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### Title

Midwives experience of telehealth and remote care: a systematic mixed methods review.

### Permalink

<https://escholarship.org/uc/item/33r3v82j>

### Journal

BMJ Open, 14(3)

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### Publication Date


2024-03-29

### DOI

10.1136/bmjopen-2023-082060

Peer reviewed

# BMJ Open Midwives' experience of telehealth and remote care: a systematic mixed methods review

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**To cite:** Golden BN, Elrefaay S, McLemore MR, *et al.* Midwives' experience of telehealth and remote care: a systematic mixed methods review. *BMJ Open* 2024;**14**:e082060. doi:10.1136/bmjopen-2023-082060

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (<https://doi.org/10.1136/bmjopen-2023-082060>).

Received 13 November 2023  
Accepted 14 March 2024



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## ABSTRACT

**Introduction** Increasing the midwifery workforce has been identified as an evidence-based approach to decrease maternal mortality and reproductive health disparities worldwide. Concurrently, the profession of midwifery, as with all healthcare professions, has undergone a significant shift in practice with acceleration of telehealth use to expand access. We conducted a systematic literature review to identify and synthesize the existing evidence regarding how midwives experience, perceive and accept providing sexual and reproductive healthcare services at a distance with telehealth.

**Methods** Five databases were searched, PubMed, CINHAL, PsychInfo, Embase and the Web of Science, using search terms related to 'midwives', 'telehealth' and 'experience'. Peer-reviewed studies with quantitative, qualitative or mixed methods designs published in English were retrieved and screened. Studies meeting the inclusion criteria were subjected to full-text data extraction and appraisal of quality. Using a convergent approach, the findings were synthesized into major themes and subthemes.

**Results** After applying the inclusion/exclusion criteria, 10 articles on midwives' experience of telehealth were reviewed. The major themes that emerged were summarized as integrating telehealth into clinical practice; balancing increased connectivity; challenges with building relationships via telehealth; centring some patients while distancing others; and experiences of telehealth by age and professional experience.

**Conclusions** Most current studies suggest that midwives' experience of telehealth is deeply intertwined with midwives' experience of the response to COVID-19 pandemic in general. More research is needed to understand how sustained use of telehealth or newer hybrid models of telehealth and in-person care are perceived by midwives.

## INTRODUCTION

The World Health Organization (WHO) recommends using telehealth and other digital interventions for its potential to increase access and strengthen healthcare systems.<sup>1</sup> 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.<sup>2 3</sup>

## STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ Adherence to the inclusion and exclusion criteria and the search strategies informed by Population, Intervention, Comparison, Outcome to identify midwives' experience and perception of using telehealth.
- ⇒ Use of the Consolidated Criteria for Reporting Qualitative Research and the Strengthening the Reporting of Observational Studies in Epidemiology checklists to enhance detailed extraction of data and results.
- ⇒ Use of a convergent integrated approach to synthesize the findings across studies from diverse types of study designs.
- ⇒ A limited set of studies met the inclusion and exclusion criteria.

As part of a global response, many sexual and reproductive health providers in Europe, Australia, Asia, Africa and the United States of America (USA) quickly integrated diverse telehealth models and used remote technologies to continue providing essential services.<sup>4 5</sup> Concurrently, as telehealth transformed clinical practice and provider-patient interactions, WHO maintained the urgent need to invest in midwifery workforce and midwifery-led models and promote midwifery leadership in health systems worldwide.<sup>6 7</sup> Midwives were identified as 'pivotal' to meet the 2030 Sustainable Development Goals.<sup>7</sup> The focus on midwives' vital contributions is evidenced in part from cross-cultural studies that demonstrate midwifery-led care improves health outcomes, decreasing preterm births, caesarean sections and medical interventions while maintaining patients' experience.<sup>6 8-11</sup>

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.<sup>12</sup> Yet, the model is rooted in the relational aspect between the person seeking care and the midwife.<sup>13</sup> 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 healthcare 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.<sup>14 15</sup> 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<sup>14</sup> (online supplemental material). Definitions and PICO inclusion and exclusion criteria for articles published between 1 January 2010 and 22 August 2022 are shown in table 1. The search start date corresponds with the WHO's first definitions of telehealth and telemedicine, and the end date is when the literature search was completed. Reference lists of the selected studies and literature reviews were searched manually.

## Patient and public involvement

None.

