OR ‘attitude’ OR perspectives or ‘viewpoint’/exp OR ‘viewpoint’ OR ‘utilization’/ exp OR ‘utilization’ OR ‘satisfaction/exp’ OR ‘satisfaction’ or ‘visibility’/exp OR ‘visibility ‘ OR ‘personal experience’/exp OR ‘personal experience’ OR ‘experience/exp OR ‘experience OR ‘perception’/exp OR ‘perception’) and [2010-2022]py	2,083,662
3	(‘midwife/exp OR ‘midwife’ OR ‘nurse midwife’/exp OR ’nurse midwife’ OR ‘midwives’/exp OR ‘midwives) and [2010-2022]py	24,474
4 Combined	#1 AND#2 AND #3	235

Database: Web of Science. 1/1/2010 to 2/8/2022 results below **Re-run each search custom date** 2/09/2022-8/16/2022 **Additional articles**: 249		
Set #	**Search terms/ keyword**	**Results**
1	(midwives OR midwife OR midwifery OR "Nurse Midwives")	56,061
2	(experience OR experiences OR views OR view OR viewpoint OR perception OR perceptions OR acceptance OR accept OR accepts OR acceptability OR acceptable OR satisfaction OR dissatisfaction OR barrier OR barriers OR adapt OR adapts OR adaptability OR utilization OR “Lived experience” OR favorable OR unfavorable OR meaningful OR unmeaningful OR appropriateness OR inappropriateness OR perspective OR perspectives OR feasibility)	5,937,044
3	(telehealth OR telemedicine OR eHealth OR mHealth OR “mobile health” OR videoconferencing OR videoconference OR “mobile app” OR “Mobile applications” **OR app OR apps OR** zoom OR “virtual consultation” OR “video consultation” OR “remote care” OR “virtual visits” OR “remote visits” OR “work-from-home” OR “digital technology” **OR** remote or telephone or “text messaging” or text OR texting OR “chats” OR “chatting” OR **"cell phone")**	1,007,781
4 Combined	#1 AND #2 AND #3	2,368

Database: CINAHL COMPLETE

Date:1/01/2010-2/8/2022

Re-run each search custom date 2/01/2022-8/16/2022

Additional articles: 30

Set #	Search terms/ keyword	Results
1	(midwives OR midwife OR midwifery OR "Nurse Midwives")	42,142
2	(experience OR experiences OR views OR view OR viewpoint OR perception OR perceptions OR acceptance OR accept OR accepts OR acceptability OR acceptable OR satisfaction OR dissatisfaction OR barrier OR barriers OR adapt OR adapts OR adaptability OR utilization OR “Lived experience” OR favorable OR unfavorable OR meaningful OR unmeaningful OR appropriateness OR inappropriateness OR perspective OR perspectives OR feasibility)	911,588
3	(telehealth OR telemedicine OR eHealth OR mHealth OR “mobile health” OR videoconferencing OR videoconference OR “mobile app” OR “Mobile applications” **OR app OR apps OR** zoom OR “virtual consultation” OR “video consultation” OR “remote care” OR “virtual visits” OR “remote visits” OR “work-from-home” OR “digital technology” **OR** remote or telephone or “text messaging” or text OR texting OR “chats” OR “chatting” OR **"cell phone")**	113,909

Table 2.6 Mixed Methods Appraisal Tool Criteria Results

Studies	Results	S.1	S.2	1.1	1.2	1.3	1.4	1.5	4.1	4.2	4.3	4.4	4.5	5.1	5.2	5.3	5.4	5.5
Bailey et al.	Appraisal 80% 4.2 No, lacks clear indication of a representative sample of the target population	Y	Y						Y	N	Y	Y	Y					
Bradfield et al.	Appraisal 60% 4.2 No, the sample is not representative of the population 4.4 No, lacks indicators of low non-response bias	Y	Y						Y	N	Y	N	Y					
Galle et al.	Appraisal 60% 4.3 Can't tell, limited information on the survey development of measurements 4.4 No, lacks indicators of low non-response bias and lacks information on response rate	Y	Y						Y	Y	C	N	Y					
Gemperle et al.	Appraisal 60% 4.3 Can't tell, limited information on the survey development of measurements 4.4 No, high non-response rate not adequately addressed	Y	Y						Y	Y	C	N	Y					
Hearn et al.	Appraisal 80% 1.5 No, lacks clear link between data and analysis i.e., definition of telehealth is too narrow, presented data requires broader definition	Y	Y	Y	Y	Y	Y	N										

Studies	Results	S.1	S.2	1.1	1.2	1.3	1.4	1.5	4.1	4.2	4.3	4.4	4.5	5.1	5.2	5.3	5.4	5.5
Henry et al.	Appraisal 60% 5.2 No, no joint display or integration of mixed methods components at collection, analysis or interpretative phase 5.3 No, unable to interpret outputs with lack of integrated data	Y	Y	Y	Y	Y	Y	Y	Y	Y	C	Y	Y	Y	N	N	Y	Y
Jacobsen et al.	Appraisal 80% 1.3 No, the systematic methods for data collection and analysis for using IP approach are not adequately explained	Y	Y	Y	Y	N	Y	Y										
Perrenoud et al.	Appraisal 60% 1.4 Insufficient explanation of data analysis process, vague and broad approach to describing methods, and lacks specific qualitative approach 1.5 Can't tell, whether coherence can be determined due to the lack of detailed information about analysis, positionality, and reflexivity	Y	Y	Y	Y	N	Y	C										

Studies	Results	S.1	S.2	1.1	1.2	1.3	1.4	1.5	4.1	4.2	4.3	4.4	4.5	5.1	5.2	5.3	5.4	5.5
Rousseau et al.	Appraisal 80% 5.4 No, insufficient explanation for divergences between qualitative and quantitative data	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
Spiby et al.	Appraisal 80% 1.4 No, insufficient data collected to substantiate the principle finding	Y	Y	Y	Y	Y	N	Y										

References

1. World Health Organization. *WHO Guideline: Recommendations on Digital Interventions for Health System Strengthening*. (World Health Organization, Geneva, 2019).
2. Kichloo, A. *et al.* Telemedicine, the current COVID-19 pandemic and the future: a narrative review and perspectives moving forward in the USA. *Fam Med Community Health* **8**, e000530 (2020).
3. Spaulding, R. & Smith, C. E. How telehealth care exploded due to COVID: What nurse researchers need to know. *Res Nurs Health* **44**, 5–8 (2021).
4. Coxon, K. *et al.* The impact of the coronavirus (COVID-19) pandemic on maternity care in Europe. *Midwifery* **88**, 102779 (2020).
5. Larki, M., Sharifi, F. & Roudsari, R. L. Models of maternity care for pregnant women during the COVID-19 pandemic. *East Mediterr Health J.* **26**, 994–998 (2020).
6. UNITED NATIONS POPULATION FUND. *STATE OF THE WORLD'S MIDWIFERY 2021: Building a Health Workforce to Meet the Needs of Women,... Newborns and Adolescents Everywhere.* (UNITED NATIONS, S.l., 2021).
7. *Global Strategic Directions for Nursing and Midwifery 2021-2025*. 9789240033863-eng.pdf (who.int) (2021).
8. Loewenberg Weisband, Y., Klebanoff, M., Gallo, M. F., Shoben, A. & Norris, A. H. Birth Outcomes of Women Using a Midwife versus Women Using a Physician for Prenatal Care. *J Midwifery Womens Health* **63**, 399–409 (2018).
9. Harvey, S., Rach, D., Stainton, M. C., Jarrell, J. & Brant, R. Evaluation of satisfaction with midwifery care. *Midwifery* **18**, 260–267 (2002).

10. Shields, N. *et al.* Satisfaction with midwife-managed care in different time periods: a randomised controlled trial of 1299 women. *Midwifery* **14**, 85–93 (1998).
11. Forster, D. A. & McLachlan, H. L. Women's views and experiences of breastfeeding: positive, negative or just good for the baby? *Midwifery* **26**, 116–125 (2010).
12. Midwives, I. C. of. ICM Definitions. *ICM* https://internationalmidwives.org/our-work/policy-and-practice/icm-definitions.html.
13. Rising, S. S., Kennedy, H. P. & Klima, C. S. Redesigning Prenatal Care Through CenteringPregnancy. *Journal of Midwifery & Women's Health* **49**, 398–404 (2004).
14. Schardt, C., Adams, M. B., Owens, T., Keitz, S. & Fontelo, P. Utilization of the PICO framework to improve searching PubMed for clinical questions. *BMC Med Inform Decis Mak* **7**, 16 (2007).
15. Methley, A. M., Campbell, S., Chew-Graham, C., McNally, R. & Cheraghi-Sohi, S. PICO, PICOS and SPIDER: a comparison study of specificity and sensitivity in three search tools for qualitative systematic reviews. *BMC Health Serv Res* **14**, 579 (2014).
16. World Health Organization. *Global Diffusion of eHealth: Making Universal Health Coverage Achievable: Report of the Third Global Survey on eHealth*. (World Health Organization, Geneva, 2016).
17. Hong, Q. N. *et al.* The Mixed Methods Appraisal Tool (MMAT) version 2018 for information professionals and researchers. *Education for Information* **34**, 285–291 (2018).
18. Hong, Q. N. *et al.* Improving the content validity of the mixed methods appraisal tool: a modified e-Delphi study. *Journal of Clinical Epidemiology* **111**, 49-59.e1 (2019).

19. Hong, Q. N. Personal correspondence.
20. Catsaros, S. & Wendland, J. Hypnosis-based interventions during pregnancy and childbirth and their impact on women's childbirth experience: A systematic review. *Midwifery* **84**, 102666 (2020).
21. Hong, Q. N., Pluye, P., Bujold, M. & Wassef, M. Convergent and sequential synthesis designs: implications for conducting and reporting systematic reviews of qualitative and quantitative evidence. *Systematic Reviews* **6**, 61 (2017).
22. Stern, C. *et al.* Methodological guidance for the conduct of mixed methods systematic reviews. *JBI Evidence Implementation* **19**, 120 (2021).
23. Galle, A. *et al.* A double-edged sword-telemedicine for maternal care during COVID-19: findings from a global mixed-methods study of healthcare providers. *BMJ Glob Health* **6**, (2021).
24. Perrenoud, P., Chautems, C. & Kaech, C. 'Whatsapping' the continuity of postpartum care in Switzerland: A socio-anthropological study. *Women Birth* (2021) doi:10.1016/j.wombi.2021.06.009.
25. Henry, A. *et al.* Effects of the COVID-19 Pandemic and Telehealth on Antenatal Screening and Services, Including for Mental Health and Domestic Violence: An Australian Mixed-Methods Study. *Front Glob Womens Health* **3**, 819953 (2022).
26. Hearn, F., Biggs, L., Wallace, H. & Riggs, E. No one asked us: Understanding the lived experiences of midwives providing care in the north west suburbs of Melbourne during the COVID-19 pandemic: An interpretive phenomenology. *Women Birth* (2021) doi:10.1016/j.wombi.2021.09.008.

27. Jacobsen, K. E., Katon, J. G. & Kantrowitz-Gordon, I. Midwifery in the Time of COVID-19: An Exploratory Study from the Perspectives of Community Midwives. *Women's Health Issues* **32**, 564–570 (2022).
28. Spiby, H., Walsh, D., Green, J., Crompton, A. & Bugg, G. Midwives' beliefs and concerns about telephone conversations with women in early labour. *Midwifery* **30**, 1036–1042 (2014).
29. Bailey, C. M., Newton, J. M. & Hall, H. G. Telephone triage in midwifery practice: A cross-sectional survey. *International Journal of Nursing Studies* **91**, 110–118 (2019).
30. Gemperle, M. *et al.* Midwives' perception of advantages of health care at a distance during the COVID-19 pandemic in Switzerland. *Midwifery* **105**, 103201 (2022).
31. Bradfield, Z. *et al.* Midwives' experiences of providing maternity care during the COVID-19 pandemic in Australia. *Women and Birth* **35**, 262–271 (2022).
32. Rousseau, A., Gaucher, L., Gautier, S., Mahrez, I. & Baumann, S. How midwives implemented teleconsultations during the COVID-19 health crisis: a mixed-methods study. *BMJ Open* **12**, e057292 (2022).
33. Wu, K. K., Lopez, C. & Nichols, M. Virtual Visits in Prenatal Care: An Integrative Review. *Journal of Midwifery & Women's Health* **n/a**.
34. Jonasdottir, S. K., Thordardottir, I. & Jonsdottir, T. Health professionals' perspective towards challenges and opportunities of telehealth service provision: A scoping review. *International Journal of Medical Informatics* **167**, 104862 (2022).
35. Penny, R. A., Bradford, N. K. & Langbecker, D. Registered nurse and midwife experiences of using videoconferencing in practice: A systematic review of qualitative studies. *Journal of Clinical Nursing* **27**, e739–e752 (2018).

36. Altman, M. R., McLemore, M. R., Oseguera, T., Lyndon, A. & Franck, L. S. Listening to Women: Recommendations from Women of Color to Improve Experiences in Pregnancy and Birth Care. *Journal of Midwifery & Women's Health* **65**, 466–473 (2020).
37. Ukoha, E. P. *et al.* Ensuring Equitable Implementation of Telemedicine in Perinatal Care. *Obstet Gynecol* **137**, 487–492 (2021).
38. Stoll, C. R. T. *et al.* The value of a second reviewer for study selection in systematic reviews. *Res Synth Methods* **10**, 539–545 (2019).
39. Grassl, N. *et al.* A Web-Based Survey Assessing the Attitudes of Health Care Professionals in Germany Toward the Use of Telemedicine in Pregnancy Monitoring: Cross-Sectional Study. *JMIR mHealth and uHealth* **6**, e10063 (2018).
40. Lindberg, I., Christensson, K. & Ohrling, K. Parents' experiences of using videoconferencing as a support in early discharge after childbirth. *Midwifery* **25**, 357–365 (2009).

Chapter 3

Adapting Midwifery Theory to Accommodate Telehealth Care Delivery

Introduction

Background and significance

Until 2020, virtual consults between providers and patients have steadily increased, albeit slowly, with the use of telehealth in the United States (US).[1] The adoption of telehealth had been impeded by several factors: (1) acceptance of the method by clinicians and patients; (2) cost; (3) provider training; (4) required technology infrastructure; (5) complexity and uncertainty of reimbursement; and (6) restrictive regulatory policies.[2–5] However, the adoption of telehealth accelerated in March 2020 because of concerns about in-person viral transmission from severe acute respiratory syndrome-related coronavirus 2 (SARS-CoV-2), commonly known as COVID-19. By the end of 2020, Medicare visits conducted through telehealth increased 63-fold, from approximately 840,000 in 2019 to 52.7 million visits.[6]

In response to the declaration of a federal Public Health Emergency (PHE) due to the COVID-19 pandemic, regulatory changes by the Department of Health and Human Services and the Center for Medicare and Medicaid Services lifted some of the greatest impediments to telehealth adoption immediately impacting two of the largest preventative care services in the US, prenatal care and family planning services.[7–9] These changes allowed for payment parity for remote consults regardless of geographical location and became available for more types of providers, including certified nurse-midwives (CNMs) and nurse practitioners.[10]

With regulatory changes and increased reimbursement, reproductive health providers responded by offering a broad range of telehealth services. In a survey of US reproductive health providers and clinic staff from April 2020 through January 2021

(n=907), only 11% of respondents offered telehealth pre-pandemic, whereas 79% offered services during the pandemic.[9] In another survey of 172 family planning providers based in the US conducted in the same year, 78% of providers were new to telehealth during the pandemic, and 69% wanted to continue using telehealth.[11] Of a total of 91 high-risk pregnant patients surveyed in the US, 86.9% were satisfied with telehealth care, 78.3% were willing to recommend it, and 73.8% desired a combination of in-person and telehealth for future pregnancy care.[12] Because of the positive response of healthcare providers and patients to telehealth, healthcare leaders and policymakers are calling for permanent changes to healthcare insurance coverage and reimbursement to enable routine use of telehealth services and encourage ongoing acceptance and expansion of telehealth.[10]

An advantage of telehealth is the decreased time and costs associated with patient travel, time away from work, and childcare associated with in-person clinic visits.[13] In addition, telehealth offers increased access to care at medical centers with leading specialists for high-risk pregnant individuals and those living in rural and geographically distant locations.[14] However, despite these advantages, telehealth may widen existing health disparities in terms of existing racial and social structural inequities in the maternal and reproductive service delivery system.[15,16] For example, telehealth requires continuous and comprehensive insurance coverage to access both care facilities and providers unless a patient can afford to pay out-of-pocket.[17] In addition, telehealth requires digital literacy, reliable access to the internet, phone service, current functional device(s), and financial resources.[18] Equally important, telehealth requires privacy for both providers and patients. The issue of privacy is

particularly challenging for victims of intimate partner violence, those who live with extended family and/or in multi-generational homes, those who lack secure housing, and/or adolescents seeking care[15,19–21]

While patient factors associated with telehealth are important, acceptance of telehealth by maternal health providers, such as CNMs, is critical for its integration into clinical services, ongoing use, and optimal maternal and reproductive health outcomes.[22] Perceptions of midwives' experiences with telehealth may differ from other specialties, even among specialties that have high levels of in-person engagement with patients, such as occupational therapists.[23] These differences in perceptions may be due to the philosophical and professional emphasis on the need for the physical and emotional presence of midwives with those to whom they provide care, to develop trusting relationships, and to collect accurate data during hands-on clinical assessment.[24] Midwives may be particularly challenged by telehealth since sharing the same physical space with patients is considered a meaningful and satisfying aspect of their work.[25] As CNMs navigate the incorporation of telehealth as a larger component of their practice, new theory is needed to guide research and inform clinical practice to accommodate the shift to telehealth.

Current theories in midwifery have not incorporated telehealth and therefore, remain inadequate to guide telehealth research because of specific assumptions. Theories were formulated when midwives were physically present with their patients and had fewer and more limited remote experiences like triaging by phone.[26] These assumptions about midwifery practice occurring in shared physical space limit theory application to this new era of research when remote care is increasing. Because

certified midwives (CMs) and CNMs are more likely to be fully integrated into mainstream health care in the United States (US), and unlike certified professional midwives (CPMs), provide a range of services throughout the lifespan, these types of midwifery care are the focus of this paper.

Theory advancement

Theory can be understood as the conceptualization of aspects of clinical reality that describe, predict, or explain the relationships within a phenomenon.[27] Theory guides research by ordering concepts and propositions that can be applied and examined systematically across research studies.[28] Theory also informs practice decision-making and activities and, therefore, is valuable for guiding positive clinical outcomes.[29]

Knowledge development in the nurse-midwifery profession is relatively new in the US, with research in the field commencing in the 1980s and existing theories remaining broad.[26,30] More research studies about midwives' clinical experiences, the telehealth model of care, and patient-provider relationships are required to both generate new theories and effectively integrate telehealth into practice, not only to ensure acceptability by providers but also to sustain the appropriate use of this technology.[22] This is particularly important to midwifery because this profession is devoted to improving maternal outcomes, reducing interventions, and creating models of racially concordant care to reduce racial health disparities.[31–35] As clinical work shifts increasingly from in-person interactions to telehealth methods, qualitative studies, specifically, are needed to generate theory that describes and explains contemporary midwifery practice and guide future research.

Technology theories and conceptual models applied to telehealth and healthcare technology commonly address cost, utility, acceptability, feasibility, design process, and implementation both at individual provider and organizational levels.[36] Constructs such as patient/client relationship building and other care elements central to the goals of clinical practice are minimized or left out altogether.[37] In addition, telehealth theories specific to midwifery are non-existent. Taken together, theoretical and conceptual models need to advance to address this unmet need and guide research of this potentially valuable tool to optimize reproductive healthcare.

Therefore, the purpose of this paper is to develop a theoretical starting point by combining constructs from midwifery and technology theory into a new conceptual framework for telehealth delivery within midwifery practice. The two theories of foci are (1) the Hierarchy Model for the Means and Targets of Midwifery (HMMTM) and (2) the Technology Acceptance Model 2 (TAM2). These theories were chosen to demonstrate how theories and constructs from two different disciplines are useful to move forward theory development for a new clinical phenomenon.

Current midwifery theory

The HMMTM describes the aims and objectives for midwifery practice in a theoretical framework to advance the creation of quality-of-care measurements.[26] The theory was developed in three stages. The first stage was the synthesis, extraction, and definition of key constructs and concepts from the eleven existing grand and middle range theories, conceptual models, and frameworks developed over the years using qualitative, mixed methods, and Delphi studies.[26] In the second stage, a systematic literature review of women's experience and preferences for midwifery care was

conducted and included 26 empirical studies from industrialized countries dating back to 2002.[26] These studies provided data to support earlier identified concepts, examine relationships, and explore how these concepts interacted in midwifery practice.[26]

In the third stage, the aims and objectives (i.e., constructs) were further refined to build a model (Figure 3.1 and Figure 3.2). To determine how the aims and objectives were related to one another and to the concepts of midwifery practice, two questions were asked: “Why is this concept carried out in midwifery,” and “Which requirements are required for this aim?”. [26] The answers informed the identification of distinct aims and the primary objective (Figure 3.1).[26] The definitions of the constructs and the concepts within each level are described in Table 3.1.

Because the HMMTM is a relatively new theory, it has only been validated empirically in one study.[38] In a Swedish maternity hospital, a purposive sample of twenty women was recruited and surveyed while in the hospital. They were interviewed eight to 13 months postpartum to conduct empirical validation of the theory using qualitative deductive methodology.[38] Eligible participants who had: 1) midwifery care; 2) high scores for birth satisfaction with birth experience numeric rating scale; and 3) low scores for fear of birth on the Wijma Delivery Experience Questionnaire Version B [39] were surveyed while in the hospital. Using content analysis with a directed approach, all three levels of the theory’s operational aims and objectives were reported.[38] All of the women interviewed reported trusting relationships with regard to midwifery care.[38] In addition, 19/20 women reported that midwifery care promoted a sense of security.[38] The majority of participants thought midwives promoted their mental and physical health, and half agreed their reproductive capabilities were supported by midwives.[38]

In terms of the HMMTM concepts, they were difficult to analyze separately due to overlapping definitions (i.e., respect and dignity, empathic attitude, and women-centered care).[38] Of note, new concepts of the midwifery process that were not covered by theory, such as supporting the partner, coaching, and supportive talks, were suggested as potential future extensions of the theory.[38] Importantly, the data did not confirm the HMMTM concept of choice and continuity. This may be because of the organizational structure of the maternal health system in Sweden, which rarely offers a continuity of care where a person is cared for throughout pregnancy, birth, and postpartum by the same midwife or small team of midwives.[38,40] Future validation studies are needed to determine how the HMMTM theory performs in diverse populations and with varied birth and reproductive health experiences in different health systems globally.

