

Postpartum Family Planning During Sociopolitical Transition: Findings from an Integrated Community-Based Program in Egypt

CONTEXT: Limited information exists on postpartum family planning and implementation of integrated reproductive and maternal and child health programs in countries experiencing sociopolitical transition.

METHODS: A quasi-experimental evaluation of an integrated reproductive and maternal and child health program implemented in selected sites in Upper and Lower Egypt was conducted between 2012 and 2014. Preintervention and postintervention household surveys were conducted among 12,454 women in intervention sites and nonintervention comparison sites who at survey had a child younger than 24 months. Bivariate and multivariate analyses estimated the intervention's effects on postpartum family planning–related outcomes, including contraceptive use, knowledge of optimal birthspacing, reproductive intentions and decision making about contraceptive use.

RESULTS: In Upper Egypt, modern contraceptive use decreased over the study period in both intervention and comparison sites (by six and 15 percentage points, respectively), and in Lower Egypt, contraceptive use remained unchanged in intervention sites and decreased slightly (by three points) in comparison sites; in both regions, the intervention was positively associated with the difference in differences between groups (odds ratios, 1.5 for Upper Egypt and 1.3 for Lower Egypt). The intervention appears to have had a positive effect on knowledge of optimal birthspacing in Upper Egypt, on wanting to delay the next pregnancy in Lower Egypt, and on pregnancy risk and joint decision making in both regions.

DISCUSSION: Study findings demonstrate the feasibility and effectiveness of an integrated reproductive and maternal and child health program implemented in a changing sociopolitical context. Revitalized efforts to bolster family planning within the country are needed to avert further losses and spark a return to positive trends.

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Postpartum family planning aims to help women who have recently given birth select a contraceptive method that they want to use, voluntarily initiate its use and continue use for two years or longer, depending on the reproductive intentions of the woman or couple.¹ Family planning following childbirth is important not only to help women and couples achieve their reproductive intentions, but also to achieve broader maternal and child health outcomes. Pregnancies spaced fewer than 18–24 months apart have been associated with an increased risk of preterm birth; low birth weight; fetal, early neonatal and infant death; and adverse maternal health outcomes.² In addition, short interpregnancy intervals have been positively associated with childhood stunting and underweight.³ Programs have successfully integrated family planning into maternal and child health services,^{4,5} and community-based approaches for integrating postpartum family planning into broader health activities have been successful in improving postpartum contraceptive uptake without negatively affecting maternal and child health service provision.^{5,6}

National demographic data from Egypt show that many reproductive and maternal and child health outcomes for the country improved between 1990 and 2011;^{7,8} however, challenges remained, including stagnating neonatal

mortality rates and an increase in stunting among children younger than five, from 23% in 2005 to 29% in 2008, the latest data available at the time the intervention was designed. To address these challenges and build on previous donor investments, the United States Agency for International Development (USAID) funded the Maternal and Child Health Integrated Program to implement the SMART project in selected sites in Upper and Lower Egypt.* The project was designed to address the increase in child malnutrition rates by introducing an integrated, community-based reproductive and maternal and child health intervention package. It focused on the critical 1,000-day window of opportunity from conception through age two during which simple, community-based interventions can dramatically improve a child's chances of surviving and living a healthy life.⁹ The SMART intervention package was delivered primarily in rural sites by local nongovernmental organizations (NGOs), in coordination with private-sector service providers and local health committees. The intervention package included activities focused on maternal nutrition, exclusive breast-feeding, infant care and feeding,

*SMART is the short form for the longer project name "Smart Choices for Healthy Living."

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gender roles and household decision making, and postpartum family planning.*

SMART built on successful community health activities established by previous reproductive and maternal and child health programs that created a cadre of well-trained health care personnel and helped increase demand for facility births and family planning; however, implementation of SMART occurred during a period of sociopolitical unrest and transition following the 2011 revolution against the regime of then-President Hosni Mubarak. This period presented challenges in terms of access to and availability of key reproductive and maternal and child health services, as donors shifted funding away from direct support for government services and the new Egyptian government's support for family planning waned.^{10,11}

Conscious of the government's shifting priorities, the SMART project considered the political environment and social sensitivities at the beginning of implementation and did not initially emphasize family planning or gender equity as much as the other technical areas. However, family planning and gender activities were given greater priority within the integrated package starting in June 2013, once the project became more established and gained stakeholder involvement and trust, and after changes in country management and Ministry of Health and Population staff.

