



Maternal Health Task Force



HARVARD SCHOOL OF PUBLIC HEALTH

Department of Global Health
and Population



Jacaranda Health

**A model for sustainable affordable high-quality maternal
care for Nairobi's low-income women**

OVERVIEW OF KENYA

Kenya's 571,466 square kilometres of land are organized into eight provinces and 158 districts.² The country remains largely rural, but is quickly urbanising – between 2010 and 2015, the country is expecting an annual 4.36% increase in its urban population, while public services such as health facilities and sanitation struggle to keep up.³ Those living in informal settlements, which house almost two-thirds of Nairobi's population and are present across the country,⁴ face the most difficult living conditions. Several key socioeconomic and demographic indicators are summarised in Table 1.

Table 1: Socioeconomic and demographic indicators

| INDICATOR | INFORMAL SETTLEMENTS ^a | NAIROBI ^b | KENYA |
|---|-----------------------------------|----------------------|-----------------|
| Population (millions) ^{5,6} | 2.02 | 3.36 | 41.61 |
| Urban population (%) ⁷ | n/a | n/a | 24.8 |
| Poverty, below national poverty line (%) ^{6–8} | 73 | 44 | 45.9 |
| Human Development Index (HDI) ⁹ | – | – | 0.519 |
| Gini coefficient ⁹ | – | – | 47.7 |
| Access to piped water (% households) ^{10,11} | 19 | 71 | 59 ^c |

a: Estimates are for all informal settlements in Nairobi

b: Nairobi estimates include informal settlements

c: Access to any improved water source

Health in Kenya

The majority of health care facilities in Kenya are government-run, including 56% of hospitals and 60% of health centres;³ the remaining ones are private for-profit and private not-for-profit

institutions.¹² Health status varies significantly across the country. While average health status in Nairobi is better than the average across Kenya, the citywide health indicators mask stark inequalities (Table 2). Premature mortality rates (calculated using Global Burden of Disease standard life expectancies by age) in the peri-urban areas such as those which Jacaranda serves are often two to three times those in Nairobi overall, and access to quality care can be much more difficult.²² For example, the neonatal mortality rate in Nairobi as a whole is 21.8

per 1,000 live births, while that in the city's informal settlements is 30.4 overall and as high as 111.1 in some settlements.²³ Estimates also suggest that maternal mortality reaches over 700 deaths per 100,000 live births in some settlements, compared to the national average of 360.¹⁶

The shortage of human resources is a barrier to improving health. Kenya has fewer than 10 doctors, nurses and midwives per 10,000 population, compared to the minimum threshold of 23 per 10,000 population needed to deliver essential maternal and child health services.²⁴ This shortage means many women cannot access skilled care, and those with access are often disrespected or abused by overworked providers in overcrowded wards.²⁵ To avoid this, many women in Kenya deliver at home with untrained traditional birth attendants or in sub-par facilities.²⁵ While 70% of births in Nairobi's peri-urban areas take place in health facilities, just 48% of women deliver in facilities meeting minimum standards (those which provide at least the following: injectable oxytocics; injectable antibiotics; manual placenta removal; injectable anticonvulsants; and removal of retained products).²⁶ Moreover, a recent study found that in some peri-urban areas in Nairobi, just 38% of health facilities had a license from the Kenyan Medical Practitioners and Dentist Board, the national regulatory body, and the vast majority (106 of 125) were private for-profit institutions.²⁶

Approximately 287,000 women die worldwide each year due to obstetric complications,²⁶ and for each of these deaths, another twenty women suffer from morbidity related to pregnancy or childbirth.²⁸ Maternal and neonatal mortality have remained high in Kenya over the last three decades. Home deliveries are more common in rural areas, but in Nairobi, the majority of women deliver at public facilities, which are often overcrowded, understaffed, and under-resourced.

