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A Qualitative Study of Midwives' Perceptions on using Video-Calling in Early Labor

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Abstract (249 words)

BACKGROUND

Decisions made in early labor influence the outcomes of childbirth for women and infants. Telephone assessment during labor, the current norm in many settings, has been found to be a source of dissatisfaction for women and can present challenges for midwives. The aim of this qualitative study was to explore midwives' views on the potential of video-calling as a method for assessing women in early labor.

METHODS

A series of eight midwife focus groups (n=45) and interviews (n=4) in the Midlands region of England and the mid-South and Northeast regions of the United States were completed. Audio recordings were transcribed verbatim and coded using content analysis. Coding diagrams were used to help develop major themes in the data.

RESULTS

Midwives were generally positive about the potential of video-calling in early labor and using visual cues to make more accurate assessments and to enhance trust. Some midwives expressed concerns about privacy, both for themselves and for women, and issues of accessibility. They suggested strategies for implementation and further research, such as the need for a private space in birth facilities and training for both staff and service users.

CONCLUSIONS

Video-calling was seen as a viable option for assessment of women in early labor with some particular challenges related to implementation. This research focused on midwives' views; the views of women and their families should also be considered. There is a lack of evidence on the clinical and cost effectiveness of video-calling in maternity care and further research is warranted.

Keywords: early labor, video-calling, telehealth, qualitative research

Introduction

In most United Kingdom (UK) and many United States (US) settings, women telephone the maternity unit or midwife to seek advice when they feel that labor is starting. Advice may include strategies for self-care and when to travel to the maternity unit. These calls can be a source of dissatisfaction for childbearing women.[1, 2] Women are typically encouraged to stay at home for as long as possible to avoid unnecessary intervention, but they and their families may find this difficult due to uncertainty about self-diagnosing labor onset.[3] Early labor management is critical in helping women stay home until active labor.[4]

Women are often concerned with needing to establish credibility that they are really in labor.[5] They can feel unwelcome at the maternity unit after advice to stay at home,[2] sometimes feeling uncared for or finding it difficult to manage their pain.[6] Even if they feel reassured by the midwife on the phone, there may be pressure to go to the hospital from anxious companions.[5-7]

Midwives answering early labor calls must make an accurate assessment of labor onset without the visual and nonverbal cues available in face-to-face care[8], relying on subtle cues such as tone of voice and breathing pattern.[9] Telephone calls may feel impersonal compared to face-to-face meetings and make it more difficult to build rapport, especially important in settings without continuity of care models.

Early admission or repeated 'false alarms' are costly for both women and service providers. Assessments where UK women were found not to be in active labor and were sent home or to the antenatal ward, comprised between 10-33% of labor ward admissions;[10] these have significant workload and resource implications. Hosek et al found that 41% of women did not want to be discharged home in latent labor.[11] Women admitted too early may receive unnecessary intervention.[12] However, errors in assessing labor

progress can lead to professionally unattended birth at home or in transit, which are associated with poor outcomes for infants[13] and emotional distress for women and their companions.[14] Visits to hospital have economic consequences, including costs related to missed work, travel, car parking, and childcare.[15] Tilden et al estimate that delaying admission until active labor across the US would result in 672,000 fewer epidurals and 67,232 fewer caesarean births, with an annual cost saving of US$694 million while also improving maternal outcomes.[16]

Home visits have been reported to support relationship building, provide reassurance to women, and improve women's ability to cope with labor; [17, 18] However, operational challenges may be prohibitive.[18, 19] Therefore, alternatives such as video-calling, that enable a conversation between a woman and midwife where visual cues may be observed but without the need for travel by either party, merit inquiry.