## Data collection management

The results of the search strategy were compiled and managed in Covidence systematic review software (Veritas

**Table 1** Operation definitions and eligibility criteria

Midwife	A midwife is a person who has successfully completed a midwifery education programme that is duly recognised 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) <sup>12</sup>	
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 labour 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 then forwarded to a clinician. <sup>40</sup> 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 <sup>40</sup>	
Population, Intervention, Comparison, Outcome (PICO) <sup>14</sup>		
Criteria	Inclusion	Exclusion
Population	Midwives as defined by the International Confederation of Midwives	N/A
Intervention	Studies regarding midwives' consultation from a distance including synchronous telehealth virtual visits, videoconferencing, texting, telephone calling 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-19 or post-COVID-19	N/A
Primary outcomes	Experience, views, perception, perspective, perspectives acceptability, unacceptability, satisfaction, dissatisfaction, barriers, adaptability, utilisation, lived experience, favourable, unfavourable, 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

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 the full-text review. Two reviewers (BNG, SE) independently screened articles at the abstract and full text levels by using the software's voting system: 'yes' or '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 same datasets were not included. The reviewers resolved conflicts, by engaging in open discussion to understand each's other rationales and presenting evidence to reach 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 telehealth experience of multiple types of providers, such as physicians and nurses, only the

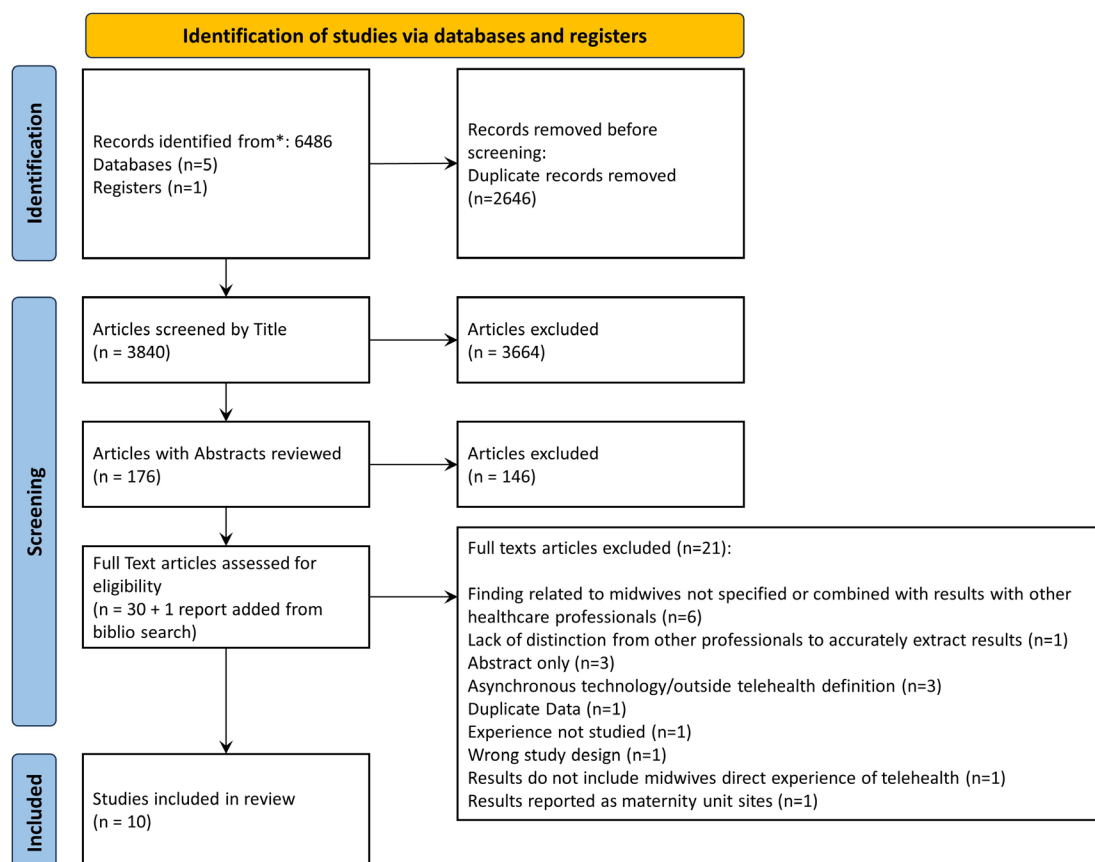
data pertinent to midwives was extracted. If needed, lead authors were contacted for additional data and clarification regarding findings specific to midwives. The systematic review protocol was developed in accordance with PROSPERO guidelines but was conducted in partial fulfillment of a PhD course and therefore was not permitted to be registered.