Constructs in the US context

In terms of the application of the HMMTM to midwifery and telehealth in the US, major limitations in the HMMTM constructs of choice, continuity, empathy, attitude, respect, dignity, and security are worth noting. First, in terms of choice and continuity, US provider choice and continuity in care is highly influenced by health insurer policies. In the US. Healthcare insurers (and health systems) dictate whether and to what degree coverage is provided for midwifery services, alternatives to hospital births, and reproductive health via telehealth.[41,42] For pregnant people in the US whose health insurance does cover midwifery care, those models of care do not provide continuity of care, even though international studies show such models promote fewer interventions, improved maternal and newborn health outcomes, and higher patient satisfaction.[40,43]

Second, in terms of empathy & attitude, the prevalence of mistreatment and obstetrical violence, especially pronounced in hospital settings, suggest this is an area for multi-level intervention in the US confounded by structural and interpersonal racism.[44,45] The concepts of empathy & attitude have only recently been explored in relation to prenatal care and telehealth, with new strategies and techniques about how to best convey these concepts remotely by health providers in general. However, no current recommendations specifically for midwives exist.[46]

Finally, in terms of respect & dignity, and security, evidence of maltreatment and disrespect during pregnancy and birth in hospital settings directly contradicts the application of these concepts in the US context.[44,47] In a national sample of birthing people (n=2138), one in six birthing persons (17.3%) experienced maltreatment in multiple forms during birth perpetrated by providers. The maltreatment included physical harm, violations of privacy, shouting or scolding, forcing or withholding treatments, threatening, ignoring, or causing a delay in care by neglecting requests for help.[44] These forms of mistreatment were more commonly reported by Black, Latina, and Indigenous persons with first-time pregnancies that were considered high-risk. While maltreatment was reported less in midwifery care and free-standing birth centers than among physicians and hospital settings, it did exist across settings.[44] Cultivating a sense of security between pregnant people and midwives is less realizable when midwives lack a collaborative team setting for managing adverse outcomes.[48]

Taken together, the concepts in the HMMTM, while capturing some of what historically has been the theoretical foundation of midwifery, are extremely limited in applicability for many people (e.g., Black, Latine, and Indigenous birthing people) within

the current mainstream US healthcare system. There was selection bias at both the theory development and the validation stages of HMMTM. By including only positive birthing experiences in the first validation study,[38] it remains partial and incomplete. However, by integrating patient experiences from more holistic racially concordant community-based midwifery models of care that exist in the US and elsewhere, the HMMTM model could be further developed and become a useful framework for practice and research.

Assumptions and deficits

As discussed, one major assumption of this model is that midwives' clinical encounters with patients occur in person in the same physical space. Another major assumption is that midwives' clinical practice solely pertains to birth work. HMMTM relies on prior theories, the majority of which use a limited scope of midwifery clinical practice. They prioritize theory creation around midwives' clinical function in pregnancy, prenatal services, childbirth preparation, labor, and birth. In the US, the scope of practice of CNMs and CMs also includes a full range of primary care and sexual and reproductive health care from adolescence beyond menopause. In addition, it is inclusive of all gender identities and sexual orientations. It also includes gynecologic, family planning, and preconception services; newborn care; treatment of partners with sexually transmitted infection; treatment of substance abuse; and, where legal, abortion.[49] Of note, Grundström et al. (2022) cite the theory as applicable to gynecology and postpartum. However, this deficit, lacking the full scope of CNMs/CMs practice, limits its applicability to the full scope of midwifery services research. And, because it is a new model, it has limited validity and reliability testing. Taken together, the existing

theory would require modifications to embrace the full scope of midwifery services in the US context.

Technology Acceptance Model 2 (TAM2)

Having identified the limitations in this composite of midwifery theories with respect to the role of telehealth, another direction to explore is technology-focused theory to examine its relevance to telehealth in midwifery. TAM2 is both an intrapersonal theory and an information system theory.[50] TAM2 was modified from an earlier version, the Technology Acceptance Model (TAM), a mature information systems theory developed by Davis & Bagozzi in 1989 to explain why users accept or reject technology. Based on the principles of social psychology from Fishbein and Ajzen's Theory of Reasoned Action, TAM posits that actual behavior is explained through pre-existing behaviors and attitudes.[51] The original theory and its constructs have been evaluated in a wide range of industries, within work settings that require that technology use is mandatory or voluntary, and with professionals, employees, and students.[52,53]

TAM2 was designed with the purpose of understanding what predicts ongoing technology acceptance and greater usage (Figure 3).[50] TAM2 sought to strengthen the original TAM model's predictability, to define additional social and cognitive concepts/predictors, and to understand how these change the use of technology over time.[50] The components of TAM2 are defined in Table 2 and include Perceived Usefulness, Perceived Ease of Use, Intention to Use, Usage Behavior, Subjective Norm, Image, Job Relevance, Output Quality, Result Demonstrability, Voluntariness, and Experience.[50]

TAM and TAM2 were not developed for healthcare but rather in corporate settings valuing productivity (e.g., manufacturing firms, financial services, accounting firms, and investment banking).[50] When TAM/TAM2? has been used in healthcare settings, it has focused more often on how technology systems, like electronic health records or the Internet, are used by clinicians in brick-and-mortar settings. [55] For example, in 2001, 205 pediatricians were mailed a modified TAM2 survey to test the predictors of the acceptance of using internet health applications in their practice.[56] For the physician participants, the significance of Perceived Usefulness had a higher predictive effect on the intention to use than Perceived Ease of Use. Job relevance and Result Demonstrability were more predictive of Perceived Usefulness than the other concepts. TAM2 was also used to explain factors influencing homecare nurses' intention to adopt mobile technology in Canada (n=91). Findings indicate that Perceived Usefulness had a stronger effect on adoption intention than Perceived Ease of Use, while Cognitive Factors' influence could not be confirmed.[57]

The limitations of the TAM2 model are its inability to accommodate unique and complex aspects of care delivery that may influence technology adoption, such as provider-patient relationships, workflow, administration burden, stress, emotionality of disease, organizational structures, and cultural factors.[54] Further, TAM2 emphasis on productivity and transactions rather than interactive engagement/building relationships may not be as appropriate in healthcare technology acceptance as in other industries.

This theory describes the factors that promote the ongoing use of technology. In addition, it evaluates how those determinants change over time from two specific vantage points, each with its own theoretical lineages (i.e., social psychology and

information system design). Within the midwifery profession, both areas of study are relevant and impactful. Midwives use technology systems to function at work, share information, and, with telehealth, actively and regularly consult with and engage with patients. Components of TAM2 theory offer practical, measurable, and application assessments for midwifery practice. As reliance on telehealth grows among healthcare providers, TAM2 has been modified to incorporate new concepts specific to the individual or groups being studied.[58]

Nonetheless, TAM2's goal of identifying the determinants of technology acceptance may provide key theoretical constructs that advance telehealth use in healthcare generally and midwifery specifically. For example, the goals of telehealth should be well-designed technology solutions that are aligned with the aims and objectives of midwifery clinical practice. Although TAM2 may not be the optimal theory for midwifery practice in its entirety, TAM2 can provide key constructs and measurement tools to guide research and implementation of telehealth use in midwifery.

Integration of midwifery and technology theory

While the HHMTM and TAM2 theories differ greatly in focus and scope, combined, they may provide greater explanatory power for examining telehealth in midwifery care. HMMTM is a theoretical framework that describes how quality of care can be achieved in midwifery practice, while TAMS explains and predicts technology acceptance and sustainability. The HMMTM was formed from secondary literature and data sources. Some of the selected articles lack clear articulation of methods, putting the quality of the selected research in question without critical appraisal. [26] By comparison, TAM2 was rigorously developed and tested in a wide range of industries

using quantitative empirical indicators and primary data collection, leading to the instrument development. The theories' scopes also differ from narrow and specific to general, resulting in increased applicability. One benefit of combining elements of HMMTM and TAM2 is that, taken together, these theories include both individual and organizational levels, thereby increasing applicability in levels of the US healthcare system.

As shown in Figure 4, the proposed model, Midwifery Acceptance of Telehealth (MAT), would integrate Perceived Usefulness, Job Relevance, and Result Demonstrability at the base of a modified HMMTM. Perceived Usefulness was demonstrated to be more predictive than other constructs when tested amongst physicians and nurses.[56,57] Job Relevance and Result Demonstrability were found to contribute to Perceived Usefulness and remain in MAT and operationalized as productivity, enhancing effectiveness, and providing practical support.

MAT builds out the construct of Perceived Usefulness and the two concepts, Job Relevance and Result Demonstrability, with specifications for midwifery practice in relation to Trusting Relationships. Perceived Usefulness is purposefully positioned below Trusting Relationships because it is important to assess how telehealth either supports or disrupts this foundational objective to reach higher aims.[38] Job Relevance and Result Demonstrability are further delineated with subcategories specific to midwifery: Appropriate Use, Valued Interaction, Mutual Satisfaction, Concordant Care, and Improved Quality of Care. The definition of Appropriate Use is the use of telehealth for a range of clinical services that can be effectively and safely performed remotely without causing a delay in care. Valued Interaction is defined as the use of telehealth to

enhance the meaningful engagement, connection, and participation for both provider and patient. Mutual Satisfaction is defined as the use of telehealth as satisfying for both midwife and patient. Concordant Care is defined as a shared identity, such as race, gender, ethnicity, sexual orientation, or age, between patient and provider.[59] Improved Quality of Care is defined as the use of telehealth, which improves the quality of care compared to being physically present. More research would be necessary to begin the process of operationalizing and testing each concept and its relationships to one another.

MAT differs from the two theories by centering the reality of full-scope reproductive health services in the era of telehealth that CNMs and CMs offer diverse populations whose sexual and reproductive health needs and desires vary. The apex of MAT is replaced with the construct of sexual and reproductive health decisions rather than reproductive capabilities in HMMTM. Informed by Ross (2017) articulation of reproductive justice and the rights to bodily autonomy, the construct of sexual and reproductive health decisions is defined as a multi-dimensional (physical, mental, social, and psychological) decision-making process where midwives offer knowledge and support to people as they choose what is best for lives and well-being.[59] This new construct encompasses and updates several key aspects of nurse-midwifery in the era of telehealth: 1) Midwives care for people from adolescence to beyond menopause. 2) Midwives offer a wide range of health services. 3) Midwives care for people who choose not to or are unable to become pregnant. 4) Midwives care for people from diverse racial, ethnic, and gender identities and sexual orientation. This concept replaces the

professional objective that midwives offer aids and competencies to enable each woman's capabilities to have the best birth possible, as stated in HMMTM.

To conclude, theory development in midwifery needs to better reflect the modern changes in how midwives practice and deliver care and to whom. This may be accomplished by including telehealth and avoiding assumptions that care requires physical presence and prioritizes birth work. For the midwifery profession to advance, a new theory is needed that encompasses midwives' professional role in the full spectrum of reproductive health services for diverse populations, in-person and remotely. This paper represents an initial attempt to merge certain aspects of the HMMTM and technology acceptance guided by the TAM2 to provide a starting point for theory advancement. More studies that generate theory for understanding telehealth and clinical practice are needed. In doing so, a move towards a more evolved understanding of care delivery to better measure midwives' clinical practice and delivery of quality and equitable care can be envisioned to inform clinical practice policy and research.

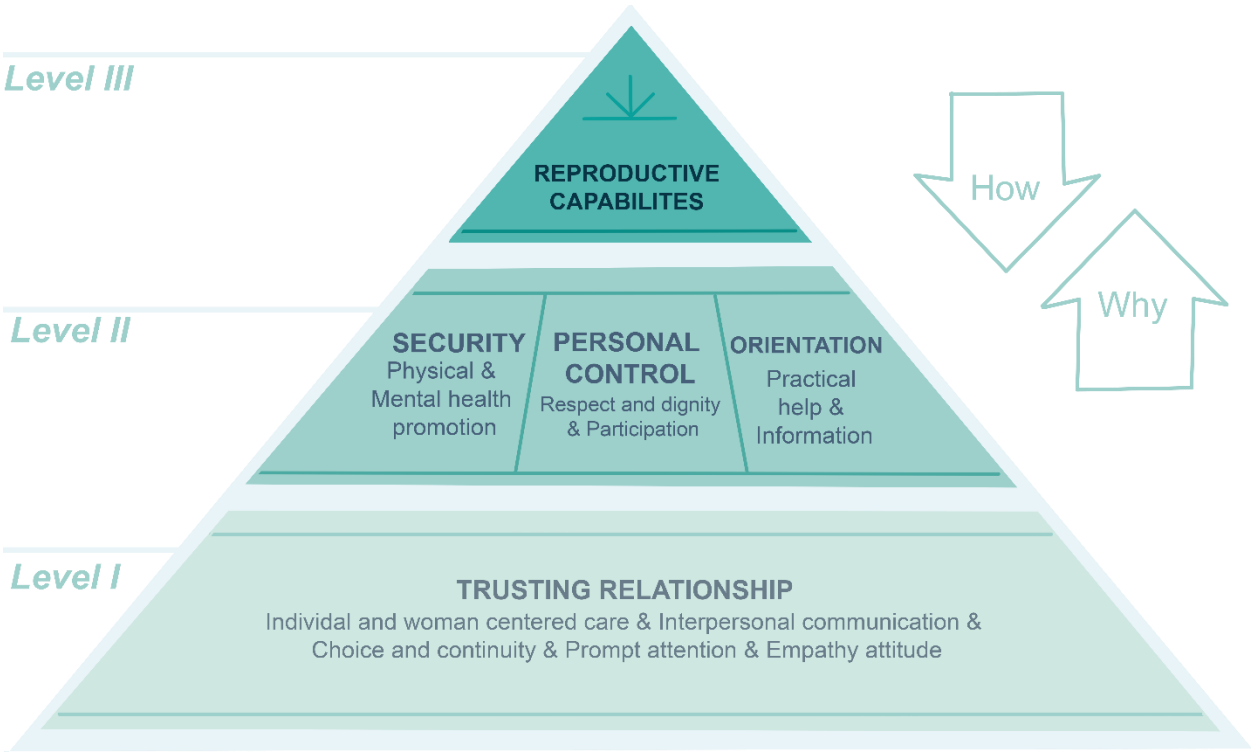

Figure 3.1 Diagram for The Hierarchy Model for the Means and Targets of Midwifery[26]

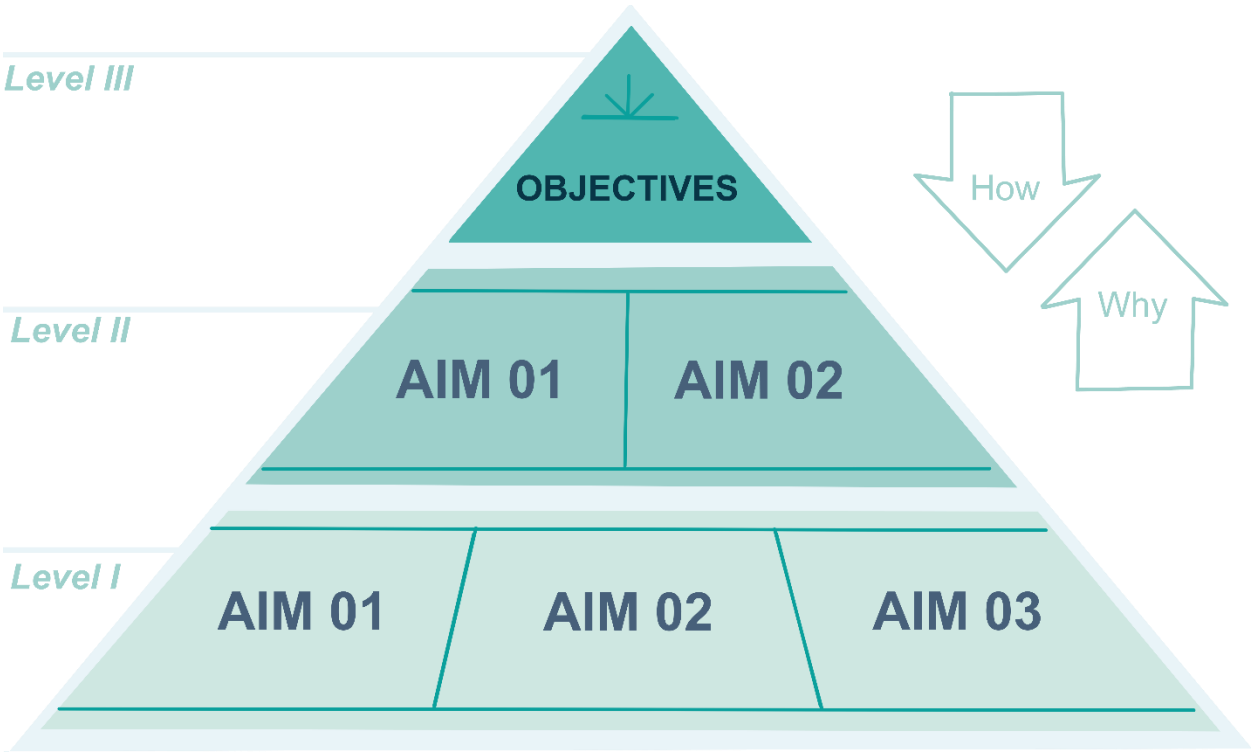

Figure 3.2 Diagram of Means-end chain in The Hierarchy Model for the Means and Targets of Midwifery[26]

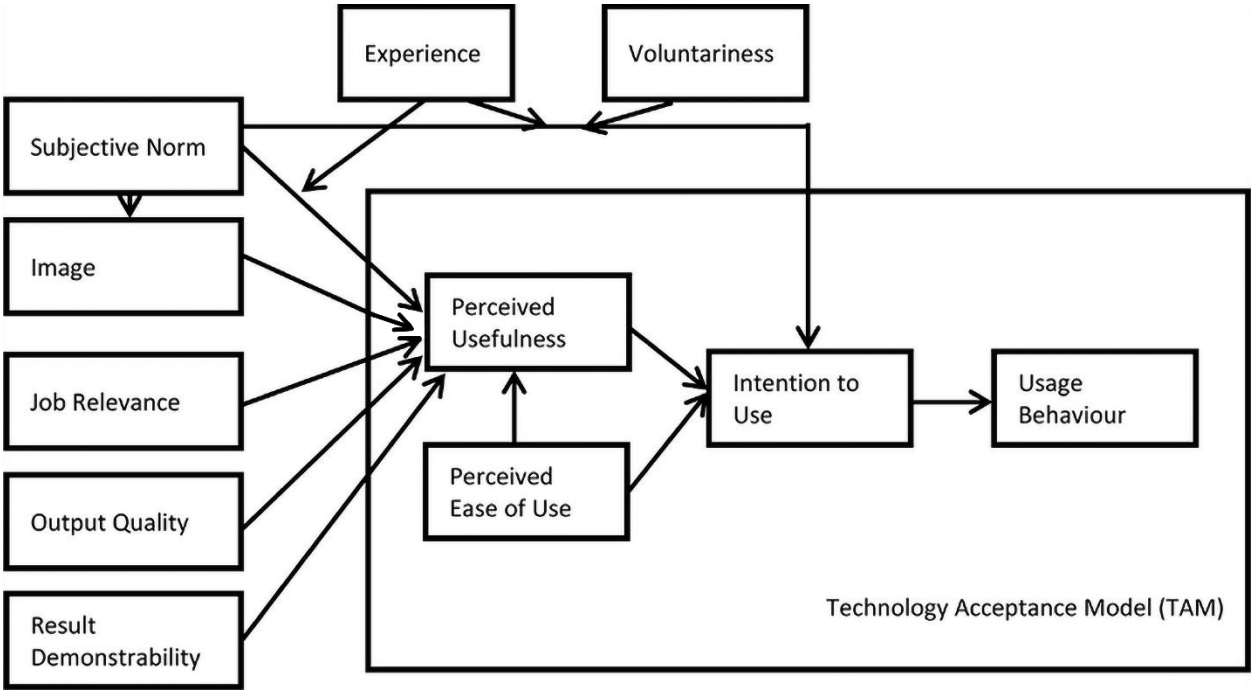

Figure 3.3 The original Technology Acceptance Model 2 (TAM2)[50]

Figure 3.4 Midwifery Acceptance of Telehealth (MAT) Model

Table 3.1 The definitions of HMMTM constructs and concepts [26]

Level One		
Constructs	Concepts	Definition
Trusting Relationships		A construct defined as the process that leads to a reciprocal relationship of autonomy and cooperative results.
	Individual and women-centered care	A concept defined as the midwives' non-judgmental acceptance and promotion of every woman's individuality. Through active listening and identification of physical, physiological, cultural, and social needs and preferences, midwives can assess and tailor support for each person.
	Interpersonal communication	A concept defined as good verbal, tactile, and aural communication skills. Midwives explain and answer questions thoroughly. Through active listening and ensuring sufficient time, women can share emotions and experiences.
	Choice & Continuity	A concept defined as the ability for women to choose their midwife and to have a continuous relationship to promote familiarity and trust and avoid repeated exams and confusion from differing provider opinions.
	Prompt Attention	A concept defined as midwives' ability to be available, present, accessible, and dependable for women, especially during birth.
	Empathy Attitude	A concept defined as the need for midwives to be empathetic since women find themselves in a vulnerable situation during pregnancy, childbirth, and postpartum.
Level Two		
Security		A construct defined as a feeling of safety and reassurance for women that is created by midwives through the promotion of women's psychological and physical health an

Constructs	Concepts	Definition
		and well-being
	Physical Health Promotion	A concept defined as the process that midwives engage in to assist women to understand what is physiologically normal and what is expected to encourage self-health promotion. Midwives avoid intervention unless risks arise where midwives aptly manage or refer if medically necessary.
	Mental Health Promotion	A concept defined as a process offering emotional support to build self-esteem and reduce anxiety about transitions.
Personal Control		A construct defined as a woman's need to feel respected and feel that their choices are supported and accepted, which facilitates a sense of personal control. It includes two concepts: Respect & Dignity and Participation.
	Respect & Dignity	A concept defined as respecting women, her situation and her human dignity through acceptance of her decisions, her privacy, and individual needs.
	Participation	A concept defined as the process of how midwives involve women through continuous dialogue, active listening, offering alternatives, informing, and supporting her decision-making process.
Orientation		A construct defined as the process of providing women with timely, realistic and tailored information.
	Information	A concept defined as information and advice that midwives give about physical changes, normal processes, guidance and preparation for deviances, and resources especially for labor and birth.
	Practical Help	A concept defined as midwives giving useable instructions for labor support (i.e., how to breathe),

Constructs	Concepts	Definition
		breastfeeding, and partner involvement.
Level Three		
Reproductive Capabilities		A construct defined as multi-dimensional (physical, mental, social, and psychological) capabilities. Midwives offer aids and competencies to enable each woman's capabilities to have the best birth possible.

Table 3.2 Definitions of TAM 2 constructs and concepts [50,51,54,55]

Construct	Concepts	Definition
Perceived Usefulness		A major construct defined as the extent to which a person believes that using the system will enhance his or her job performance.
Perceived Ease of Use		A major construct defined as the extent to which an individual believes that using the tech system will be free of effort.
Intention to Use		A construct defined as the intention to use the technology over time.
Usage Behavior:		This central construct of the TAM2 is formulated by all preceding constructs and concepts and is the structured endpoint. It has been renamed from the original TAM but was left undefined, thereby assuming the same implicit definition as Behavioral Intention/Actual Use in TAM modified for use over time.
	Subjective Norm	A concept defined as the extent to which an individual's perception is based on important people whose opinions the individual values and how they approve or disapprove of a behavior. Subjective norm, or the influence of one's social group to perform a certain behavior, relies on the theoretical mechanism of "internalization," or the process by which an individual's perception or belief system incorporates the beliefs of other relevant individuals.
	Image	A concept defined as how an individual is identified within a group. Status within that group is elevated by executing a specific behavior that is "expected" in that group (e.g., using a form of technology). The end result is that this maintains an individual's power or a favorable presence within the group.