Some evidence suggests acceptability of video-calling in the maternity context. Women found the use of home-video communication for breastfeeding support acceptable; not needing to travel to access advice was a particular benefit.[20-22] In a pilot study of videoconferencing to support parents after early discharge, midwives reported that more information was gained through a video-call compared to a telephone call and described the conversation as richer and almost equivalent to face-to-face meetings.[23] Similarly, Gund et al found that implementing Skype calls to support parents caring for premature infants at home was acceptable to families and improved confidence in caring for their child, with 75% of families reporting a reduced need for home visits.[24] However, there is a paucity of evidence about the use of this technology in labor management.

The aim of this qualitative study was to explore the potential for the use of video-calls in early labor from midwives' perspectives, including implications for future research.

Methods

A descriptive qualitative study was conducted across three settings. The UK site was located in the Midlands region of England with midwives employed by the National Health Service (NHS) caring for women with whom they had no relationship prior to labor. NHS maternity care is free at point of service and funded through general taxation. The two US sites (mid-South and Northeast) had midwives employed in a variety of practice settings, from out-of-hospital birth centers and private practices with marked autonomy and continuity of care, to collaborative midwife-physician practices, and some in more physician-dominated practices. All practices were fee for service with coverage ranging from government subsidized to private fee-for-service insurance. Some midwives in the US setting had experience of using video-calling in practice.

Midwives were invited to take part in focus groups, taking an opportunity sampling approach. Midwifery managers were invited for individual interviews through targeted recruitment by collaborators at each site. This approach enabled midwives to speak freely without managers present in the focus groups, and individual interviews with senior staff enabled the discussion of legal, management, and governance issues. Eight focus groups (UK n=3; US n=5) and four individual interviews (UK n=3; US n=1) were conducted, sufficient to reach data saturation. Twenty-two UK midwives and 27 US midwives participated in the study.

Focus groups and interviews were conducted during 2016-2017 (JR, HS, HPK and MF), following a semi-structured guide (developed from literature and professional

knowledge of practice settings) to ensure that the same topics were covered in each session, while still allowing flexibility. Focus groups provide a synergistic approach to data collection that can be both "problem-focused" and "problem-solving.[25] The method was ideal for a study to focus midwives' perspectives on the potential benefits and challenges of video-calling in early labor. The research team had a mix of backgrounds, including midwifery, health services research, and social sciences. All members of the team were experienced in qualitative data collection and analysis.

Audio-recorded interviews were transcribed verbatim, anonymised, and checked for accuracy of the transcription. The final transcripts were imported in to Atlas.ti, version 8 (www.atlas.ti.com, Berlin, Germany) to assist with data management and analysis. The transcripts were coded using content analysis as described by Krippendorff which moves beyond counting to understanding meaning within text.[26] Three researchers (HPK, MAF, & GS) coded the data through an iterative process of code identification, comparison of code definitions across analysts and settings, achieving consensus, and redefining codes as needed. In addition to coding the general discourse of the discussions, the data were also coded by setting and location. A fourth researcher (HS) reviewed all transcripts and the coding dictionary to ensure comprehensive coding. All researchers then clustered similar codes using the networks feature of Atlas.ti to help visualise data linkages. Figure 1 provides one example of a network showing linkages among codes. Multiple networks were created to assist interpretation of the data and identification of themes.

[FIGURE 1]

The UK arm of the study was approved by the University of Nottingham Faculty of Medicine and Health Sciences Ethics Committee (Reference: T15032016 16002) and governance approval from the NHS Trusts involved. UK and US (Northeast site) participants provided written consent. The US arms were approved as exempt by Baylor (Reference: 1164893) and Yale (Reference: 1604017650) Universities.

Results

Midwives' views on the potential use of video-calling in early labor were varied and complex. Three broad themes were identified that reflected this complexity and their general perceptions: 1) Positive Potential for Video-calling in Labor; 2) Challenges and Skepticism; and 3) Implications for Practice and Future Research.

1) Positive Potential of Video-calling in Labor

Midwives described potential benefits of the use of video-calling in early labor: enhanced assessment ability, development of trust and relationships, and savings in time and cost. Some stated that since they had been aware of the study they had identified several interactions with women where they felt video-calling would have been helpful. The majority of the discussions were enthusiastic, although not all.

