Mobile translators for non-English speaking women accessing maternity services

Abstract

It is becoming increasingly common for midwives to care for women who do not speak English, and UK interpreting services are often inadequate and underused. Persistent language barriers have been found to contribute to maternal and perinatal mortality thus it is essential that these barriers are overcome to provide safe maternity care. This article reports on a two-stage study undertaken to address this. The study aimed to:

- Identify difficulties midwives experience when communicating with non-English-speaking women. Through undertaking a group interview with 11 senior students, four themes emerged: accessing interpreters, working with interpreters, cultural barriers and strategies to address persistent language barriers
- Explore the feasibility of using mobile devices with a translation application to communicate in clinical practice. Google Translate was tested in a simulated clinical environment with multi-lingual service users. Google Translate was not adequately developed to be safely used in maternity services. However, a maternity-specific mobile application could be built to help midwives and women communicate in the presence of a persistent language barrier.

Communication skills are fundamental to midwifery (Nicholls and Webb, 2006; Nursing and Midwifery Council (NMC), 2009). Communication errors occur when the message becomes distorted; this can be due to the 'sender' and 'receiver' speaking a different language (Dysart-Gale, 2007). With an increasingly global society, it is becoming more common for contemporary midwifery practice to involve caring for recently-migrated women who speak different languages. This creates the potential for communication errors to occur due to language barriers. As well as difficulties in communicating in English, recently-arrived migrant women tend to have poor underlying health and more complicated pregnancies, which can result in an increased risk of maternal and perinatal mortality (National Institute for Health and Care Excellence (NICE), 2010; Centre for Maternal and Child Enquiries (CMACE), 2011). Poor communication between staff and pregnant women is one of the most pervasive threats to patient safety (Paul and Schyve, 2007) and CMACE suggests that language barriers may have had an influence on the death of 26 women between 2006–2008 (CMACE, 2011). These women were not able to provide a full medical history, which resulted in inappropriate clinical decision-making (CMACE, 2011). In addition, adequate communication is essential for acquiring informed consent from a woman when performing any examination or intervention; without this consent, the midwife could be accused of undertaking a physical assault

(Dimond, 2006). The evidence suggests that, in reality, trained interpreters are not always accessed when needed. They may be perceived as expensive, with limited budgets restricting their use (Gerrish et al, 2004; MacFarlane et al, 2009). Furthermore, gaps in services have been identified with interpreters not always being available when required (Gerrish et al, 2004; MacFarlane et al, 2009; Hadziabdic et al, 2010) and only bookable in advance, therefore unavailable for unplanned encounters (Gerrish etal, 2004). There is evidence to suggest that when interpreters are booked for consultations, they may not always attend (Hadziabdic et al, 2010). In some contexts, there is a reliance on informal interpreters, including family members when no trained interpreter is available. This is contrary to national recommendations (NICE, 2010) and health professionals are aware of the potential ethical and legal ramifications of their use. Patient safety, as well as confidentiality and privacy, can be compromised (Meddings and Haith-Cooper, 2008). This can lead to negative effects on family relationships when relaying sensitive information (Gerrish et al, 2004) and translated information may be misunderstood, misinterpreted or edited by the family member (Dysart-Gale, 2007). Previous studies have also shown that inadequate informal interpreting has led to misdiagnosis, inappropriate treatment of conditions and non-attendance atsubsequent appointments (Gerrish et al, 2004; MacFarlane et al, 2009). In the UK, approximately 10% of babies are born to non-English-speaking women (NICE, 2010). It is essential that these women can communicate their needs to ensure safe maternity care. Due to the cost implications of providing interpreters, the limitations of current interpreting services and the link between language barriers and health outcomes, there is an urgent need to develop novel and sustainable approaches to overcome language barriers for non-English-speaking women who access maternity services. With technological advances in voice activation software, it would appear viable to develop electronic devices that enable non-English-speaking women to communicate with midwives. Translation software, such as Google Translate, that can be downloaded onto mobile devices are widely available. Although evidence suggests that Google Translate is not reliable for use in a neonatal context (Borner et al, 2013), anecdotal evidence suggests that midwives are attempting to use it in certain midwifery encounters. However, no published literature could be found to determine its safety in accurately translating maternity interactions. Consequently a study was undertaken to explore this issue, with the following research questions:

1. What difficulties have senior midwifery students encountered when communicating with non-English-speaking women who were accessing maternity services?
2. How accurate and user-friendly is a mobile translation application when implemented in a simulated clinical environment?