Limited documentation exists on postpartum family planning and implementation of integrated reproductive and maternal and child health programming in countries experiencing a sociopolitical transition. In addition, previous analyses from the SMART project have focused on the overall impact of the intervention on maternal and child health.¹² This article explores whether the SMART intervention—implemented during a period of sociopolitical transition—had an effect on women's family planning knowledge, reproductive intentions, pregnancy risk and method use, and on couples' contraceptive decision making. It aims to contribute to the broader literature on postpartum family planning and couples' decision making regarding contraceptive use—particularly in contexts facing unrest and sociopolitical transition, and where government support for family planning may be waning. We share our observations and recommendations for strengthening integrated, community-based maternal and child health and family planning to inform future efforts in Egypt, as well as in other countries.

Program Description

SMART was implemented in six target governorates: Qalyubia and Sharqia in Lower Egypt, and Asyut, Beni-Suef, Qena and Sohag in Upper Egypt. These areas were selected because they had among the country's highest rates of chronic malnutrition, as evidenced by the 2008 Egypt Demographic and Health Survey (EDHS) and other available data; they were among the hardest hit by the recent economic downturn (i.e., areas that had high rates

*For the purposes of this article, "postpartum" refers to the extended postpartum period of the first year after childbirth.

of poverty); and they had lower health indicators than other sites (e.g., rates of contraceptive prevalence, antenatal care and delivery by skilled providers). From each governorate, two districts with relatively high NGO capacity were purposefully selected for the SMART intervention, along with a comparison district matched on the basis of population size and health indicators.

Implementation of SMART lasted 13 months, beginning in November or December 2012, depending on study site; a baseline assessment was conducted in September and October 2012, and a final evaluation was conducted in January and February 2014. At the outset, SMART worked with local NGOs to cultivate stakeholder support for implementation of the integrated package and helped those organizations train community health workers, pharmacists, community leaders, physicians and nurses through a series of capacity building activities. Community health workers were tasked with reaching pregnant women and women with children younger than 24 months through antenatal and postpartum home visits, nutrition classes and monthly seminars, and were expected to counsel them on a range of reproductive and maternal and child health topics, including the benefits of family planning, healthy timing and spacing of pregnancies, postpartum return to fecundity and risk of pregnancy after childbirth, the lactational amenorrhea method (LAM)[†] and timely transition to other modern contraceptive methods. Women began their participation at various stages, depending on their pregnancy status or their child's age when the intervention began; therefore, some women had exposure to the full range of activities, while others participated only in later-stage activities.

SMART also developed a Family Solidarity Module, which was used to train community health workers to introduce the concepts of gender roles, social and gender-based inequalities, domestic violence, joint decision making and women's rights during home visits and group discussions. SMART community health workers verbally identified themselves as being associated with the project during all community activities and used standardized SMART-branded communication materials to guide counseling and discussion sessions.

In addition, SMART and its partner organizations facilitated mobile clinics to provide quality primary care services to women living in remote or isolated areas. Each clinic was staffed by a team of volunteer service providers—a gynecologist, a pediatrician, nurses and lab technicians—who traveled to preselected communities monthly to offer free medical care, including family planning services, to pregnant women and mothers of children younger than 24 months. SMART also worked with private pharmacists to strengthen their capacity to provide women and couples with counseling on the

[†]LAM is a natural, modern contraceptive method, the use of which is based on a woman's meeting the following criteria: having a baby younger than six months, breast-feeding the baby exclusively and remaining amenorrheic. Women practicing LAM should make the transition to another modern family planning method before one or more of the criteria no longer apply.

appropriate use of family planning methods; pharmacists were encouraged to provide SMART participants with informational materials and discounts on contraceptives. In addition, SMART coordinated with local health directors to advocate for availability of family planning commodities at government health facilities and mobile clinics so women could conveniently obtain a range of methods.