### Appraisal of the quality of studies

Using the Mixed Method Appraisal Tool version 2018, the two independent reviewers (BNG/SE) appraised the quality of the studies.<sup>16 17</sup> Reviewers independently assessed each article, then convened to determine consensus. The reviewers discussed all disputed criteria and presented evidence from the study for their assessment and then reached agreement to their final decisions. For reporting purposes, in addition to the appraisal descriptions, metrics are used to indicate low/medium/high-quality studies.<sup>18</sup> Due to the dearth of published studies available for this review, the MMAT appraisal was used to assess quality but did not determine exclusion.<sup>19</sup>

### 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.<sup>20 21</sup> Quantitative data was extracted, then



**Figure 1** Preferred Reporting Items for Systematic Reviews and Meta-Analyses diagram. From Page *et al.*<sup>41</sup>

'qualitized' as written text.<sup>21</sup> 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.<sup>21</sup> 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 synthesis.<sup>21</sup>

## RESULTS

### Search results

The search strategy yielded 6486 article titles. After removing duplicates, 3840 titles were screened, and 176 titles remained for abstract review. The two reviewers independently screened the abstracts resulting in 30 articles. One study was identified from bibliographies of three systematic reviews. 31 full-text articles were reviewed separately by the two reviewers, and 21 were excluded. 10 full-text studies were ultimately included in this review (see [figure 1](#)). Three lead authors were contacted for additional data and clarification regarding findings specific to midwives.<sup>22–24</sup>

### Selected studies: design type, settings/services and aims

The 10 studies meeting the review inclusion/exclusion criteria represented the views of 3354 midwives regarding telehealth in their midwifery practice. Of the 10 selected studies, 3 studies reported the telehealth experience of multiple types of providers (physicians, nurses, midwives), therefore only data pertinent to midwives was extracted.<sup>22–24</sup> [Tables 2 and 3](#) show the characteristics of each included study and [table 4](#) displays the key thematic findings for each study.

The study designs can be broadly categorized as qualitative (n=4),<sup>23 25–27</sup> quantitative (n=1),<sup>28</sup> quantitative with content/thematic analysis (n=2),<sup>22 29</sup> quantitative with descriptive analysis (n=1)<sup>30</sup> and mixed methods (n=2).<sup>24 31</sup> The settings of nine studies were Australia (n=4),<sup>24 25 28 30</sup> England (n=1),<sup>27</sup> France (n=1),<sup>31</sup> Switzerland (n=2)<sup>23 29</sup> and the USA (n=1).<sup>26</sup> One large worldwide study conducted 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, USA, Nepal, France and Argentina.<sup>22</sup> The settings of clinical telehealth services differed widely across the studies: antenatal/pregnancy-related, birth and post partum (n=8)<sup>23–30</sup> plus gynaecology, family planning and abortion (n=2).<sup>22 31</sup>

The telehealth mode for connecting with patients also varied across the studies: telephone only (n=2),<sup>27 28</sup> telephone and videoconferencing (n=3)<sup>24 25 30</sup> instant messaging only (n=1)<sup>23</sup> and all modalities plus text (n=3).<sup>22 29 31</sup> A single study used dedicated software,<sup>31</sup> and one study did not specify the mode of telehealth.<sup>26</sup> Notably, three studies explored midwives' perceptions of telehealth for labour triage and postpartum care were conducted prior to the COVID-19 pandemic by

phone or instant messaging service.<sup>23 27 28</sup> Nine studies (n=10) were approved by Institutional Review Board or Ethics Committee, one research study was exempt (n=10).<sup>29</sup>

The complete MMAT quality appraisal results are reported (online supplemental material). Five studies scored 80% achieving high quality<sup>25–28 31</sup> and the other five studies scored 60% achieving medium quality.<sup>22–24 29 30</sup> Issues in quantitative studies ranged from sampling methods that were not representative of the target population,<sup>28 30</sup> lack of indicators of low non-response bias,<sup>22 30</sup> the need for greater explanation of high non-response rate<sup>29</sup> and limited information about the development of measurements.<sup>22 29</sup> Qualitative studies were negatively assessed for narrow thematic definitions in analysis compared with presented data,<sup>25</sup> insufficient data presented to substantiate principal finding,<sup>27</sup> lack of appropriate methods for stated qualitative approach<sup>26</sup> and lack of a clear qualitative approach with inadequate discussion of positionality.<sup>23</sup> Each quantitative and qualitative components of the mixed methods studies were strong when assessed independently, however, the lack of integration of data<sup>24</sup> and insufficient explanation of divergences between qualitative and quantitative data<sup>31</sup> 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 10 studies. In addition to the descriptions below, a matrix of themes, their definitions and subthemes is provided in [figure 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 risk of transmission of infection.<sup>22 24–26 29–31</sup> It was considered a solid and essential tool healthcare delivery during the pandemic,<sup>22 24 25 29 31</sup> but described as inferior to face-to-face visits and physical contact.<sup>22 25 31</sup> However, some midwives perceived telehealth as personally beneficial as it enabled them to continue to work,<sup>29 31</sup> to reduce their risk of infection,<sup>29</sup> to maintain an income and to create a better balance between their personal lives and work during the pandemic.<sup>31</sup> The possible role of telehealth post-pandemic as hybrid with in-person was viewed positively by midwives in two studies.<sup>25 30</sup>

