

Maternal Health in Kenya: Showing the high potential of digital solutions with the Nairobi-based startup Malaica

The global maternal mortality ratio declined between 2000 and 2017 (*Maternal Mortality Rates and Statistics*, n.d.). According to Unicef (*Maternal Mortality Rates and Statistics*, n.d.) in Kenya, the number of deaths due to complications of pregnancy and childbirth was at 342 per 100'000 live births in 2017 and rated among the highest in the world (Bartlett et al., 2021, p. 3). A recent report from the Bill & Melinda Gates Foundation shows that Kenya's ratio increased even more in the past few years and is now at 378 maternal deaths per 100'000 live births per year (*Global Progress and Projections for Maternal Mortality*, n.d.).

As Masaba et al. mention in their paper, most of the mortalities are preventable. The issue stems from the failure to administer rapid obstetric interventions after developing complications during pregnancy or labour. According to the same paper, this happens to approximately 15% of pregnant women. "In most developing countries, the major direct causes of maternal morbidity and mortality are hypertensive diseases with eclampsia, postpartum haemorrhage, infections, obstructed labour, ruptured uterus and unsafe abortion" (Masaba et al., 2022, pp. 1–2).

In this essay, I will present the Nairobi-based startup Malaica (*Homepage - Malaica*, 2021), with which I've personally been working for the past year. I will focus on its digital solution and how its services are addressing gaps in the astonishingly high maternal mortality ratio in Sub Saharan Africa. The one-year-old Kenyan social enterprise supports pregnant women throughout their pregnancy journey. With a holistic approach, Malaica aims to make the journey for pregnant women safe and convenient. Nurse midwives are at the core of their offered pregnancy program. How does it work? A client is matched with their personal nurse midwife, and uses WhatsApp as a communication tool for easy and rapid access to support and high quality information. Dr. Lorraine Muluka, OBGYN and CEO of Malaica, explained over email (L. Muluka, personal communication, January 25, 2023): "Nurse midwives are the primary caregivers of antenatal and delivery services in Sub Saharan Africa. Studies have shown that pregnant mothers supported by qualified nurse midwives are likely to have good pregnancy outcomes." Among other things, their customers benefit from being part of a mum's group, daily education

on their and their baby's health status, and weekly access to group conversation with an OBGYN or private consultation in the case of any elevated risk that would need an escalation. Everything is delivered online via the customer's smartphone.

With their innovation, Malaica tackles multiple delays in Kenya's maternal health system. In Kenya, expecting mothers receive maternal health care through antenatal visits at their clinics (public or private). WHO recommends eight antenatal care touchpoints (*WHO Recommendations on Antenatal Care for a Positive Pregnancy Experience: Summary*, n.d.). As a study shows in western Kenya, 90% of pregnant women do visit their clinic at least once in their pregnancy, starting in their third trimester rather than in their first trimester as recommended by WHO (Mason et al., 2015). From my own observations and conversations with numerous mothers in Kenya, I can tell that an overwhelmed hospital staff, long waiting hours, and an extremely short consultation time with a nurse or doctor at a facility make the journey for pregnant women inconvenient and unsuitable for taking the time to ask burning questions. With its pregnancy program, the startup is not trying to replace the Kenyan maternal health system, but rather to enhance it. "Being part of the Malaica pregnancy program, pregnant women can be sure they have a trusted partner throughout their pregnancy journey who will not only provide them with reliable information but also coach them and ensure they are meeting WHO guidelines for pregnancy – from the comfort of their home", says Dr. Muluka.