Community health workers organized targeted group meetings for men, mothers-in-law and other community members. Husbands were invited to participate in monthly seminars with their wives, as well as in monthly meetings specifically for men. Mothers-in-law were reached through an individualized home visit and monthly seminars, and were encouraged to participate in events their daughters-in-law attended.

Across all service delivery efforts, SMART provided technical support, coordination and advocacy. Community health workers did not distribute contraceptives directly, but provided referrals to government health units and NGO clinics for family planning services. All family planning messages incorporated into SMART activities were designed to be consistent with the Ministry of Health and Population's national policy and guidelines. The various SMART activities, their timing and the family planning aspects of each are summarized in Appendix Table 1.

METHODS

Study Design

The evaluation used a quasi-experimental design with baseline and endline household surveys of intervention and comparison sites. At the outset of data collection, research team members met with village heads and religious leaders to explain the purpose of the visit and ask permission to conduct the survey. In addition, interviewers participated in a three-day training that covered informed consent, interviewing techniques, data recording processes and protocols for maintaining confidentiality.

A total of 120 clusters were sampled—15 from each of four intervention districts and 30 from each of two comparison districts. From each sampled cluster, the research team visited and screened 53 randomly selected households to determine whether a mother with a child younger than 24 months was present. If there was more than one woman with a child younger than 24 months in the household, one was randomly selected to be interviewed, and if a mother had more than one child of the appropriate age, the interview focused on the youngest. Verbal informed consent was obtained for all survey participants, either from women themselves if they were aged 18 or older, or from their husband (considered their legal guardian) if they were younger than 18. Interviews lasted 60–90 minutes and took place wherever in the household provided privacy. Overall, 12,454 women were interviewed: at baseline, 3,049 from the intervention group (1,530 in Upper Egypt and 1,519 in Lower

Egypt) and 3,058 from the comparison group (1,529 in Upper Egypt and 1,529 in Lower Egypt), and at endline, 3,125 from the intervention group (1,641 in Upper Egypt and 1,484 in Lower Egypt) and 3,222 from the comparison group (1,640 in Upper Egypt and 1,582 in Lower Egypt).

This study was approved by the institutional review board of Johns Hopkins Bloomberg School of Public Health and the Research Ethics Committee at the Egyptian Society for Healthcare Development.

Measures

The baseline and endline household survey instruments were drawn largely from the EDHS. Specific questions on postpartum family planning were added, however, because the topic is not fully explored in the EDHS.

Outcome measures included women's knowledge of optional birthspacing, reproductive intentions and contraceptive use. Knowledge of optimal birthspacing was measured by asking women how long a couple should wait after the birth of a child before they have their next pregnancy. Responses were "within two years," "two to five years," "more than five years" and "don't know"; women who espoused waiting two or more years were considered to have knowledge of optimal birthspacing. To measure women's reproductive intentions, respondents were asked if they planned to have another child and, if so, how long after their last child they wanted to wait before they had their next pregnancy; responses were the same as for knowledge of optimal birthspacing. Contraceptive use was measured by asking women if they were currently doing something or using any method to delay or avoid getting pregnant; those who responded yes were asked which method they were using. Women were considered contraceptive users if they reported current use of sterilization, the IUD, the implant, the injectable, the pill or condoms. Women who reported current contraceptive use were also asked if the decision to use a method was mainly made by them, by their husband or by them and their husband together.

In addition, we included a measure of women's pregnancy risk. Women were considered to be at risk of pregnancy if they were not currently pregnant and were neither currently using a modern contraceptive method nor passively protected by lactational amenorrhea (i.e., exclusive breast-feeding of a child younger than six months); the intervention promoted exclusive breast-feeding and contraceptive use (including LAM as an option). The measure did not account for whether women had returned to sexual activity or whether their menses had returned, because those questions were not included in the household survey.

Women at endline reported on their exposure to SMART intervention activities. Respondents were asked whether they had received child spacing advice, and if so, the source of such advice (SMART community health worker only, SMART community health worker

and another source or another source only). They were also asked whether they had received a home visit by a community health worker in the previous six months, and if so, the number of visits per month during that time (less than one, one or more than one). Women reported whether and how often they or their husband had participated in an intervention seminar or group meeting; response options for those reporting participation were once per week, once per month, once every few months and once per year or less. Finally, women were asked whether they had received services from a mobile clinic.