Delivery Care in Kenya

The Nursing Council of Kenya is the national regulatory body maintaining standards of nursing and midwifery education and practice.²⁹ A license is required to practice nursing and midwifery, and there are 60 midwifery education institutions.³⁰ In an effort to increase access to skilled attendance at birth, in 2006, the Ministry of Health commissioned the development of a community midwifery model, which encourages women who desire to deliver at home to utilize trained midwives who are trusted within the community.³¹ Recently, the Ministry has also discouraged the use of traditional birth attendants.³²

Status of Women

Kenya ranks 130th out of 148 countries in the Gender Inequality Index and 78th out of 136 countries in the Gender Gap Index.^{9, 33} The literacy rate for women is 67%, while it is 78% for men. Men are more likely than women to participate in the labour force

Table 2: Health and epidemiologic indicators

| INDICATOR | INFORMAL SETTLEMENTS | NAIROBI | KENYA |
|---|----------------------|---------|--------------------|
| Average life expectancy at birth (total/female/male) ^{5,7} | – | – | 60.0 / 59.2 / 56.7 |
| Physicians (per 10,000 population) ¹³ | – | – | 1.8 |
| Nurses and midwives (per 10,000 population) ¹³ | – | – | 7.9 |
| HIV prevalence, adults 15–49 years (5) ^{2,14} | 12.0 ^a | 7.0 | 6.3 |
| Anti-retroviral therapy coverage for advanced HIV (%) ¹⁴ | – | – | 72 |
| Total fertility rate (live births per woman) ^{2,15} | 3.4 ^b | 2.8 | 4.6 |
| Maternal mortality ratio (per 100,000 live births) ^{16,17} | 706 ^b | – | 400 |
| Under-five mortality rate (per 1,000 live births) ² | – | 64 | 74 |
| Neonatal mortality rate (per 1,000 live births) ² | – | 48 | 31 |
| Married women using any contraceptive method (%) ^{2,18} | 39 ^{a,c} | 55 | 46 |
| Birth interval, months since preceding birth (median) ² | – | 40.4 | 33.1 |
| Antenatal care coverage, at least 4 visits (%) ¹³ | – | – | 47 |
| Births attended by skilled provider (%) ^{2,19} | 52 ^a | 88.9 | 43.8 |
| Births delivered in a health facility (%) ^{2,20,d} | 70 | 89.4 | 42.6 |
| Birth weight < 2500g (%) ² | – | 7.8 | 5.6 |
| Births by Caesarean section (%) ² | – | 11.5 | 6.2 |
| Postnatal care visit within 2 day of birth (%) ^{2,21} | 94.9 ^b | 76.7 | 42.1 |

(72% and 62%), and women earn just two-thirds what men do.³³ While men generally feel strongly about their wives' role as joint decision-makers in the household, gender-based violence is still common; 38.5% and 20.6% of adult women have experienced physical and sexual violence, respectively. In addition, 12.3% of women report that their first sexual intercourse was against their will.²

JACARANDA HEALTH

In 2011, Jacaranda Health opened its first mobile clinic to provide affordable, high-quality antenatal care to women in peri-urban communities; the following year, Jacaranda expanded its services and moved to a fixed clinic. The organization has developed a strong set of protocols for providing antenatal, obstetric and post-natal care, which are delivered at the clinic along with family planning services (Pearson N 2014, personal communication, 19 Feb).

As of February 2014, the Jacaranda maternity clinic staff includes nurses, midwives, and support staff – there are not

currently any physicians working at Jacaranda. The organization provides clients with high-quality individual antenatal care (ANC) provided by nurse-midwives. Jacaranda's detailed ANC protocols are adapted from the WHO's 2006 recommendations³⁴ on maternity care.

In addition to ANC and managing pregnancy, women are counselled on birth readiness and family planning. Unless there is a known risk that the woman may need a Caesarean section, she is also eligible for labour and delivery care at Jacaranda. Jacaranda does not currently have the capacity to conduct Caesarean sections, meaning the organization's referral protocols are somewhat conservative; they refer more than 20% of their cases to nearby, previously-vetted facilities, of the patient's choosing, which are able to perform Caesarean sections.³⁵ New mothers from across Jacaranda's catchment area may also receive

a: Informal settlements overall, Nairobi

b: Settlements of Korogocho and Viwandani, Nairobi

c: Use of modern contraceptive methods

d: Includes births in all facilities, regardless of quality

Trigger for Innovation

In Kenya's sprawling peri-urban areas, availability and accessibility of health services is particularly poor. There are few facilities and they are often too distant or expensive for women to access them. Many of these facilities are unlicensed and remain untouched by government quality-of-care standards.²⁶ In addition to these barriers, women commonly opt out of seeking care due to being treated poorly or disrespectfully by health care staff.¹