Construct	Concepts	Definition
	Job Relevance	A concept defined as the individual's perception of how applicable and compatible the target system is to the actual job they perform and is assessed through the lens of compatibility
	Output Quality	A concept defined as an individual assessment process about whether the technology improves the output of their work, which can be compared to another means of performing their work
	Result Demonstrability:	A concept defined as the realized and tangible results of using the technology.
	External Factors	A concept defined as a composite of the design of the technology, training, and software characteristics that influence the major constructs.
	Experience	A concept defined as the use of technology over time
	Voluntarism	A concept is defined as the degree to which an adopter of technology perceives their choice to use technology as non-mandatory. It is the opposite of compliance, where the adopter is required without consent to use a technology.

References

1. Nesbitt, T. S. & Katz-Bell, J. Understanding Telehealth. in *Understanding Telehealth* (eds. Rheuban, K. S. & Krupinski, E. A.) (McGraw-Hill Education, New York, NY, 1).
2. Lin, C.-C. C. *et al.* Telehealth In Health Centers: Key Adoption Factors, Barriers, And Opportunities. *Health Affairs* **37**, 1967–1974 (2018).
3. Byrne, M. D. Telehealth and the COVID-19 Pandemic. *Journal of PeriAnesthesia Nursing* **35**, 548–551 (2020).
4. Weinstein, R. S. *et al.* Telemedicine, Telehealth, and Mobile Health Applications That Work: Opportunities and Barriers. *The American Journal of Medicine* **127**, 183–187 (2014).
5. Koivunen, M. & Saranto, K. Nursing professionals' experiences of the facilitators and barriers to the use of telehealth applications: a systematic review of qualitative studies. *Scandinavian Journal of Caring Sciences* **32**, 24–44 (2018).
6. Samson, L. W., Tarazi, W., Turrini, G. & Sheingold, S. Medicare Beneficiaries' Use of Telehealth in 2020: Trends by Beneficiary Characteristics and Location. 34 (2021).
7. Thompson, T.-A., Sonalkar, S., Butler, J. L. & Grossman, D. Telemedicine for Family Planning: A Scoping Review. *Obstet Gynecol Clin North Am* **47**, 287–316 (2020).
8. Peahl, A. F. *et al.* Patient and provider perspectives of a new prenatal care model introduced in response to the coronavirus disease 2019 pandemic. *Am J Obstet Gynecol* (2020) doi:10.1016/j.ajog.2020.10.008.
9. Comfort, A. B. *et al.* Assessing differences in contraceptive provision through telemedicine among reproductive health providers during the COVID-19 pandemic in the United States. *Reprod Health* **19**, 99 (2022).

10. Spaulding, R. & Smith, C. E. How telehealth care exploded due to COVID: What nurse researchers need to know. *Res Nurs Health* **44**, 5–8 (2021).

11. Stifani, B. M., Avila, K. & Levi, E. E. Telemedicine for contraceptive counseling: An exploratory survey of US family planning providers following rapid adoption of services during the COVID-19 pandemic. *Contraception* **103**, 157–162 (2021).

12. Jeganathan, S. *et al.* Adherence and acceptability of telehealth appointments for high-risk obstetrical patients during the coronavirus disease 2019 pandemic. *Am J Obstet Gynecol MFM* **2**, 100233 (2020).

13. Fryer, K., Delgado, A., Foti, T., Reid, C. N. & Marshall, J. Implementation of obstetric telehealth during COVID-19 and beyond. *Maternal and child health journal* **24**, 1104–1110 (2020).

14. Britt, D. W., Bronstein, J. & Norton, J. D. Absorbing and transferring risk: assessing the impact of a statewide high-risk-pregnancy telemedical program on VLBW maternal transports. *BMC Pregnancy Childbirth* **6**, 11 (2006).

15. Ukoha, E. P. *et al.* Ensuring Equitable Implementation of Telemedicine in Perinatal Care. *Obstet Gynecol* **137**, 487–492 (2021).

16. Westby, A., Nissly, T., Gieseker, R., Timmins, K. & Justesen, K. Achieving Equity in Telehealth: 'Centering at the Margins' in Access, Provision, and Reimbursement. *J Am Board Fam Med* **34**, S29–S32 (2021).

17. Crear-Perry, J. *et al.* Social and Structural Determinants of Health Inequities in Maternal Health. *J Womens Health (Larchmt)* **30**, 230–235 (2021).

18. Wood, S. M. *et al.* Outcomes of a Rapid Adolescent Telehealth Scale-Up During the COVID-19 Pandemic. *Journal of Adolescent Health* **67**, 172–178 (2020).

19. Jack, S. M. *et al.* Recognising and responding to intimate partner violence using telehealth: Practical guidance for nurses and midwives. *Journal of Clinical Nursing* **n/a**.

20. Yarger, J. *et al.* Perceived Access to Contraception via Telemedicine Among Young Adults: Inequities by Food and Housing Insecurity. *J GEN INTERN MED* **38**, 302–308 (2023).

21. Young, J. D., Borgetti, S. A. & Clapham, P. J. Telehealth: Exploring the Ethical Issues. *DePaul Journal of Health Care Law* **19**, 16 (2017).

22. Wade, V. A., Eliott, J. A. & Hiller, J. E. Clinician acceptance is the key factor for sustainable telehealth services. *Qual Health Res* **24**, 682–694 (2014).

23. Klamroth-Marganska, V. *et al.* Does therapy always need touch? A cross-sectional study among Switzerland-based occupational therapists and midwives regarding their experience with health care at a distance during the COVID-19 pandemic in spring 2020. *BMC Health Serv Res* **21**, 578 (2021).

24. Kennedy, H. P., Anderson, T. & Leap, N. Midwifery Presence: Philosophy, Science and Art. in *Essential Midwifery Practice: Intrapartum Care* 105–123 (John Wiley & Sons, Ltd, 2010). doi:10.1002/9781444317701.ch7.

25. Penny, R. A., Bradford, N. K. & Langbecker, D. Registered nurse and midwife experiences of using videoconferencing in practice: A systematic review of qualitative studies. *Journal of Clinical Nursing* **27**, e739–e752 (2018).

26. Peters, M., Kolip, P. & Schäfers, R. A theory of the aims and objectives of midwifery practice: A theory synthesis. *Midwifery* **84**, 102653 (2020).

27. Meleis, A. I. *Theoretical Nursing: Development and Progress.* (Lippincott Williams & Wilkins., 2011).

28. Meleis, A. I. *A Model for Evaluation of Theories: Description, Analysis, Critique, Testing, and Support. Theoretical Nursing: Development and Progress,*. (2012).

29. Chinn, P. L. & Kramer, M. K. *Knowledge Development in Nursing, Theory and Process*. (Mosby/Elsevier, St. Louis, MO, 2022).

30. Eri, T. S. *et al.* Models for midwifery care: A mapping review. *Eur J Midwifery* **4**, 30 (2020).

31. Liese, K. *et al.* Melanated Group Midwifery Care: Centering the Voices of the Black Birthing Community. *Journal of Midwifery & Women's Health* **67**, 696–700 (2022).

32. Loewenberg Weisband, Y., Klebanoff, M., Gallo, M. F., Shoben, A. & Norris, A. H. Birth Outcomes of Women Using a Midwife versus Women Using a Physician for Prenatal Care. *J Midwifery Womens Health* **63**, 399–409 (2018).

33. Renfrew, M. J. *et al.* Midwifery and quality care: findings from a new evidence-informed framework for maternal and newborn care. *Lancet* **384**, 1129–1145 (2014).

34. Vedam, S. *et al.* Mapping integration of midwives across the United States: Impact on access, equity, and outcomes. *PLOS ONE* **13**, e0192523 (2018).

35. UNITED NATIONS POPULATION FUND. *STATE OF THE WORLD'S MIDWIFERY 2021: Building a Health Workforce to Meet the Needs of Women,... Newborns and Adolescents Everywhere.* (UNITED NATIONS, S.l., 2021).

36. Wade, V., Gray, L. & Carati, C. Theoretical frameworks in telemedicine research. *J Telemed Telecare* **23**, 181–187 (2017).

37. Fronczek, A. E. Nursing Theory in Virtual Care. *Nurs Sci Q* **32**, 35–38 (2019).

38. Grundström, H., Malmquist, A., Nieminen, K. & Alehagen, S. Supporting women's reproductive capabilities in the context of childbirth: Empirical validation of a midwifery theory synthesis. *Midwifery* **110**, 103320 (2022).

39. Wijma, K., Wijma, B. & Zar, M. Psychometric aspects of the W-DEQ; a new questionnaire for the measurement of fear of childbirth. *Journal of Psychosomatic Obstetrics & Gynecology* **19**, 84–97 (1998).

40. Hildingsson, I., Fahlbeck, H., Larsson, B. & Johansson, M. 'A perfect fit' – Swedish midwives' interest in continuity models of midwifery care. *Women and Birth* **36**, e86–e92 (2023).

41. George, E. K., Shorten, A., Lyons, K. S. & Edmonds, J. K. Factors influencing birth setting decision making in the United States: An integrative review. *Birth* **49**, 403–419 (2022).

42. Sanders, S. A., Niemczyk, N. A., Burke, J. G., McCarthy, A. M. & Terry, M. A. Exploring Why Birth Center Clients Choose Hospitalization for Labor and Birth. *Nursing for Women's Health* **25**, 30–42 (2021).

43. Kennedy, H. P. *et al.* The role of midwifery and other international insights for maternity care in the United States: An analysis of four countries. *Birth* **47**, 332–345 (2020).

44. Vedam, S., Declercq, E. R., Monroe, S. M., Joseph, J. & Rubashkin, N. The Giving Voice to Mothers Study: Measuring Respectful Maternity Care in the United States [18Q]. *Obstetrics & Gynecology* **129**, 177S (2017).

45. Davis, D.-A. Obstetric Racism: The Racial Politics of Pregnancy, Labor, and Birthing. *Medical Anthropology* **38**, 560–573 (2019).

46. Gustin, T. S., Kott, K. & Rutledge, C. Telehealth Etiquette Training: A Guideline for Preparing Interprofessional Teams for Successful Encounters. *Nurse Educator* **45**, 88 (2020).

47. McLemore, M. R. *et al.* Health care experiences of pregnant, birthing and postnatal women of color at risk for preterm birth. *Social Science & Medicine* **201**, 127–135 (2018).

48. Eppes, C. S. *et al.* Enhancing Obstetric Safety Through Best Practices. *Journal of Women's Health* **30**, 265–269 (2021).

49. American College of Nurse-Midwives. Definition of Midwifery Scope of Practice of Certified Nurse-Midwives and Certified Midwives. (2021).

50. Venkatesh, V. & Davis, F. D. A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management science* **46**, 186 (2000).

51. Davis, F. D. Perceived Usefulness, Perceived Ease Of Use, And User Accep. *MIS quarterly* **13**, 319 (1989).

52. King, W. R. & He, J. A meta-analysis of the technology acceptance model. *Information & Management* **43**, 740–755 (2006).

53. Yarbrough, A. K. & Smith, T. B. Technology Acceptance among Physicians: A New Take on TAM. *Med Care Res Rev* **64**, 650–672 (2007).

54. Ammenwerth, E. Technology Acceptance Models in Health Informatics: TAM and UTAUT. *Stud Health Technol Inform* **263**, 64–71 (2019).

55. Holden, R. J. & Karsh, B.-T. The Technology Acceptance Model: Its past and its future in health care. *Journal of biomedical informatics* **43**, 159–172 (2010).

56. Chismar, W. G. & Wiley-Patton, S. Test of the technology acceptance model for the internet in pediatrics. *Proc AMIA Symp* 155–159 (2002).

57. Zhang, H., Cocosila, M. & Archer, N. Factors of Adoption of Mobile Information Technology by Homecare Nurses: A Technology Acceptance Model 2 Approach. *CIN: Computers, Informatics, Nursing* **28**, 49–56 (2010).

58. Min, K. & Dong, C. An Empirical Research on Online Infomediary Based on Extension of the Technology Acceptance Model (TAM2). in *2007 International Conference on Management Science and Engineering* 40–45 (2007). doi:10.1109/ICMSE.2007.4421822.

59. Ross, L. J. Reproductive Justice as Intersectional Feminist Activism. *Souls* **19**, 286–314 (2017).

Chapter 4

Virtual Adaptation: CNMs' Experiences of Telehealth Use:

A Constructivist Grounded Theory Study

Abstract: The aim of this study was to generate theory from data on how certified nurse-midwives (CNMs) in the United States use and experience telehealth in clinical practice. A constructivist grounded theory approach was used to collect and analyze interviews. Nineteen CNMs who serve patients in the 10 census regions in California participated in semi-structured interviews from December 2023 to March 2024. Interviews and data analysis proceeded in an iterative process. The analysis included three levels of coding: line-by-line coding, focused coding, and theoretical coding, using constant comparison, memoing, and diagramming. After generating concepts and constructs from this process, an overarching theory of virtual adaptation was developed. Virtual adaptation is a learning process comprised of modifying and transferring existing in-person clinical skills to the virtual environment, including knowledge, behaviors, attitudes, and values to telehealth visits. This process directly influences CNMs' perception of telehealth, including whether it is perceived as enhancing connected and person-centered care or falls short. As telehealth use continues to be integrated into clinical practice, this study offers an initial explanatory theory about how CNMs learn to adapt their practice, skills, and values to offer full-spectrum reproductive health clinical care.

Introduction

In the United States (US), certified nurse-midwives (CNMs) provide sexual and reproductive health care for people throughout their lives.[1] CNMs are the largest group of midwifery professionals in the US, with 14,084 CNMs number as of August 2023.[2,3] CNMs are advanced practice nurses who are credentialed primary care providers with prescriptive authority in all 50 states. CNMs provide a wide range of health services (e.g., antepartum, intrapartum, postpartum, and gynecologic care; family planning and preconception services; newborn care; treatment of partners with sexually transmitted infection; gender-affirming care; treatment of substance abuse; abortion; infertility; and primary care).[4] CNMs attend 9.3% of total births in the US[5] and also care for newborns, people from adolescence to beyond menopause, people who choose not to or are unable to become pregnant, and people from diverse racial, ethnic, and gender identities and sexual orientations.[4] Increasingly, CNMs provide these services both in person and remotely via telehealth.[6,7]

Along with certified midwives (CMs) and certified professional midwives (CPMs)**,** CNMs contribute to the profession of midwifery and the practice of midwifery model of care, with positive health outcomes for patients and communities in the US.[8] Midwifery care decreases the rates of cesarean section, preterm birth, and labor interventions and increases rates of patient satisfaction, abortion, and vaginal births.[8–13] However, many states have regulations that limit midwives' scope of practice and reimbursement policies, impeding patient and community access to CNM care.[14]

In most of the midwifery research and theory literature, the CNM role is often narrowly focused on the context of in-person care during pregnancy and birth rather

than inclusive of the full range of services they provide through the lifespan.[1,15,16] Despite this, current practice trends clearly indicate that CNMs perform primary care as well as reproductive health care. For example, a secondary analysis of 7,184 CNMs and CMs recertified by the American Midwifery Certification Board between 2016 and 2020 demonstrated that 55.1% (n = 3956) provided reproductive care, and 38.5% (n = 2763) offered primary care services.[17] As part of the American College of Nurse-Midwives (ACNM) core data survey of members (n=1231) conducted from May through July 2019, of those who worked full-time, 76% offered reproductive services, and 49% provided primary care.[18] Most services were conducted during in-person visits, but many are increasingly available through telehealth.[19] The shift towards telehealth impacts CNMs' clinical practice for not only pregnant people but all people across ages, gender identities, and sexual orientations.[4,20,21] Thus, CNMs lack conceptual models to provide theory to guide clinical practice when providing full-spectrum reproductive care via telehealth.

Background

In this study, telehealth is defined as patients and providers interacting virtually in real-time using synchronous technologies, such as videoconferencing, telephone, and text messaging.[22] The transition to telehealth for CNMs and other sexual and reproductive health providers accelerated in March 2020 as healthcare systems decreased in-person visits to reduce the rate of transmission of severe acute respiratory syndrome-related coronavirus 2 (SARS-CoV-2), commonly known as COVID-19.[7,23] Specifically, during the federally declared public health emergency, many CNMs were reimbursed for telehealth visits at parity with in-office visits and permitted to provide

services from any location using phone or videoconferencing.[24] Moreover, telehealth has enabled compensation for a wider variety of services.[24,25] Telehealth is also increasingly culturally accepted with the advancement of technology to substitute or supplement in-person visits.[26,27] As a result, the practice of midwifery is undergoing an evolution from almost exclusively an in-person direct care model in private practices, birth centers, clinics, and hospitals to a model that is inclusive of virtual care.

Integration of telehealth in CNM practice

Telehealth has not yet been implemented equitably [28–31] and it remains unclear how the continued expansion of telehealth services post-pandemic will impact the quality of the care of midwifery services and accessibility for marginalized individuals and communities. A recent qualitative study in Colorado explored the views of CNMs, perinatal nurses, and patients on synchronous and asynchronous forms of telehealth for prenatal and postpartum visits during and after the height of COVID-19. [32] CNMs and nurses reported concerns about the experience of diverse patients, in particular those who speak a language other than English. [32] However, CNMs and patients cited a strong interest in continuing to offer prenatal care to low-risk pregnant people via telehealth. Notably, the reported benefits included increased access and opportunities for interpersonal connection with patients, reduction of barriers to attending prenatal visits, and increased flexibility for both patient and provider.[32]

In addition, CNMs' adoption of telehealth for full spectrum care directly challenges existing assumptions within midwifery theory. Past midwifery theory has two major limitations. First, its primary focus is on cisgender women during pregnancy and birth.[16] Second, it assumes that midwives share physical space with their patients.[16]

New or updated conceptualization of midwifery practice should describe CNMs' actual clinical experiences of providing a full range of services via telehealth for all patients, many of whom are not pregnant.

Aims

This study was conducted to update the conceptualization and description of CNM clinical practice to incorporate telehealth. The primary aim of this qualitative study was to generate a theory from data, which can then be used in future explanatory or predictive research. A secondary aim was to describe how CNMs in the US use and experience telehealth in their full-scope clinical practice. Three main research questions were posed: 1) how do midwives use telehealth technology in their clinical practice? 2) how do midwives experience clinical practice when using telehealth? and 3) how are midwives' experiences similar or different when interacting with patients using telehealth technology compared with interacting with patients in person?

Materials and methods

Study design

The study used a qualitative design with a Constructive Grounded Theory (CGT) approach to describe and generate a conceptual understanding with data inclusive of CNMs' lived experiences.[33] The broad aim of the CGT methodology is to understand phenomena as a social reality interpreted with language and action.[33] Understanding gained through this form of qualitative inquiry is recognized as partial, relative, not absolute, and co-created.[33] CGT embraces the subjectivity of both researcher and participants, integrating it into an interpretive process of the co-construction of knowledge throughout data collection and analysis and ongoing reflexivity.[33]

Sensitizing concepts

As no theory currently exists that explicitly incorporates telehealth into midwifery practice, the initial interview guide questions were developed using sensitizing concepts.[33] Sensitizing concepts in CGT are tentative ideas to guide the initial interviews. For this research, sensitizing concepts were drawn from the Hierarchy Model for the Means and Targets of Midwifery (HMMTM) and existing technology theory, Technology Acceptance Model 2. (TAM2) [16,34] as starting points and relationally organized in a proposed theoretical, conceptual framework named the Midwifery Acceptance of Technology model (MAT). Key concepts, including trusting relationships, perceived usefulness, job relevance, and results demonstrability, were identified and extracted from the existing midwifery model and the existing technology theory.[16,34] These concepts were then modified for midwifery telehealth practice, resulting in key sensitizing concepts, including appropriate use, mutual satisfaction, concordant care, valued interaction, and improved quality of care (See Table 4.1 and Figure 2.4). These concepts assisted with the framing of questions in the study's initial interview guide.

MAT centers the context of full-scope reproductive health services where CNMs offer care via in-person and telehealth to diverse populations whose sexual and reproductive health needs and desires vary. The MAT conceptual framework is informed by Ross (2017) principles of reproductive justice and the rights to bodily autonomy, underpinning the objective of midwifery practice to support humans in their sexual and reproductive health decisions. In MAT, midwifery practice is defined through a reproductive justice lens as a multi-dimensional (physical, mental, social, and psychological) decision-making process where midwives offer knowledge and support

to people as they choose what is best for their lives and well-being.[35] Central tenets from HMMTM and TAM2 are also integrated into MAT.

Study setting and recruitment

A purposive sample of CNMs was recruited online until saturation of analytical categories and theoretical sampling were reached. Midwives in the sample differed in the type of practice setting and professional experience. The rationale for the sample size and demographic variation was to ensure that the quality of the data was rich for analysis and included sufficiently varied perspectives.[36] As data collection and analysis progressed, theoretical sampling was introduced. The final sample size was determined once no new information was heard during interviews and no new findings were identified using constant comparison analysis.[37] For theoretical sampling, additional participants were recruited to ensure geographically and racially diverse viewpoints.[38,39]

CNMs were recruited through professional networks and associations, referrals from clinicians, social media such as Facebook/Instagram/Threads, newsletters, and direct email. A QR code and tiny URL directed potential study participants to an eligibility survey on the secure website for Research Electronic Data Capture (REDCap; Nashville, Tennessee) and electronic data capture tools hosted at the University of California, San Francisco.[40] The lead researcher reviewed and confirmed enrollment criteria prior to the interview.

The interview research information sheet was emailed at the confirmed meeting time and read again to each participant prior to commencing interviews. Participants verbally consented to participate in the study at the time of the interview. Participants

received a $100 gift card for each interview in partial acknowledgment of their time and effort and were asked if they would want to read over any quotes prior to public use.

Inclusion criteria

The inclusion criteria for the study were CNMs who spoke English, were age 18 or older, and had provided reproductive healthcare via telehealth for at least one year. In addition, all participants were required to have current or prior experience within the last ten years with in-person care.

Data collection

Semi-structured interviews were conducted via Zoom video conferencing (San Jose, California). All interviews were audio recorded with the participant's permission. An interview guide with prompts was used at each interview. Questions were revised or removed from the interview guide using categories identified from the analysis of initial data to guide the subsequent interviews.

The topics for the first set of interviews focused on each participant's experience of telehealth. The interview began with broad questions about their experience practicing midwifery and then advanced to their use of telehealth. The interview guide included questions representing the following domains mostly derived from MAT: professional and perceived mutual satisfaction, job relevance, appropriate use, provider-patient relationship, concordant care, valued interaction, and improved quality of care. The interview guide is shown in Appendix A. Conceptual and reflexive memos were kept throughout data collection and analysis.

