Introduction of pregnancy tests by community health volunteers to determine family planning eligibility increases uptake of modern contraceptive methods and early antenatal care

Overview

In Madagascar, despite years of efforts to improve maternal health, the maternal mortality ratio remains as high at 487 deaths per 100,000 live births, whereas the average for developing countries is 235.\(^1\)\(^2\) Additionally, only 51% of pregnant women receive four antenatal care (ANC) visits, which is the recommended number to prevent and manage possible pregnancy complications.\(^3\) Thus, nationwide family planning (FP) and maternity initiatives have been introduced to improve the country’s maternal health outcomes.

One such initiative is increasing the number of women using a modern FP method to limit or space their births. Increasing access to FP has several health benefits, including reducing rates of unwanted pregnancies, unsafe abortions, and sexually transmitted infections.\(^4\) Furthermore, delaying and spacing pregnancies reduces fertility rates and leads to improved maternal and child health outcomes.\(^5\)

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5. ibid
THE USAID MIKLO Project increases access to and availability of community-based primary health care, especially for women of reproductive age, children under age five, and infants living in remote areas in Madagascar. Implemented by Management Sciences for Health (MSH), with partners Action Socio-sanitaire Organisation Secours, Catholic Relief Services, Institut Technologique de l’Education et du Management, and Overseas Strategic Consulting, Ltd., the project is aligned with Madagascar’s national community health policy and specifically focuses on reproductive health; family planning; maternal, newborn, and child health; and malaria prevention and care. The five-year project serves an estimated 8.5 million people who live more than five kilometers from a health facility in 8 of Madagascar’s 22 regions, 42 districts and 506 communes.

The USAID Mikolo Project supports the Ministry of Public Health by training and supporting community volunteers to support a continuum of care under the supervision of the local health center. The community-based delivery of the service package they offer is endorsed by the World Health Organization and has been shown to be an effective way to address shortages of human resources without compromising the quality of care.

However, women living in remote and rural areas often have limited, unreliable access to modern contraceptive methods. To increase access, Madagascar has introduced hormonal contraceptives (the pill and short-acting injectables) to the package of services provided by community health volunteers (CHVs). By offering hormonal contraceptives and other non-clinical methods (condoms and fertility education), CHVs in Madagascar provide critical FP services to the approximately 64% of women who live more than five kilometers from a health center.

Determining if a woman is currently pregnant is a crucial step in the provision of hormonal contraceptives. However, many CHVs often do not have a reliable method of verifying a woman’s pregnancy status if the client is not menstruating. While a pregnancy checklist tool is useful for determining a client’s status, using urine tests for pregnancy would allow CHVs to more accurately ascertain if a woman is an appropriate candidate for hormonal contraception.

Without proof of non-pregnancy, CHVs provide women with condoms and either tell them to return when they are menstruating or refer them to a clinic that sells pregnancy tests. Therefore, the use of pregnancy tests by CHVs at the point of care has the potential to increase the number of women using a hormonal method of FP by removing these critical barriers.

Furthermore, only 51% of pregnant women in Madagascar receive the recommended minimum of four ANC visits. The USAID Mikolo Project hypothesizes that, in addition to increasing FP use among women found to not be pregnant, pregnancy tests may also increase ANC among women whose test positive. Previous studies demonstrate that a primary reason for late initiation of ANC is uncertainty about pregnancy status, particularly during the first trimester. The theoretical framework suggests that providing women with point-of-care pregnancy tests will enable women who are pregnant to seek ANC as soon as possible and thus increase the number of women who attend the recommended four visits, ultimately improving maternal and child health outcomes.

APPRAOCH

In 2015, the USAID Mikolo Project began scaling up pregnancy test availability to CHVs in eight regions of Madagascar. This initiative is based on a pilot study commissioned by USAID Madagascar and implemented by the Strengthening Health Outcomes through the Private Sector (SHOPS) Project, which suggested that the introduction of pregnancy tests increases the number of hormonal contraceptive users by up to 24%. USAID Mikolo also emphasizes using pregnancy tests for women who want to know their pregnancy status as a mechanism to promote early ANC.

The USAID Mikolo intervention consists of providing CHVs with pregnancy tests and monitoring the progress of FP indicators through the project information system. The tests, which were distributed by project teams during training sessions, are administered in the presence of the CHVs.

