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# Communicating with Mothers of Small Children

**Chelsea-Joy Wardle**

University of Cape Town  
Cape Town, South Africa  
wrdche003@myuct.ac.za

**Melissa Densmore**

University of Cape Town  
Cape Town, South Africa  
mdensmore@cs.uct.ac.za

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**Abstract**

Communicating and interacting with mothers of small children requires patience and understanding. In this work we explore the intricacies of three distinct relationships across borders, in the early stages of motherhood – researcher and mother; NGO and mother; mother and mother. In a developing country like South Africa, technology has the ability to help or harm mothers from diverse backgrounds, socioeconomic statuses, cultures and belief systems. We have taken a co-design approach to address these women and have experienced different results from using a variety of methodological approaches. Through our work we identify several factors that should be considered by HCI researchers when conducting probes, workshops, online surveys, interviews and participant observation with mothers of small children.

**Author Keywords**

Breastfeeding, breast milk donation, NGO, mothers of small children, co-design, probes, workshops, interviews, surveys, participant observation.

**ACM Classification Keywords**

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.



Figure 1: A prototyping and brainstorming workshop attended by two donor mothers

## Introduction

The initial phase of motherhood can be a challenging, scary and isolating time for women. Many first-time mothers may feel overwhelmed with their new role and newfound responsibilities. Some of these feelings may be alleviated with the help or guidance from a partner, family member or anyone else who has knowledge in the field such as a duala, breastfeeding expert or a nanny.

However in today's society, where a lot of time is spent online, new mothers are more regularly referring to technology for help. Mothers of small children may be a member of a WhatsApp or Facebook group and in addition to this, use online searches for answers to any pressing concerns that may arise during a crisis.

Technology has been used as a medium for mothers to connect with other mothers across borders, and form communities of varying skills, demographics, ages and socioeconomic statuses, capable of supporting and helping each other through this life phase. Yet by forming these vocal communities it has allowed for a lot of exclusion towards mothers who feel they are not able to fulfill their role as "the perfect mother" or do not have the resources to do so. Much of this comes from women who have not experienced the struggles of a pre-term birth, their milk not coming in, not being able to afford a milk pump, taking medication or needing professional help and experiencing post-partum depression.

In this study we work with mothers affiliated with Milk Matters, a human milk bank situated in Cape Town, South Africa. In working with this population we examine how to do research with mothers from diverse

communities, understand how they leverage technology to communicate with each other and how they respond to an under-resourced non-governmental organisation (NGO). Presently there is very little research on breast milk donation, motivating donation and milk banking in the South. Our participants, mothers of small children are an understudied population in HCI, with only a few studies emerging in the past few years; their interaction with NGOs such as Milk Matters, is even more so.

## Background

Milk Matters is a non-profit human milk bank that operates in the Western Cape, South Africa [8]. The milk bank is run by five women whose primary activities include sourcing human breast milk from donor mothers, pasteurising the milk for safe consumption, and distributing the breast milk to sick or preterm infants in local Neonatal Intensive Care Units (NICUs). The staff of Milk Matters comprises a dietician, a nurse, a lactation consultant and public health experts who have worked with breastfeeding mothers extensively. Most of Milk Matters' present interaction with donor mothers takes the form of emails (they have a mailing list consisting of 1016 donors, supporters and the general public who subscribe via their website), both automated and personal. This makes sourcing and attaining donor mothers and their excess breast milk a labour-intensive task, especially for an under-resourced small non-governmental organisation like Milk Matters. At any one time they receive milk from an average of 20 women.

Donor mothers are typically middle-income women, who can afford a breast pump and the travel expenses required to deliver their milk to a depot location.

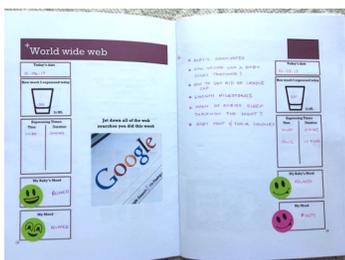
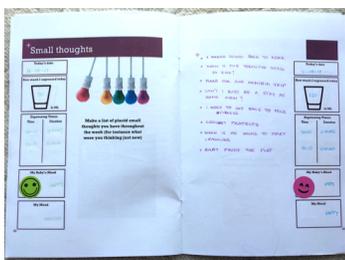


Figure 2: Cultural probe kits completed by three donor mothers over one month

However the milk bank is not exclusive, and Milk Matters does receive donations from low-income women who use hand-pumping to express their milk and rely on their relatives or partner to deliver the milk to a nearby depot location for donation. Recipients of the milk are generally low-income.