Data analysis

The transcripts of the interviews were professionally transcribed verbatim by human beings, not by artificial intelligence (REV, Austin, Texas). In accordance with CGT methodology, data analysis was conducted concurrently and iteratively as data were collected through coding, reflexive and analytical memos, and visual diagramming.[33] A three-level coding approach was used. Initial line-by-line or phrase-by-phrase coding used gerunds to represent the meaning and action of the participants more closely.[33] Coding analysis was completed using Atlas.ti software (Berlin, Germany). Codes from each transcript were compared to previous transcripts to begin the process of refining the codes.[33,41] Using spreadsheets and diagrams, focused coding proceeded, allowing the initial codes to be elevated or discarded, sorted, grouped, and then summarized.[33] The transcripts were re-read and analyzed using the focused codes.[33,41] These codes were defined and condensed into a codebook.[42] Focused codes were grouped and sorted into more specific categories.[33]

Analytical memos were kept to track and connect direct quotes and codes to concrete concepts during this coding phase.[33] Visual diagramming and tables were also used to organize and understand linkages of focused codes to advance to theoretical coding. By grouping and cross-referencing memos and diagramming, relationships between codes were clarified, and core conceptual categories were developed inductively with the data.[33]

Data analysis occurred iteratively with interviews to refine theoretical sampling and interview questions.[33] As data were collected, the sensitizing concepts were replaced with emergent concepts. The MAT concepts became less central as more

conceptual areas of interest informed by the data were processed in an iterative process of constant comparative methods.[33]

Experts in qualitative methods and midwifery were consulted throughout for guidance on the methods, processes for data collection, and conceptual analysis.[43] A summary of findings was sent to all participants for review and comment to invite assistance with confirming or refuting early analysis.[33]

Ethical considerations

There were limited ethical considerations for this research. However, risks did exist for participants. Participants were asked to reflect and share their experiences of work, which can provoke associated frustration, anxiety, stress, or other negative emotions. Participants were informed that they could ask questions, skip questions, not answer, pause, or end an interview at any time and for any reason.

To ensure privacy, the participants were informed that their responses would be handled with confidentiality and kept on a secure server. Names and references to workplaces were removed from the transcripts and replaced with pseudonyms. This study was deemed exempt by the Institutional Review Board at the University of California, San Francisco (23-40058).

Rigor and reflexivity

Trustworthiness in qualitative research consists of credibility, transferability, dependability, and confirmability.[44,45] Credibility can be established through member checking.[45] Member checking occurred in multiple ways. During interviews, the lead researcher engaged in active listening and repeating back to the participant to clarify interpretation[46] Every participant was offered an opportunity to review their transcript

and return it with comments or changes. Three transcripts were requested but none were returned. A summary of conceptual findings was sent to all participants to provide feedback about whether their perceptions of telehealth were reflected or not; one responded positively and affirmed the findings. Four participants requested to review quotes and two desired copies of future publications.

Dependability was accomplished by sharing and revising a detailed research study proposal beforehand with experts. Specifics included the creation of an interview guide and focused codebook. The process was documented in shared research folders, including memos, diagrams, coded transcripts, the interview guide, research checklists, and timeline, and shared coding through Atlas.ti version, 24 (Berlin, Germany). [45,47] Using direct quotes and thick descriptions in the findings, other researchers are able to determine the transferability of this study to different contexts.[45,47] Confirmability ensures bias is minimized throughout the study.[45,47] The lead researcher (BG) met regularly with second and senior authors to discuss design, recruitment, data collection process, and findings. She also provided email updates with focused codes and early findings to all the authors.

The positionality of the lead researcher as a CNM, a telehealth user, and a female PhD student was acknowledged and assessed continuously for how her views influenced participant encounters, data collection, and analysis. None of the participants interviewed were previously known to the lead researcher/interviewer. Participants' pseudonyms were chosen to honor her relatives and ancestors, past and present, who encouraged her to challenge assumptions, inquire deeply, and remain curious about and learn from differing perspectives. After the interviews, she reflected on what went

well, what fell short, and how her pre-existing attitudes and perspectives influenced the data collection and analysis. Through this ongoing active reflexive process of examination of positionality, through memoing and with guidance from qualitative research experts, she tried to overcome her own existing assumptions to better understand how and where her positionality affected the research.[33,45]

Results

There were 19 participants in the final sample. None declined to participate or dropped out of the study. Characteristics of participants by age, years in practice, and type of practice are described in Table 4.2. All participants identified as female, their ages ranged between 30-63 years, and their professional experience ranged from two to 24 years in various clinical settings. Interviews ranged from ranged from 27 to 65 minutes. The participants identified racially as White (n=15), Black (n=1), Hispanic/Latina (n=1), and Mixed race (White/Asian and White/Hispanic) (n=2). Their self-identified sexual orientation was heterosexual (n=16) and bisexual/queer (n=4). Participants reported caring for patients from rural (n=5), suburban (n=7), and urban (n=13) populations, and they provided care for patients in all ten regions in the California census.[48]

Participants offered the following services in their clinical practices: family planning (n=16), gynecology (n=17), prenatal/antepartum (n=16), intrapartum (n=11), postpartum (n=15), abortion (n=9), and transgender care (n=4). However, not all services were provided via telehealth. Participants' clinical focus also varied, from reproductive health care generalists to a higher degree of specialization, including

abortion (n=1), menopause (n=2), infertility (n=1), gender-affirming care (n=2), vasectomy counseling (n=1), and pregnancy and birth (n=3).

The models of care identified by each participant were grouped as midwifery/person-centered (n=11) and collaborative/medical (n=8). One participant was in the process of establishing a telehealth company at the time of the interview, while another participant had recently discontinued her independent telehealth practice. Most participants used telephone and videoconferencing either as part of a health organization's electronic health records system or a separate software package (n=11), while some used stand-alone videoconferencing systems (n=4) or telephone (n=4). Participants also reflected upon the use of telehealth in prior employment settings with differing modalities when sharing their experiences. The decision about whether a clinical visit would occur in person or by telehealth was often determined by the clinic management team, insurance reimbursement, or patient preference. The types of insurance accepted by CNMs were private (n=12), Medi-Cal/Government (n=16), and Health Maintenance Organization (HMO) (n=4). Participants received no clinical or technical training (n=14), minimal training to use the technology (n=3), or more extensive telehealth training for clinical practice integration (n=2).

Theory development

The core concepts and constructs were derived inductively from data provided by the participants during interviews. They were developed through the analytical process described above. The linkages were completed with visual diagramming and memoing. Two major constructs emerged from the analysis: enhancing or disrupting responsive care and connectivity and virtual adaptation. The first construct is a composite of three

concepts: offering more connectedness, promoting person-centered care, and falling short but better than nothing. The second construct, virtual adaptation, is comprised of the concepts of modifying clinical routines, relying on interpersonal skills, and aligning midwifery values to telehealth. Two examples are presented in Table 4.3 and Table 4.4 to illustrate how concepts were developed. Constructs and concepts are defined below with supporting quotes from study participants. An explanation of the relationship between the constructs and the overarching theory concludes the findings.

Enhancing or disrupting responsive care and connectivity

The first major construct is enhancing or disrupting responsive care and connectivity. This construct describes how telehealth is experienced as strengthening or weakening how CNMs connect and provide responsive care for their patients across a broad spectrum of sexual and reproductive health needs. Figure 4.1. shows the relationships among the construct and its constituent concepts: offering more connectedness, promoting person-centered care, and falling short but better than nothing. Each concept is delineated below, including descriptions of the sub-categories and illustrative quotes from the interviews.

Offering more connectedness

The first concept, offering more connectedness, is a composite of two sub-categories that emerged from the data: enhanced communication and promoting patient and provider agency. It describes CNMs' experience of telehealth as allowing them to offer more connectedness than they would otherwise if confined to a "brick and mortar" clinical space, clinic routines, visit norms, and time expectations. "And we learned we

could give good care; we could give good care over the phone. And that was by talking and relating and connecting." Flora

Enhanced communication

Enhanced communication was described by participants as a way to stay connected with patients and be a supportive presence while not physically being there. Telehealth via phone and videoconferencing fostered the CNMs' ability to stay in direct and ongoing contact with patients. It permitted CNMs to check in, track progress, coordinate care efficiently, and formulate a mutually agreed plan with patients. Enhanced communication was perceived as particularly important for midwives to remain in contact during an ongoing or evolving change in health, such as during pregnancy, miscarriage, sexual dysfunction, medical abortion, menopause, infertility, early labor, prior to and after procedures, or with postpartum depression. Enhanced communication allows CNMs to remain responsive and involved in the progression of the patient's health status. For example, Ruby described using telehealth as a way to stay engaged with a patient who had a chronic condition.

> "One patient in particular comes to mind. I've never actually met her in person, but we've only done telehealth visits and it's been about low libido. So, we've been trying to work through what it is. We've just been trying to figure out meds for her." Ruby

Another participant, Daphne, explained the ease and efficiency of using telehealth for abortion care to enhance communication for complex care coordination while the patient remains at home, highlighting the convenience for the patient and the importance of respecting the patient's time.

> "We're able to step in and make a multidisciplinary multi-day plan while that patient is still in the place that they live. And then when they come to the place that they need to physically be to receive the care that they need, that everything

> is lined up. And when they're physically there, their time is respected and then they can go home and they get their follow-up by phone and not have to make a three-hour drive to have an ultrasound and labs and then go back and then wait and come back for their operative day and then drive another three hours or six hours round trip to have a follow-up appointment that did not really need a physical exam. So, I feel really good about it." Daphne

Helen explained how she has a greater ability to collaborate more thoroughly with patients through telehealth to create a more meaningful and mutually agreed upon plan, focusing on shared decision-making.

> "I'm just thinking with women, having a conversation, you're facing the person, you're not that far away. You have time to listen. You have time to think it through, and really... Well, I mean, work together on a plan that's really going to work for her rather than just top-down telling her what to do and what you, as the expert, have decided she should do." Helen

Enhanced communication was also experienced with the use of telehealth because it created a greater sense of flexibility in how CNMs perceive time compared to in-person visits. Using telehealth, midwives had a greater ability to directly access, educate, and counsel their patients. They gave more attention and time while also answering short yet relevant questions, supporting patients in their daily lives. For example, Edna perceived having more time to educate and deepen her engagement with patients.

> "I'm not rushed. I feel like I sometimes provide better quality of care only because I'm explaining things maybe more thoroughly or in a way that I know the patient genuinely understands. So, when it comes... And again, I know I keep talking about fertility, but even in family planning, a lot of, I would say women, regardless of their age, don't know a lot about their body. And so, when I start to explain simple biology, it is something that people want to engage in conversation with because nobody has ever talked to them about it. And when I am in a telehealth, I do feel like I just have more time." Edna

Zoe reported how she checked in more frequently and gained direct access, which increased informal encounters and her sense of connectedness.

> “I feel like I do more follow-up, almost once I've called them, then I can just call them again quickly, like, "Oh, let me check on that. I'm going to call you back." Or there's just a more casual line of communication that's been opened, and maybe I'll call them again when I'm working next. Or I kind of maybe have a more informal follow-up with people over the phone because I know I can just access them really quickly and that we've already opened up that line of communication.” Zoe

Mary described newly found flexibility using telehealth, which allowed her to re-schedule patients more efficiently while being mindful of their time and hers.

> “I had two patients no-show in the morning and so I had time to call them real quick, and they all wanted to talk early in the morning. So that sort of flexibility is a lot easier on the phone than in person when we're having to make people wait and move things around.” Mary

Promoting provider and patient agency

Midwives experienced telehealth as a way to increase agency for patients and themselves. By integrating telehealth visits into their existing in-person visit schedules, CNMs perceived having more control over how they utilized their time. Spirit explained how the flexibility of telehealth enabled her to find time in her day to fit a patient into her fully booked schedule.

> “if our schedule's full, but we do want to kind of go over something with them, then we'll say, okay, we can get you in for a telephone visit. Then it's a little bit more flexibility as far as in between patients, we can kind of squeeze you in.” Spirit

Zoe shared how she was able to control the patient flow by rearranging the order of her schedule to be more efficient and flexible.

> “I love it. I mean, I also like too that I can pad my day a little bit. If I see I have a telephone visit at 10 o'clock, but I'm finished with an appointment or someone is getting roomed, it's also nice for me as long as it works for their schedule and it doesn't always. But the start time is a little bit more flexible and I can like, oh, okay, I have a Nexplanon removal and reinsert and I have a telephone visit right after. I'm going to try to call my telephone visit and see if she can take the call a little earlier. Then I can have a little bit more time for that appointment. It also

> gives me a little bit of flexibility in my day, which you have to be careful that you're respecting the time that people set aside for their phone visits and that you adhere to that time as much as possible. But there is some possibility for flexibility in my clinical day, which can be really nice if I problem-solve it correctly.” Zoe

CNMs perceived a greater sense of control over their work-life balance when working from home. Edna explained how she felt more at ease and less rushed, enabling her to better accommodate other responsibilities outside of work.

> “I just save time in my own life. I don't have to worry about drop off and pick up with my kids. I don't need to worry about those other extra things in life. And even just taking that one thing off my plate gives me better mental space and more mental clarity for my day. Sometimes I'm rushing to get out of clinic so I can go pick up my kids. You know what I mean? And not having to worry about that one thing gives me more space in my day.” Edna

CNMs also viewed that patients gained agency by having a telehealth option. Amanda acknowledged the importance of patient agency, describing the need for both telehealth and in-person visits so that patients ultimately decide which is more doable for their circumstances. Yet Amanda also set limits on patient agency, prioritizing the need for patient safety.

> “I think having all three options [in-person, telephone, and video-conferencing] and letting patients choose as far as safety allows is a little empowering. I mean, that's maybe a strong word, but it feels important for patients to have that choice and those options. Because some people don't have transportation, some people don't have internet. Some people are juggling too many things and just can deal with an earbud.” Amanda

Zoe reflected on how telehealth granted patients agency by enabling patients to decide what is optimal for them. Telehealth use shifted the direction of care by having providers come to patients rather than patients stepping away from their responsibilities to come to a facility.

> “I really do like that the telehealth appointment gives people another option to get care and connect in a way that actually makes sense for their life. And that it's

> more meeting them where they're at rather than having them come to me. It's like, let me come to you. That feels very midwifery to me to be able to go into someone's life when it makes sense for them.” Zoe

Edna perceived telehealth as creating a patient-centric alternative space, which was more comfortable and conducive than discussing sensitive topics in a clinic setting.

> “I had a 13-year-old walk into clinic, or I think mom or boyfriend is in a parking lot. I could tell she was just so visibly uncomfortable. And if she could have just been on her phone and just wherever she was, I think she would've been more apt to just be super honest, not uncomfortable. It would've brought her anxiety about birth control down. It would've just felt like a much easier conversation instead of feeling like you're pulling teeth.” Edna

Flora explained the lack of agency that previously existed when in-person visits were deemed the only form of care available.

> "’No, I'm sorry honey, you got to come in. That's just the way it is.’ And when in fact you actually can do that, you can meet some people's needs.” Flora

Daphne reflected on her own preconceived notions of privacy and deferred to the patient, knowing best where to receive care.

> “I have had virtual visits with people who I can hear they're on the bus. I would think that that's not a place that they could speak freely, but it's not for me to decide. It's the person themselves telling me this is the best time for me.” Daphne

A greater sense of agency for both providers and patients was conditional on supporting the patient’s preference and having patients opt-in to telehealth versus it being compulsory. Zoe explained why catering to patients' preferences and giving them a choice mattered.

> “I think that when it's imposed upon patients and they do not have a choice to be in person, I don't think that that's good use of a telephone visit. But I do think for people who... That it just accommodates people's life circumstances in a very different way. They have a sick kid, they're sick themselves, they don't have transportation, they don't have childcare, all the things, they have conflicting appointments, they can't make it across town. I think it's just when it's the type of appointment that the patient wants and not imposed upon them that it can just really meet their need in a different way.“ Zoe

CNMs supported patient preference yet remained cautious about the acuity, urgency, and safety of the patient's health concerns. CNMs experienced limitations due to their practice setting, which sometimes determined what services and patients were automatically triaged to telehealth. When telehealth was mandated, the majority of the CNMs experienced using telehealth as preventing them from meeting the needs of the patient adequately. Elizabeth expressed frustration with automatically triaging patients for telehealth visits and removing their agency to decide what care is best for them.

> "Probably because we don't let patients choose what they want. And so a lot of patients are already getting something less than what they think that they want. It is perceived, telehealth, at least for the patients that I ... It's considered, I think, lower quality care for some reason. Less personalized, that kind of thing. So it's seen as not getting really good attention or care. And then when they feel like they should have been seen in person, it's like God, You know what I mean?" Elizabeth

Offering a pathway towards more person-centered care

The concept of offering a pathway towards more person-centered care consists of two sub-categories: interacting with patients in their lived environments and leveling the playing field. With telehealth use, patients possessed increased control of the parameters of telehealth visits (i.e., location, length of visit, attendees, and decreased waiting times) compared to in-person visits, where the needs and routines of the provider and clinic were paramount. Telehealth use removed the formalities of the clinic setting, and CNMs could gain valuable insight into other dimensions of patients' lives to offer better support and care.

Interacting with patients in their lived environments

CNMs experienced telehealth as a way to contextualize patients within their lived environments to better understand their health challenges and support systems. They

gained insight into patients' life circumstances, broadening their own understanding and awareness of patients' experiences of home, work, family, and community. In addition, telehealth use was perceived as normalizing common methods of communication that people use to interact and maintain connection. Mary reflected on how services and community were discovered online, and for some, telehealth felt safer than visits to a clinic, providing person-centered care that aligns with their technology use.

> "Or they are not 'passing' yet or whatever, and they feel embarrassed about how masculine they look, and they don't want to walk past the protestors that are outside our clinic. I think safety is a big part of [telehealth use], and especially I think a lot of people in the transgender community have a lot of resources that are via the internet, and the computer, and the phone, and so we just get to be another extension of that. A lot of them, because we talk about their communities and their support people in their visits, and I hear a lot of them say that they have online support communities that are very important to them." Mary

Lina described how telehealth allows her to observe her patients' lives more fully and center her patients by facilitating care with commonly used technology.

> "We want to see who they are in their family, in their life, in their community. And with video visits, I literally can do that. I can literally say, okay, this is the room you live in. This is the home you live in. This is the car you live in. Maybe you have 15 family members running in and out of your video. It really provides me with a much more visual context of the patient's lived reality."…"But even with my patients who are undocumented and living 20 people in a house, [telehealth] was not an issue. This is already a technology that people use for their private lives, their social lives to communicate with friends and family. How do we make it easy for people to do so for healthcare?" Lina

Jessie explained how patients used the internet to connect and find health information. She expressed that it was preferable to meet up using telehealth to receive real-time guidance from her rather than going online to find opinions,

> "But if we think about how people connect nowadays, it's all Facebook groups and TikTok. It's all things that are online anyway, so I'm like, "Why not make it live with someone who could help guide them [re: breastfeeding] instead of just these online forums where people are just giving opinions." Jessie

Edna described how youth may be more comfortable receiving care via telehealth than in person, reducing anxiety and fear associated with being in person.

> “Young people in their teens and twenties, technology is another arm for them, and they don't want to have to go into a clinic if they don't have to either. And honestly, I think connecting with a young person on technology, I feel like almost makes it feel less scary.” Edna

Leveling the playing field

CNMs experienced telehealth as a way to provide care outside the expectations and constraints of a clinic. It shifted the role of the CNMs from authority figure to collaborative partner in meaningful ways, disrupting traditional medical hierarchies. Telehealth use was perceived to increase the level of patient comfort since patients determined where the visit took place. It was viewed as prioritizing and being respectful of the patient’s time by decreasing travel and wait times when compared to in-person visits. For many people, telehealth made care possible. More than just convenient, it relieved systemic challenges to accessing a clinic, removing the need for childcare, transportation, and time off from work. Telehealth options were perceived as alleviating the harms and limitations of in-person care that negatively impact patients while also combating the stigma of non-compliance and missed visits. Betty spoke about how conducting telehealth over the phone shifted the power dynamic between the provider and patient prescribed in clinical settings.

> “Over the phone, it's their space. They're in their space, they're talking, they're telling you, and so some of that power dynamic can shift over the phone that you can't get in the clinic where they're naked, they're looking at you, they're in this sterile, bright room. So, in some ways, I think you get more authenticity over the phone because the patient's probably more comfortable.” Betty

Flora outlined how using telehealth made care possible to overcome clinical, social, and systemic barriers to care.

> “And then for our patients that are marginally housed or substance using, we basically just want to take what we can get with them. The clinic system is not made for people who have a hard time getting in. So obviously sometimes they show up 15 minutes late and I'm like, "I will see them anytime. Just get them in." And the front desk is like, "You're 15 minutes late. I'll have to see if you'll be seen." And I'm like, "No, no, don't do that." So, telehealth for those people where we could just call them and they didn't need the reminder calls and the who's going to drive you and maybe they've forgotten about it, maybe they're too busy doing something else. That was wonderful because we could catch them anywhere and complete a visit that we needed to do with them.” Flora

Similarly, Rebecca perceived telehealth as necessary, relieving systematic barriers and providing a more person-centered option.

> “Because again, sometimes you just can't get into the clinic. There's barriers, especially with the public transportation. There's barriers ... Time restraints. People have to work. Our migrant workers, they work really long hours in the fields. Sometimes it's very hard to get into the clinic. And we had Saturday hours once a month. That's not enough. For only half a day and only two providers, so that's not enough appointments. So, it's just really, really hard for some people to get into the clinic. And I think it's not the end all be all of care, but at least it is a way to bridge the gap between no care and being able to connect with people for care.” Rebecca

Zoe compared her practice prior to telehealth when patients who missed appointments were dismissed as delinquent, to her practice with telehealth, where she was able to give people the benefit of the doubt that they missed their appointments for legitimate and logical reasons.

> “Yeah, telephone visits were not a thing before COVID. And we just kind of had this idea of just like, well, they no-showed and they no-showed. And then people get labeled as noncompliant or lapse in care or you get all these labels on you for not coming to your appointments. But there's a lot of reasons why people can't come to their appointments.” Zoe

Falling short but better than nothing

The concept, falling short but better than nothing, emerged from CNMs’ experiences of telehealth as interfering with their ability to care for and connect with patients while simultaneously supporting it as an alternative for those unable to access

in-person care. Telehealth use was perceived by some as sub-optimal, impersonal, and less professionally satisfying, yet at the same time, filling a critical gap in access. The duality of this experience of telehealth provoked anxiety about missing essential clinical data or overlooking highly acute situations.

Failing to meet their own and patients' needs

CNMs continued to value in-person interactions. Some CNMs viewed telehealth visits as a deficient and suboptimal form of care, whereas others enthusiastically endorsed its use, increasing the quality of care. Those who had significant concerns about using telehealth were worried about making errors or missing key data. Being physically present was prioritized to fully observe and interpret body language, non-verbal cues, and patients' reactions. Some CNMs expressed concerns about whether telehealth delayed care, which may have been managed more efficiently in a clinical setting. Interactions with telehealth were at times perceived as impersonal, less gratifying, and more transactional, weakening a sense of connection with patients. Some midwives felt they were unable to meet the needs of their patients if an in-person visit was desired. Also, telehealth was deemed inadequate for highly acute health situations, patients who spoke languages other than English, and those who lacked access to an internet connection. For example, Amanda described her worry about her colleagues missing information via telehealth.