Methods

To address the first question, 11 final year midwifery students volunteered to participate in a group interview. Data were generated to explore the type of situations where students had difficulties communicating with non-English speaking women in clinical practice. The hour long interview was audio recorded and transcribed verbatim. The findings were used to inform the second stage of the study.

To address the accuracy of the application, Google Translate was downloaded onto six mobile devices purchased for this study. This appeared to be the most sophisticated of all the free applications with more languages available for verbal

translation. Individual words, short phrases and longer sentences were constructed, which may be used by midwives when communicating with women in clinical practice. Using the mobile device, the accuracy of the verbal translation between English and Polish was assessed and recorded by a bilingual speaker (*Table 1*).

The application was then tested by midwifery students with different accents and three multilingual service users (Polish, French and Arabic) who role-played clinical scenarios. Six scenarios were developed from the clinical situations described by participants in the focus group interview where persistent language barriers had created difficulties in providing care (*Table 2*). These scenarios were role played using only a mobile device to communicate and video recorded within a simulated ward environment in the university clinical skills suite. An audio recording of background 'ward' noises was created, including a baby crying intermittently, with sound levels between 40–70 dB. The service users evaluated the accuracy of the translation and all participants verbally evaluated their experience of each activity which was audio recorded and transcribed verbatim. Finally, a group interview was undertaken evaluating the experience.

Ethical issues

The research was conducted in accordance with the prevailing ethical principles. Ethical approval was gained through the University Ethics Panel, 28/9/12, reference E246. Information sheets and consent forms were discussed with all participants to acquire informed consent, with the choice to withdraw from the study later if they wished. Although confidentiality was assured, it is difficult to maintain anonymity with a small local sample (Ford and Reutter, 1990). However, participants were informed of this and data were anonymised as much as possible, with their agreement. The data were stored in a password protected area with only the researcher having access.

Data analysis

The audio data were analysed following the principles of content analysis; reading and re-reading, identifying significant words and statements, examining patterns in these to develop themes and then coding the themes and indexing the data within the themes (Burnard, 1991; Mason, 2005). The video recordings were observed to examine data that demonstrated how user friendly the device was. This included looking at the reactions of the participants when background noise was introduced, how difficult the interface was to manipulate and how fast the device worked. A 'critical friend' checked the theme development to ensure consistency in the process (Bassey, 1999).

Results

From the group interview, four themes emerged related to communication difficulties in clinical practice:

Accessing interpreters

Although services were available, the majority of participants identified some difficulties in accessing interpreters at certain times, especially at night and weekends. When interpreters were booked, they sometimes failed to turn up or were in a hurry to get to their next appointment. To save money, interpreters were only booked for certain appointments where it was expected that key information would

need to be discussed, such as the woman's initial booking appointment or the neonatal blood spot. However, it was identified that at any appointment, information may be needed to be provided:

'You don't know what you may find antenatally … reduced fetal movements, unusual heart rate. You might be sending them to hospital for a check-up. How are you going to explain that if you cannot speak the language?' (Participant 6)

It was identified that for postnatal care, both at the ward and at home, interpreters were less likely to be available. In one instance, this led to a participant insisting that a healthy postnatal woman and baby have an extended stay on the ward over the weekend:

'… because there was no understanding of English. Very little family support— they'd attempted to, and she was happy for them, to try and translate but I wasn't happy with the understanding that she'd received from the postnatal information. So she had to stay in over a weekend, which is an extra 3 days of a bed, an extra 3 days of maternity care from the ward staff.' (Participant 4)

Participants felt that persistent language barriers had a negative impact on their own job satisfaction and the quality of care provided to the women:

'It affects you personally really because you know you're not providing the care.' (Participant 8)
'I do feel that people who do have trouble understanding English do suffer and do get substandard care because of it.' (Participant 4)

Working with interpreters
Participants identified situations where they had experienced excellent translating services with trained interpreters. However, there were also occasions where the interpreters did not translate as the participant would have expected, which led to difficulties when providing care. This included questioning the accuracy of the translation:

'... try to tell the translator something and then you know for a fact that they can't have possibly said what you just said.' (Participant 9)

This also included refusing to pass on information because it was not considered to be culturally appropriate:

I've had interpreters turn round to me before when you're giving dietary advice, or something like that, or asking about female genital mutilation, and they turn around and say, before they've even asked the woman 'oh no that's not in our culture.''' (Participant 2)

There were situations where interpreters appeared to act inappropriately in clinical situations, leading to negative perceptions of the situation:

'I find it quite uncomfortable when going through a translator and they start laughing. I just think that it's a serious situation and I don't actually know what they're saying.' (Participant 5)

Participants described situations where there was no trained interpreter available and midwives had asked family members to interpret. Some participants had to use a third party (male) to communicate with a woman and her partner and in one context, this was by telephone:

'We had to ask the man (who we didn't know) if it was alright to do a vaginal examination on this woman.' (Participant 1)

In addition, some participants described situations where family members appeared to condense important information when relaying to the woman thus questioning the accuracy of the translation:

'… we asked her sister to translate whatever we were saying and she said it in, like, three words.' (Participant 2)

Some husbands refused to translate, instead making the decision about care for their wives themselves. This included refusing to discuss the options for pain relief in labour and also telling the midwives they were giving the wrong advice about how to breastfeed. One situation related to a woman who presented in pre-term labour with a history of stillbirth at 24 weeks gestation:

'… and we wanted to give her some steroids. And he refused to translate, saying "It's Gods will, it's Gods will" but we kept saying that it was for his wife to decide, but he just refused to.' (Participant 5)

Another situation involved a husband translating for his wife while she was in labour. However, she did not want him present so he stood on the other side of a closed door:

'… and it was quite awkward as this booming voice shouting at her, but he was getting quite cross because he wanted her to hurry up and deliver.' (Participant 3)

Cultural barriers
Participants felt that language and cultural barriers were entangled and being unable to explain things because of a language barrier did not help overcome cultural barriers. For example, being unable to explain fully the implications of practices that were rooted in culture but potentially harmful to the mother or baby:

'(For) some Eastern European families, I've seen, it appears to be part of the culture as they still swaddle babies … (with) an appropriate translator, you'd be able to advise why you're giving that information (SIDS) rather than just discrediting what a family member may have told them … someone who doesn't understand you isn't going to understand why you're telling him or her something against what they believe to be right.' (Participant 4)

Strategies to address persistent language barriers
Participants described a number of strategies that they adopted to try to overcome language barriers and the limitations of these strategies. These included words in different languages for women to point to:

'On [the] labour ward they have a chart thing … in some of the cupboards and there's, like, the word blood or the word for pain … in any language and you just flip it. But it's one word and your trying to find it and you're in a hurry … what are you trying to say? It doesn't really give you much to work with …' (Participant 6)

Similar frustrations were experienced with translation technology:

'… the woman from Egypt on the postnatal ward, she had one of those little translating-gadget-things but it's one word at a time, so it took forever for her to do her morning visit.' (Participant 3)

One participant recalled a situation where she was asked to use an online translator application brought by a woman on her laptop:

'… I felt uncomfortable as wasn't designed for medical terminology … you're not sure you're asking the right things.' (Participant 4)

Some participants had attempted to use the Google Translate application in the clinical context but only through written, rather than verbal, communication which had limitations:

'Written ones aren't great for everyone because a lot of women cannot read their native language.' (Participant 2)

However, participants believed that a mobile application that accurately translated verbally would help to overcome some of the difficulties that they had encountered:

'You can look into her eyes and say, look this is what I am saying … have some kind of rapport and try to build on that then at least you have got a direct response instead of via a third party you don't have that fear of whether we actually getting the same information across.' (Participant 6)

However, perceived limitations of such a device needed to be overcome:

'… as long as its midwifery related… relevant and medical rather than general.' (Participant 5)

The accuracy and user-friendliness of the application

The accuracy of Google Translate in verbally translating between English and Polish varied depending on the content (*Table 1*). The table shows that the generic words translated more accurately than the midwifery terminology. When observing the video data, it appeared that using the mobile device slowed down the interaction. It was observed that it took time for the user to become familiar with working the

application and waiting for the translation. The time-lapse increased when the application did not accurately translate and the users had to repeat or change the phrase, often several times. Also, it was observed that the mobile device became central to the interaction, with both parties looking down rather than maintaining eye contact. In addition, it was found that the background noise did not appear to disturb the interaction. However, the participants appeared to speak louder and put the mobile device closer to their mouth when the baby cried. The application seemed to work more effectively when the user spoke slowly and clearly using short phrases rather than in full sentences. This was highlighted as an issue by two of the participants:

'It makes the sentence really drawn out when you have to do it in short sentences trying to think in short words.' (Participant 2)

There were times when the participants had to re-phrase information to gain better understanding. One example was explaining the dangers of cot death. This had to be repeated in different, less obvious ways to get the message across, resulting in a lack of depth (and clarity) to the communication:

'Babies can die in the house, when sleeping.' (Participant 1)

Another issue that arose was the multiple meanings of some words and how this influenced the translation:

'I said "does your tummy go hard with the pain?" it was saying "hard" but was meaning "difficult" in the Polish translation.' (Participant 3)

There were many occasions where the application either translated inaccurately or not at all:

'I asked (translated) in Arabic can I check your blood pressure, the app informed the woman that it did not need to check her blood pressure.' (Participant 2)

In another encounter, when trying to obtain consent for the BCG vaccine, the translation into Polish turned into phrases that could be considered offensive:

'It came up with rude words that could cause quite a problem on a home visit.' (Participant 2)

When observing the interactions, the researcher noted that sometimes participants appeared to become frustrated when they couldn't communicate verbally. When they typed the words into the application rather than speaking them, it was found to work more effectively:

'It picked up more of the stuff that I typed in but not when I spoke. (Explaining SIDS)' (Participant 3)

One participant pre-loaded the application with the questions she anticipated she may need to ask when assessing a Polish woman with abdominal pain. This

appeared to work more effectively than the verbal translations, although the participant stressed the need for pre-loaded phrases to be checked for accuracy:

'Some of the things that I pre-typed onto it were not 100% correct when they were translated so they needed to be typed in and checked as well by someone.' (Participant 3)

In addition, the accuracy of the reply from the woman was an issue. The value of using the application was questioned when it did not accurately translate the woman's response:

'... no point asking the question if you don't understand the answer unless it is a yes or no answer.' (Participant 3)

The language appeared to influence the accuracy of the information, French being the most accurate, and Arabic the least. Also, it was found that two participants who both translated breastfeeding advice to an Arabic woman had different experiences of using the application with the same words:

'Found breastfeeding easiest to translate … picking up 'nipples'" (Participant 1 (Arabic))
'Did not pick up a lot of things said … did not know 'nipples'" (Participant 3 (Arabic))

Interestingly, these two participants had very different English accents, one being South African and the other from Southern England. This suggests that accents may have influenced the accuracy of the translation, an issue highlighted by the participants.

Overall, there were mixed views as to the usefulness of such an application. One of the Polish service users believed it would not be helpful for her. However, other participants felt that it would be good enough in some contexts such as a routine appointment if there was no interpreter available.

'There's definitely a place for it, for example labour ward in the middle of the night for things like abdominal pain serious things that can't wait.' (Participant 1)

Discussion
This study confirmed that non-English-speaking women accessing maternity services in the UK experience significant communication barriers, reflecting findings from studies in other health care contexts (Hadziabdic et al, 2009; MacFarlane et al, 2009; Hadziabdic et al, 2010). In order to address this, midwives used different, untested methods to facilitate communication. This is the first study to evaluate the accuracy and user friendliness of a mobile translation application in a simulated maternity environment. The findings reflected a German study testing Google Translate in a neonatal unit (Borner et al, 2013). This study suggested that there are frequent problems with the availability of interpreters and their translation accuracy. Participants felt that inadequate translation can lead to substandard care as well as having an adverse impact on the ability to build a trusting relationship with the

woman, overcome cultural barriers and obtain informed consent. There still appears to be an over-reliance on informal interpreters despite the ethical ramifications associated with this. Other strategies such as words for women to point at and written translation devices used in practice to overcome language barriers appear inadequate. Participants perceived that implementing a mobile device with a translation application would be an acceptable way for midwives to communicate with women accessing maternity care where there are persistent language barriers. However, the findings demonstrated that Google Translate was not accurate enough to be used in the maternity setting. This supports Borner et al (2013) who found that, on average only 42% of sentences translated accurately when tested using 20 sentences communicating with parents in a neonatal unit.

This study is limited, with a small local sample and therefore the generalisability of the findings can be questioned. However, it is the first study to consider using Google Translate in a maternity setting. Also, the findings from the focus group are consistent with other health care research (Gerrish et al, 2004; MacFarlane et al, 2009; Hadziabdic et al, 2010; McCarthy et al, 2013). In the simulated ward, there was a limited range of vocabulary and topics tested for accuracy and only three languages assessed. Wider testing of the application in other languages would be needed to support these findings. Furthermore, Google Translate was the only mobile application tested, and although it appeared be the most sophisticated of the applications currently available, other products may have performed more effectively. This study is not conclusive, but forms the basis for further research in this area of significant need. It has been demonstrated that poor communication between staff and patient is one of the pervasive threats to patient safety especially during maternal and perinatal events (Paul and Schyve, 2007). Using an inaccurate mobile translation application could exacerbate issues around patient safety if the user relies on the device to assist in communicating during the clinical assessment of non-English speaking women. It is vital therefore that such untested devices are used with caution in the maternity context.