We also included measures of women’s social and demographic characteristics, including age, years of education, number of children and age of youngest child.

Data Analysis

Bivariate and multivariate analyses were conducted on the outcome variables of interest. We used t tests to detect changes from baseline to endline across intervention and comparison sites in Upper and Lower Egypt. The multivariate models used a standard generalized linear regression model with Poisson distribution and

log link function on the outcome variables. All analyses were performed using Stata 12.0. We noted some differences in social and demographic characteristics between Upper Egypt and Lower Egypt and, therefore, disaggregated data by region.

RESULTS

Sample Characteristics

Across all groups (i.e., region, survey time and study group), the majority of women were aged 20–29 (63–71%; Table 1), and had 11 or more years of education (49–74%) and 1–2 living children (52–64%). The age of women’s youngest child was fairly evenly distributed across the four included age-groups. Some significant differences by group were found in each region: For example, women in the intervention group had a greater mean number of years of schooling than did women in the comparison group at endline in Upper Egypt and at baseline in Lower Egypt (7.9 vs. 7.1 and 10.1 vs. 9.3, respectively). And compared with respondents in Lower Egypt, those in Upper Egypt had less education and were more likely to have had more than two children (not shown).

TABLE 1. Selected background characteristics of women with a child younger than 24 months, by region, survey time and study group, Upper and Lower Egypt, 2012–2014

Characteristic	Upper Egypt				Lower Egypt			
	Baseline		Endline		Baseline		Endline	
	Intervention	Comparison	Intervention	Comparison	Intervention	Comparison	Intervention	Comparison
PERCENTAGE DISTRIBUTIONS								
Age	(N=1,458)	(N=1,453)	(N=1,601)	(N=1,611)	(N=1,462)	(N=1,471)	(N=1,477)	(N=1,582)
<20	6.1	6.5	4.1	3.5	5.1	7.1	6.0	7.3
20–29	65.2	62.8	62.6	62.7	71.3	68.0	70.1	66.4
30–39	27.0	27.0	30.0	30.0	22.7	22.6	22.6	24.1
40–49	1.8	3.7	3.3	3.7	1.0	2.4	1.2	2.2
Years of schooling	(N=1,456)	(N=1,493)	(N=1,641)	(N=1,574)	(N=1,347)	(N=1,492)	(N=1,484)	(N=1,580)
0	15.8	18.4	26.4	34.9	10.8	17.0	9.8	14.4
1–5	6.9	4.4	5.1	3.0	4.0	5.1	5.2	4.2
6–10	18.5	15.1	15.7	13.1	10.8	8.6	14.4	8.9
≥11	58.8	62.2	52.8	49.0	74.4	69.3	70.6	72.5
No. of living children	na	na	(N=1,641)	(N=1,640)	na	na	(N=1,484)	(N=1,582)
1–2	na	na	53.3	52.4	na	na	63.5	61.1
3–4	na	na	34.1	32.7	na	na	33.2	33.9
5–13	na	na	12.7	14.9	na	na	3.4	5.0
Age of youngest child (in mos.)	(N=1,526)	(N=1,529)	(N=1,639)	(N=1,624)	(N=1,499)	(N=1,525)	(N=1,481)	(N=1,518)
≤5	23.0	23.2	26.4	27.9	24.5	21.0	28.5	28.7
6–11	29.0	31.7	27.0	25.4	29.4	29.3	25.5	25.4
12–17	22.4	22.6	25.2	24.9	23.5	23.7	25.7	25.5
18–24	25.6	22.5	21.4	21.8	22.6	26.0	20.4	20.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
MEANS								
Age	26.9	26.7	27.6	27.5	26.1	26.3	26.1	26.4
Years of schooling	8.9	8.9	7.9	7.1**	10.1	9.3**	9.9	9.7
No. of living children	na	na	2.7	2.8	na	na	2.2	2.3*
Age of youngest child (in mos.)	11.6	11.3	10.9	11.0	11.2	12.0**	10.8	10.8

*Significantly different from intervention group at p<.05. **Significantly different from intervention group at p<.01. Notes: In this and subsequent tables, for Upper Egypt, total intervention and comparison group sample sizes at baseline were 1,530 and 1,529, respectively, and at endline were 1,641 and 1,640, respectively; for Lower Egypt, total intervention and comparison group sample sizes at baseline were 1,519 and 1,529, respectively, and at endline were 1,484 and 1,582, respectively. Cell sample size varies because of missing data (“don’t know” or did not respond). na=not applicable.