> "I do worry that if clinicians are not super mindful of or deciding, well, does this really need to be seen in person for some physical things; then we could miss some stuff there. Just because not every person is going to be great at describing things clinically. But overall, I think it's probably a good thing to have access." Amanda

She also shared how she experienced telehealth as a harm-reduction approach that served a purpose.

> “Yeah, I think it's very possible that they're... Depending on the people, some access is better than no access. Almost like a harm reduction type thing, people who wouldn't have otherwise accessed care are going to benefit from where they would have otherwise. And then some people, I think, probably will have slightly poorer outcomes than they would have if everything else was perfect and they were able to be seen in person. But again, some access is better than no access.” Amanda

Elizabeth detailed concerns about safety when timely health matters are triaged to telehealth against patient and provider preference.

> “And a lot of those urgent visits where people are urgently needing help get booked via video, and it's usually not something that can be well evaluated over the phone. I really can't think of any real positive experiences, but what happens to me almost on a weekly basis in that clinic is someone is having a problem. They wanted to be seen. They were offered this instead. So, they're already like, ‘No. I want to be seen. I'm having this problem.’” Elizabeth

Zelta perceived a difference between how it felt to be together in person compared to connecting virtually.

> “I think in person, it's a little different just 'cause they can see it's just us two. And I feel like it makes it a little bit easier for us to open up. 'Cause it just feels more personal and it feels like we're there together, we can discuss things. I can help, I can be physically available too if needed versus tele-visit. I don't know. Sometimes, something just feels impersonal about it for me.” Zelta

Spirit discussed the lack of connectedness while perceiving telehealth visits as adequate.

> “I think it's just sometimes the little bit of that personal connection that they may feel of just being in the same room with you or that physical connection is what sometimes is lacking, not necessarily the quality of the care that they're receiving.” Spirit

Virtual adaptation

Virtual adaptation, the second construct, emerged from interview data that described the ongoing process of adapting midwifery care to telehealth. It was defined as a reflective learning process of transferring, modifying, acquiring, and discarding clinical and interpersonal skills, knowledge, behaviors, and values. To provide responsive care remotely, CNMs consciously adjusted their existing clinical practice. Three concepts comprise the construct of virtual adaptation. The concepts are modifying clinical routines, relying on interpersonal skills, and aligning midwifery values to telehealth, see Figure 4.2. Notably, the majority of CNMS adapted their clinical practice to telehealth on their own without evidence-based clinical guidance or any formal training. “I feel like there wasn't really training for [telehealth]. It's just kind of learning on the go.” Spirit

Modifying clinical routines

Modifying clinical routines is defined as CNMs deviating from their in-person clinical approach to adapt to telehealth. Conducting telehealth visits compelled CNMs to diverge from their previous training and practice protocols designed for in-person visits. For instance, CNMs reevaluated the relevance and timing of physical exams, point-of-care tests, and vital signs. Ruby explained how she modified and adapted her clinical practice for telehealth use from how she provided in-person care.

> “I find that I don't often need to do a physical exam for a lot of birth control. Even a young teenager who wants an IUD I don't necessarily need to do a pelvic exam before I insert an IUD unless it's at the time of the visit. So if it's just counseling, I find that if we're just talking about things, there doesn't need to be a physical exam, then telehealth is perfect for that.” Ruby

Mary adjusted her practice for the diagnosis of common vaginal and sexually transmitted infections for telehealth by relying less on external tests and strengthening her medical history-taking skills, perceiving how the change improved the quality of care.

> “So I do think history taking is extremely important, and so telehealth sort of forces you to rely on that a little bit, which sometimes can accidentally increase the quality of care. You're sort of probing more for an answer rather than relying on your test. And so I think sometimes, getting to the bottom of things and feeling like I have to solve a puzzle a little bit is more over telehealth. While it's easier to say, "Your wet mount had a lot of white blood cells on it, let's treat you for cervicitis and just wait for STI testing," versus them saying, "I've been having a lot of itching and burning," and us being able to say, "Okay, well have you tried this? What actually have you been using? Okay, when did this start?" I don't know. I just feel like the history-taking aspect can actually improve the quality of care because you're forced into only that with telehealth.” Mary

Paula realized that using telehealth permitted her to disrupt the standard order of clinical operations that exist for in-person encounters, where imaging and labs are ordinarily ordered after physical exams. By reversing the order, she was able to gather more information initially to make the subsequent in-person encounters more pertinent and efficient.

> “If a person has pelvic pain, and I know that I can't see them soon or at a time that works for them, but I know I need an ultrasound done at some point, I'll order the formal imaging and maybe they can get that done before our in-person appointment. So at least once we see each other we can discuss it and talk about.” AND “I'm still interested in what healthcare is going to look like because I'm just like, We can do so much via phone. You don't have to come in for me to order your pelvic ultrasound. Go get an ultrasound first." Paula

Lina commented on how she questioned her training about the relevance of a bimanual exam before ordering an ultrasound and diagnostic labs and how telehealth allowed her to rethink how she manages gynecology issues.

> “So I'd say that's an atypical video visit, but one that I actually think works surprisingly well. Things like heavy bleeding, painful periods. I think we often

> really were like, well, we have to do a bimanual exam. And it's like, well, why? What is the bimanual exam going to tell me for pelvic pain potentially? If I'm still going to order an ultrasound, if I'm still going to order all these tests, and I'm going to manage based on the tests, not on my exam, yes, maybe I can feel like an enlarged uterus, or maybe I feel an enlarged ovary, but I'm still going to order imaging to confirm that." Lina

Daphne explained how she learned to modify her systematic approach to interacting with patients for telehealth by relying more on patients' responses.

> "There's this learning curve, and when you're new to telehealth, you're worried that it's so scrambled. You don't have your normal flow with patient interaction, like your introduction, your rapport building, your physical assessment. And so at some point you have to get really good just at making a head-to-toe assessment with your questions because patients... It's not always the case, but in most cases, patients are really good at being able to tell you head to toe what is going on." Daphne

Relying on interpersonal skills

The concept of relying on interpersonal skills was defined as CNMs sharpening their interpersonal skills to care for patients remotely. The CNMs described making a conscious effort to verbally communicate with patients and to rely less on direct observation and touch. Video technology provided some visual cues and the ability to detect body language, more so than phone but less than in-person visits. The importance of speaking slowly, creating opportunities for patients to speak, asking more detailed questions, remaining conscious of tone, humor, and hand and face gestures, and using a more casual and slower style of speaking were cited as ways CNMs adjusted their practice. Listening, responding, and ensuring time and space were allotted in the conversation for patients' questions were also noted. CNMs identified specific techniques for telehealth, such as recapping the conversation, vocally affirming, repeating the patient's words, asking the patient to teach back, and encouraging questions and concerns. While many of these strategies CNMs used during in-person

care, they became more dependent on them during telehealth visits. Notably, CNMs did not always specify which techniques they used for which telehealth modality, blurring which approaches they used for video versus audio-only encounters.

Without being physically present to see and interpret her patient's affect and demeanor in telephone interactions, Phyllis relied more on her listening skills to detect the nuisance and tone of her patients' verbal communication. For in-person visits, she observed the patient's posture, facial expressions, and body language. She found this clinical adaption for audio-only telehealth more conducive to promoting shared decision-making, a valued tenant of midwifery.

> Telehealth is, I can't set the tone of the room in the same way, and I can't pick up on... There's not a whole lot of body language or information about the person's body if I'm just looking at their face. But I can still hear stuff from their voice, like how they're doing. You can hear whether someone's stressed or relaxed from their voice. And then, of course, there's no clinical piece. So it's more just hearing what their concerns are. It's great in terms of doing a really focused history and really focusing on what the plan is, and I feel like we can do really great shared decision-making. It's great for a really focused conversation." Phyllis

Betty adapted her practice to demonstrate empathy and respect by affirming her patients' concerns verbally, adjusting her tone, and repeating what she had heard. She deliberately slowed her pace to create a conducive atmosphere.

> "So being really gentle and warm, and just listening a lot and not rushing a patient, saying something like, "It sounds like you have really been struggling with this," or the high empathy of repeating back what you're hearing. Am I getting this right? Just making sure that that power dynamic is as close to even as it can be so that that patient feels like, okay, I'm going to be heard now." Betty

Mary consciously employed a variety of techniques to convey to her patients that they could speak freely and would have her full attention, creating space for them to share.

> "It's hard to tell by the way I'm speaking right now, but I consciously try to speak more slowly, and I think tone of voice is so important. I'm a big fan of using tone for my benefit. So I smile when I'm on the phone. I try to imbue as much of my

> personality as I can so that they know that I'm a real person and they can be real people, too. I try to give them opportunities of silence. Because then that's often when people are more likely to add a little bit something extra that they might not have shared before. And I think having that kind of affirming, "Yeah, yeah," kind of response when they're talking so that they know that I'm actually listening, even if they can't see me.” Mary

Aligning midwifery values to telehealth practice

The concept of aligning midwifery values with telehealth practice was demonstrated by the CNM’s efforts to embody midwifery values and care through their telehealth practice. Enacting traditional core midwifery values, such as the importance of presence, therapeutic touch, shared decision-making, equity, privacy, and respectful care, sometimes required adaptation. CNMs explored how to demonstrate these values in remote care encounters and overcome differences from in-person care, such as no longer being physically present and losing the ability to touch patients. After integrating telehealth into her midwifery practice, Flora critically reflected on her own use of touch in practice and questioned its benefit.

> “And so it means a lot to me when somebody will trust me enough to let me examine them or touch them in the ways that they let me touch them. And I think it's not a small thing at all. And to go with telehealth with that, I have learned that the things that I do when I am touching people is for my benefit. It's for their benefit in the long run, but in the moment it's for my benefit. So I can chart something, so I can chart a number or give information to them. And in telehealth, you are not doing that at all. So, it really is about the patient. The whole thing is about the patient. We're not getting anything from them. We're not taking anything from them. And I think that's pretty powerful.” Flora

Lina strategized about how to maintain, convey, and enact the values that she held about compassionate and respectful care in the context of telehealth. She aligned her approach to care by inquiring about the patient's comfort level, using prompts to prepare the patient for a medical conversation, and asking for permission to start.

Concerned about privacy, she articulated and confirmed details about the setting of the remote visits.

> “I hope that when I bring my clinical training [to telehealth], that [it] really supports patient-centered care and trauma-informed care. And so just having that lens and thinking about how do I make this feel safe and private, which I feel like we kind of take the privacy for granted in clinic when we're physical, but in telehealth, really understanding that people, my patients might not know where I am, they might not be aware where they are. So really how do we talk about privacy and consent in that space? And so really consenting to who's going to hear your conversation I think is the biggest thing.” Lina

Daphne articulated how integrating telehealth allowed her to activate an improved form of midwifery care by enabling her to be more responsive and respectful of patients’ needs. By handling logistics and reviewing medical history prior to in-person visits, telehealth made the time spent together more valuable.

> “In a way, it's like a home visit because you're... Or they could be at work, but in a way because coming to them, we're meeting them in a place that's convenient for them, which is their phone. So I think it [telehealth] is a really good example of midwifery care as a whole, that we are listening to our patients, they're telling us what they need, and we're responding to that. We're recognizing too that care is best when it's provided to patients in a convenient way. I see it being respectful of our patients' time and respectful of our patients to offer them that. I also think it acknowledges that the whole clinic system is convenient for providers.” Daphne

Virtual adaptation influences experience

Virtual adaptation directly influenced the CNMs’ experiences of telehealth. The relationship between the main theoretical constructs is illustrated in Figure 4.3.[49] CNMs were involved in a continuous process of adapting their clinical practice and values to telehealth. This process directly influenced whether CNMs perceived their telehealth experience as positive or negative. As the adaptation process progressed, telehealth was perceived as offering more connectedness and creating a path to more person-centered care. With less or slower adaptation to telehealth, the experience was negative, and care delivered via telehealth was perceived as falling short of the person-

centered care ideal, but still better than no care at all, which was often the only alternative.

Zoe reflected on her change in practice, how it differed from in-person, and how telehealth allowed her to connect more consistently to provide more person-centered care with less reliance on clinical tests and physical presence.

> “Most of the time, I think it’s [telehealth is] a great way to connect. I think that when you’re not face-to-face with someone, it’s just a different type of communication, and sometimes it’s an even more honest communication. I wonder if there’s something about not being physically being seen if that makes a difference.” Zoe

> “We have a pretty high no-show rate for all sorts of reasons. And I just feel like with telephone visits, if they’re appropriate for telephone visits, that they’re actually getting more consistent care. They’re getting care that actually serves them. If they have four kids at home and can’t make it to the clinic and it’s an appropriate telephone visit, then they actually get care they need, they get their labs ordered, they get their ultrasounds ordered. I feel it actually, it’s very considerate of people’s life circumstances”. Zoe

> “They can do things at home like mastitis, they can check their temperature. You can look, I mean, you’re not touching and feeling and getting a breast culture, but you can get an idea. I was managing someone for an abscess, and it was great. That was the WhatsApp person that I called recently, and it was great to be able to just call her and see the progression of the healing without her having to come in with her baby”. Zoe

Zoe noted her adaptive strategies, ordering labs and ultrasounds without requiring an in person visit, allowing patients to check their own vital signs, relying less on touch and testing. She connected it to honest communication, more continuous and person-centered care. Elizabeth experienced telehealth differently, disrupting connectivity and care. She continued to value and rely on touch and physical presence, feeling at odds and concerned with remote care.

> “So in person ... And I don’t know whether this ... But my patients, we bond. And so there’s hugs. There’s a squeeze of the hand when things are hard. There’s no substitute for the power of touch when that’s something that might be wanted by

> the patient. I just feel like we miss clinical info. It's a little bit more impersonal. So when people are maybe struggling with prenatal or postpartum, perinatal depression in general, I think it almost makes the patient once removed, and so I feel like I don't catch as much of that. I feel like physically I have much more chance of missing things like growth restriction, missing things like emotional stuff." Elizabeth

Elizabeth explained how she experienced greater distance from her patients, finding it difficult to find suitable strategies to replace touch and adjust her clinical practice. Spirit believed telehealth served the purpose and provided high-quality care but was reluctant to integrate it into her perception of midwifery care as needing to be a "hands-on" approach.

> "I think the midwifery model is more always the hands-on approach, I guess you can say. And I feel like not being able to be there in person with them, I think sometimes is hard and it's not ideal. I think from the medical perspective of it, it's adequate. It's fine. You can provide medical care, but I think from that personal connection, it's not ideal. And so, I would not feel comfortable doing a lot of visits remotely. I don't think that the personal connection that you want as a midwife is able to be achieved." Spirit

Nevertheless, even with the variation of virtual adaptation and differences in the experience of telehealth, all CNMs in the study continued to value in-person interactions and perceived telehealth as serving a purpose to create needed access for those who would otherwise not receive care.

> "I would say that I'm just really appreciative that we've been able to offer care in another way that supports the in-person component too, because it doesn't replace it, but it, I think, does expand access. And that became really clear to me, too." Daphne

Discussion

The aim of this qualitative study was to generate a theory and describe CNMs' experience of telehealth use in the expanded context of full-spectrum reproductive health clinical practice in California. The findings provide conceptual clarity from a

sample of 19 CNMs representing diverse viewpoints, including age, professional experience, and practice setting. Developed directly from the data, the overarching theory was an ongoing process of virtual adaptation that directly influences CNM's experience of telehealth. The process of modifying routines and transferring clinical skills and values developed for in-person care to a telehealth environment was defined and delineated. Whether telehealth use is viewed as enhancing or disrupting responsive care and connectivity depends upon the ongoing application of strategies to transfer existing clinical skills, knowledge, and values. By utilizing alternative approaches to clinical practice, CNMs experienced telehealth as offering more connectedness and improving the potential for person-centered care. Proceeding without new approaches, telehealth was viewed as falling short but better than nothing. Notably, all participants valued in-person encounters. They also shared the importance of having an alternative for those least likely to access traditional forms of care.

The findings showed that CNMs continue to value connectedness [50] and person-centered care[51,52], which are central tenets of midwifery practice. These core concepts and their importance for building strong relationships, effective communication, and shared decision-making are not new for midwifery or other healthcare professions. [53–58] With limited midwifery-led models and professional settings that support ongoing involvement in the US, CNMs outside of birth centers and homebirths have had difficulty maintaining and enacting these priorities prior to telehealth use. [2,3] CNMs have adapted specific strategies to promote these central tenets. These approaches to virtual care directly maintain ongoing involvement for a wide variety of reproductive health needs, overcoming the limitations and restrictions of episodic in-person visits.[59] This study's

findings are congruent with existing theory and research showing that midwives value continuous responsive care that centers on the needs of the person in the context of birthwork.[50,54] In this study, CNMs valued offering similar continuous support for menopause, infertility, family planning, gender-affirming care, and other evolving health events and viewed telehealth as an integral way to remain connected. The findings differ from the existing conceptualization of in-person midwifery care by expanding the significance of the key concepts to people who are not pregnant and who seek care for a wide variety of health services offered virtually.

` The theoretical concepts of presence and the need for physical proximity and touch are other hallmarks of traditional midwifery care.[60] This emphasis on a hands-on approach in shared physical space and a low-tech and high-touch profession may negatively influence CNMs' perceptions of telehealth and thwart their willingness to adapt to clinical practice.[61,62] The findings of the study are consistent with prior studies that identified these beliefs as impediments to nurses' and midwives' processes of telehealth adaptation.[61,63] However, the findings in this study showed a broad range of perceptions, from feeling distanced from patients when interacting remotely to offering a greater sense of closeness and attentiveness[32], congruent with studies about telepresence and virtual presence in the field of nursing[64,65]. The findings from this study also support the need for a more expansive understanding of presence in midwifery theory. The definition of presence can transcend shared physical space by emphasizing more frequent, less formal, and focused responsiveness to patients' needs, connecting by phone, video-conferencing, or text messaging to offer ongoing support.[65]

Overcoming impediments to adaptation

A thick description of applicable strategies was offered in this study that promoted core midwifery values and built on existing clinical strengths. Specific strategies for achieving these objectives when using telehealth have been identified. For example, CNMs rely more heavily on self-reporting and nuanced verbal assessment[53], active listening and responding[53], tone and verbal affirmation[53], slowing the pace of conversation, attentiveness[66], humor[53], reversing the order of operations for clinical visits, and re-evaluating the timing of lab testing and physical exams[67]. Consistent with a previous study conducted with a sample of patients, nurses, and midwives in perinatal care in Colorado, the CNMs perceived having more time to thoroughly educate and counsel patients, more so than in-person visits, promoting greater professional satisfaction.[32] This study supports the need to harness front-line practitioners' experience of transferrable and new skills for the development of academic competencies and workplace clinical guidelines for telehealth. Integrating this first-hand knowledge increases the likelihood of provider acceptance and applicability of telehealth, similar to centering the users' experience as recommended for the technical design of telehealth.[68]

Adapting alone

The study findings illuminated how the majority of CNMs adapt their clinical practice to telehealth, notably on their own, without evidence-based clinical guidance or formal training. This finding is consistent with other studies conducted during the COVID-19 pandemic, in which midwives and other providers received little or no training or guidance prior to the reconfiguration of their clinical practice.[32,69,70] Only two

providers received clinical training specific to the services they offered via telehealth, as recommended for other specialties.[71] This study revealed a persistent lack of training for CNMs even as the urgency of the pandemic subsided, lagging behind that of other health professionals in integrating telehealth curricula, competencies, and protocols.[71–74]

Strengths and limitations

The findings from this study should be considered in light of its strengths and limitations. One strength of this study was the sample of CNMs, who ranged in age from 30 to 64 years old and had varied professional experience, clinical practice settings, and types of accepted insurance. This variation ensured that the data included diverse perspectives, which was even further strengthened by theoretical sampling. [36,38] Nevertheless, a limitation of the study was the lack of racial and ethnic diversity in the sample, which reflected the lack of diversity in the certified nurse-midwifery workforce in California.[75] Recruitment strategies used social media, newsletters, and directories of professional organizations and academic institutions to engage participants who were not known to the researcher to improve the credibility of the study.[76] It is also possible that the CNMs who were interviewed were inclined toward telehealth use. CNMs who chose not to use telehealth may have been less likely to participate.[76]

Another strength of the study was that deliberate forms of member checking of concepts and definitions were used to confirm the interpretation of the data.[77] Participants were informed that the lead researcher was a CNM, which assisted with the development of rapport with participants and the establishment of credibility with a robust and common understanding of CNMs' clinical roles, training, and scope of practice.[78] The “insider” status of the lead researcher also led to the risk of assumed

understanding, which was lessened through verbal clarification during interviews and memoing afterward.[78]

Another limitation of the study was that the certified nurse-midwifery sample was recruited from California-based practices only, limiting the transferability of findings to states where CNMs' practice regulations for reproductive health care differ.[79,80] Finally, the theory developed from this research describes the individual-level experience. Other organizational, structural, systemic, political, and social factors influence CNMs' experience of telehealth use and will need to be explored in future research. However, the findings and resultant theory developed through this research may have applicability to other healthcare professions using telehealth in direct patient care.

Future research recommendations

These findings are an initial starting point for theory development to understand the phenomenon of CNMs' experience of telehealth in clinical practice. It is theorized that CNMs undergo an ongoing process of virtual adaptation that directly influences how they experience clinical practice via telehealth. The initial conceptualization of virtual adaptation requires further explanatory studies prior to empirical validation testing. The specific concepts of modifying clinical practice, relying on interpersonal skills, and aligning midwifery values need further refinement for each telehealth modality. Clinical approaches to care specific to telephone, videoconferencing, and text messaging use were not delineated in this study.[71] Offering patients a choice of healthcare options will promote a greater likelihood of equitable access for those who encounter the most barriers to traditional in-person care.[30,81,82] To optimize each technology, the

interpersonal and clinical skills needed for each require further conceptual and practical discernment.

Studies using situational analysis are also recommended to position these theoretical findings further beyond the individual level.[83] Defining organizational, technological, and financial elements would assist in understanding the broader influences that impact virtual adaptation and telehealth experience.[83] In addition to virtual adaptation, practice setting, care models, workflow, technology uptake and design, training, and reimbursement elements need further consideration to understand CNMs' experience of remote midwifery care.[84]

Last, understanding how patients perceive midwifery care via telehealth for the totality of their reproductive health needs requires further exploration.[85] The majority of the research conducted has focused on patients' experience of telehealth midwifery care in the context of perinatal care in the US [27,32,86,87]. Whether patients from diverse communities share CNM experience as enabling or impeding care and connectivity for the full range of reproductive health services offered by CNMs has yet to be determined. Moreover, the inclusion of patients' perspectives and preferences is critical to overcoming ongoing concerns about equity and telehealth.[32,82] To decrease reproductive health disparities with midwifery care via telehealth, patients' experience of the acceptability and ease of translation services and telehealth platforms; accessibility to reliable internet, data plans, and video-enabled technologies; and adequacy of insurance coverage require further assessment.[30,32,88] Integrating the experiences and preferences of those who speak languages other than English, who lack consistent insurance coverage, housing, and access to digital resources, who are most impacted

by racism, poverty, mental illness, and addiction, and those who are adolescents, CNMs can customize midwifery telehealth care to those impacted by reproductive health disparities.[82,88–91]

Recommendations for practice and education

To keep up with the pace of the utilization of telehealth in clinical practice, it is recommended that learners be prepared for remote care as an integral part of their foundational education programs immediately. Midwifery educational programs can begin by adopting the multi-modal approach proposed for nurse practitioners, which includes didactics, simulations including standardized patient visits, practice immersion, and telehealth projects.[92] To accomplish this, midwifery faculty and preceptors will need additional training to provide applicable didactic knowledge and clinical learning opportunities for learners.[93,94] Due to the lack of telehealth core competencies for full-spectrum midwifery care to guide this process, faculty can start by synthesizing systematic reviews with expert consensus and clinical guidelines from professional organizations beyond the field of midwifery to aid the process of integrating telehealth training in didactic and clinical learning. This approach was used by gynecology providers during the COVID-19 response to offer services by compiling applicable evidence for telehealth use in abortion, chronic pelvic pain, family planning, and breast and cervical screening.[95] Also, a comprehensive list of existing telehealth resources and learning materials are available from the Reproductive Health Access Project[96] and National Consortium of Telehealth Resources Centers[94], as well as existing medical and nursing competencies, curriculums, and skills checklists.[74,97,98] Together, these

resources serve as a starting point for midwifery faculty as they transition to combining telehealth provision of care with in-person clinical preparation.