Between June and August 2015, the project trained 3,146 CHVs in the eight regions it supports on the
use of pregnancy tests for women wishing to adopt a hormonal FP method. Health center personnel and technical assistants from USAID Mikolo trained CHVs on the correct use of the pregnancy tests and the pregnancy checklist. During the training, CHVs received an initial stock of 15 pregnancy tests and an additional 10 in September 2015. The project also distributed monitoring forms to track pregnancy test usage.

A follow-up study was conducted by USAID Mikolo to determine the impact that the pregnancy tests have on FP uptake. In addition, a qualitative study was implemented by USAID Mikolo to identify the reasons that either hinder or motivate the use of pregnancy tests, from both the CHV and client perspectives. The qualitative study consisted of 40-minute individual interviews that were conducted by the USAID Mikolo Project team after participants were screened and provided consent. Three different stakeholders were consulted: 124 CHVs who have been trained on the tests, 64 women of reproductive age (subdivided into two groups: 29 women who have not yet used a pregnancy test given by a CHV, and 35 women who have already used a pregnancy test given by a CHV), and 29 support technicians.

RESULTS

Qualitative

All clients highly appreciated the arrival of the pregnancy tests at the community level for their accessibility, particularly clients who have already used a test at the health center level. The reduction of the financial cost is two-fold: women no longer need to travel up two hours each way to the nearest health facility, and women can now avoid paying for pregnancy tests, as the CHVs offer them for free. In addition, many women said there is greater trust and a larger perception of confidentiality with the CHVs, which inspires confidence to use the tests.

The main reasons cited by CHVs for using the pregnancy tests are:

• **Absence of menstruation:** If the client coming to the CHV does not have her period, the CHV uses the pregnancy test.

• **Appointment delay:** Each regular user has her own appointment with the CHV, but if the woman does not respect this appointment (and misses a contraceptive injection or new pills, for example), the CHV is obliged to use the pregnancy test to confirm that the client is not pregnant before resuming her FP method.

• **Postpartum amenorrhea:** CHVs use pregnancy tests for women with amenorrhea after delivery.

• **Doubt about the sincerity of the respondents:** In the cases of young girls, the CHV tends to use the test because some young girls are not honest during the question session because they want to hide their true status.

• **Hesitation on the checklist responses:** Some CHVs are doubtful of women’s answers to the checklist questionnaires because the women themselves are unsure of their answers. Therefore, to be certain, the CHV will use a pregnancy test.

Motivation

The pregnancy tests also give the CHVs a sense of certainty that they are providing high-quality care. For example, they can now be more certain that they are not providing an FP method to a pregnant woman.
or sending a non-pregnant woman home without FP. Moreover, because of exceptional cases, CHVs also face challenges in making decisions about pregnancy status (i.e., women who have irregular menstruation, or women who have menstrual symptoms while pregnant). Essentially, the availability of pregnancy tests reassures the CHVs in their decision-making, such as on the provision of FP or ANC referral.

In addition, CHVs noted that the pregnancy tests elevated their status in the community and gave them a greater sense of pride and increased their motivation. This is mainly because pregnancy tests are usually considered a luxury product used only by doctors and pharmacists who have completed long-term training.

Hindrance

This qualitative study also revealed the reasons for why CHVs who never used a pregnancy test decided not to do so.

For instance, most CHVs persuade women wishing to use FP to come for a consultation during their period of menstruation. As a result, many of the women are aware of the proper protocol and visit the CHV only when they are menstruating, thus lessening the need for the pregnancy tests.

Some CHVs spoke of their community’s lack of awareness regarding pregnancy tests at the CHV level, which decreases the overall demand for the test. Similarly, CHVs also revealed that women confused the tests with other, sometimes painful, physical examinations and so they refused them.

Another main problem identified includes lack of availability of gloves and cups, which prevent CHVs from administering the tests. Moreover, in some regions, only a single cup is available to the CHVs, and so some CHVs have used it once and discarded it and then try to use other containers for future tests. This potentially creates issues with test accuracy and may lead to the tests producing false positives or false negatives. Some CHVs also noted that the size of the cup is too small and makes collection difficult. Finally, handling urine is considered a cultural taboo by some, therefore decreasing chances they will offer the test without proper collection tools.