Exposure to SMART Activities

Women's exposure to SMART activities was generally higher in Upper Egypt than in Lower Egypt (Table 2). Among women in the intervention group, the proportion who reported at endline receiving advice on child spacing was 89% in Upper Egypt and 71% in Lower Egypt. Of those who had received such advice, 91% in Upper Egypt and 52% in Lower Egypt had done so from a SMART community health worker (either exclusively or from a SMART worker and other sources). In Upper Egypt, 97% of women had received a community health worker home visit in the six months preceding the survey, and of those, 48% had received more than one visit per month during that period; in Lower Egypt, 75% reported receiving a home visit in the last six months, and of those, only 23% reported receiving more than one visit per month. Eighty-six percent of women in Upper Egypt and 62% of women in Lower Egypt had participated in a seminar or group meeting; few women reported that their husband had participated in such activities (16% in Upper Egypt and 5% in Lower Egypt). The proportion of women who had received services from a mobile clinic was 79% in Upper Egypt and 57% in Lower Egypt.

Intervention Impact

• **Knowledge and behavior indicators.** Over the study period, knowledge of the optimal spacing between births increased for the intervention and comparison groups in both Upper Egypt (by 14 and four percentage points, respectively—Table 3) and Lower Egypt (by 26 and 27 points). In difference-in-differences logistic regression analyses that controlled for age and education, the odds of change in knowledge for women in the intervention group compared with that for women in the comparison group was greater in Upper Egypt, but lower in Lower Egypt (odds ratios, 1.7 and 0.6, respectively).

In Upper Egypt, the proportion of women who reported not wanting another pregnancy within two years decreased by one percentage point in intervention sites and by three points in comparison sites; however, the decrease was significant only for comparison sites. In Lower Egypt, the proportion of women not wanting another pregnancy within two years increased for both the intervention group and the comparison group (by 11 and four percentage points, respectively), and the change in pregnancy intentions was significantly greater for the intervention group (odds ratio, 1.7).

The intervention appears to have had a positive effect on husband-wife joint decision making on contraceptive use. Joint decision making increased in intervention and comparison sites in both Upper Egypt (by 16 and 6 percentage points, respectively) and in intervention sites in Lower Egypt (by 15 points); the difference between the intervention and comparison groups was significant in both regions (odds ratios, 2.2 for Upper Egypt and 2.6 for Lower Egypt). Further analysis revealed that the increase in joint decision making was largely attributable to an increase in the involvement of husbands and to fewer women reporting that their

TABLE 2. Percentage distribution of women in intervention group who responded to the endline survey, by participation in SMART project activities, according to region

Activity	Upper Egypt	Lower Egypt
Received advice on child spacing	(N=1,627)	(N=1,477)
No	11.3	28.6
Yes	88.7	71.4
Source of child spacing advice†	(N=1,439)	(N=1,054)
SMART CHW only	62.1	16.7
SMART CHW and other source	29.3	35.3
Other source only	8.6	48.0
Received a CHW visit in last six months‡	(N=1,562)	(N=1,088)
No	3.5	24.7
Yes	96.5	75.3
No. of CHW visits per month in last six months	(N=1,507)	(N=819)
<1	18.2	19.8
1	33.8	57.6
>1	48.0	22.6
Participated in a seminar/group meeting	(N=1,576)	(N=1,103)
No	14.0	37.7
Yes	86.0	62.3
Level of seminar/group meeting participations§	(N=1,355)	(N=687)
Once per week	52.1	33.5
Once per month	35.8	51.2
Once every few months	8.9	11.6
≤once per year	0.1	1.5
Unspecified	3.2	2.2
Husband participated in a seminar/group meeting	(N=1,570)	(N=1,101)
No	84.2	95.4
Yes	15.8	4.6
Husband's level of seminar/group meeting participation§	(N=248)	(N=51)
Once per week	15.7	9.8
Once per month	46.8	49.0
Once every few months	33.1	21.6
≤once per year	0.4	7.8
Unspecified	4.0	11.8
Received services from mobile clinic	(N=1,572)	(N=1,107)
No	20.8	42.7
Yes	79.2	57.3
Total	100.0	100.0