Enhanced assessments through visual cues

The majority of midwives commented that the ability to see women in early labor would add capacity in their assessment. This was seen as one of the greatest benefits of video-calling, with the expectation that it could enable more accurate assessments of active

labor, particularly when other diagnostic measures, such as reported frequency of contractions, were misleading.

"… although her contractions were only one in five, if we'd have looked at her, we would have thought oh my gosh, … you're in really advanced labour ... I think we would have seen her not being able to sit still, the way she was … breathing through the contractions, not able to talk, and the frequency." (UKINT3)

Equally, midwives described situations where a visual assessment might suggest that labor may not be as advanced as it was perceived to be by women and their family members. Another benefit was that video-calling allows midwives to assess women when they feel they would be unable to speak on the phone.

"the husband calls and he says, "she's contracting a lot, every two to three minutes, really strong, she's crying" and then you know you're like, "Okay, well can I talk to her" and he says, "no, she can't talk" --- and she comes in and it's definitely early labor. So you have to send her home and she feels defeated --- so, I think the video call could help if you could see her, even if she can't talk." (USBFG2)

Building relationships and trust

In addition to the potential to enhance clinical assessment, midwives deliberated on how the visual component of video-calling could help them to build relationships with women and families. Some midwives commented that they may be able to offer more reassurance by developing an early connection with women, and tailor support, and therefore help women feel confident to stay at home for longer.

This advice, in addition to following up with the same midwife by video-call, would enhance trust building.

"[If] I'd had a video call with a lady and then I saw her come into the door … I'd feel like I knew her already … and I'd already started to build up that relationship … (UKFG1)

Time and cost saving

The third perceived benefit was the time and cost saving that may occur by being able to see with video-calls, described as a benefit for women and their families, and maternity services.

"The worst thing is coming in here and then having to go home … you've wasted somebody's time and you're going home without your baby … sometimes just being able to see somebody and say, it's very early days yet, … I think we're just going to make everybody feel much better, much more looked after without actually a huge lot of expense, you know, we're not running out there in a car and they're not doing repeated phone calls maybe because they've been reassured." (UKFG1)

Many midwives thought that video-calls could save women unnecessary trips to hospital, particularly beneficial where long, stressful, uncomfortable journeys were involved. Others described how it may reduce costs and health care resources through fewer triage admissions.

"A lot of our diagnosis is on what we can see rather than what we're being told. It would just save so much time for that woman coming into the hospital … and NHS

resources … it's going to save us that time triaging that lady who actually would benefit from being at home for a bit longer." (UKFG3)

In the US system, fees for triage visits could be diminished and access enhanced. One of the US midwives described previous involvement in video calls in early labor in remote rural areas, where they were successful in reducing costly emergency flights to the hospital.

2) Challenges and Skepticism

Anticipated challenges were often practical in nature. Potential barriers included concerns about access, acceptability, and privacy and confidentiality. Some were skeptical that video-calls would really add value and that technological issues might make assessments more complicated.

Access

In order to use video-calling effectively, the technology would have to be accessible to both midwives and women. Some midwives described that the use of technology can be very helpful, but it can also be frustrating, causing delays when it fails.

"I think people go off using things if they don't work really well straight away, if they've got to spend any more time setting it up or sorting out they will just … let's go back to the telephone, I'll just call you … you'd have to be really certain that your hardware and your software was going to be fit for the purpose (UKFG1)"

Some midwives expressed concerns about equity since some women might not be technologically literate, have access to computers, or speak the same language as the provider. The language challenges were summed up by US midwives.

I have a high Spanish speaking [population] and ... a high Korean population so I always need a translator; so if they video time me I'm not going to be able to fully communicate with them (USBFG1).