Other barriers

Other cultural barriers exist, mainly regarding the gender of CHVs. It should be noted that the CHVs working

The use of pregnancy tests provides the opportunity for women to confirm their pregnancies earlier, without having to trek long distances to health centers, and receive antenatal care sooner, leading to better outcomes for mothers and children

in USAID Mikolo intervention areas are mainly female (81%), except in two regions, Vatovavy Fitovinany and Atsimo Andrefana, where the number of men and women CHVs is about the same. Female clients might hesitate to consult male CHVs about reproductive health and FP, as many consider it improper for a man to handle a woman’s urine.

Additionally, CHVs also noted that time constraints deterred them from completing the test registers, which negatively impacts data collection and makes forecasting pregnancy test supply needs more difficult.

Most CHVs also raise the question about the continuity of the pricing strategy after the distribution of the start-up batch. Under the USAID Mikolo Project, the tests are free, whether they are distributed during the start-up or afterwards. However, it was found during the study that some CHVs were selling the pregnancy tests. In Analamanga, for example, a meeting was held after the training in which CHVs decided to fix the price of the pregnancy tests at 1000 Ar (USD $0.65).

Across stakeholders, the long-term aim is to ensure a steady supply of tests, which means a sustainability of pregnancy tests in the market. Support technicians and CHVs also want clarification on where they can obtain more tests after the start-up batch has been exhausted.

Moreover, most CHVs wish to be retrained to strengthen their technical capacities on the pregnancy tests. For example, the type of urine to be taken for analysis has created confusion among CHVs—some think that the sample must be taken first thing in the morning
and that the reliability of the results depends on such
timing. Additionally, clarification should focus on the
differentiation between invalid and negative test results,
as well as on the length of time the testing stick should
be exposed to urine.

Finally, supervision has proven to be an issue. Many
support technicians say their roles are grouped into
three distinct themes: training on pregnancy tests,
supervising CHVs on test usage, and collection of
data on pregnancy tests. Theoretically, all the support
technicians are responsible for collecting data on the
pregnancy tests, but in practice, the majority admit that
the reporting rate remains low, indicating that their
supervision and training tools need to be strengthened.

Quantitative results
During the 13 months following the initial training, 1,308
CHVs (42%) reported using the pregnancy tests at least
once. Most of this group (96%) used 1–5 tests during
the previous year. A total of 7,460 tests out of 78,650
(9.6%) distributed were reported as used.

New FP users increased by 73% for CHVs who reported
using the test during 13 months, as opposed to only 48%
for CHVs who never used the pregnancy tests. Further
analysis of project data spanning 15 months prior to
the introduction of the pregnancy tests to 13 months
after the introduction, demonstrates a strong correlation
between the introduction of the pregnancy tests \( r^2 = .78 \)
and an increase in new FP users among clients of
CHVs who reported using the pregnancy tests compared
to CHVs who did not use pregnancy tests \( r^2 = .44 \)
(Figures 1 and 2).

Figure 1. Evolution in the number of new users of modern contraceptive methods for CHVs who introduced
pregnancy tests from April 2014 to July 2016

![Figure 1](image1.png)

Figure 2. Evolution in the number of new users of modern contraceptive methods for CHVs who
never introduced pregnancy tests from April 2014 to July 2016

![Figure 2](image2.png)
Unlike FP uptake, the number of clients referred to ANC after the introduction of the pregnancy test was not significantly different between the CHVs who used the pregnancy test ($r^2 = .86$) and the CHVs who never used the test ($r^2 = .72$). However, the relative increase in ANC referrals for CHVs who ever used the pregnancy test was higher than for CHVs who never used (Figures 3-4). The data did not show a significant impact from the introduction of the pregnancy test on ANC referrals. However, this finding remains inconclusive because of the small number of women with a positive pregnancy test.

**Challenges**

Perhaps one of the greatest challenges in evaluating the effectiveness of pregnancy test administration on increasing FP and ANC usage is data quality. For example, *underreporting* of pregnancy test usage by CHVs appears to be a widespread problem. This is primarily because CHVs have to fill out a user card after each pregnancy test, in addition to other existing registers. Thus, the information collected on the pregnancy tests should be integrated into the existing tools in order to minimize the administrative burden of the CHVs, and pregnancy test reporting could be more strongly integrated into CHV supervisions by support technicians.

