



## WHAT KEEPS PREGNANT WOMEN FROM ATTENDING CARE? DETERMINANTS OF ANTENATAL CARE VISITS AND SKILLED DELIVERY IN KENYA

What keeps pregnant women from attending care? What are the reasons for their late enrolment in antenatal care? Which factors would increase skilled birth attendance? This study seeks to answer these questions using data from more than 1,500 pregnant women enrolled in the MomCare program in Nairobi, Kisumu, and Kakamega counties in Kenya. It assesses patterns of adherence to antenatal care (ANC), and identifies key challenges in attending ANC visits and skilled delivery. Moreover, it offers insights for the design of more effective antenatal care interventions in the future.

Antenatal care is a critical factor in reducing complications and death ratios for mothers and infants during the maternal journey. However, the costs of high-quality antenatal care are an obstacle to seeking care for many women in Sub-Saharan Africa [1]. Additionally, pregnant women often prefer to postpone their first ANC visit as long as possible, which leaves them at a greater risk of developing unnoticed complications. Moreover, coverage of skilled birth attendants in 2018 was only 59 percent in Sub-Saharan Africa, further contributing to the consistently high maternal and infant mortality rates.

In Kenya alone, more than 6,000 maternal deaths, and 35,000 stillbirths occur each year [2]. In fact, the maternal mortality rate in Kenya is 139 percent higher than the average of lower-middle-income countries [3][4]. With a well-functioning health system, most of these deaths would be avoidable. Predictions show that nearly 160,000 more newborn lives could be saved in Sub-Saharan Africa if 90 percent of women received ANC instead of the current 69 percent [5].

To eliminate these preventable deaths, PharmAccess Foundation initiated the MomCare project in November 2017 to support pregnant women and providers of maternity care. The MomCare project mainly incentivizes 'adherence to care'-journeys through a digitally-enabled smart contract. MomCare enrolls pregnant women in a partly or fully subsidized health insurance program and offers them a 'health wallet' on their mobile phone which they can use to check-in and pay at the clinic. The health wallet runs on a mobile platform that enables sending nudges, reminders for check-ups and rewards to patients to improve their adherence to care, while simultaneously rewarding providers financially for quality care provision when women complete their journey.

### Key statistics on the study population

- Average age was 27,4 years
- The majority of women did not complete secondary school
- 37% experienced their first pregnancy before age 18; teenage pregnancy is associated with lower socio-economic status
- 56% lives at more than 15 minutes walking-distance to the clinic
- 76% do not have access to (public or private) motorized transportation to the clinic
- 47% of pregnancies are classified as 'at risk'; a higher risk-level is associated with lower socio-economic status.

In order to reduce maternal and infant mortality with better policies, a good understanding of the behavioural basis of maternal healthcare-seeking is paramount. By collecting detailed data on all pregnant women that enroll in the program, the MomCare project can provide essential insights. This study aims to assess the demographic, socioeconomic, and health-related determinants of adherence to antenatal care using data on 3,861 pregnant women who participated in a baseline survey during their first MomCare clinic visit between 2017 and 2019; of whom 1,571 had delivered their baby at the time of writing. These data are complemented with medical records on the week of enrolment, the number of ANC visits, the risk-level attributed to the pregnancy, and whether the woman delivered at the clinic in the presence of a skilled birth attendant.

The study focuses on three crucial aspects of maternal care: (i) the week of enrolment in ANC, (ii) the total number of ANC visits, and (iii) attendance to skilled delivery.

## Enrolment in ANC

The World Health Organization (WHO) recommends women to enrol in antenatal care in the first trimester (before the 12th week) of their pregnancy - which is called 'early antenatal care' [5]. Early registration creates favourable circumstances in which healthcare providers have enough time to adequately support and plan mother journeys.

This scheme provided pregnant women with a shopping voucher if they enrolled before week 16. After introducing the incentive, the early enrolment rate increased to 44 percent in this cohort of 491 women.