†Among those who reported receiving advice. ‡Among those who reported receiving ≥1 SMART community health worker visit. §Among those who reported that they (or their husband) participated in ≥1 seminar/group meeting. Notes: Sample size varies because of missing data ("don't know" or did not respond). CHW=community health worker.

husband was the primary decision maker about contraceptives (not shown). In Upper Egypt, the proportion of women who indicated that the decision to use contraceptives was mostly their husband's decreased in intervention sites (from 7% to 4%) and increased in comparison sites (from 5% to 7%); in Lower Egypt, the proportion of women who indicated that the decision to use contraceptives was mostly their husband's also decreased in intervention sites (from 7% to 4%), but remained unchanged in comparison sites (4% each).

In Upper Egypt, the proportion of women at risk of pregnancy remained unchanged over the study period in intervention sites, but increased by nine percentage points in comparison sites. In Lower Egypt, the proportion of women at risk of pregnancy decreased by nine percentage points at intervention sites, but increased by five points in comparison sites. Differences in changes in women at

risk of pregnancy were significant in both regions (odds ratios, 0.7 for Upper Egypt and 0.4 for Lower Egypt).

• **Contraceptive use.** Overall, in Upper Egypt, modern contraceptive use decreased over the study period by six percentage points in the intervention group and by 15 percentage points in the comparison group (Table 4); in Lower Egypt, modern contraceptive use in the intervention group remained stable over the study

period, but decreased by three percentage points in the comparison group. The intervention had a positive effect in both regions (odds ratios, 1.5 for Upper Egypt and 1.3 for Lower Egypt). However, in separate analyses by child's age, the intervention effect was significant among women with a child aged 12–24 months (1.9 for Upper Egypt and 1.5 for Lower Egypt), but not among those with a child younger than 11 months.

TABLE 3. Percentage of women at baseline and endline surveys, and percentage-point change between surveys, by knowledge or behavior indicator and study group; and odds ratios from difference-in-differences logistic regression comparing the odds of change across groups—all according to region

Indicator	Upper Egypt				Lower Egypt			
	Baseline	Endline	%-point change	Odds ratio†	Baseline	Endline	%-point change	Odds ratio†
Knowledge of optimal birthspacing								
Intervention	(N=1,521) 65.7	(N=1,638) 79.7	14.0***	1.68***	(N=1,485) 62.8	(N=1,484) 89.0	26.2***	0.55***
Comparison	(N=1,521) 71.2	(N=1,638) 75.0	3.8*		(N=1,520) 67.4	(N=1,581) 94.5	27.1***	
Does not want another pregnancy in next two years								
Intervention	(N=1,383) 81.7	(N=1,479) 80.5	-1.2	1.12	(N=1,368) 80.8	(N=1,261) 91.4	10.6***	1.70**
Comparison	(N=1,420) 85.1	(N=1,546) 81.8	-3.3*		(N=1,404) 84.5	(N=1,434) 88.8	4.3**	
Joint contraceptive decision making‡								
Intervention	(N=953) 73.6	(N=1,093) 89.9	16.3***	2.19***	(N=1,114) 72.9	(N=1,169) 87.9	15.0***	2.57***
Comparison	(N=995) 78.9	(N=988) 84.4	5.5***		(N=1,079) 83.4	(N=1,165) 83.9	0.5	
At risk of pregnancy								
Intervention	(N=1,524) 30.1	(N=1,631) 30.2	0.1	0.67***	(N=1,496) 22.3	(N=1,484) 13.4	-8.9***	0.40***
Comparison	(N=1,522) 26.9	(N=1,640) 35.6	8.7***		(N=1,517) 23.7	(N=1,582) 28.8	5.1**	

*p<.05. **p<.01. ***p<.001. †Difference-in-difference logistic regression adjusted for current age and level of education; the comparison group is the reference group. ‡Among women who reported currently using a contraceptive method. Note: Sample size varies because of missing data ("don't know" or did not respond).