##### *Concerns about the practice of midwifery going remote*

For many midwives, sharing physical presence with patients was deemed as essential for midwifery.<sup>22 25 29 31</sup> Midwives were concerned about making errors in remote assessments and/or inadequately addressing certain health issues.<sup>23</sup> Being unable to complete a physical assessment during virtual visits created anxiety.<sup>30</sup> Midwives perceived there was insufficient data comparing maternal outcomes between in-person prenatal care and telehealth

**Table 2** Characteristics of qualitative studies

Study author Country/Region or city	Stated method	Methodology/ Theoretical framework	Data collection/ Timing of collection	Aim	Sample/Type of sampling	Setting of midwifery service	Mode of telehealth service used	Type of care pertinent to study
Hearn <i>et al</i> <sup>25</sup> Australia, NW suburbs of Melbourne	Qualitative	Interpretive phenomenology	Semi-structured interviews  September and October 2020	To understand the lived experiences of midwives providing care in the suburbs of Melbourne, Victoria during COVID-19	n=8 midwives  Purposive with snowball sampling approach	Hospital and community settings	Phone, Zoom, Facetime	Pregnancy-related, labour and delivery, post partum
Jacobsen <i>et al</i> <sup>26</sup> USA, Seattle	Qualitative	Phenomenological approach	Semi-structured interviews  February to April 2021	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	n=11 community midwives  Convenience	Community settings/out-of- hospital births	Unknown	Pregnancy-related, labour and delivery, post partum
Perrenoud <i>et al</i> <sup>23</sup> Switzerland, French-speaking region	Qualitative	Socio-anthropological approach with ethnographic methods	Field work and semi- structured  December 2018 to January 2020 (one part of a larger three part study)	To describe and analyse how community midwives and other health and social care workers and women communicate between postpartum home visits through instant message applications	n=14 midwives  n=6 social workers n=7 nurses n=2 adult n=1 director of institution n=20 immigrant women	Community settings	Instant messaging, WhatsApp	Post partum
Spiby <i>et al</i> <sup>27</sup> England, The Midlands	Qualitative	Interpretive phenomenology	Focus groups and interviews  Date unknown	To explore midwives' concerns, experiences and perceptions of the purpose of telephone contacts with women in early labour	Purposive  N=18 midwives	Hospital setting	Telephone	Labour delivery and triage

**Table 3** Characteristics of quantitative studies, quantitative thematic/content analysis, descriptive analysis and mixed methods

Study author Country/ Region or city	Stated method research design	Data collection	Data analysis	Aim	Sample/Type of sampling	Setting of midwifery service	Mode of telehealth used	Type of care pertinent to study
Bailey <i>et al</i> <sup>28</sup>	Quantitative	Online non-validated survey	Descriptive statistics and non-parametric statistics	To gather the experiences and practices of midwives in their management of triage	n=230 practicing midwives surveyed	Public and private hospital and practice settings with low-risk, medium-risk and high-risk populations	Telephone	Labour and delivery and triage
Australia, State of Victoria	Cross-sectional design	Data collected April to September 2017	$\chi^2$ , Mann-Whitney U and Kruskal-Wallis H tests to analyse relationships between variables		Purposive			
	First phase of an explanatory sequential future mixed methods study							
Bradfield <i>et al</i> <sup>60</sup>	Quantitative	Online non-validated survey and semi-structured interviews	Descriptive statistics	To explore and describe Australian midwives' experience of providing maternity care during COVID-19 pandemic	n=620 midwives (16 of 620 were interviewed)	Public and private hospitals, group practices, private practice and out-of-hospital birth	Telephone and videoconferencing	Antenatal, labour and delivery, post partum
Australia, nationwide including urban, regional, rural and remote areas	Cross-sectional design with descriptive analysis	May to June 2020	Transcripts analysed with four-stage thematic analysis		Convenience			