One of the challenges would be to prepare women for the technology, particularly if they needed to download an app or software in advance. Practical challenges were mentioned as being an issue, such as midwives potentially missing incoming video calls. Finally, access was discussed in terms of cost to the midwifery service.

"And then this just goes back to like a little bit of the [business] part of me is like, is like, well, all this stuff costs money and who's paying for it?" (USYFG2).

Acceptability

The acceptability of video-calling was mostly centred on the privacy and presentation of the midwife, with some describing that they might feel uncomfortable being seen on a video call, especially if they were at home in the middle of the night. In some of the UK focus groups and interviews, acceptability was influenced by midwives' anxieties about being able to be identified from the call, or concerned about not knowing who else might be watching them. The midwives commented that it was really no different from doing the meeting face-to-face, but that there might need to be assurances for staff. Some US midwives in private practice who took labor calls from home said that having to get out of bed and use a computer or smart-phone would be an imposition. Many of these midwives were in practices with continuity of care and felt they already had a strong relationship with the women and could conduct a satisfactory assessment over a regular telephone (and from their bed).

"Right now in the middle of the night, my answering service calls me, they patch the patient through, I don't have to turn on the bedside table … If I was gonna Skype with somebody, I'd have to get out of bed, put some clothes on, go to another room and, by then I'd be very awake, and probably less happy … when the time came for me to go in, because I'd be more tired" (USINT1).

Personal presentation was mentioned as a challenge, with midwives aware they would need to have a professional, attentive appearance, contrasting with telephone calls where midwives could be multi-tasking in the background.

"Sometimes, you know, you're sitting there and your back's aching and your shoes are off and stuff, but you're trying to talk quite perky on the phone. So you could have mismatch, but I think you'd have to do some kind of training." (UKINT3)

Confidentiality was thought of as a challenge as telephone calls may currently be taken in busy clinical areas, as well as issues of recording of the calls.

"The confidentiality, who is walking past, who is overhearing that conversation, how it's going to be stored … is it going to be kind of recorded?" (UKINT3)

There was a concern about personal privacy for some US midwives of using their personal mobile/cell phones when on call. Another aspect of the conversation was what the midwife would do if they saw activity in the home that was worrisome. How would that be documented or acted upon?

"if you're on a videoconference with somebody and you potentially see something in the background that is either, you're not comfortable with, or is potentially illegal then how do you respond to that new information … [to which] you're not really supposed to be privy, … but now you have this information and what do you do with it?" (USYFG1).

Acceptability was also linked to legal issues. Some hospitals do not allow video-recording during labor and birth, thus potential recording of a video-call in labor could have legal implications. Patient privacy, including protection of personal patient information and the need to meet legislative requirements (HIPAA Act 1996), was discussed at length by the US midwives.

> *"I do our HIPPA certification at our birthing center … according to this HIPPA class I just finished, if you have a designated phone for your practice and you have a lock on that phone and the client is aware that they are texting you then there isn't a problem" (USBFG1)*

3) Implications for Practice and need for Future Research

Despite the reservations expressed above, midwives discussed the need for prior planning to guide implementation of video calls to avoid or minimize some of the challenges with use of technology in practice. They also responded positively to the proposition of future research to implement video calling in early labor, with the vast majority willing to participate

Many midwives commented on the need for high-specification technology and good Internet speeds to facilitate a high-quality connection during video-calls. There was also a need for a private space in the birth facility to ensure confidentiality for both the woman on the video-call, and any women who may be on the labor suite or have their details displayed on a board.

"We'd need a private space in the hospital, and what comes to my mind are those old-fashioned telephone booths, you know, [laughs] where you go in and you close the door" (USFGD1).

Training was identified as key for staff, women, and their families to inform them about the video-calling service and its benefits, and also give instructions for use. Actual practice in use of the technology was critical.

"I mean I would think a dry run with your patient would be necessary… 'let's practice this; I want you to go into another room and I want you to video me. You know, so that way you know it works.' Every technology there's always hiccups …" (USBFG2).