Policy recommendations

Telehealth is quickly becoming the standard of care, not just an alternative to traditional in-person care.[98] As discussed earlier, CNMs, like other advanced practice nurses, are required to use telehealth in the workplace but are not adequately trained or prepared by their academic institutions.[74,98] To catapult the reform needed within institutions, telehealth knowledge, skills, and clinical approaches for sexual and reproductive health services need to be standardized and added to the ACNM core competencies[99]. These competencies guide what is taught in midwifery programs and are the requisites for academic accreditation by the Accreditation Commission for Midwifery Education.[99] This education policy change would ensure that graduates are adequately prepared for a clinical reality where telehealth is increasingly the norm.

The development of core competencies for telehealth would be accelerated by requiring institutions to integrate telehealth training as a requirement for publicly available funding. Large nurse-midwifery workforce expansion initiatives are underway at the state and federal levels, such as the Song-Brown Healthcare Workforce Training Program in California and the Maternity Care Nursing Workforce Expansion Program. [100,101] Linking these and future initiatives to telehealth educational reform would incentivize institutions to adopt new standards in a timely manner.

Additionally, CNMs unanimously agreed that telehealth provided a critical alternative for those least likely to access in-person care. [30,32,81,82] State and federal policies need to reflect the importance of continued telehealth access, such as payment

parity for audio-only and video visits, public and private insurance coverage for all modalities, cross-state licensure compacts, and expansion of broadband access.[25,30,32,81,82] These policies support patients in maintaining a connection to the healthcare system and center their preference for how to receive care.

Conclusion

A unique contribution of the study was the conceptual framing of the social process of integrating telehealth into midwifery clinical practice. The construct of virtual adaptation directly influenced how CNMs experienced telehealth. It described the ongoing learning process that CNMs underwent to transform their practice. The findings support the continued relevance of core midwifery concepts such as connectedness and person-centered care to midwifery practice as CNMs continue to integrate telehealth for more services. The study also described the challenges that CNMs face as they re-evaluate the need for physical proximity and touch and re-conceptualize the concept of presence.

This study augments the conceptual understanding of midwifery in clinical practice by describing remote full-spectrum sexual and reproductive care. This study's updated conceptual findings can contribute to guiding research studies that inform future clinical guidelines, care models, training programs, and telehealth competencies.[49,102] As theory advances beyond a limited conception of CNMs in their role in pregnancy and birth to integrate the dynamic and evolving experience of telehealth use and full spectrum care, theory must incorporate more robust interpretations of midwifery clinical practice. Meaningful conceptual descriptions of

midwifery telehealth practices are needed to transition and meet the expectations of the profession as leaders to reduce reproductive health disparities.

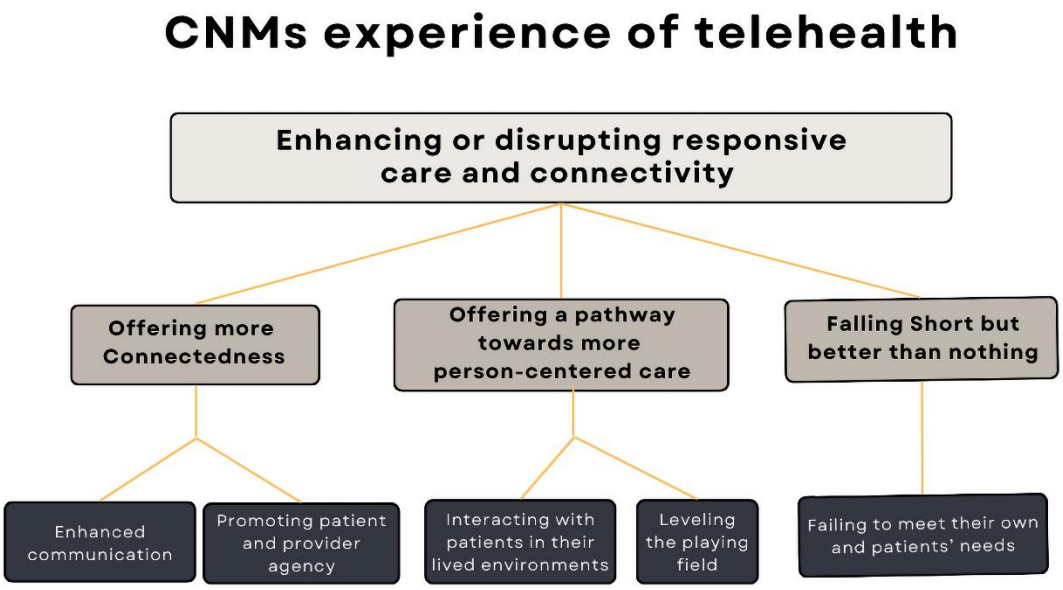

Figure 4.1 Diagram of Certified Nurse-Midwives' (CNMs) experience of telehealth

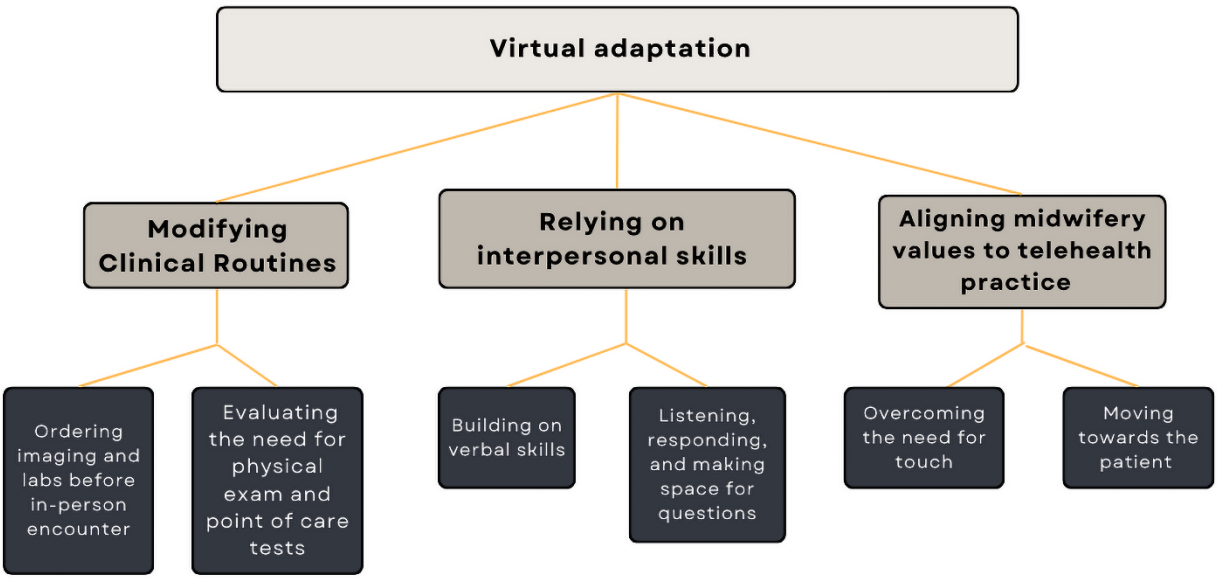

Figure 4.2 Diagram of the construct of virtual adaptation

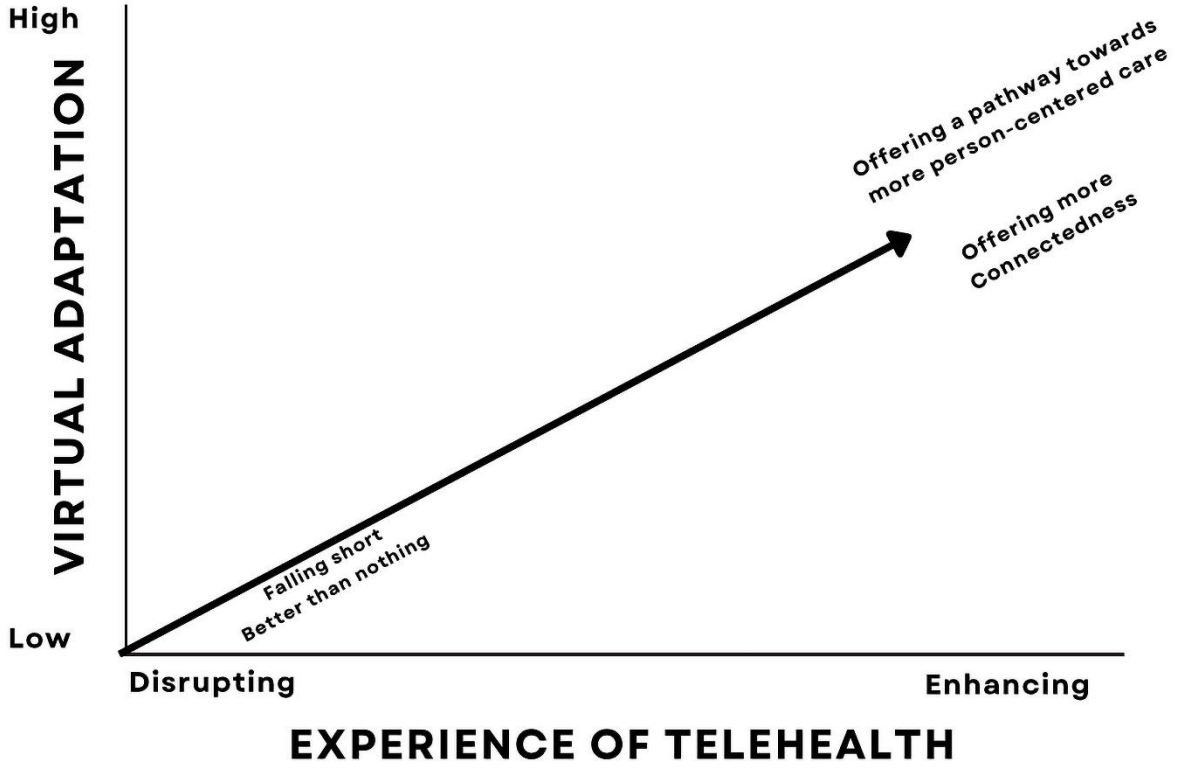

Figure 4.3 Graph describing virtual adaptation influence on telehealth experience

Table 4.1 Definitions of Midwifery Acceptance of Telehealth (MAT) sensitizing concepts

Sensitizing Concepts	Definition
Appropriate Use	The use of telehealth for a range of clinical services that can be effectively performed remotely without causing a delay in care.
Valued Interaction	The use of telehealth enhances the meaningful engagement, connection, and participation for both provider and patient.
Mutual Satisfaction	The satisfactory use of telehealth for both midwife and patient.
Improved Quality of Care	The use of telehealth that improves the quality of care compared to being physically present
Concordant Care	A shared identity, such as race, gender, ethnicity, sexual orientation, or age, between patient and provider.[103]

Table 4.2 Characteristics of Participants

Pseudonym	Age	Years in Practice	Type of Practice
Lina	37	7	Group Private Practice (CNM/MD)
Spirit	39	11	Physician-Owned
Mary	30	5	FQHC
Flora	47	17	FQHC
Ruby	36	7	Group Private Practice (CNM/MD)
Zelta	39	1	Birth center
Helen	63	20	FQHC/Establishing a self-owned Telehealth Company
Betty	40	8	Not-for-profit family planning and primary care clinic
Jessie	37	5	Group Private Practice (CNM/MD)
Daphne	35	7	Group Practice Outpatient clinic (County Hospital)
Zoe	42	10	Group Practice Outpatient clinic (County Hospital)
Amanda	39	2	Independent Delivery Network (IDN)
Edna	40	13	Group Private Practice (CNM/MD)
Rebecca	46	2.5	IDN
Elizabeth	47	17	IDN
Phyliss	45	14	Solo Midwifery Practice
Virginia	52	24	Community Health Center with Birth Center Discontinued self-owned telehealth company.
Kelsey	50	21	Group Practice Outpatient clinic (County Hospital)
Paula	39	11	IDN

Table 4.3 Example one of concept development

Raw Data	Line-by-line coding	Focused Code	Sub-Categories	Concept of Theory
“Oh, let me check on that. I'm going to call you back." Or there's just a more casual line of communication that's been opened.” Zoe	Perceiving flexibility of time with telehealth	Creating more opportunities to Connect Creating more Flexibility	Enhanced Communication	Offering More Connectedness
“I find that I don't often need to do a physical exam for a lot of birth control. Even a young teenager who wants an IUD, I don't necessarily need to do a pelvic exam before I insert an IUD unless it's at the time of the visit. So, if it's just counseling, I find that if we're just talking about things, there doesn't need to be a physical exam, then telehealth is perfect for that.” Ruby	Dialoguing to make a conducive plan over telehealth	Fostering the ability to stay in dialogue, check-in, coordinate, and make a plan.	Enhanced Communication	Offering More Connectedness
“And just being able to see that progression, even over the phone, that you just feel like, okay, they're getting the help that they need, our plan is working.” Spirit	Remaining Connected	Creating more opportunities to Connect Fostering the ability to stay in dialogue, check in, coordinate, and make a plan.	Enhanced Communication	Offering More Connectedness

Table 4.4 Example two of concept development

Raw Data	Line-by-line coding	Focused Code	Sub-Categories	Concept of Theory
“I do worry that if clinicians are not super mindful of or deciding, well, does this really need to be seen in person for some physical things; then we could miss some stuff there. Just because not every person is going to be great at describing things clinically. But overall, I think it's probably a good thing to have access.” Amanda	Relying on assessment Worried about missing something Serving a purpose	Worrying about making an error and missing something	Failing to meet their own and patients’ needs	Falling short, but better than nothing
“Some prefer phone, and you can see in their chart that they almost always choose phone. Other patients are annoyed that they're on the phone, and even on the phone they'll be like, ‘I tried to make an in-person visit but it wasn't for three weeks, but I could get the phone sooner.’ We get a lot of those.” Mary	Using the phone Integrating in-person and telehealth, hybrid Patient choosing telehealth or not	Failing to meet patients’ needs	Failing to meet their own and patients’ needs	Falling short, but better than nothing
“They might've been treating yeast for months with never doing an exam, and then I would find trich (trichomonas) under the microscope and say, "Okay, well that was never going to resolve if somebody didn't do an exam." So I do know that there are lots of times when an in-person visit is needed.” Helen	Needing an in-person visit	Delaying Care	Failing to meet their own and patients’ needs	Falling short, but better than nothing

Appendix A

Interview Guide: Midwives' Experience of Telehealth in Clinical Practice Study
Introduction: Hello, my name is Bethany Golden. I am a nurse researcher who is interested in learning from you and hearing about your experiences using telehealth in your clinical practice. In particular, it is important for me to understand how you experience engaging with patients. This interview is completely voluntary. During the interview, if you want to skip a question, take a break, or stop, please let me know. Before we begin, what questions do you have for me? If none, we can begin the interview. Do you agree to be recorded? (Verbal consent given or denied) (If agreed) I will turn on the audio recording now. Thank you.

Questions	Prompts
A. **In-person Midwifery -** *First, we're going to talk a little bit about your background as a midwife and focus on your experience providing* ***in-person*** *patient care.*	
1. Can you briefly tell me a little about yourself?	• Briefly, what about the midwifery profession that appealed to you?
2. How do you connect with patients in person?	• What is your general approach to building relationships with patients?
B. **Telehealth** – *Now, we're going to talk specifically about your experiences with telehealth.*	
3. What telehealth services do you offer?	• How do you decide what services and patients are appropriate for telehealth? • Does your practice use guidelines or use criteria? • Please share more about this. • Can you tell me what clinical services work well remotely? Which ones don't?
4. Please tell me about your experience of providing telehealth care as a midwife. How is it?	• Do you remember when you first started using telehealth? What was it like? How did it go? • How does it feel to connect and interact with your patients in this way? • Tell me about your last interaction with a patient you saw using telehealth.

5. How do you make patients feel heard, safe, respected, and cared for when using telehealth?	• How is this approach similar or different to your in-person approach?
6. How has your clinical training influenced how you conduct telehealth?	• What type of training did you receive for implementing telehealth in your practice? • What training would you recommend for going forward?
7. Can you say more about the types of telehealth visits, like prenatal care/family planning/ gynecology/abortion care visits, you would like to talk about or share your experience?	• What was a typical visit? • What was an atypical visit? • Can you tell me what clinical services work well remotely? Which ones don't?
8. How do you and/or your patient decide to use the phone, videoconferencing, or another mode to connect with patients?	• Can you share how you think the different remote options for communication influence the visit? • Does your comfort level vary using telehealth? Can you identify what causes it to vary? • How do you perceive it impacts patient satisfaction
9. How does your or the patients' racial identity influence your experience of connecting via telehealth with patients?	• How has a patient's sexual orientation influenced your interactions? Gender identity?
10. How is the meaning or value in your work similar or different when providing in-person care or care by telehealth?	• Can you tell me about your professional satisfaction before telehealth? • How does telehealth influence your professional satisfaction? • How is telehealth relevant to your clinical practice?
11. Can you speak to the quality of remote care? Please give specific examples.	• How does quality care differ from in-person? What factors influence the quality of care?
12. Do you have any advice or suggestions about how to train future providers who will use the telephone or virtual platforms?	

13. What would you recommend for improving telehealth care? What are some changes based on your experience?	• Would you say telehealth has a role in clinical practice? • How might it affect health outcomes?
C. **Comparison** – *Now I'm going to ask you a few questions where I'd like you to compare in-person care to telehealth*	
14. Walk me through what it is like to provide visits in person vs. virtually.	• How do they differ? • Can you remember an interaction that went well? Can you share what did not go well? How come? • Do you remember another interaction that you wish could be different?
15. Can you tell me a little bit about how you see your ability to provide midwifery care virtually?	• How is it different than when you're in person? • How does it influence your understanding of the midwifery model of care?
D – Wrap up. *I have a few final questions before we finish.*	
16. Would you mind sharing some demographic information: your age, gender and racial/ethnic identity, sexual orientation, and confirmation of the clinic you work at and its location? How many years have you been a provider?	
17. Is there anything else you would like to share?	

Closing: Would it be okay if I contact you again after reviewing the transcript? My goal is to publish the results of this study. For your privacy, all participants will not be identified if directly quoted in future publications or public conferences. Would you like to choose a pseudonym for me to use for publication? Also, would you like to review any direct quotes prior to publications or use at conferences? Thank you for participating in the research.

References

1. The American College of Nurse-Midwives. Essential Facts about Midwives: Midwives and Birth in the United States. (2023).
2. American Midwifery Certification Board. Demographic Report 2023. (2023).
3. Kennedy, H. P. *et al.* The role of midwifery and other international insights for maternity care in the United States: An analysis of four countries. *Birth* **47**, 332–345 (2020).
4. American College of Nurse-Midwives. Definition of Midwifery Scope of Practice of Certified Nurse-Midwives and Certified Midwives. (2021).
5. Martin, J. A., Hamilton, B. E., Osterman. Michelle J. K. & Driscoll, A. K. Births: Final Data for 2019. **70**, (2021).
6. Stifani, B. M., Avila, K. & Levi, E. E. Telemedicine for contraceptive counseling: An exploratory survey of US family planning providers following rapid adoption of services during the COVID-19 pandemic. *Contraception* **103**, 157–162 (2021).
7. Kern-Goldberger, A. R. & Srinivas, S. K. Obstetrical Telehealth and Virtual Care Practices During the COVID-19 Pandemic. *Clin Obstet Gynecol* **65**, 148–160 (2022).
8. Vedam, S. *et al.* Mapping integration of midwives across the United States: Impact on access, equity, and outcomes. *PLOS ONE* **13**, e0192523 (2018).
9. Loewenberg Weisband, Y., Klebanoff, M., Gallo, M. F., Shoben, A. & Norris, A. H. Birth Outcomes of Women Using a Midwife versus Women Using a Physician for Prenatal Care. *J Midwifery Womens Health* **63**, 399–409 (2018).
10. Renfrew, M. J. *et al.* Midwifery and quality care: findings from a new evidence-informed framework for maternal and newborn care. *Lancet* **384**, 1129–1145 (2014).

11. UNITED NATIONS POPULATION FUND. *STATE OF THE WORLD'S MIDWIFERY 2021: Building a Health Workforce to Meet the Needs of Women,... Newborns and Adolescents Everywhere.* (UNITED NATIONS, S.l., 2021).
12. Weitz, T. A. *et al.* Safety of Aspiration Abortion Performed by Nurse Practitioners, Certified Nurse Midwives, and Physician Assistants Under a California Legal Waiver. *Am J Public Health* **103**, 454–461 (2013).
13. Paul, J., Jordan, R., Duty, S. & Engstrom, J. L. Improving Satisfaction with Care and Reducing Length of Stay in an Obstetric Triage Unit Using a Nurse-Midwife-Managed Model of Care. *Journal of Midwifery & Women's Health* **58**, 175–181 (2013).
14. Herndon, A. & Vanderlaan, J. Associations Between State Practice Regulations and Access to Midwifery Care. *Journal of Midwifery & Women's Health* **69**, 17–24 (2024).
15. Likis, F. E., Petersen, R., Clark, K. A. & Payne, P. A. Gynecologic and Contraceptive Services Provided by Certified Nurse-Midwives in North Carolina. *Journal of Midwifery & Women's Health* **51**, 410–414 (2006).
16. Peters, M., Kolip, P. & Schäfers, R. A theory of the aims and objectives of midwifery practice: A theory synthesis. *Midwifery* **84**, 102653 (2020).
17. Thumm, E. B. *et al.* American Midwifery Certification Board Certification Demographic and Employment Data, 2016 to 2020: The Certified Nurse-Midwife and Certified Midwife Workforce. *J Midwife Womens Health* **68**, 563–574 (2023).
18. American College of Nurse-Midwives. The ACNM Core Data Survey. (2021).