Continued

Table 3 Continued

Study author Country/Region or city	Stated method research design	Data collection	Data analysis	Aim	Sample/Type of sampling	Setting of midwifery service	Mode of telehealth used	Type of care pertinent to study
Galle <i>et al</i> <sup>22</sup>	Quantitative	Online non-validated survey	Descriptive statistics and qualitative thematic analysis of open text questions	To document the experiences with providing telemedicine for maternal and newborn healthcare during COVID-19 among healthcare professionals worldwide	Midwife/nurse-midwife n=257 (25% of total N)	Unknown	Telephone and video conferencing and text and instant messaging (WhatsApp)	Not specified by midwife in descriptive statistics, regarding type maternal and newborn care. Areas represented in thematic data include antenatal, postpartum, newborn care, abortion, childbirth preparation and labour triage
Nigeria, Costa Rica, Norway, Uganda, Kenya and Argentinat	Cross-sectional design with thematic analysis	5 July 2020 to 10 September 2020			Total N=1060 maternal and newborn health professionals surveyed	Not specified by midwife in descriptive statistics		
Bangladesh, Germany, USA, Nepal, France and Argentinat					Nurse n=312 (29%) obstetrician/ gynaecologists n=223 (21%) neonatologist/ paediatrician n=73 (7%)			
71 countries surveyed					Medical doctor (no specialisation) n=126 (12%)			
					Other n=54 (5%) Convenience			
Gemperle <i>et al</i> <sup>23</sup>	Quantitative	Online non-validated survey and open-ended questions	Descriptive statistics and $\chi^2$ test of independence, effect size with Cramer's V, post hoc Bonferroni correction	To explore midwives' perceptions of telemedicine during the COVID-19 pandemic in Switzerland and differences by age, professional experience and work setting	N=630 midwives, community and hospital based	Work solely in hospital or community or both	Telephone, instant messaging (eg, WhatsApp, online chat), text/short message service (eg, SMS), videoconference	Labour and delivery, and/or post partum
Switzerland Nationwide	Cross-sectional with content/thematic analysis		Integrative content analysis		Convenience			

Continued



Table 3 Continued

Study author Country/Region or city	Stated method research design	Data collection	Data analysis	Aim	Sample/Type of sampling	Setting of midwifery service	Mode of telehealth used	Type of care pertinent to study
Henry <i>et al</i> <sup>24</sup> Australia, Sydney	Mixed methods  Quantitative survey and qualitative Braun and Clark thematic analysis	Online non-validated survey and semi-structured interviews  Data collected October 2020 to March 2021	Descriptive statistics  $\chi^2$ with subgroups: hospital of practice, type of professional, length of time working professionally  Thematic analysis	To assess COVID-19 domestic and family violence and mental health screening and service provision from provider perspective and explore telehealth in antenatal care and future application of telehealth	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)	Three hospitals, maternity units	Telephone and videoconferencing	Antenatal and mental health screening
Rousseau <i>et al</i> <sup>31</sup>  France, all regions represented	Mixed methods  Quantitative survey and qualitative grounded theory analysis	Online non-validated survey  April 29 to 15 May 2020  Semi-structured interviews by Zoom May to July 2020	Descriptive statistics and univariate and multivariate recession models  Inductive content analysis	To measure and understand the determinants of the implementation of teleconsultations, and secondary is understand and measure for the determinants for its continued use	Convenience (survey) Purposeful (interviews)  Independent midwives n=1491 (22 out of 1491 interviewed)  Convenience (survey) Purposeful (interviews)	Hospital, maternal welfare agencies, independent and group clinical practice, home	Telephone and video conferencing (Skype, Zoom, Facetime) and instant messaging (WhatsApp/Messenger) and dedicated software (Doctolib, Prédis, Covaliaweb, etc)	QUANT: antenatal, post partum, early gynaecology, group and individual birth prep, family planning and psychological support  QUAL: ante partum, post partum, early gyn follow-up, childbirth prep, post-abortion, group and individual

\*Contacted author for additional survey results for midwives, only published text results available. Relevant thematic analysis results that were exemplified by midwifery quotes with specific countries represented added to the review.

†Published survey results did not distinguish 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.

**Table 4** Key themes and findings by author

Study	Relevant themes and subthemes in published study	Key findings pertinent to telehealth (TH)
<b>Qualitative studies</b>		
Hearn <i>et al</i> <sup>25</sup>	Telehealth was primary theme	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 jeopardising the creation of meaningful relationships. They experienced shorter visits, higher volume, 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 lack of touch and non-verbal cuing. In contrast, midwives, who had ongoing continuity of care and more autonomy in clinical practice, experienced telehealth as a means to increase partnership with mother and entire family
Jacobsen <i>et al</i> <sup>26</sup>	Practice changes due to COVID-19 was 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 clinic and the need to obtain transportation and childcare. Whereas others experienced the creation of new barriers for those who lack access to the internet and concern about safety who lack privacy or experience domestic violence
Perrenoud <i>et al</i> <sup>23</sup>	Instant messenger applications (IMA) telehealth was primary theme 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 postpartum period and beyond. 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 social services and assuming the role of gatekeepers to 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 need for greater support. Midwives perceived IMA as less used by non-English/French speakers
Spiby <i>et al</i> <sup>27</sup>	Multiple primary themes: the telephone call; clinical parameters of assessment; labour ward busyness; training for midwives on telephone triage; success and unsuccessful calls	Telephone triage for labour 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 vying to be seen in person and 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 not further training was needed whereas others believed the nuisances of assessment are teachable
<b>Quantitative studies, quantitative with content/thematic analysis or quantitative with descriptive component</b>		
Bailey <i>et al</i> <sup>28</sup>	Primary theme: telephone triage in midwifery practice Subtheme: level of confidence and anxiety with telephone triage is associated with professional experience and age	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 to managing triage greater in those with less experience. Anxiety reported more in metropolitan or regional settings than in midwives working in rural or remote setting
Bradfield <i>et al</i> <sup>30</sup>	Primary theme: coping rapid and radical change due to COVID-19 Subtheme: telehealth	Midwives unable to complete a full assessment of patient 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