TABLE 4. Percentage of women at baseline and endline surveys, and percentage-point change between surveys, by contraceptive method use and study group; and odds ratios from difference-in-difference logistic regression comparing change in modern contraceptive use across groups—all according to region

Indicator	Upper Egypt				Lower Egypt			
	Baseline	Endline	%-point change	Odds ratio†	Baseline	Endline	%-point change	Odds ratio†
Use of modern method								
Intervention	(N=1,508) 63.8	(N=1,470) 58.2	-5.6**	1.45***	(N=1,474) 76.1	(N=1,474) 77.5	1.4	1.29*
Comparison	(N=1,519) 65.8	(N=1,480) 51.0	-14.8***		(N=1,514) 71.7	(N=1,371) 68.3	-3.3*	
Use of modern method by women with children ≤11 months								
Intervention	(N=787) 61.6	(N=787) 53.9	-7.7**	1.13	(N=782) 76.5	(N=795) 76.6	0.1	1.20
Comparison	(N=835) 62.9	(N=784) 51.5	-11.4***		(N=762) 71.3	(N=711) 66.7	-4.6	
Use of modern method by women with children 12–24 months								
Intervention	(N=717) 66.1	(N=681) 63.1	-3.0	1.94***	(N=672) 75.3	(N=676) 78.6	3.3	1.48*
Comparison	(N=684) 69.3	(N=681) 50.8	-18.5***		(N=749) 72.1	(N=599) 69.0	-3.1	

*p<.05. **p<.01. ***p<.001. †Difference-in-difference logistic regression adjusted for current age and level of education; the comparison group is the reference group. Note: Sample size varies because of missing data ("don't know" or did not respond).

TABLE 5. Percentage distribution of women, by current contraceptive method, according to region, study group and survey time

Method	Upper Egypt				Lower Egypt			
	Intervention		Comparison		Intervention		Comparison	
	Baseline	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline
Sterilization	0.0	0.4	0.0	0.0	0.0	0.3	0.0	0.0
IUD	27.7	15.9	25.4	15.7	39.9	41.8	33.8	18.4
Implant	1.1	0.4	1.3	0.3	2.1	0.5	1.3	1.2
Injectable	10.5	12.6	9.7	11.3	10.5	6.8	11.8	11.2
Pill	24.3	28.6	29.4	23.5	23.3	28.0	24.8	37.2
Foam/jelly	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0
Condom	0.1	0.2	0.0	0.0	0.1	0.1	0.0	0.3
LAM†	0.6	4.6	0.9	5.5	0.2	1.2	0.7	3.4
Traditional	0.0	0.1	0.0	0.2	0.0	0.3	0.0	0.2
Not currently using	35.6	37.1	33.4	43.4	23.7	21.0	27.7	28.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

†The study had intended to track LAM use; however the term “LAM” was incorrectly translated in the data collection tools as “breast-feeding method,” limiting the ability to interpret this indicator. Note: LAM=lactational amenorrhea method.

Use of long-acting reversible contraceptive methods generally decreased in intervention and comparison sites over the study period (Table 5). In Upper Egypt, 28% of women in the intervention group and 25% of women in the comparison group reported using an IUD at baseline, but only 16% in each group reported IUD use at endline; implant use was about 1% for both groups at baseline, but only 0.3–0.4% at endline. In Lower Egypt, in the comparison group, IUD use was 34% at baseline and 18% at endline, but implant use remained relatively stable over study period (1%). In the intervention group, implant use was 2% at baseline and 0.5% at endline, but IUD use remained relatively stable over the study period (40–42%). Use of the pill increased from baseline to endline in intervention sites in Upper Egypt and in both intervention and comparison sites in Lower Egypt.

DISCUSSION

Contraceptive Use and Political Transition

The study revealed high levels of SMART exposure and a positive intervention effect on family planning outcomes, especially in Upper Egypt. In addition, we found troubling decreases in contraceptive use among women with children younger than age two across sites—likely because of the sociopolitical situation and overall reduced access to family planning information and services during the implementation period.