In addition, pregnancy test false positives and false negatives would not only skew the data, but could also harm the desired health interventions. False negatives and positives can occur 12%–39% of the time. For example, if a woman has a false positive, she would be denied FP services, thus deterring her from seeking FP services for several weeks and putting her at an increased risk for pregnancy. On the other hand, if a woman receives a false negative, then she may receive a hormonal contraceptive and delay seeking ANC.
With regard to ANC, there may be other reasons besides uncertainty of pregnancy status for not seeking early care, including cultural traditions/beliefs, cost, distance, and quality of care. Therefore, these other factors may undermine the effectiveness of pregnancy test usage as a mechanism for increasing ANC visits.

Furthermore, the interviews also shed light on several other key challenges that influenced the results of the pregnancy test scale-up and underscore the importance of both supply and demand factors on the success of the pregnancy test initiative. Primarily, supply issues pose the greatest challenge to pregnancy test use and scale-up. In regards to procurement and supply chains, each CHV was supposed to receive 25 initial pregnancy tests; however, this amount varied considerably, ranging from 2–15 per CHV. Similarly, it is also important to enforce the no-cost rule, in order to make sure that all CHVs are providing the tests for free. Ultimately, ensuring a reliable supply of pregnancy tests, cups, and gloves is imperative for the continued use of pregnancy tests.

On the demand side, improved training will help CHVs to more confidently and accurately administer pregnancy tests, and strengthened community advocacy and promotion activities will increase awareness regarding pregnancy tests and their benefits, which may increase overall demand.

Lessons learned

Overall, several factors may have contributed to the relatively low use of pregnancy tests by the CHVs. Primarily, if the CHVs have effectively conducted community outreach activities, clients may already be aware that they need to come for an FP consultation when they are menstruating and have learned to respect their return appointments, thus lessening the need to administer a pregnancy test to verify their status.

Moreover, the results reveal the importance of additional community education about pregnancy tests in order to dispel misperceptions and cultural taboos. These education efforts would help to encourage use of pregnancy tests by women wanting to know their pregnancy status as a catalyst for FP adoption or for early ANC visits.

Another lesson points to the need for strengthening CHV training and supervision in order to clarify how to properly administer tests, when to do so, how to read the results, and the importance of data accuracy. These trainings and supervisions could also be used to enforce the no-cost rule to ensure continued financial access at the community level and to monitor the supply of tests, which would help to prevent test stock-outs.

Way forward

In the future, it is important to ensure improved data quality by strengthening reporting mechanisms. Additionally, a cost-benefit analysis should be conducted to determine if the costs of the pregnancy test administration by CHVs is justified by the increased health benefits. The results of such an analysis could be used to inform further scale-up of CHV pregnancy test administration in Madagascar.

Moreover, it is crucial that supply meet the increase in demand generated by the pregnancy tests. For example, ANC clinics and providers must be accessible for the women referred to them, and hormonal contraceptives must be available for all women who test negative and want to adopt a hormonal method. There must also be efforts to prevent stock-outs of pregnancy tests, gloves, and cups. Furthermore, improving the training given to the CHVs on test administration and counselling and referral tools is important to increase the overall number of CHVs actually administering the tests. Information about false positives and negatives should be included in these trainings. Education activities targeted at the clients may also help to increase the pregnancy test acceptance rates. In addition, efforts to ensure the sustainability of FP and ANC use must be strengthened to ensure FP continuation and continued pregnancy care after the initial visits with the CHVs.
Conclusion

Finally, the qualitative interviews provided helpful insight into the motivations and challenges of pregnancy test usage, which can be used by public health professionals and policymakers to develop strategic recommendations to improve future implementation. It is evident that pregnancy test usage at the CHV level improves quality of care provided by CHVs, improves financial and geographic access to the tests, and can lead to increases in FP and ANC use. Improved and more frequent training and supervision of CHVs on pregnancy test protocol and data collection is a primary opportunity to monitor supplies and ensure continued test usage.

Overall, the quantitative data suggests that pregnancy test administration by CHVs can reduce instances of FP service denial, and thus can have a positive impact on FP usage rates in Madagascar. The data for ANC usage, however, is less conclusive with regards to health impact. While there are various issues with data quality, the evidence does suggest that pregnancy tests administered by CHVs can be an effective way to more concretely ascertain a woman’s pregnancy status and thus increase FP, and potentially early ANC usage.

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A client receives an injectable contraceptive