Continued

Table 4 Continued

Relevant themes and subthemes in published study	Key findings pertinent to telehealth (TH)
<p>Galle <i>et al</i><sup>22</sup></p> <p>Primary themes: education and counselling of women and their families; reducing or eliminating personal visits; replacing in-person consultations</p> <p>Subtheme of each: use of telemedicine</p>	<p>Midwives found telehealth useful to continue care and decrease risk of transmission during the pandemic. It was considered a strong alternative for ante partum, post partum 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 increase 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</p>
<p>Gemperle <i>et al</i><sup>23</sup></p> <p>Primary theme of quantitative results:</p> <p>midwives' perceptions of advantages of telehealth beyond the pandemic which varies by age, years of professional experience and reimbursement</p>	<p>55.3% of respondents reported advantages of telehealth beyond the pandemic, such as reduces the workload (31.5% of all respondents), improves healthcare provision (18.9%) and increase in 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 that there were no benefits or opportunities for telehealth.</p> <p>Midwives aged <math>\leq 39</math> years were significantly more likely to report an advantage beyond the pandemic than those aged <math>\geq 50</math> (<math>p &lt; 0.001</math>).</p> <p>Midwives aged <math>\leq 39</math> years and younger were significantly more likely to report reduced workload as an advantage than those aged 40–49 years (<math>p = 0.002</math>) and aged <math>\geq 50</math> years (<math>p &lt; 0.001</math>). Midwives <math>\geq 50</math> and older were more likely to indicate protection from COVID-19 as an advantage than midwives aged <math>\leq 39</math> years and younger (<math>p = 0.018</math>).</p> <p>Midwives with less professional experience tended more often to mention an advantage beyond the pandemic. Midwives with <math>\leq 14</math> years of work experience were significantly more likely to report an advantage beyond the pandemic than their colleagues with 15–24 (<math>p = 0.021</math>) and 25 years and more of work experience (<math>p &lt; 0.001</math>).</p> <p>Midwives who had been reimbursed were more likely to mention an advantage beyond the pandemic such as reduced workload than those who had not.</p> <p>There was a significant correlation between experience with telemedicine and the advantages mentioned (<math>\chi^2 = 38.2</math>, <math>p &lt; 0.001</math>, <math>n = 414</math>). Midwives with a positive experience were more likely to mention the maintaining of care (<math>p = 0.003</math>) and improved healthcare provision (<math>p = 0.050</math>) 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 (<math>p &lt; 0.001</math>)</p>
<p><b>Key themes and findings by author for mixed methods studies</b></p> <p>Henry <i>et al</i><sup>24</sup></p> <p>Primary theme: major change to care delivery during COVID-19</p> <p>Subtheme: telehealth</p>	<p>Midwives' experienced telehealth as inferior to in-person visit but necessary for care delivery during pandemic. Midwives' perceived patients as feeling less cared for via telehealth until they had in person appointment 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 with known benefits of engaging early prenatal care in person. The perceived advantages of telehealth include appropriate for postpartum care, patients' convenience and offered increased accessibility for those who are geographically distant from hospitals. Midwives had interest in a post-pandemic hybrid model option. Perceived ongoing telehealth would use a criteria for telehealth. Telehealth was viewed as more suited for low-risk, multiparous and who live further from hospital and not appropriate for patients who have high-risk pregnancies or those who need greater psycho-social support</p>

Continued

**Table 4** Continued

Relevant themes and subthemes in published study	Key findings pertinent to telehealth (TH)
Rousseau et al <sup>31</sup> Primary theme: telehealth	<p>Younger age (<math>\leq 41</math>), female gender, married or living with partner or working in a group practice as the determinants of teleconsultation implementation, the need to maintain continuity of care and access to patients, reduce viral transmission and need to work and generate income while meeting family needs during a crisis.</p> <p>For those who did not convert to teleconsultation, qualitative data added 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.</p> <p>Qualitative finding also confirmed that midwives who wanted to continue teleconsultations found the technology was easy to use, aligned with society's digital trend, and satisfying for their practice and patients. Midwives who did not want to continue use found human contact was necessary for clinical practice</p>
*Survey results were a composite of all types of maternal healthcare providers. Contacted author for additional survey specific results for midwives, only published text results available. Relevant thematic analysis results that were exemplified by midwifery quotes added to the review.	
†Published survey results did not distinguish 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.	

visits to justify telehealth adoption in routine practice.<sup>24</sup> Some midwives perceived no advantage to using telehealth for remote treatment.<sup>29</sup>