19. VandeVusse, A., Castillo, P. W., Kirstein, M., Mueller, J. & Kavanaugh, M. Disruptions and opportunities in sexual and reproductive health care: How COVID-19 impacted service provision in three US states. *Perspectives on Sexual and Reproductive Health* **54**, 188–197 (2022).
20. Beatty, K. *et al.* Contraceptive care service provision via telehealth early in the COVID-19 pandemic at rural and urban federally qualified health centers in 2 southeastern states. *The Journal of Rural Health* **39**, 160–171 (2023).
21. American College of Nurse-Midwives. Use Telehealth in Midwifery. (2022).
22. World Health Organization. *Global Diffusion of eHealth: Making Universal Health Coverage Achievable: Report of the Third Global Survey on eHealth*. (World Health Organization, Geneva, 2016).
23. Smith, D. C. *et al.* Sudden Shift to Telehealth in COVID-19: A Retrospective Cohort Study of Disparities in Use of Telehealth for Prenatal Care in a Large Midwifery Service. *Journal of Midwifery & Women's Health* **0**, (2023).
24. Snyder, E. F. & Kerns, L. Telehealth Billing for Nurse Practitioners During COVID-19: Policy Updates. *J Nurse Pract* **17**, 258–263 (2021).
25. Garber, K. *et al.* Telehealth Policy and the Advanced Practice Nurse. *J Nurse Pract* **19**, 104655 (2023).
26. Ghimire, S., Martinez, S., Hartvigsen, G. & Gerdes, M. Virtual prenatal care: A systematic review of pregnant women's and healthcare professionals' experiences, needs, and preferences for quality care. *International Journal of Medical Informatics* **170**, 104964 (2023).

27. Wu, K. K., Phillippi, J., Mueller, M., Lopez, C. & Nichols, M. Telemedicine for Routine Prenatal Care: Use and Satisfaction During the COVID-19 Pandemic. *Journal of Midwifery & Women's Health* (2024) doi:10.1111/jmwh.13621.
28. Yee, V., Bajaj, S. S. & Stanford, F. C. Paradox of telemedicine: building or neglecting trust and equity. *The Lancet Digital Health* **4**, e480–e481 (2022).
29. Niles, P. M. *et al.* Reflecting on Equity in Perinatal Care During a Pandemic. *Health Equity* **4**, 330–333 (2020).
30. Westby, A., Nissly, T., Gieseker, R., Timmins, K. & Justesen, K. Achieving Equity in Telehealth: 'Centering at the Margins' in Access, Provision, and Reimbursement. *J Am Board Fam Med* **34**, S29–S32 (2021).
31. Ukoha, E. P. *et al.* Ensuring Equitable Implementation of Telemedicine in Perinatal Care. *Obstet Gynecol* **137**, 487–492 (2021).
32. Kissler, K. *et al.* Perinatal Telehealth: Meeting Patients Where They Are. *Journal of Midwifery & Women's Health* **69**, 9–16 (2024).
33. Charmaz, K. C. *Constructing Grounded Theory*. (SAGE Publications, Thousand Oaks, 2014).
34. Venkatesh, V. & Davis, F. D. A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management science* **46**, 186 (2000).
35. Ross, L. J. Reproductive Justice as Intersectional Feminist Activism. *Souls* **19**, 286–314 (2017).
36. Sandelowski, M. Sample size in qualitative research. *Research in Nursing & Health* **18**, 179–183 (1995).

37. Saunders, B. *et al.* Saturation in qualitative research: exploring its conceptualization and operationalization. *Qual Quant* **52**, 1893–1907 (2018).
38. Butler, A. E., Copnell, B. & Hall, H. The development of theoretical sampling in practice. *Collegian* **25**, 561–566 (2018).
39. Foley, G., Timonen, V., Conlon, C. & O'Dare, C. E. Interviewing as a Vehicle for Theoretical Sampling in Grounded Theory. *International Journal of Qualitative Methods* **20**, 1609406920980957 (2021).
40. Harris, P. A. *et al.* Research electronic data capture (REDCap)--a metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform* **42**, 377–381 (2009).
41. Law, S., Daftary, A., Mitnick, C. D., Dheda, K. & Menzies, D. Disrupting a cycle of mistrust: A constructivist grounded theory study on patient-provider trust in TB care. *Social Science & Medicine* **240**, 112578 (2019).
42. Reyes, V., Bogumil, E. & Welch, L. E. The Living Codebook: Documenting the Process of Qualitative Data Analysis. *Sociological Methods & Research* 0049124120986185 (2021) doi:10.1177/0049124120986185.
43. Given, L. M. *The SAGE Encyclopedia of Qualitative Research Methods*. (SAGE Publications, 2008).
44. Guba, E. G. & Lincoln, Y. S. *Fourth Generation Evaluation.* (SAGE Publications, India, 1989).
45. Maher, C., Hadfield, M., Hutchings, M. & de Eyto, A. Ensuring Rigor in Qualitative Data Analysis: A Design Research Approach to Coding Combining NVivo With

Traditional Material Methods. *International Journal of Qualitative Methods* **17**, 1609406918786362 (2018).

46. Cho, J. & Trent, A. Validity in qualitative research revisited. *Qualitative Research* **6**, 319–340 (2006).
47. Johnson, J. L., Adkins, D. & Chauvin, S. A Review of the Quality Indicators of Rigor in Qualitative Research. *Am J Pharm Educ* **84**, 7120 (2020).
48. Regions | CA Census. *CA Census 2020* https://census.ca.gov/regions/.
49. Chinn, P. L. & Kramer, M. K. *Knowledge Development in Nursing, Theory and Process*. (Mosby/Elsevier, St. Louis, MO, 2022).
50. Diane Ménage BSc RM RN, Elizabeth Bailey BSc RM PhD, Susan Lees RM MSc RN, & Jane Coad RGN/RSCN BSc PhD. A concept analysis of compassionate midwifery. *Journal of Advanced Nursing 73(3* **73**, 558–573 (2017).
51. Masi, S. de *et al.* Integrated Person-Centered Health Care for All Women During Pregnancy: Implementing World Health Organization Recommendations on Antenatal Care for a Positive Pregnancy Experience. *Global Health: Science and Practice* **5**, 197–201 (2017).
52. American College of Nurse-Midwives. ACNM Vision, Mission, Core Values_2021. (2021).
53. Duffy, L. V., Evans, R., Bennett, V., Hady, J. M. & Palaniappan, P. Therapeutic Relational Connection in Telehealth: Concept Analysis. *Journal of Medical Internet Research* **25**, e43303 (2023).

54. Bradfield, Z., Hauck, Y., Kelly, M. & Duggan, R. Urgency to build a connection: Midwives' experiences of being 'with woman' in a model where midwives are unknown. *Midwifery* **69**, 150–157 (2019).
55. Aziz, M. R. & Cunliffe, M. L. Midwifery Presence - The Catalyst for Connection. *Women and Birth* **35**, 37 (2022).
56. Leap, N., Dahlen, H. & Brodie, P. 'Relationships – the glue that holds it all together': Midwifery continuity of care and sustainability. in *Sustainability, Midwifery and Birth* (Routledge, 2010).
57. Phillips-Salimi, C. R., Haase, J. E. & Kooken, W. C. Connectedness in the context of patient-provider relationships: a concept analysis. *J Adv Nurs* **68**, 230–245 (2012).
58. Rubashkin, N., Warnock, R. & Diamond-Smith, N. A systematic review of person-centered care interventions to improve quality of facility-based delivery. *Reproductive Health* **15**, 169 (2018).
59. Eri, T. S. *et al.* Models for midwifery care: A mapping review. *Eur J Midwifery* **4**, 30 (2020).
60. Bradfield, Z., Duggan, R., Hauck, Y. & Kelly, M. Midwives being 'with woman': An integrative review. *Women and Birth* **31**, 143–152 (2018).
61. Penny, R. A., Bradford, N. K. & Langbecker, D. Registered nurse and midwife experiences of using videoconferencing in practice: A systematic review of qualitative studies. *Journal of Clinical Nursing* **27**, e739–e752 (2018).
62. Klamroth-Marganska, V. *et al.* Does therapy always need touch? A cross-sectional study among Switzerland-based occupational therapists and midwives regarding

their experience with health care at a distance during the COVID-19 pandemic in spring 2020. *BMC Health Serv Res* **21**, 578 (2021).

63. Barrett, D. Rethinking presence: a grounded theory of nurses and teleconsultation. *Journal of Clinical Nursing* **26**, 3088–3098 (2017).
64. Groom, L. L., Brody, A. A. & Squires, A. P. Defining Telepresence as Experienced in Telehealth Encounters: A Dimensional Analysis. *Journal of Nursing Scholarship* **53**, 709–717 (2021).
65. Grumme, V. S., Barry, C. D., Gordon, S. C. & Ray, M. A. On Virtual Presence. *Advances in Nursing Science* **39**, 48 (2016).
66. Henry, B. W., Block, D. E., Ciesla, J. R., McGowan, B. A. & Vozenilek, J. A. Clinician behaviors in telehealth care delivery: a systematic review. *Adv in Health Sci Educ* **22**, 869–888 (2017).
67. Lee, S. & Hitt, W. C. Clinical Applications of Telemedicine in Gynecology and Women's Health. *Obstetrics and Gynecology Clinics of North America* **47**, 259–270 (2020).
68. Rangachari, P. A Holistic Framework of Strategies and Best Practices for Telehealth Service Design and Implementation. in *Service Design Practices for Healthcare Innovation: Paradigms, Principles, Prospects* (eds. Pfannstiel, M. A., Brehmer, N. & Rasche, C.) 315–335 (Springer International Publishing, Cham, 2022). doi:10.1007/978-3-030-87273-1_16.
69. Galle, A. *et al.* A double-edged sword-telemedicine for maternal care during COVID-19: findings from a global mixed-methods study of healthcare providers. *BMJ Glob Health* **6**, (2021).

70. Hearn, F., Biggs, L., Wallace, H. & Riggs, E. No one asked us: Understanding the lived experiences of midwives providing care in the north west suburbs of Melbourne during the COVID-19 pandemic: An interpretive phenomenology. *Women Birth* (2021) doi:10.1016/j.wombi.2021.09.008.
71. Connolly, S. L., Charness, M. E. & Miller, C. J. To increase patient use of video telehealth, look to clinicians. *Health Serv Res* **58**, 5–8 (2023).
72. Cruz-Panesso, I., Tanoubi, I. & Drolet, P. Telehealth Competencies: Training Physicians for a New Reality? *Healthcare* **12**, (2024).
73. Gustin, T. S., Kott, K. & Rutledge, C. Telehealth Etiquette Training: A Guideline for Preparing Interprofessional Teams for Successful Encounters. *Nurse Educator* **45**, 88 (2020).
74. Arends, R. *et al.* Enhancing the nurse practitioner curriculum to improve telehealth competency. *Journal of the American Association of Nurse Practitioners* **33**, 391 (2021).
75. California's Midwives: How Scope of Practice Laws Impact Care. *California Health Care Foundation* https://www.chcf.org/publication/californias-midwives/.
76. Goldman, N., Willem, T., Buyx, A. & Zimmermann, B. M. Practical Benefits, Challenges, and Recommendations on Social Media Recruitment: Multi-Stakeholder Interview Study. *Journal of Medical Internet Research* **25**, e44587 (2023).
77. Koelsch, L. E. Reconceptualizing the Member Check Interview. *International Journal of Qualitative Methods* **12**, 168–179 (2013).
78. Elizabeth Aburn, G., Gott, M. & Hoare, K. Experiences of an insider researcher - interviewing your own colleagues. *Nurse Res* **29**, 22–28 (2021).

79. Jenkins, J., Pitney, C., Nuzzo, M. & Eagen-Torkko, M. Midwifery and APRN Scope of Practice in Abortion Care in the Early Post-Roe Era: Everything Old Is New Again. *Journal of Midwifery & Women's Health* **68**, 734–743 (2023).
80. Ranchoff, B. L. & Declercq, E. R. The Scope of Midwifery Practice Regulations and the Availability of the Certified Nurse-Midwifery and Certified Midwifery Workforce, 2012-2016. *Journal of Midwifery & Women's Health* **65**, 119–130 (2020).
81. Shah, S. D., Alkureishi, L. & Lee, W. W. Seizing The Moment For Telehealth Policy And Equity. *Health Affairs Forefront* doi:10.1377/forefront.20210909.961330.
82. Kruis, R. *et al.* Patient Perceptions of Audio-Only Versus Video Telehealth Visits: A Qualitative Study Among Patients in an Academic Medical Center Setting. *Telemed Rep* **5**, 89–98 (2024).
83. Clarke, A. *Situational Analysis*. (Thousand Oaks, California, 2024). doi:10.4135/9781412985833.
84. Hilty, D. M., Maheu, M. M., Drude, K. P. & Hertlein, K. M. The Need to Implement and Evaluate Telehealth Competency Frameworks to Ensure Quality Care across Behavioral Health Professions. *Acad Psychiatry* **42**, 818–824 (2018).
85. Schindler Rising, S., Kennedy, H. P. & Klima, C. S. Redesigning prenatal care through CenteringPregnancy. *Journal of Midwifery & Women's Health* **49**, 398–404 (2004).
86. Weiss, C. R. *et al.* Best Practices for Telehealth in Nurse-Led Care Settings—A Qualitative Study. *Policy, Politics, & Nursing Practice* **25**, 47–57 (2024).

87. Bruno, B. *et al.* Virtual prenatal visits associated with high measures of patient experience and satisfaction among average-risk patients: a prospective cohort study. *BMC Pregnancy Childbirth* **23**, 234 (2023).
88. Michel, A., Minton, L., Sullivan, C., Fontenot, H. & Lee, M.-J. Integrating Mobile and Portable Technologies With In-Person and Telehealth Care to Increase Perinatal Healthcare Equity for the Unstably Housed. *The Journal of Perinatal & Neonatal Nursing* **37**, 27 (2023).
89. Zhang, D. *et al.* Disparities in telehealth utilization during the COVID-19 pandemic: Findings from a nationally representative survey in the United States. *J Telemed Telecare* **30**, 90–97 (2024).
90. Sutton, M. Y., Anachebe, N. F., Lee, R. & Skanes, H. Racial and Ethnic Disparities in Reproductive Health Services and Outcomes, 2020. *Obstet Gynecol* **137**, 225–233 (2021).
91. Crear-Perry, J. *et al.* Social and Structural Determinants of Health Inequities in Maternal Health. *J Womens Health (Larchmt)* **30**, 230–235 (2021).
92. Rutledge, C. M. *et al.* Telehealth and eHealth in nurse practitioner training: current perspectives. *Advances in Medical Education and Practice* **8**, 399–409 (2017).
93. Rutledge, C. M. *et al.* Telehealth Competencies for Nursing Education and Practice: The Four P's of Telehealth. *Nurse Educator* **46**, 300 (2021).
94. Gartz, J. & O'Rourke, J. Telehealth educational interventions in nurse practitioner education: An integrative literature review. *J Am Assoc Nurse Pract* **33**, 872–878 (2021).

95. Grimes, C. L. *et al.* Guidance for gynecologists utilizing telemedicine during COVID-19 pandemic based on expert consensus and rapid literature reviews. *International Journal of Gynecology & Obstetrics* **150**, 288–298 (2020).
96. Telehealth for Reproductive Health Care Resources. *Reproductive Health Access Project* https://www.reproductiveaccess.org/telehealth/.
97. Noronha, C. *et al.* Telehealth Competencies in Medical Education: New Frontiers in Faculty Development and Learner Assessments. *J GEN INTERN MED* **37**, 3168–3173 (2022).
98. Rutledge, C. & Gustin, T. Preparing Nurses for Roles in Telehealth: Now is the Time! *Online J Issues Nurs* **26**, (2021).
99. American College of Nurse-Midwives. ACNM Core Competencies for Basic Midwifery Practice. (2020).
100. Song-Brown Healthcare Workforce Training Programs – Family Nurse Practitioner, Primary Care Physician Assistant, and Midwifery Training Programs. *California Grants Portal* https://www.grants.ca.gov/grants/song-brown-healthcare-workforce-training-programs-family-nurse-practitioner-primary-care-physician-assistant-and-midwifery-training-programs/ (2022).
101. Health Resources and Services Administration. Maternity Care Nursing Workforce Expansion (MatCare) Program | HRSA. https://www.hrsa.gov/grants/find-funding/HRSA-23-120.
102. Meleis, A. I. *A Model for Evaluation of Theories: Description, Analysis, Critique, Testing, and Support. Theoretical Nursing: Development and Progress,*. (2012).

103. Street, R. L., O'Malley, K. J., Cooper, L. A. & Haidet, P. Understanding Concordance in Patient-Physician Relationships: Personal and Ethnic Dimensions of Shared Identity. *The Annals of Family Medicine* **6**, 198–205 (2008).

Chapter 5

Discussion

Discussion

The purpose of this qualitative dissertation study was to explore certified nurse-midwives' (CNMs) lived experience of telehealth and advance midwifery theory regarding the integration of telehealth in the provision of the full spectrum of reproductive health. The dissertation elucidates the full scope of services offered by CNMs and contextualizes how CNMs experience offering this care as they integrate telehealth use into their practice. This dissertation study provides a new conceptualization with a more expansive depiction of what CNM care provision is, who it is for, and how it is experienced by CNMs. This final chapter presents a summary and a synthesis of the three prior chapters and an overall summary discussion of the findings from this dissertation for research, practice, and policy regarding telehealth integration in comprehensive reproductive healthcare provided by CNMs.

Summary of chapters

In Chapter 2, the aim of the mixed methods systematic review was to summarize and synthesize the existing evidence on how midwives experience, perceive, and accept the practice of providing sexual and reproductive health care at a distance using telehealth. After completing the systematic search of five databases between January 1, 2010 and August 22, 2022, an insufficient number of peer-reviewed studies were identified on the research topic to complete an exclusively quantitative or qualitative systematic review, highlighting the lack of research in this area. Therefore, a convergent integrated methodological approach recommended by JBI, previously known as the Joanna Briggs Institute for Evidence-Based Nursing, was used to synthesize a limited number of diverse design types.[1] The thematic findings in the systematic review inform

the field about how midwives commonly perceived telehealth as impacting patient care, workload, provider-patient relationship, and health equity while highlighting the lack of training or preparation prior to telehealth integration.

The purpose of Chapter 3 was to develop a theoretical foundation for the proposed dissertation research by analyzing constructs from existing midwifery and technology theory. Midwifery care was re-conceptualized from the standpoint of a midwifery model that provides full spectrum care throughout the lifespan for all gender identities and sexual orientations in the era of telehealth. The combined and modified concepts were organized within the Midwifery Acceptance of Technology (MAT) model. Key MAT model conceptual domains guided the creation of the Chapter 4 prospective research interview guide. However, as data analysis progressed, initial sensitizing concepts were replaced by those derived directly from the study data, as is expected in qualitative studies that use constructivist grounded theory (CGT) methodology.[1] The inclusion of patients' perspectives in future exploratory studies would help evaluate the relevance of MAT concepts to describe how midwifery care is received and how patients' experiences of telehealth converge or diverge from those of CNMs.

The qualitative study findings in Chapter 4 explored and conceptualized CNM participants' experiences of telehealth use as enhancing and disrupting connectedness and responsive care and promoting pathways to more person-centered care. The findings contribute to a conceptual understanding, defined as virtual adaptation, of how CNMs adapt and transfer their existing in-person practice experience to telehealth encounters, sometimes requiring the redefining of their core values. The findings of the qualitative study expand knowledge about how adaptive strategies transcend and alter

clinical practice for many reproductive health services and influence CNMs' perception of telehealth. Last, the findings also suggest that the CNM participants continue to value in-person interactions[2–5] and perceive telehealth as an essential access point for those least likely to access in-person care.[6]

Policy recommendations in this section emphasized how to reform midwifery education and state and federal workforce initiatives to prepare CNMs for remote clinical practice by developing telehealth core competencies and accelerating their adoption by linking them to public funding. Future research recommendations included further delineation of how CNMs adapt care for differing telehealth modalities, analysis of factors that impact care beyond the individual level, and studies that center patients' perspectives of midwifery care for reproductive health services other than birth work.

Synthesis of findings

The dissertation study herein commenced almost four years ago, coinciding with the COVID-19 pandemic and public health response that included a rapid national scaleup of telehealth aimed at reducing the likelihood of viral transmission.[7] The shift to telehealth has progressed, with CNMs moving forward with hybrid care, starting full remote telehealth private practices, and beginning to normalize this form of care for patients.[21,30,33] Although no longer critical to public health protection or utilized as much, telehealth use has persisted and appears to be becoming part of the fabric of healthcare delivery.[8] The results from the systematic review in Chapter 2 showed that during the pandemic, midwives experienced telehealth use as an essential tool in healthcare delivery [6–8,10,11] The findings of the dissertation study are consistent with

those prior to the COVID-19 pandemic that telehealth continues to provide critical and necessary access to midwifery care, even after the urgency of the pandemic waned.

Consistent with other studies, CNM participants in the dissertation study perceived telehealth use as improving access for patients by relieving barriers, reducing the need for time off from work, childcare, and transportation, and overcoming geographical distance to access care.[9–12] Published after the completion of the systematic review, Kissler et al. (2024), in a descriptive qualitative study with a sample of CNMs and perinatal nurses (n=17) and patients (n=14) who provided and received care from midwifery practices and nurse-led models in Colorado from March 2020 to November 2022, described the benefits and disadvantages of remote care. The findings were the reduction of barriers to attending prenatal visits, more flexibility, the ability to maintain an interpersonal connection with telehealth, and concerns about equity, consistent with those in the dissertation study.[13]

Similar to other professionals who use telehealth, CNM participants had concerns about equity for those lacking technology and reliable internet connectivity and deemed translation services insufficient for those who spoke languages other than English.[13–15] This dissertation study offers a thick description of how CNMs view telehealth as enabling them to collaborate and partner with patients rather than being viewed as authority figures.[16] This power shift was explored as disrupting traditional medical hierarchies by releasing CNMs from the confines of traditional clinical structure and expectations, creating an alternative space to discuss intimate subjects, and enabling CNMs to prioritize patients' time and preferred setting for care.[16]

Only a single study included in the findings in Chapter 2 delineated the practice changes needed for remote care, such as clear expectation setting, logical advice, and confirmation of a summary of an agreed-upon plan.[17] This study focused exclusively on early triage of labor via the telephone with a sample of midwives in England, where the health system and the professional roles of midwives differ from CNMs in the US.[18] Weiss et al.(2024) have since conducted a descriptive qualitative study with a purposive sample of CNMs and perinatal nurses (n=18) and patients (n=30) who provided and received care in nurse-led models of care in Colorado from March 2020 to May 2021. The providers identified best practices for telehealth implementation that enhance health equity, including the use of various telehealth modalities, customizing triage and scheduling, cultivating safety through expectation and boundary setting, and differentiating patients between new and established relationships. These results further refine those in the systematic review by highlighting the need for maintaining different telehealth options to cater to patient preferences, the importance of clear expectations between providers and patients about remote care, and the promotion of relationship building by combining in-person and telehealth visits.

The results in Chapter 4 delineated the process of how CNMs modified their clinical approaches to practice via telehealth. As discussed, CNMs relied more heavily on verbal assessment and interpersonal skills, emphasized active listening, and depended less on physical exams and point-of-care testing. These techniques have been articulated in the research literature for other specialties and with combined samples of nurses. [13,19–23] However, in the field of midwifery, this study, with an exclusive sample of CNMs, is the first to describe and conceptualize how CNMs altered

their clinical approach to remote care to offer a wide variety of reproductive health services.