Nick Pearson has invested in several market-based social franchises, focusing particularly on businesses serving low-income populations around the world. An alumnus of Stanford University's Graduate School of Business, Pearson founded Jacaranda Health in 2011 to provide Nairobi's low-income women with high-quality, friendly and affordable maternal care.

postnatal care (PNC) at the clinic. Clinic-based PNC at Jacaranda is derived from recommendations published by the WHO^{34,36} as well as the UK's NICE³⁷ guidelines. Responding to mothers who are often more concerned with their child's health and well-being than with their own, Jacaranda bundles maternal postnatal care services with newborn preventative care. For example, when mothers bring their newborns to Jacaranda for BCG vaccination at seven days postpartum, they can receive postnatal care for themselves as well (Pearson N 2014, personal communication, 19 Feb).

As part of their effort to ensure a high standard of maternal and newborn care with a patient-centred approach, Jacaranda Health continues to test innovative methods to improve the care it offers. An electronic medical records system is in development using Jacaranda's customized, user-friendly medical record system.

Jacaranda's clients have access to a 24-hour hotline for health and logistical concerns, which has proven to be an important dynamic communication channel connecting clients and providers. Mobile phones are used to input patient data and to send appointment reminders or satisfaction surveys to clients. Jacaranda has developed its own mobile pre-payment service called MamaKiba ("MotherSavings") which helps families save for delivery costs.¹ In recent months, they have piloted a postpartum family planning campaign to learn more about women's needs using a cloud-based SMS service. A small number of postpartum clients received a family planning-related SMS and were encouraged to respond for more information; those who did were followed up by Jacaranda's nurse-midwives. Nearly one-third of women who received messages asked for more information, and there was a 35% increase in family planning visits at Jacaranda during the pilot period.³⁸

In addition to Jacaranda's technology-related interventions, it is piloting different ways to deliver care as well as behaviour change programs. Jacaranda is examining ways to increase male involvement, particularly with choices surrounding labour and delivery, an area in which many women do not have the autonomy to make decisions themselves. They are also testing the effectiveness and feasibility of providing home follow-up for women who deliver at Jacaranda. Based on international recommendations,³⁹ these women receive in-person or phone-based screening for maternal and newborn complications on the third day after delivery, ensuring that they receive basic PNC even if they are unable to attend Jacaranda for follow-up care (Ettenger A 2014, personal communication, 25 Feb).

Jacaranda's pricing structure has allowed it to be self-sustaining, covering the costs of running the clinic with client fees. Normal delivery costs 7,900 Ksh (about US\$80), while antenatal, postnatal, and family planning visits generally cost 100 Ksh each (with the exception of the initial ANC visit, which costs 500 KSh inclusive of all required lab tests). Jacaranda has experimented with various client incentives, such as a program giving women 500 KSh cash for referring a friend.³⁵ Jacaranda conducted extensive market research to derive its cost structure before opening its first clinic. While initially under-cutting much of the similar-quality competition in the area, other facilities have since reduced their costs to remain competitive. In addition, the Kenyan government removed all maternity care user fees from public facilities in July 2013, complicating the decision-making process for low-income women and families (Ettenger A 2014, personal communication, 25 Feb). But numerous labour strikes in public facilities have affected Kenya in recent months, reducing access to care there and highlighting the importance of other facilities such as Jacaranda.^{40,41}

MONITORING, EVALUATION, AND RESULTS

Since its inception, Jacaranda Health has collected data on health outcomes and conducted surveys about patient satisfaction. They have monitored staff documentation of patient visits to ensure consistency of record-keeping and have kept track of the length of patient visits, as a proxy for thoroughness and quality, to ensure women's full needs are being met (Pearson N 2014, personal communication, 19 Feb).

Jacaranda has served thousands of women.¹ As of February 2014, their fixed clinic provides about 250 ANC visits and conducts around 30 deliveries per month. Around 200 children receive wellness visits per month (Jacaranda provides these through 9 month of age, which is when the Kenyan vaccination schedule is complete), and care for the mother is offered during these visits as well. Family planning is offered several times postpartum, and is especially emphasized at six weeks after birth. Early patient surveys have been promising; 95% of women rated their care a full five stars.⁴²

Jacaranda has more recently established partnerships with the Harvard School of Public Health (HSPH) and University of North Carolina – Chapel Hill (UNC) to ensure scientific rigor in the measurement of impact of their interventions.¹ Specifically, they are working with UNC to improve efficiency and empower their staff while maintaining high quality. Jacaranda is also collaborating with a team from HSPH to learn more about women's decision-making regarding place of care for antenatal, labour and delivery, and postnatal care, and how Jacaranda may serve women's needs more effectively.