#### *Benefits and disadvantages of incorporating telehealth into clinical practice*

In one study, midwives found telehealth convenient and easy to use,<sup>31</sup> whereas in three other studies, midwives reported struggling with the technology.<sup>22 24 31</sup> Interrupted internet access in remote areas, lack of equipment and larger infrastructure issues were also reported to impede telehealth use.<sup>22 24–26</sup> Midwives who opted out of using telehealth perceived it as having little benefit or cited provider or patient preference for in-person.<sup>30</sup> Some midwives preferred telephone over other forms of telehealth.<sup>23 29 31</sup> In one study, some midwives experienced financial hardship as a result of using telehealth, having to personally cover the cost for internet access, resulting in the inability to follow-up with patients.<sup>22</sup>

#### *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.<sup>23 27 28</sup> Managing labour via the telephone without formal training has been a requirement for midwives for decades and often goes unrecognized as part of their daily workload.<sup>27 28</sup> During the COVID-19 pandemic, concerns about the lack of adequate training to effectively manage pregnancy-related health issues persisted.<sup>22 25</sup> 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'.<sup>27</sup>

##### *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,<sup>23 31</sup> and three studies reported that it increased the midwives' workload, in both hospital and community-based midwives.<sup>23 25 28</sup> 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.<sup>23</sup> They were challenged by being placed in a new role as gatekeeper for the health system, receiving requests for help accessing health and social services outside of their scope of practice.<sup>23</sup> Whereas midwives in another study reported a benefit of decreased workload by 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.<sup>29</sup> Midwives in England reported that telephone triage consultations served as a means of regulating the workload on maternity wards for other midwives.<sup>27</sup>

Figure 2: Matrix of Theme and Subthemes

Themes	Subthemes	Definition of Theme	Barley	Bradfield	Jacobson	Galle	Gemperle	Hearn	Henry	Perrenoud	Rousseau	Sigh
			2019 Australia	2022 Australia	2022 United States	2020 Multi National	2021 Switzerland	2021 Australia	2022 Australia	2022 Switzerland	2022 France	2014 England
Integrating Telehealth in Clinical Practice During Covid-19 and beyond: Perceived Gains and Losses	Telehealth as an Essential Tool for the COVID-19 Pandemic	Midwives experienced advantages and disadvantages to their practice by caring for patients remotely during the height of the pandemic and beyond.		X	X		X	X			X	
	Concerns about the Practice of Midwifery Going Remote		X				X	X		X	X	
Balancing increased connectivity with little training and workload	Incorporating Telehealth into Clinical Practice			X			X	X		X	X	
		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					X	X		X	X	
Lack of Training, Guidelines and Protocols	Interacting with Patients with Greater Frequency Impacts Workload.		X			X	X	X		X	X	X
			X				X	X		X	X	X
Challenges with Building Relationships via Telehealth	Telehealth disrupts and enhances interaction with patients	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.					X		X	X	X	X
	Identified Strategies for remote inter-personal communication.											
Centering some patients while distancing others	Perceived benefits and appropriate telehealth services for patients	Midwives experience telehealth as having broad range of implications for patients from improving accessibility for some while creating new barriers for others.		X	X	X	X	X	X	X	X	X
	Perceived barriers and inequities for patients		X	X	X	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 Matrix of theme and subthemes.

### 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.<sup>22 25 31</sup> 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.<sup>22 25</sup> This was reported as particularly troubling when caring for non-native speakers, complicated by difficulty using interpreter services.<sup>22 25</sup> 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.<sup>26</sup>

#### *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.<sup>27</sup> When speaking to patients, clear expectation setting, logical advice, an agreed on and confirmed summary of the plan were cited as necessary to confirm mutual understanding.<sup>27</sup> In-person care for patients who called three times or sounded distress was advised.<sup>27</sup> 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.<sup>27 31</sup> Midwives cited telehealth benefits for patients as reducing the need for childcare, transportation, reducing geographical distance,<sup>26</sup> promoting greater self-care<sup>29</sup> and improving continuity of care and access.<sup>23–25 31</sup> Childbirth preparation,<sup>22</sup> post partum<sup>22–24</sup> and lactation consultations<sup>22 24</sup> were considered as appropriate telehealth services. Telehealth was seen as means of overcoming patients' isolation and loneliness, as well as an essential life-saving service for ante partum, post partum,<sup>22 31</sup> managing labour and abortion, during the pandemic.<sup>22</sup>

#### *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.<sup>24 25</sup> Midwives reported financial barriers to telehealth for patients who lack access to internet service,<sup>22 26</sup> or phones or video-conferencing technology.<sup>22</sup> Some midwives reported patient distrust of receiving care via telehealth, especially vulnerable populations concerned with interfacing with government agencies.<sup>22</sup> 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.<sup>24–26 30</sup>