When testing the application in a simulated ward, midwifery students found that typing in the phrase to be translated was more effective than the verbal translation. In addition, pre-loading the application with midwifery related phrases appeared to increase the accuracy of the translations. The translations of these phrases would need to be carefully checked prior to use to ensure the accuracy of the verbatim and avoid possible scenarios of offensive or inappropriate translations.

Conclusions
It is becoming more common for contemporary midwifery practice to involve caring for women who do not speak English. There are limitations in the provision of interpreters within NHS maternity services, which could be exacerbated in the current economic climate with budget cuts. It would appear feasible to use a translation application to overcome persistent language barriers. However, the findings from this study suggest that in its current form, Google Translate is not adequately developed to be used in maternity services. With further work in developing midwifery terminology in different languages and pre-loading these into an application, it could be possible to effectively use a mobile translating device as a channel to assist midwives communicating with women who do not speak English. With the persistent problems of using interpreters in clinical practice, and the link

between perinatal and maternal mortality rates and language barriers, a greater focus on meeting the communication needs of these women is required. This study identifies the need for a fresh approach to addressing language barriers and the potential for harnessing the rapidly developing world of technology to find solutions to these needs.

Table 1. Direct verbal translation between English and Polish

Statement to communicate/ Translation in English to Polish/ Accuracy of translation
Hello Hello Correct
Hi Hi Correct
My name is My name is Correct
I am a midwife I am a midwife Correct
How are you? How are you? Correct
Are you ok? Are you *** Inaccurate and dangerous
I am looking after you today I am searching for you today Inaccurate
Would you like Would you like Correct
Toast Text Inaccurate
Tea T Near correct
Coffee Coffee Correct
Water What's up Inaccurate
Sandwich Sandwich Correct
Cheese sandwich *** Inaccurate
Bath (have to say barth) Bath Correct (accent dependent)
Shower Shower Correct
Toilet Toilet Correct
Check your Check Near correct
Please can I check your Please can I check mine Inaccurate
Blood pressure Blood pressure Correct
Urine Yaris Inaccurate and dangerous
Legs Legs Correct
Abdomen Tummy Near correct
Breasts Breasts Correct
Pulse Pulse Correct
Temperature Temperature Correct
Any pain Every pain Near correct
Pain in legs Pain in the legs Correct
Swelling Swelling Correct
Pain when pass urine Pain when urine Near correct
Bowels Whole of your inside Inaccurate and dangerous
Going to the toilet OK Toilet as a place Inaccurate and dangerous
Baby's movements Baby movements Correct
Fetal Fetal Correct
Normal Normal Correct
Baby's heart is normal Baby's heartbeat is normal Correct
Breech Breech status Correct
Head down Head down Correct
Blood loss Blood loss Correct
Is it red It is red Correct
Pink Pink Correct
Brown Brown Correct
Any clots *** Inaccurate and dangerous
Ultrasound Ultrasound Correct
Hospital Hospital Correct
You need hospital You need hospital Correct
Blood test Blood test Correct
Blood group Blood group Correct

Iron levels Iron levels Correct
Soft Soft Correct
Contractions Contractions Correct
Waters gone *** Inaccurate and dangerous
Cervix Neck Inaccurate and dangerous
Dilated *** Inaccurate and dangerous
Centimetres Centimetres Correct
Show *** Inaccurate and dangerous
Blood Blood Correct
Gas and air *** Inaccurate and dangerous
Pethidine *** Inaccurate and dangerous
Epidural *** Inaccurate and dangerous
Drip *** Inaccurate and dangerous
Injection Injection (as in car) Nearly correct
Monitor Translated as noun Nearly correct
Forceps *** Inaccurate and dangerous
Suction Suction (generic meaning) Inaccurate and dangerous
Internal examination Gynaecology examination Nearly correct
Baby tired Baby tired Correct

Table 2. Clinical scenarios
Polish woman Explain SIDS
French woman Explain co-sleeping
Arabic woman Breastfeeding advice
French woman Consent for BCG
Arabic woman Undertake an antenatal examination
Polish woman Admission 24/40 abdominal pain
Arabic woman Breastfeeding advice
Polish woman Consent for BCG vaccine
French woman Explain SIDS
(SIDS: sudden infant death syndrome)

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