In Chapter 4, the key conceptual findings of virtual adaptation, responsive care, connectedness, person-centered care, and falling short differed from those proposed in the MAT model in Chapter 2. It is noteworthy that the dissertation study is limited by only including providers' perspectives and not those of patients, who would lend keen insight to confirm or refute the proposed MAT concepts. Beyond the expected conceptual differences between the dissertation study and MAT, a thick description is offered in Chapter 4 that illuminates our understanding of the broad range of services that CNMs offer via telehealth and that are perceived as appropriate for remote care. The description also adds understanding to what CNMs may or may not find meaningful and satisfying about telehealth. This description can assist in developing areas of research to further our conceptual understanding of this practice change.

CNMs in the dissertation study were less conflicted about shorter telehealth visits and not having enough time to meet patients' concerns than midwives in Chapter 2. [4,24] The flexibility of telehealth and maintaining contact with patients was perceived by many CNMs dissertation study participants as creating more opportunities to connect[13] similar to other studies in the systematic review.[3–5,25] Most CNM participants in the dissertation study perceived having more time to coordinate, make plans, track progress, and engage in more continuous dialogue-deepening interactions as advantageous for greater opportunity for ongoing involvement with patients. These results both confirm findings[5,13,25] and differ from others that saw this connectivity as burdensome[4,25,26], or as increasing workload[3]. CNM participants in the dissertation study differed in their

perception of the benefit of more frequent and informal interactions to promote connectedness from studies in the review.[5,25] Notably, there were dissertation findings that telehealth was perceived otherwise as less gratifying and more transactional. The differences may be due to individual perception; however, other organizational and structural level factors and concerns about technology use were outside of the scope of this study and need further exploration to understand these differences in perception.[18]

Responsive and continuous care has been difficult to achieve due to the lack of midwifery-led continuity of care models in the United States.[27] Directly responding to patients' needs, staying in contact, normalizing technology, and prioritizing patients' time was perceived by many participants as making care possible, not only convenient[13]. These perceptions were included within the conceptualization of promoting a form of more person-centered care. A unique finding of this study is that participants challenged the stigma of "non-compliance" for missing visits by observing in real time the barriers people encounter to accessing care. Also, telehealth was viewed by CNMs as providing an alternative space that was deemed less harmful and more suited for some, in particular, transpeople and teenagers. As one CNM participant stated, "It really provides me with a much more visual context of the patient's lived reality. And I think that's really midwifery. It's me being able to do home visits without having to do home visits" (Lina).

Discussion of the implications for research

The concepts in this dissertation study are offered to help guide future research by centering the objectives of enhanced connectivity, responsive care, and the promotion of person-centered care. For appropriate application and meaningful use of

telehealth, future research must address how CNMs' process of adapting care to telehealth is perceived by patients, whether these objectives are mutually agreed upon, and, if so, how they are best achieved.[28] The dissertation study did not delineate the different skills or behaviors that CNMs adapted for audio-only versus video technologies. Nor did it explore CNMs' attitudes about which reproductive health services are perceived as appropriate for telehealth. Pursuing these areas of research in partnership with patients would inform how to better prepare CNMs for clinical practice.

Existing studies have shown that patients prefer having in-person, audio-only, video, and text messaging options, but findings differ in the perceived benefits and disadvantages between modalities.[13,28–31] Non-video interactions have been perceived by patients as less judgemental,[32,33] easier to share personal information,[33] convenient [28], compared to video-conferencing. Other studies have shown that video visits improve communication and address a wider variety of health concerns.[28] Nonverbal options, such as text messaging, have been preferred by adolescents when inquiring about sexual and reproductive health services to ensure autonomy, confidentiality, and privacy.[34] People have unique telehealth preferences that differ greatly depending on care scenario, age, and ethnic, cultural, racial, linguistic, and geographical backgrounds.[13,30,35,36] Therefore, to better customize care, future studies will require the ongoing and active engagement of community members to understand how CNMs can meet their reproductive health needs. Community-based participatory research co-led by CNM researchers and patients would assist in identifying research priorities and recommendations to deepen the understanding of the reproductive health needs of

specific communities. [37] By actively listening to communities most affected by reproductive health disparities and enabling them to set the research agenda, telehealth care has a greater likelihood of addressing their needs.

Discussion of the implications for practice

The American College of Nurse-Midwives (ACNM) has endorsed telehealth use but has not developed standardized core competencies as other medical and advanced practice nursing organizations have accomplished, like the National Organization of Nurse Practitioner Faculty, the Association of American Medical Colleges, and the Accreditation Council of Graduate Medical Education.[38–40] Building upon existing telehealth competency domains developed for other specialties can jump-start the process. Competency domains have been identified as telehealth etiquette and communication, access and equity, privacy and consent, data collection, reimbursement ethical and legal considerations, interprofessional collaboration, and technology use.[40,41]

As discussed in Chapter 4, implementing future competencies and interim curriculum requires re-tooling midwifery faculty to learn interpersonal skills and modified clinical routines for telehealth.[40,42,43] It is recommended that midwifery faculty use the concepts of virtual adaptation and situate telehealth integration within existing foundational concepts of care taught to midwifery students, such as person-centered care[44,45] and responsive care[46,47], highlighting how telehealth can amplify connectivity with patients. Furthermore, expected clinical skills and knowledge for telehealth will need further customization by CNMs to accommodate differing telehealth modalities and overcome the emphasis placed on physical presence, touch, and direct observation in existing training.[38,48] As recommended in Chapter 4, faculty can start integrating

telehealth content by using the domains in existing telehealth competencies and conducting rapid reviews to synthesize existing evidence and expert consensus.[40,41,49]

The current lack of training and guidance in the workplace presents a unique opportunity for midwifery-led improvements.[40,50] In both the dissertation study and the systematic review findings, the majority of CNMs modified and re-conceived their clinical practice at work, primarily alone, without standardized clinical guidelines, practice protocols, or organizational support. To ensure healthcare innovations are fully integrated and sustained into clinical settings, internal champions are critical for successful implementation.[51] CNMs are well-positioned to champion hybrid telehealth models for reproductive health services that promote flexibility, responsiveness, and relevance to providers and patients.[19,52] CNMs can lead the development and implementation of scheduling and triage workflows and reproductive health clinical guidelines.[19]

Similar to any major practice change, gaps between the guidelines and telehealth clinical practice will need to be identified, requiring CNM involvement in quality improvement oversight such as retrospective chart reviews, audits, and structured discussions for feedback.[53] Direct one-on-one observation of telehealth visits and existing evaluation tools and checklists enable experienced CNMs to serve as peer mentors and offer immediate feedback to colleagues to assist with adapting their clinical practice to telehealth.[40] Also, establishing secure text-based chat groups among clinicians would provide clinical advice on-demand and collective support as providers build confidence and determine whether telehealth or in-person care is clinically appropriate. Providing CNMs with dedicated phone lines and text messaging

capabilities would further promote direct access to patients and colleagues for ongoing guidance and support.

Discussion of the implication for policy

The findings in the dissertation offer a unique description of the full range of services midwives provide via telehealth throughout the lifespan. In particular, midwives reflected on their experiences in the remote provision of family planning, abortion, and gender-affirming care, among other services offered via telehealth. In Chapter 4, the policy recommendations included payment parity for audio-only and video visits, public and private insurance coverage for all modalities, cross-state licensure compacts, and expansion of broadband access to promote greater equitable access to telehealth.[6,28,54,55] These telehealth policy recommendations complement those policies that impact CNMs' ability to provide patients access to essential reproductive services in-state and across state lines. For example, the recent passage of the SB345 bill shields providers from criminal and civil action who provide abortion or gender-affirming medication via telehealth from California to patients who live or travel to hostile states.[56]

Although the state of California offers strong legal protections to provide and receive abortion, gender-affirming therapy, and family planning services in-person and remotely, many states do not.[57–60] Fifteen states have total abortion bans, and fourteen others restrict telehealth provision of medical abortion via telehealth with physician-only laws, preventing the mailing of medication or requiring the provider to be physically present for the distribution of medication.[60] Similarly, laws preventing gender-affirming therapy, especially for youth and adolescents, prevent CNMs from offering this care

even though it is within their scope of practice while increasing the need for providers from out of state to provide this care via telehealth.[61]

Additional policy recommendations include supporting the passage of shield laws to protect providers from prosecution from states where essential care is criminalized, measures to ensure cross-state licensure compacts, and the federal protections offered in the bill, Women's Health Protection Act. [54,62,63] This act would prevent and pre-empt further state-level bans and criminalization of essential reproductive health services and permit interstate travel for health services as needed.[62] Reproductive health providers, including CNMs, can play a greater advocacy role in the public discourse as individuals and as active members in professional organizations, inter-professional collaborations, and reproductive health justice and policy coalitions similar to the California Coalition of Reproductive Freedom and In Our Own Voices: National Black Women's Reproductive Justice Agenda partnership.[64–66] Active involvement in policy change can take the form of offering expert testimony, crafting position statements and op-eds, cultivating a social media presence, and building leadership skills through advocacy training programs.[67] Political engagement is necessary to protect essential access services and fight misinformation for CNMs to offer full-spectrum reproductive health care via telehealth.

Conclusion

This dissertation study describes and conceptualizes how CNMs are in the process of adapting to telehealth to offer a variety of reproductive health services. The change in care challenges central concepts traditionally valued by the profession, such as the importance of physical presence and touch and prioritization in midwifery theory of cis women and pregnancy and birth rather than the whole lifespan of the person. It

also offers CNMs new-found opportunities to offer connectedness and person-centered care that responds to patients' needs that had been previously restricted by interacting in person, mainly in clinical settings. However, for these opportunities to be realized, real-time activation will be required by CNMs to lead advancements in training, policy, research, and clinical practice to keep up with the evolution in practice. Telehealth has the potential to serve as a powerful tool to address reproductive health inequities if CNMs understand when and how to apply it to meet their patients' needs.

References

1. Charmaz, K. C. *Constructing Grounded Theory*. (SAGE Publications, Thousand Oaks, 2014).
2. Galle, A. *et al.* A double-edged sword-telemedicine for maternal care during COVID-19: findings from a global mixed-methods study of healthcare providers. *BMJ Glob Health* **6**, (2021).
3. Gemperle, M. *et al.* Midwives' perception of advantages of health care at a distance during the COVID-19 pandemic in Switzerland. *Midwifery* **105**, 103201 (2022).
4. Hearn, F., Biggs, L., Wallace, H. & Riggs, E. No one asked us: Understanding the lived experiences of midwives providing care in the north west suburbs of Melbourne during the COVID-19 pandemic: An interpretive phenomenology. *Women Birth* (2021) doi:10.1016/j.wombi.2021.09.008.
5. Rousseau, A., Gaucher, L., Gautier, S., Mahrez, I. & Baumann, S. How midwives implemented teleconsultations during the COVID-19 health crisis: a mixed-methods study. *BMJ Open* **12**, e057292 (2022).
6. Westby, A., Nissly, T., Gieseker, R., Timmins, K. & Justesen, K. Achieving Equity in Telehealth: 'Centering at the Margins' in Access, Provision, and Reimbursement. *J Am Board Fam Med* **34**, S29–S32 (2021).
7. Kern-Goldberger, A. R. & Srinivas, S. K. Obstetrical Telehealth and Virtual Care Practices During the COVID-19 Pandemic. *Clin Obstet Gynecol* **65**, 148–160 (2022).
8. Center for Medicaid and Medicare. Medicare Telehealth Trends Report. (2020).

9. Jonasdottir, S. K., Thordardottir, I. & Jonsdottir, T. Health professionals' perspective towards challenges and opportunities of telehealth service provision: A scoping review. *International Journal of Medical Informatics* **167**, 104862 (2022).
10. Jacobsen, K. E., Katon, J. G. & Kantrowitz-Gordon, I. Midwifery in the Time of COVID-19: An Exploratory Study from the Perspectives of Community Midwives. *Women's Health Issues* **32**, 564–570 (2022).
11. Wu, K. K., Lopez, C. & Nichols, M. Virtual Visits in Prenatal Care: An Integrative Review. *J Midwifery Womens Health* (2021) doi:10.1111/jmwh.13284.
12. Fryer, K., Delgado, A., Foti, T., Reid, C. N. & Marshall, J. Implementation of obstetric telehealth during COVID-19 and beyond. *Maternal and child health journal* **24**, 1104–1110 (2020).
13. Kissler, K. *et al.* Perinatal Telehealth: Meeting Patients Where They Are. *Journal of Midwifery & Women's Health* **69**, 9–16 (2024).
14. Yee, V., Bajaj, S. S. & Stanford, F. C. Paradox of telemedicine: building or neglecting trust and equity. *The Lancet Digital Health* **4**, e480–e481 (2022).
15. Ukoha, E. P. *et al.* Ensuring Equitable Implementation of Telemedicine in Perinatal Care. *Obstet Gynecol* **137**, 487–492 (2021).
16. Duane, J.-N. *et al.* Environmental Considerations for Effective Telehealth Encounters: A Narrative Review and Implications for Best Practice. *Telemedicine and e-Health* **28**, 309–316 (2022).
17. Spiby, H., Walsh, D., Green, J., Crompton, A. & Bugg, G. Midwives' beliefs and concerns about telephone conversations with women in early labour. *Midwifery* **30**, 1036–1042 (2014).

18. Kennedy, H. P. *et al.* The role of midwifery and other international insights for maternity care in the United States: An analysis of four countries. *Birth* **47**, 332–345 (2020).
19. Weiss, C. R. *et al.* Best Practices for Telehealth in Nurse-Led Care Settings—A Qualitative Study. *Policy, Politics, & Nursing Practice* **25**, 47–57 (2024).
20. Wang, L., Fabiano, A., Venkatesh, A. K., Patel, N. & Hollander, J. E. Telehealth Clinical Appropriateness and Quality. *Telemedicine Reports* **4**, 87–92 (2023).
21. Duffy, L. V., Evans, R., Bennett, V., Hady, J. M. & Palaniappan, P. Therapeutic Relational Connection in Telehealth: Concept Analysis. *Journal of Medical Internet Research* **25**, e43303 (2023).
22. Nagel, D. A. & Penner, J. L. Conceptualizing Telehealth in Nursing Practice: Advancing a Conceptual Model to Fill a Virtual Gap. *J Holist Nurs* **34**, 91–104 (2016).
23. Groom, L. L., Brody, A. A. & Squires, A. P. Defining Telepresence as Experienced in Telehealth Encounters: A Dimensional Analysis. *Journal of Nursing Scholarship* **53**, 709–717 (2021).
24. Henry, A. *et al.* Effects of the COVID-19 Pandemic and Telehealth on Antenatal Screening and Services, Including for Mental Health and Domestic Violence: An Australian Mixed-Methods Study. *Front Glob Womens Health* **3**, 819953 (2022).
25. Perrenoud, P., Chautems, C. & Kaech, C. 'Whatsapping' the continuity of postpartum care in Switzerland: A socio-anthropological study. *Women Birth* (2021) doi:10.1016/j.wombi.2021.06.009.

26. Bailey, C. M., Newton, J. M. & Hall, H. G. Telephone triage in midwifery practice: A cross-sectional survey. *International Journal of Nursing Studies* **91**, 110–118 (2019).
27. Bradford, B. F. *et al.* Midwifery continuity of care: A scoping review of where, how, by whom and for whom? *PLOS Global Public Health* **2**, e0000935 (2022).
28. Kruis, R. *et al.* Patient Perceptions of Audio-Only Versus Video Telehealth Visits: A Qualitative Study Among Patients in an Academic Medical Center Setting. *Telemed Rep* **5**, 89–98 (2024).
29. Chen, E. T. Considerations of Telemedicine in the Delivery of Modern Healthcare. *American Journal of Management* **17**, (2017).
30. Holcomb, D. *et al.* Patient Perspectives on Audio-Only Virtual Prenatal Visits Amidst the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Pandemic. *Obstetrics & Gynecology* **136**, 317 (2020).
31. Rea, S., Zynda, A., Allison, B. & Tolleson-Rinehart, S. Adolescent Perceptions of Technology-Based Sexual and Reproductive Health Services: A Systematic Review. *Journal of Adolescent Health* **71**, 533–544 (2022).
32. Wu, K. K., Phillippi, J., Mueller, M., Lopez, C. & Nichols, M. Telemedicine for Routine Prenatal Care: Use and Satisfaction During the COVID-19 Pandemic. *Journal of Midwifery & Women's Health* **n/a**, (2024).
33. Heckemann, B., Wolf, A., Ali, L., Sonntag, S. M. & Ekman, I. Discovering untapped relationship potential with patients in telehealth: a qualitative interview study. *BMJ Open* **6**, e009750 (2016).

34. Rae, K. *et al.* Developing research in partnership with Aboriginal communities - strategies for improving recruitment and retention. *Rural Remote Health* **13**, 2255 (2013).
35. Chen, J. *et al.* Predictors of Audio-Only Versus Video Telehealth Visits During the COVID-19 Pandemic. *J GEN INTERN MED* **37**, 1138–1144 (2022).
36. Barton, A. J. *et al.* Patient and Provider Perceptions of COVID-19-Driven Telehealth Use From Nurse-Led Care Models in Rural, Frontier, and Urban Colorado Communities. *Journal of Patient Experience* **10**, 23743735231151546 (2023).
37. Altman, M. R., McLemore, M. R., Oseguera, T., Lyndon, A. & Franck, L. S. Listening to Women: Recommendations from Women of Color to Improve Experiences in Pregnancy and Birth Care. *Journal of Midwifery & Women's Health* **65**, 466–473 (2020).
38. Rutledge, C. & Gustin, T. Preparing Nurses for Roles in Telehealth: Now is the Time! *Online J Issues Nurs* **26**, (2021).
39. American College of Nurse-Midwives. Use Telehealth in Midwifery. (2022).
40. Noronha, C. *et al.* Telehealth Competencies in Medical Education: New Frontiers in Faculty Development and Learner Assessments. *J GEN INTERN MED* **37**, 3168–3173 (2022).
41. Rutledge, C. M. *et al.* Telehealth Competencies for Nursing Education and Practice: The Four P's of Telehealth. *Nurse Educator* **46**, 300 (2021).
42. Hilty, D. M., Maheu, M. M., Drude, K. P. & Hertlein, K. M. The Need to Implement and Evaluate Telehealth Competency Frameworks to Ensure Quality Care across Behavioral Health Professions. *Acad Psychiatry* **42**, 818–824 (2018).

43. Adams, J. E. & Ecker, D. J. Telehealth: from the abstract to necessity to competency. *FASEB Bioadv* **3**, 475–481 (2021).
44. Masi, S. de *et al.* Integrated Person-Centered Health Care for All Women During Pregnancy: Implementing World Health Organization Recommendations on Antenatal Care for a Positive Pregnancy Experience. *Global Health: Science and Practice* **5**, 197–201 (2017).
45. Fontein-Kuipers, Y., de Groot, R. & van Staa, A. Woman-centered care 2.0: Bringing the concept into focus. *Eur J Midwifery* **2**, 5 (2018).
46. Diane Ménage BSc RM RN, Elizabeth Bailey BSc RM PhD, Susan Lees RM MSc RN, & Jane Coad RGN/RSCN BSc PhD. A concept analysis of compassionate midwifery. *Journal of Advanced Nursing 73(3* **73**, 558–573 (2017).
47. Eri, T. S. *et al.* Models for midwifery care: A mapping review. *Eur J Midwifery* **4**, 30 (2020).
48. Penny, R. A., Bradford, N. K. & Langbecker, D. Registered nurse and midwife experiences of using videoconferencing in practice: A systematic review of qualitative studies. *Journal of Clinical Nursing* **27**, e739–e752 (2018).
49. Grimes, C. L. *et al.* Guidance for gynecologists utilizing telemedicine during COVID-19 pandemic based on expert consensus and rapid literature reviews. *International Journal of Gynecology & Obstetrics* **150**, 288–298 (2020).
50. Fund, U. N. P. *The State of the World's Midwifery 2021: Building a Health Workforce to Meet the Needs of Women, Newborns and Adolescents Everywhere*. (United Nations, 2021). doi:10.18356/9789214030935.

51. Jazieh, A. *et al.* Improving adherence to lung cancer guidelines: a quality improvement project that uses chart review, audit and feedback approach. *BMJ Open Qual* **8**, e000436 (2019).
52. Brewster, L., Mountain, G., Wessels, B., Kelly, C. & Hawley, M. Factors affecting front line staff acceptance of telehealth technologies: a mixed-method systematic review. *Journal of Advanced Nursing* **70**, 21–33 (2014).
53. Ferguson, L. *et al.* Clinical leadership: Using observations of care to focus risk management and quality improvement activities in the clinical setting. *Contemporary nurse : a journal for the Australian nursing profession* **24**, 212–224 (2007).
54. Garber, K. *et al.* Telehealth Policy and the Advanced Practice Nurse. *J Nurse Pract* **19**, 104655 (2023).
55. Shah, S. D., Alkureishi, L. & Lee, W. W. Seizing The Moment For Telehealth Policy And Equity. *Health Affairs Forefront* doi:10.1377/forefront.20210909.961330.
56. California Becomes the Sixth State to Legally Protect Telehealth Abortion and Gender-Care Providers. *Senator Nancy Skinner* https://sd09.senate.ca.gov/news/20231003-california-becomes-sixth-state-legally-protect-telehealth-abortion-and-gender-care (2023).
57. Reproductive Rights. *State of California - Department of Justice - Office of the Attorney General* https://oag.ca.gov/reprorights (2022).
58. Gans, A. California set to become a refuge for transgender health care. *CalMatters* (2022).
59. Attacks on Gender Affirming Care by State Map. *Human Rights Campaign* https://www.hrc.org/resources/attacks-on-gender-affirming-care-by-state-map.

60. Medication Abortion | Guttmacher Institute. https://www.guttmacher.org/state-policy/explore/medication-abortion (2016).
61. Grasso, C. *et al.* Gender-Affirming Care Without Walls: Utilization of Telehealth Services by Transgender and Gender Diverse People at a Federally Qualified Health Center. *Transgend Health* **7**, 135–143 (2022).
62. Sen. Baldwin, T. [D-W. S.701 - 118th Congress (2023-2024): Women's Health Protection Act of 2023. https://www.congress.gov/bill/118th-congress/senate-bill/701 (2023).
63. Cohen, D. S., Donley, G. & Rebouché, R. Abortion Shield Laws. *NEJM Evidence* **2**, EVIDra2200280 (2023).
64. Carroll, M., Daly, D. & Begley, C. M. The prevalence of women's emotional and physical health problems following a postpartum haemorrhage: a systematic review. *BMC Pregnancy Childbirth* **16**, 261 (2016).
65. California Coalition for Reproductive Freedom. *California Coalition for Reproductive Freedom* https://www.reproductivefreedomca.org/.
66. In Our Own Voice – National Black Women's Reproductive Justice Agenda. https://blackrj.org/.
67. Leadership Training Academy. *Physicians for Reproductive Health* https://prh.org/leadership-training-academy/.

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