Abstract

What do you think was one of the most dangerous moments in your mother’s life? Most likely when she gave birth to you! This is shockingly true even in some rich and developed nations, but especially so for countries in the developing world, such as Kenya, where many women are poor and lack access to adequate medical facilities. These women often give birth at home, where no trained medical staff is on hand when complications occur. To improve their chances at survival, the Kenyan government got rid of the fee for giving births at public health facilities in 2013. We conducted a survey of women of childbearing ages in five cities in Kenya before and after the fee stopped being charged. Among poor women we found that they were more likely to deliver their baby at a public facility than at home after the delivery fee was removed, but we did not have the same findings among all women.

Introduction

Being pregnant or giving birth puts many women at risk. In fact, these times are among the most dangerous in a woman’s life. You might not know this, but roughly 830 women still die each day due to childbirth or pregnancy complications worldwide (measured as recently as 2017). This makes the global maternal mortality ratio (the number of pregnant women who die per 100 000 live births) way too high, and the United Nations have made it their goal to reduce it.

Are you thinking this is mainly a problem of developing countries with poor medical care? You are far from the truth: in fact, this is a current issue even for the US, where the maternal mortality ratio has risen in recent years.

However, many pregnant women do indeed die in developing countries, because many of them can neither afford nor access medical help. Instead, many women give birth at home without any doctors, nurses or trained midwives nearby. Researchers and public health workers are working hard to improve this dangerous situation for expecting mothers (Figure 1).

We tried to evaluate one such effort in Kenya. In 2013, the Kenyan government implemented a policy that got rid of the fee pregnant women had to pay for giving birth at all public medical facilities. We wanted to know if this new policy had any impact on where women gave birth.

Figure 1: A mother with her newborn infant following delivery. More access to health care leads to more healthy mothers and babies. © 2012 Arturo Sanabria, Courtesy of Photoshare
Methods

To find out, we gathered information about women in Kenya before and after the policy was changed. Our study was supported by the Bill & Melinda Gates Foundation in an effort to evaluate several health programs in developing countries.

We collected data in two stages: baseline data in 2010 before the policy was changed, and in 2014 after the policy change.

The baseline data came from a total of 8932 randomly selected women from a representative sample of households in five cities in Kenya: Kakamega, Kisumu, Machakos, Mombasa and Nairobi (Figure 2). We interviewed women in these households who were between 15-49 years old, and asked them about their household assets, education, access to medical care and place of delivery, among other things.

In 2014, we tracked down women from the first survey who still lived in these five cities, and interviewed over 5000 who were willing to be interviewed again. (The response rate to our survey was about 60%.)

For this study, we analyzed data from 4125 women:

- 2793 who had given birth since 2008, for the baseline survey, and
- 1332 who had given birth since 2012 for the follow-up survey; some of these women gave birth before the fee was dropped in 2013 and others afterwards.

We placed responses in three categories for places of birth (home/other, public, or private medical facility), and three wealth categories (poorest/poor; middle, and rich/richest).

![Figure 2: Our survey of where women gave birth before and after the delivery fee was dropped took place in these 5 cities in Kenya. Source: Create from a Wikipedia map.](https://en.wikipedia.org/wiki/Kenya)
Results

Here is what we found out:

- Roughly half of the women in our surveys were poor.
- About 15% of women delivered their most recent babies at home before the fee was removed. Afterwards, home delivery dropped to 5%.
- The percentage of deliveries at a public facility among all women surveyed was roughly the same before and after the new policy (41.5%).
- Among poor women, whom we would expect to benefit the most from the fee being dropped, we found that they were less likely to deliver babies at home (10% after vs. 24% before), and they delivered more babies at public facilities after their delivery fee was dropped (46% instead of about 40%).
- Some women had more than one birth between 2008 and 2014. Of the women who originally gave birth at home, 42% delivered their next baby at a public hospital, and 28% at a private medical facility (Figure 3).
- Women who were less educated, poorer and younger were more likely to deliver their babies at home than in any facilities.

![Figure 3: Place of delivery for births after the new policy (no delivery fee at public hospitals) was implemented among women who had more than one birth and had their first birth at home.](image)

Discussion

The main goal of dropping the delivery fee was to give poor pregnant women easier access to trained healthcare providers and appropriately equipped facilities in Kenya. And that’s what happened: urban poor women were 1.6 times more likely afterwards to deliver their babies at a public facility than at home. This likely increases their chances at survival because trained medical staff can be at hand if complications occur.

Of the women who gave birth before and after the policy change, we see many delivering their second baby at a public facility even if they had their first at home. This may be due to the policy change, because otherwise, we would expect more
experienced mothers delivering their second child at home. However, the removal of the delivery fee could also have some negative consequences, such as less money being available to health facilities, and therefore potentially a decrease in the quality of medical care due to an overwhelmed health system. Unfortunately, our study did not assess this question.

**Conclusion**

Sometimes a horrible problem like mothers in risk of dying can have a simple solution: increasing their access to medical care during pregnancy and birth. With adequate care, maternal death doesn’t need to be so frequent. However, it is often difficult for women, especially the less privileged and educated, to get the medical care they need. This is even true for some more developed countries. Providing good healthcare to future mothers which is affordable to them can really save and change their lives.

Still, we remain confident that getting rid of the delivery fee changed the access to care and therefore will continue to be beneficial for the survival rates of mothers and newborns in Kenya.

**Glossary of Key Terms**

- **Baseline data** – Data collected before a change is introduced (in our case, the delivery fee was dropped). This allows us to compare the outcome after the change to what was happening before it.
- **Household assets** – the total possessions of value a set of people living together has. In our case this included their housing, utilities like water and toilet access, and property like furniture, bicycles, and television.
- **Maternal mortality ratio** – the number of pregnant women who die due to pregnancy-related causes per 100,000 live births.
- **Random selection** – refers to how a sample is drawn out of a whole. Researchers often prefer random samples to omit bias. For instance, if we did not randomly select households or women but just chose the ones we met in a hospital to talk to, we would have skewed our results towards women who already deliver their babies in hospitals.
- **Representative** – a representative sample is something that accurately reflects a larger entity. We designed our study in a way where the answers of a selected group of mothers would represent all mothers in the 5 cities we studied.
- **Response rate** – the number of people who answer a survey/question in relation to all the people who are asked or sent the questions. For instance, a response rate of 65% means 65 out of 100 people that we initially asked (or tried to ask) answered our questions.

**REFERENCES**


WHO: Why do so many women still die in pregnancy or childbirth? [http://www.who.int/features/qa/12/en/](http://www.who.int/features/qa/12/en/)

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Check your understanding

1. What is the maternal mortality ratio?

2. Are high maternal mortality ratios only a problem for developing countries?

3. Why did the Kenyan government decide to get rid of the delivery fee for public health facilities?

4. What happened when Kenya dropped the delivery fee?

5. What did mothers who had babies both before and after the policy change do? And what does this tell us?