Human breast milk has vital nutritional and immunological properties that cannot be replicated in infant formula (manufactured food for babies) [17]. As such, the use of human breast milk in an infant's diet results in positive health outcomes [16]. This is especially true for fragile infants [14], such as sick or premature infants in Neonatal Intensive Care Units, whose immune systems may be weak. In addition, formula or alternate forms of food may result in health complications for some infants, such as those whose bodies cannot tolerate it [17]. For these reasons human milk is considered to be a vital medical resource and the ideal source of food for infants, as stipulated by the World Health Organisation [1,17].

Milk banks play a very important role in collecting, screening and distributing human milk to the premature population. In this regard, the services provided by milk banks could be considered "preventative medicine" [12], as they provide the infant with many positive health outcomes [11]. However, the resources needed to ensure the milk is safe for consumption can be costly, especially in the developing world where public health is poorly funded.

### Contribution of this work

It is important to understand the pressures and insecurities mothers of small children experience. Without this insight much of what you may say, as a

researcher, NGO or even as another mother, could be perceived negatively. When trying to work with mothers from diverse backgrounds, cultures and beliefs to pursue collaboration across borders, it is crucial to use a good approach and know how to communicate effectively and respectfully with them. This work aims to provide insight on the varying methods we used to work with mothers of small children and offer an analysis on technological communication within these three distinct relationships:

#### *Researchers and mothers*

We aim to gain a better understanding of how to conduct different styles of enquiry with mothers of small children, contributing to Human Computer Interaction (HCI) knowledge on an under-represented population.

#### *NGO's and mothers*

We aim to gain a better understanding of how under-resourced NGO's, such as a milk bank from South Africa like Milk Matters, is perceived by mothers based on the nature of their communication and feedback mechanisms.

#### *Mothers and mothers*

A better understanding of how mothers interact with each other using ICTs, focusing on chat room functionality.

We believe this research will benefit from feedback and discussion with fellow HCI researchers at HCI Across Borders. The work we've already accomplished with this under-represented population so far, may serve to guide others in their projects and provide context for

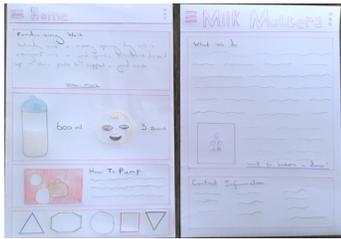


Figure 3: Paper prototyping with the donor mothers of the proposed mobile application and chat room feature.

milk donation, breastfeeding, NGO relationships and mothers of small children on a global scale.

### Related Work

There have been several projects that have tried to address this issue of communication with and amongst mothers of small children. Balaam et al. [7,13] worked with mothers of small children on the design and development of an application, *Feedfinder*, that helped women communicate with each other on establishments within their community that were favourable towards breastfeeding. The application not only provided women with a map of areas they could freely breastfeed, but also helped alleviate any anxiety's these mothers felt about breastfeeding in public.

Hui and Neustaedter [15] created *MammiBelli*, which helps expectant mothers' communicate information on their pregnancy with their intimate social groups. Kosaka et al. [10] created *Mommy Tummy*, which is able to simulate the experience of being pregnant and allow others to feel the mother's sensations.

D'Ignazio et.al. [3] provided mothers with a space to raise their concerns about, and collectively share their experiences of the breast pump. Their work highlighted the need for a large-scale conversation on post-partum technologies.

Wardle et.al. [4] created the *Milk Matters* mobile application, a tool designed to motivate milk donation and improve feedback and communication between donor mothers and the milk bank (see figure 4). In this work, the co-design with breastfeeding mothers is discussed in-depth.

### Approach

In this research we've adopted a co-design approach because we believe it fosters collective creativity amongst participants of varying levels of expertise throughout a design process [6]. We wanted to create an equal and empathetic relationship between the mothers and researcher, inducing a shared sense of ownership for and the sustainability of the artefact [5,9,18].

Our choice of methodology has been influenced by feminist HCI practice, which has values of agency, fulfilment, equity, inclusivity, empowerment, diversity and social justice [19]. We wanted to give the mothers the most freedom to express their ideas, thoughts and opinions.

#### *Probes*

This approach presents two obstacles: it requires long-term deployment, which participants may not be willing to commit to; and the probe packages (see figure 2) need extensive planning as to what you want to achieve with them and how to obtain that feedback. Although we are aware that the data gathered from this method may lack focused design implications, we rather wanted to gather interesting reflections on the mothers, as the users of a proposed technology. The probes are a good tool for understanding your participant's in-depth, focusing future interactions and work well as a starting point to any design discussion [2,20].