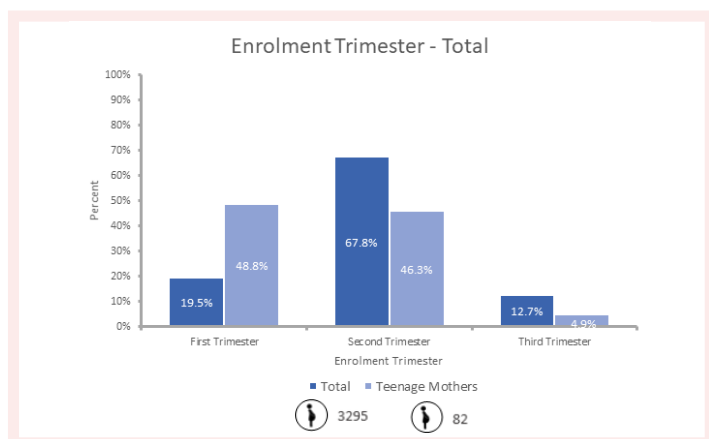


Figure 1. Trimester of Enrolment Trimester

## Number of ANC visits

ANC visits create an opportunity to take action: they enhance the likelihood of a safe mother journey and reduce the risk of fatal outcomes for mother and child. In order to realize the full life-saving potential of ANC visits, the WHO recommends a minimum of four visits providing essential evidence-based interventions. However, the MomCare data show that only 36.8 percent of women attend the recommended four ANC visits, and only 56.1 percent attend at least three visits.

The total number of ANC visits is significantly lower for women with low education, who gave birth before, and who initiated their first ANC visit in a later week of pregnancy. On the other hand, women with a higher pregnancy risk-level complete more ANC visits. Age is not significantly related with the number of visits. Our results do not provide evidence of wealth inequalities either: women in the poorest and the richest wealth tercile are equally likely to attend maternal care. However, women who lack transportation (controlling for distance), i.e. who need to travel to the facility by foot, attend less visits in total.

The MomCare data shows that only 19.5 percent of the women in the study sample enrolled in their first trimester. On average, women first enrolled in week 22 of their pregnancy. To increase the proportion of early enrolments in line with WHO guidelines, the MomCare project piloted an incentive scheme in the last three cohorts of women who entered the project.

Our regression results show that age matters for early enrolment: at 48.8 percent, pregnant teenagers are almost 30 percentage points more likely to enroll during their first trimester than the overall sample. Similarly, first-time mothers are more likely to enroll early than women who gave birth before. These findings suggest that women may underestimate the benefits of timely enrolment as they grow older or more experienced as a mother.

Socio-economic and accessibility factors play less of a role in early enrolment. The results suggest that better educated mothers enroll somewhat later, but there is no clear pattern for income nor distance to the health facility or access to transportation. We also do not find evidence that the week of enrolment is correlated with the estimated risk-level of the pregnancy.

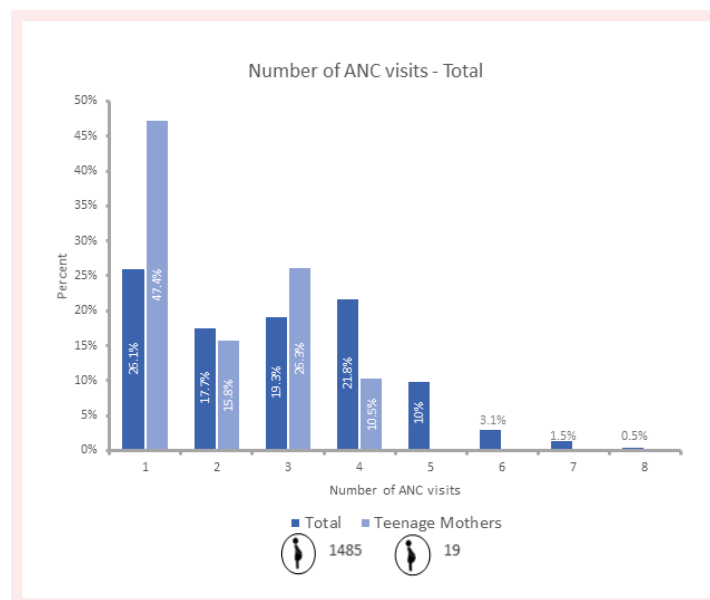


Figure 2. Number of ANC visits

## Skilled Delivery at MomCare Clinics

Attending ANC visits not only reduces the risk of complications, but also connects pregnant women to the health care system, which in turn increases the probability of a skilled delivery at a formal health care facility. The

presence of a skilled health professional during delivery is a critical factor to reduce maternal and newborn deaths.