One study found that telehealth exacerbated patient distrust, stereotyping and bias among some midwives. Examples of 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.<sup>27</sup>

### 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 labour 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 with those worked in rural/remote areas.<sup>28</sup> 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 also were more likely to perceive advantages following the COVID-19 pandemic than those who were not.<sup>29</sup>

## 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 telehealth in clinical care delivery. In the review by Wu *et al*, negative experiences of virtual prenatal visits for prenatal providers and nurses commonly resulted from discomfort with technology, inadequate training and technical difficulties.<sup>32</sup> 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.<sup>33</sup> 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.<sup>22 23 25 31</sup> Studies in the present review found that physical presence in an in-person patient-midwife interaction was a 'hallmark' characteristic of midwifery.<sup>22 25 31</sup> The review by Penny *et al* supports 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.<sup>34</sup>

A prominent theme of this review, 'Centring some patients, while distancing others' described how midwives viewed telehealth as benefiting some patients and disadvantaging others. Advantages included reducing the need for childcare, transportation and overcome geographical distance to improve access<sup>26</sup> and continuity of care.<sup>25</sup> In the review by Wu *et al*, prenatal patients reported similar advantages for virtual prenatal visits, except for improved continuity of care, even though the most preferred model of care.<sup>32</sup> 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*.<sup>33</sup>

Shorter visits with less time for patients' concerns is a newer finding about midwives' experience of telehealth, and significant for clinical practice because it could impact individualized patient-centred care and relationship building, all of which are necessary for improving care.<sup>35</sup> In the present review, midwives perceived disadvantages of telehealth for patients such as shorter visits with less time for patients' concerns,<sup>24 25</sup> financial barriers for those who lack internet access or devices,<sup>22 26</sup> lack of privacy for patients, dangers of remote domestic violence and mental screening,<sup>24-26 30</sup> and the creation of greater distrust for those already concerned about interacting with institutions or being recorded.<sup>22</sup> The review by Penny *et al* similarly reported that midwives and nurses' had concerns about patient safety and privacy with videoconferencing,<sup>34</sup> while Wu *et al* 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.<sup>32</sup>

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 overusing services when triaging by phone.<sup>27</sup> These experiences can be understood as stigmatising and perpetrating mistrust with patients. Telehealth combined with various forms of bias and concerns about privacy have the potential to deepen mistrust between provider and patients.<sup>36</sup> 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, minimising selection bias

and increasing reproducibility, compared with a single reviewer.<sup>37</sup> 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.<sup>36</sup> 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 phone, 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.<sup>26</sup> As audio-only services expand, and midwives adapt to new telehealth formats, these findings pave the way for future research inquiries.

However, limitations entail a small number of studies meeting 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 (eg, home, clinic and hospital), reimbursement, and scopes of practice impede the comparability and transferability of findings within and between low-resourced 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.<sup>32 33 38</sup> 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.<sup>6</sup> Midwives' telehealth experience is often studied within the discrete confines of their telehealth practice that relates to perinatal care.<sup>23 25–30 39</sup>

### 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 starting point to understand 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 is 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, to build relationships and assess patients remotely will inform clinical guidelines for clinical and administrative leaders and future training programmes for midwifery educators. Healthcare policy makers 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 which will require updated systematic reviews.

**Acknowledgements** We would like to acknowledge Peggy Tahir, research and copyright librarian, at University of California, San Francisco, for her thoughtful feedback and thorough review of the database search strategy and criteria for this review.

**Contributors** In collaboration with LSF, BNG conducted the systematic review including study design, search strategy, methodology development, screening, appraisal of quality, thematic analysis and prepared the manuscript, acting as guarantor. SE, as second reviewer, screened abstracts and full text published papers and assessed the quality of the studies. MRM, AA, KB critically reviewed the manuscript to reach the final submitted and approved version. LSF also edited, reviewed and approved the final manuscript.

**Funding** The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

**Competing interests** None declared.

**Patient and public involvement** Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

**Patient consent for publication** Not applicable.

**Ethics approval** Not applicable.

**Provenance and peer review** Not commissioned; externally peer reviewed.

**Data availability statement** All data relevant to the study are included in the article or uploaded as supplementary information.

**Supplemental material** This content has been supplied by the author(s). It has not been vetted by BMJ Publishing Group Limited (BMJ) and may not have been peer-reviewed. Any opinions or recommendations discussed are solely those of the author(s) and are not endorsed by BMJ. BMJ disclaims all liability and responsibility arising from any reliance placed on the content. Where the content includes any translated material, BMJ does not warrant the accuracy and reliability of the translations (including but not limited to local regulations, clinical guidelines, terminology, drug names and drug dosages), and is not responsible for any error and/or omissions arising from translation and adaptation or otherwise.

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