#### *Workshops*

Workshops (see figure 1) present the opportunity for discussion prompted by shared experiences, sparking conversations that might not happen in a one-on-one situation. However, workshops are difficult to schedule



Figure 4: Donation tracking and Education screens from the deployed Milk Matters mobile application

for mothers of diverse backgrounds who present different challenges to meeting, such as no transport or limited time available if they are working. For this population interviews may be preferable as they are easier to organize.

### Surveys

Surveys allow mothers who are unable to meet to respond remotely at any time. However responses may be variable and may require further reminders, advertisements or incentives to obtain more responses. Surveys also exclude mothers who lack data or the technological resources required to answer a survey online.

### Interviews

We use individual house visits in this work to eliminate the exclusivity created by workshops and surveys for mothers without the capacity to meet away from home or technology to answer online. Interviews offer more flexibility to plan sessions, in case donors need them to be moved for circumstances such as bath time, a sick baby, a working mother who needs to meet later in the evening or a mother who wants to get her child to nap before visiting her.

### Participant Observation

The first author has been volunteering at the milk bank on a weekly basis. This approach provides an opportunity for informal dialogue with the staff. A physical presence in their office also serves as a reminder for the extremely busy, under-resourced NGO to recruit participants for the research, which they were willing to do because the author was helping them with collections and office work in return. The first author also works in the Groote Schuur Neonatal Intensive Care Unit to research the broader implications of breast

milk donation and the perception of breast milk and the milk bank from the mothers and staff in the NICU.

### Lessons Learned

#### *As a researcher communicating with mothers of small children*

It is important to have patience as a researcher when working with mothers of small children, not only during the session when she is interrupted by her child, but also with regards to remote communication when trying to organize sessions.

It is also important to understand your role as a researcher when interacting across borders with diverse mothers of small children. Sometimes a session may diverge from the topic at hand to discuss anxieties or difficulties the mother has experienced. It is important to know that taking the time to hear her struggle and confirm her capabilities as a mother is important to promote a positive relationship between the mother and researcher.

Going into a session, understand that each mother has her own beliefs for raising their child. An example of this is having no cellphone present around her child. Also be prepared for what may be considered dangerous materials to have around a small child, such as scissors or glue in a prototyping tool kit that the baby may choke on or cut themselves with.

As a researcher you also need to be accommodating towards mothers of small children who have limited time available and may need to reschedule a session due to unforeseen circumstances, such as bath time or a sick baby.

*As an NGO communicating with mothers of small children*

Mothers require affirmation on how they are doing as a donor and a mother. For an under-resourced NGO like Milk Matters, who may not be able to provide compensation for their donor mothers' milk, they need to recognize the value of feedback and communication. ICTs may be used positively as a medium for connecting with their donors to offer advice, understanding, confirmation and guidance based on the expertise the NGO staff possess.

*As a mother communicating with another mother of a small child*

We currently have limited knowledge on this relationship, as it is included in the future work we will do in this project. However, based on our current work we have seen how important it is for mothers to show understanding and not use technology as a weapon to shame, bully or compete with women whose circumstances have provided them with barriers to being "the perfect mother". Motherhood is mostly dictated by natural occurrences in the body and compassion should be shown to women who already feel inadequate as a mother when turning to online communities for help or guidance.

### **Conclusion**

In this research we have endeavored to understand three distinct relationships across borders, in the early stages of motherhood. In a developing country like South Africa, technology has the ability to help or harm mothers from diverse backgrounds, socioeconomic statuses, cultures and belief systems. We've used a co-design approach to address this population, and have provided insight from our experience of using probes,

workshops, online surveys, interviews and participation observation with mothers of small children and an NGO.

In this paper we've tried to highlight our experience as HCI researchers working with mothers in a developing region. We would be grateful for the opportunity to discuss this knowledge with other researchers at HCI across borders and gain a broader understanding of working with this under-represented population in a global context.

### **Acknowledgements**

We would like to acknowledge the contribution of the mothers who gave freely of their time and participated in the co-design and evaluation of the Milk Matters application. We would also like to acknowledge Milk Matters' generous input.

### **About the Author**

Chelsea-Joy Wardle is in her second year of Masters in Computer Science at the University of Cape Town, in South Africa, supervised by Dr Melissa Densmore. She works at the UCT Centre in ICT4D, which brings together researchers from varying disciplines to focus on creating solutions that address socio-technical problems in South Africa, across Africa and in other developing regions. Chelsea's work focuses on existing technologies in the global health domain, and in this project she's focused on the health and welfare of mothers and babies in South Africa.

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