However, only 50.5 percent of the MomCare mothers delivered at one of the MomCare clinics, which is lower than

the 58 percent average of skilled birth attendance in Kenya in 2017 [6]. We note that the data do not specify the alternative location of delivery so we cannot distinguish between women who deliver at home or at another facility not included in the MomCare project. Thus, the actual percentage of women delivering in the presence of a skilled birth attendant might be larger.

## Conclusion

Adherence to maternal care remains a serious issue in the low-income population of Nairobi, Kisumu, and Kakamega, especially in view of the persistently high maternal and infant mortality rates. The majority of pregnant women enroll late, attend less than the recommended number of ANC visits, and do not deliver in a health facility. The MomCare data show clear patterns in the determinants of adherence to antenatal care, thus enhancing our understanding of the barriers to maternal health-seeking behavior.

The findings provide several suggestions for how to improve conditions for mothers and service providers. First, enrolment during the first trimester may be enhanced through **appropriate nudges** as well as by increasing understanding in the target population of the benefits of early enrolment – especially among older and more educated women, and women who have previously given birth.

Further analyses indicate that women are more likely to deliver in a MomCare clinic if they are younger, if they have a high-risk pregnancy, and if they attended more ANC visits prior to delivery. Women who live further away or who lack transportation are also more likely to deliver in a MomCare clinic, suggesting that they take precautions and travel to the clinic in time. On the other hand, we do not find evidence that levels of education or wealth affect skilled deliveries.

Timely enrolment in turn is expected to increase the total number of ANC visits, as is communicating the risk level of the pregnancy to mothers. Another potential intervention area is to **increase geographical accessibility**, e.g. through mobile clinics or telemedicine initiatives for routine check-ups, since the number of visits decreases significantly when travel distance goes up and transportation means are more limited.

Finally, women who have attended more ANC visits are also more likely to deliver at the clinic. This highlights the importance of ensuring a **continuum of maternal care** that starts as early as possible in the pregnancy and continues until after safe delivery. It also underscores the potential benefits of investing in awareness-raising among pregnant women about the link between adherence to maternal care and good outcomes for mother and child.

## Take Home Messages

- On average, pregnant women in the study enroll late in maternal care – in their 22nd week of pregnancy; they attend 2.8 ANC visits instead of the recommended 4 visits; and only 50 percent of them have a skilled delivery at a MomCare clinic.
- Late enrolment decreases the number of ANC visits. A low number of ANC visits in turn decreases the probability of having a skilled delivery. This underscores the importance of a continuum of care: encourage pregnant women to enroll early, which would create positive externalities directly for ANC visits and indirectly for having a skilled delivery.
- Women who have previously given birth seem to underestimate the benefits of maternal care. Specific interventions, such as information provision on the importance of antenatal care for healthy mother and child outcomes or the provision of financial incentives, are needed to attract different groups of pregnant women (e.g. teenage mothers and mothers who gave birth before) as early as possible.

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- [1] Okedo-Alex, I. N., Akamike, I. C., Ezeanosike, O. B., & Uneke, C. J. (2019). Determinants of antenatal care utilisation in sub-Saharan Africa: a systematic review. *BMJ open*, 9(10), e031890.
- [2] Lang'at, E., Mwanri, L., & Temmerman, M. (2019). Effects of implementing free maternity service policy in Kenya: An interrupted time series analysis. *BMC Health Services Research*, 19(1), 645.
- [3] According to Demographic and Health Survey 2014
- [4] World Health Organization, & Unicef. (2015). Trends in maternal Mortality: 1990-2015: Estimates from WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division.
- [5] Lincetto, O., Mothebesoane-Anoh, S., Gomez, P., & Munjanja, S. (2006). *Opportunities for Africa's Newborns: Practical data, policy and programmatic support for newborn care in Africa*. (pp. 51-62). Geneva: World Health Organization.
- [6] World Bank, Maternal mortality in 2000-2017: Kenya. Retrieved from: [https://www.who.int/gho/maternal\\_health/countries/ken.pdf?ua=1](https://www.who.int/gho/maternal_health/countries/ken.pdf?ua=1)