"There is growing evidence of the value of digital technologies in promoting access to healthcare" (Bakibinga et al., 2020, p. 1). 55% of Kenyans own a smartphone (Communication Authorities of Kenya, n.d.). Even if most "rural and underserved populations are likely to be in ownership of a feature phone and not a smartphone" (Sowon et al., 2022, p. 12), 1.2 million Kenyans shift to smartphones every year (Communication Authorities of Kenya, n.d.). "The growth of mobile technology in developing countries, coupled with pressing maternal health care challenges, has led to a widespread implementation of maternal mobile health (mHealth) innovations" (Sowon et al., 2022, p. 1). These fast-growing numbers of smartphone users and the accessibility of the internet provide a unique opportunity for the digital delivery of health care. "With phone diagnostic innovations such as measuring blood pressure and fetal heart rate being made possible the opportunities to improve pregnancy outcomes is literally at our fingertips", says Dr. Muluka. As Bartlett et al. write, it will ensure "timely access to quality,

proven critical health interventions and innovative facilitators to bridge health system barriers, particularly in rural or limited resource settings. Digital technology is a promising option to overcome these barriers to achieving and maintaining high-quality care standards“ (Bartlett et al., 2021, p. 1).

Although “most clinics are already equipped to work with digital processes” (Dohmen et al., 2022, p. 3), a lot of them (if not the most) rely on “key paper-based tools” such as “admission form, referral letter, medical history record, shift notes, partograph, birth register” (Bartlett et al., 2021, p. 2). As I’ve personally observed by visiting several antenatal care clinics in Nairobi, expecting mothers carry with them a pregnancy health booklet that contains their personal data and medical history. Sometimes the booklet is preprinted and shows a logo of a hospital or clinic on the cover. Others carry an empty notebook that had to be purchased before the visit to the clinic. Depending on the level of the facility (between level 1 community facility to level 6 national referral hospital), there are nurses and/or doctors present for the consultation. Often, there is not a consistent health care provider who accompanies the pregnant mother throughout their journey, but they are rather seen by whoever is available at the time of the visit. Some facilities have an ultrasound, some do not. The consultation time is extremely short. Then collected information such as blood pressure, test results, and more are written down in the booklet. Some clinics, mostly private, keep a digital record of the test results. Other facilities copy the information in a big book. But to have the medical history available, it is the mother’s responsibility to bring the maternal health booklet to her visits and keep it safe.

What if this booklet gets lost? No one would have the information about the present pregnancy and any details of the mother’s medical history. What if the handwriting in the booklet is illegible? It would be very easy to make fatal errors and could risk the mother and her baby. According to Bartlett et al. (2021, p. 2) digital health solutions can assist the current system to “facilitate and measure quality of care and drive improvements in triage, referrals, admissions and discharge protocols; support patient registration, clinical presentation, identification and initial management of key birth complications.”

The pregnancy health booklet is an example of many where digital solutions can bring improvements. But there are challenges that come with new technology. When a process is so

established and anchored in the system, like a mum carrying her and her child's medical history on paper until long after the baby is born, the people struggle to accept changes: in this example, certainly, the patients, and also the health facilities and their staff. "It takes time to overcome the challenge of trust in digital innovations. But once it is tried and tested, even laggards can become ambassadors", so Dr. Muluka.

Having their pregnancy health booklet in their hands is a good way for giving pregnant women access to their own medical history and details. But reading and understanding the details in these booklets can be quite challenging. To facilitate this, Malaica focuses on giving its customers reliable information they can easily follow. "There are often delays in decision-making. This is addressed through empowering pregnant women with educational content that enables them to go to the hospital once they identify danger signs. Further to this and even more personal is the fact that the mum can reach out to her personal nurse midwife who will not only guide her in decision making but also guide her to the right facility for the type of care she needs", explains Dr. Muluka further.

To conclude, growing access to smartphones and the internet in Kenya, is an opportunity to overcome barriers in the current maternal health system. Easier and faster health care allows for more rapid decisions in the case of any emergency. The startup Malaica uses the highly used application Whatsapp to deliver its services. "Kenya has the highest percentage of monthly WhatsApp users compared to the rest of the world, with an astonishing 97% of internet users who use WhatsApp every month" (Bayhack, 2021). With a qualified nurse midwife on the other side of the line, the young company fights to prevent cause for maternal mortality.

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