SCALABILITY, SUSTAINABILITY, AND FUTURE DIRECTIONS

Jacaranda aims to become the largest provider of maternity care in the East Africa region. A second maternity clinic is slated to open in April 2014, with plans for a third in Nairobi by the end of 2014. After the third Nairobi clinic is open, Jacaranda is planning to open clinics in other, smaller cities around Kenya in order to test its model in a variety of settings (Pearson N 2014, personal communication, 19 Feb).

Much of Jacaranda's efficiency has come from its use of task-shifting, particularly related to administrative work, which leaves the clinic's nurses and midwives more time to focus on their patients' clinical needs. Jacaranda's nurses, who participate in continual training and professional development, handle all clinical care, while nurse aides provide basic non-clinical support.¹ Jacaranda has been also piloting home visits conducted by community health workers in order to provide postnatal care for women who deliver there (Ettenger A 2014, personal communication, 25 Feb).

By working to improve system efficiencies and carefully tailoring their pricing structure to the needs of the local population, Jacaranda is creating a sustainable, scalable maternity care model. As of February 2014, Jacaranda is in the final stages of becoming a certified facility under Kenya's National Health Insurance Fund (NHIF), which will reduce Jacaranda's user fees for much of their target population and allow the organization to reach a larger number of clients in their catchment area. A woman will be able to contribute as little as \$2 per month for three months of her pregnancy, after which she will be eligible to deliver at Jacaranda with a small co-pay of about US\$10 (Ettenger A 2014, personal communication, 25 Feb).

Nick Pearson, founder of Jacaranda, seeks to improve maternity care beyond the reach of the organization. Pearson is particularly excited about spreading the word and sharing what works with other groups across the region. Jacaranda is currently examining the best ways to package its clinical protocols, checklists, and standards for use by others in the maternal health community (Pearson N 2014, personal communication, 19 Feb).

INSIGHTS FROM JACARANDA

- **A “patient-centred design” is crucial.** Initially, Jacaranda planned to utilize mobile clinics exclusively, in order to increase demand for and accessibility to services. But when they opened their brick-and-mortar maternity clinic in 2012, Jacaranda's team realized that women actually preferred to come to the fixed clinic for services because it simply looked more like what they expected. In June 2013, the mobile clinic was closed; Jacaranda was able to adjust its initial hypothesis to better serve patients' needs.
- **Include a complete monitoring and evaluation plan from the beginning.** While Jacaranda is still building their evaluation tools, they are already measuring patient satisfaction, improving internal documentation, and surveying patient outcomes.
- **Task-shifting increases access.** Jacaranda has used community health workers and mid-level professionals to increase access to services and improve community outreach. Clinical providers are better able to focus on their responsibilities while auxiliary workers can provide more basic care.
- **Word-of-mouth can increase demand.** This has been the most effective marketing strategy for Jacaranda. The organization works on providing excellent service, and testing various incentive programs for satisfied clients to refer other women they know in the community. Jacaranda has successfully grown their client base while maintaining their patient-centred focus.

- **Include men.** Through their communication with patients, Jacaranda has realized the important role of men in birth planning and decision-making. Thus, they are working to deliver antenatal counselling content more efficiently and in a way that gets men involved.

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ACKNOWLEDGEMENTS

This working paper was written as part of the Adding Content to Contact project, which aims to systematically assess the obstacles that prevent and the factors that enable the adoption and implementation of cost-effective interventions for antenatal and post-natal care along the care continuum. As part of this process, the project is working to identify existing and potentially innovative approaches to improve delivery of antenatal and postnatal health services through interviews with key informants.

We extend sincere gratitude to Nick Pearson and Allison Ettenger of Jacaranda Health for their time and assistance with this case study. ACC was made possible by Grant Number OPP1084319 from the Bill & Melinda Gates Foundation, and is a collaboration between the Maternal Health Task Force and Department of Global Health and Population at the Harvard School of Public Health, HRP/WHO, and ICS Integrare.

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April 2014 (Revised August 2014)