For women, training could be in the form of handouts and/or briefings at antenatal appointments. Identifying the benefits of video-calling, and keeping staff informed about positive accounts of its use, could be critical to willingness amongst midwives to participate in future research and use video-calling in practice. Other considerations included how to manage the initiation of the call and whether women would need to telephone the midwife first to then be video-called back.

Midwives were asked for appropriate outcomes to measure the impact of video-calling. They described a wide-range including uptake, technological effectiveness, admission in active labor, number of triage visits, effect on the use of interventions and achievement of a physiological birth, women's satisfaction and quality of care, psychological and social outcomes, and midwives' perceptions.

Discussion

The provision of early labor services that meet women's needs for self-care and support and facilitates optimal childbirth outcomes continues to be a challenge internationally.[4, 27, 28] Recent research has revised assumptions of labor stages and progress,[29] resulting in a longer duration of early labor. This provides additional impetus for investigating new approaches to early labor assessment that supports women's needs without unnecessary admissions.[12]

This research found that most midwives in both contexts respond positively to the concept of video-calling in early labor, echoing enthusiasm for telehealth in previous research.[30] We have obtained midwives' views of potential benefits: being able to see women and enhanced assessment; supporting the development of trusting relationships; potential savings of time and cost. These views are in line with previous research where video-calls were said to provide richer conversations[23] and suggestions from the US that the use of telemedicine may reduce the need to travel long distances to access health care and so reduce inequities of access.[31] Along with positive reports of video-calling in breastfeeding support[20-22] and newborn care, [24] beneficial experiences of telehealth are reported from other specialists. This includes palliative home care where calls were initiated for pain management and emotional support[32] and reductions in hospitalisation for patients with long-term cardiac and respiratory conditions.[33] Midwives supported the notion that video-calling, through more accurate visual assessment, had the potential to save time, cost, and improve women's experience by reducing both unnecessary admissions, and births before arrival [12-16].

However, it cannot be assumed that positive experiences from other health conditions will translate into the early labor care context. There was some skepticism among the midwives in both countries in terms of using the technology, privacy issues and equity of care using this communication technology. This is not surprising given that video-

calling is relatively untested in this context, and reaffirms the need for more, high-quality research in this area.[30, 34] Detailed knowledge about how video-calls are used in context, their clinical effectiveness, safety and impact on clinician-patient communication is lacking.[35] Telehealth has been associated with increased patient satisfaction,[36] and improved outcomes[37] but robust cost-effectiveness analyses are lacking[33, 36, 37] and safety outcomes are considered under-reported.[33, 36]

This exploratory study provides the first reported systematic investigation amongst the potential providers of video-calling for early labour including the potential benefits, challenges, and suggestions for future research. Early engagement with key stakeholders increases the likelihood that later research can be operationalized and supported by practitioners.[38] Differences between the UK and US reflected varying settings and whether the midwives worked in continuity of care models. More midwives in the US groups discussed prior use of the technology in practice.

The strengths of this study include participation of midwives drawn from two countries, working in varying models of maternity service provision; insights were generated from a breadth of clinical experience and perspectives that have resonance beyond the index settings. The research included midwives with experience of video-calling in their practice (US midwives) and others without (US and UK). The current research is limited through its focus on midwives; obtaining the perspectives of service users is a priority. The study is also limited by an opportunity sample which may not be representative of the midwifery workforce in the US or UK, and including a small number of settings.

Our findings should be considered against the evidence-informed framework for quality maternal and newborn care.[39] A significant component of midwifery practice is assessment, best achieved through care that is accessible, acceptable, and respectful.

Midwives in this research felt that the use of video-calling has potential to enhance early labor assessment, support the development of relationships and trust and reduce costs to families and services. Expanding the capacity to assess women in early labor via video-technology could, theoretically, contribute to improvements in care quality. However, rigorous research is required to establish an evidence base for the use of video-calling in early labor.

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