The decrease in use of long-acting contraceptive methods over the study period may reflect barriers to obtaining high-quality public clinical services resulting from the sociopolitical transition. A previous study in Egypt found that family planning service quality was positively associated with IUD use among women who obtained their method from a public source.¹³ Family planning programs that focus on strengthening access to quality services may reinvigorate the use of long-acting methods.

Overall, the program did not result in increases in contraceptive use over the study period; however, the significant differences between the intervention and comparison

areas suggest that the program prevented declines like those in the comparison areas from occurring in the intervention areas. If the intervention had been implemented during a time of sociopolitical stability in which family planning had a higher priority, the program might have contributed to increased method use.

In both Upper and Lower Egypt, the intervention appears to have had a more positive effect on contraceptive use among women with older children than among those with younger children. Given that the study period was about 13 months, mothers of a child aged 12–24 months at the endline survey would have been enrolled late in pregnancy at the earliest and, thus, would have had little exposure to antenatal contacts, but more exposure to postpartum interventions. On the other hand, women who at the endline survey had a child younger than 11 months may have had more exposure to antenatal activities, but less to postpartum activities. In addition, women with older children may have been more receptive to family planning information, and would also have had more time to act on family planning advice and seek family planning services. In future efforts, a greater emphasis on earlier postpartum uptake (immediately postpartum through the first year) may be needed to avoid the risk of unplanned and closely spaced pregnancies during that period.

Differences in contraceptive use were noted between Upper and Lower Egypt, likely because of differences in SMART intervention coverage in the two regions. Although training activities were similar in the two regions, program staff reported stronger coordination between local NGOs and officials, and greater pharmacist involvement in providing discounts and distributing communication materials in Upper Egypt. This difference in the level of institutionalization of SMART activities may have contributed to the observed differences in family planning uptake between Upper and Lower Egypt. In addition, Upper Egypt is less urban than Lower Egypt; women in urban areas may have had greater exposure

to other messages and services, and thus may have been less affected by SMART activities.

Greater increases in family planning uptake in Upper Egypt also correspond to the observed contraceptive trends in the country between 2000 and 2008. During this period, modern contraceptive use increased from 42% to 49% in Upper Egypt and from 61% to 62% in Lower Egypt.¹⁴ The 2014 EDHS revealed that in the wake of the sociopolitical transition, modern contraceptive use stagnated in both regions (at 49% in Upper Egypt and 62% in Lower Egypt).¹⁵

Between 1984 and 2000, contraceptive use increased from 17% to 45% in Upper Egypt and from 34% to 62% in Lower Egypt.¹⁴ By 2008, contraceptive use in Upper Egypt had further increased to 53%, whereas use was relatively stable in Lower Egypt (64%).⁷ However, consistent with this study, the 2014 DHS revealed that in the wake of the sociopolitical transition, contraceptive use declined from 2008 levels in both Upper Egypt (to 49%) and Lower Egypt (to 62%).¹⁵

Joint Decision Making and Other Outcomes

SMART appears to have had a positive effect on couples' shared decision making about contraceptive use, despite the program's delayed emphasis on gender equity. SMART's gender activities encouraged husbands to be more involved in decision making about maternal and child health and family planning. Increased male involvement and joint decision making about family planning has been recognized as being critical for increasing couples' use of modern contraceptive methods.^{16,17} Previous research has found that in Egypt, women who discussed family planning with their partner and those whose husband approved of family planning were considerably more likely than others to use a method, even when analyses controlled for other confounding variables, such as education and family wealth.¹³

Given that gender sessions were incorporated only in the later stage of the SMART project, the improvements in shared decision making may be at least in part attributable to program activities that targeted community leaders—a demonstrated strategy for increasing male involvement in family planning^{18,19}—to increase their awareness, approval and encouragement for male participation in family planning. Government officials participated in monthly meetings and gender meetings (held in local venues owned by prominent or wealthy families that can be used for receiving visitors), which may have increased their gender sensitivity and contributed to a more supportive environment for shared decision making related to family planning. Increased knowledge and skills and opportunities for dialogue with peers during SMART activities may also have helped to build women's confidence about sharing their opinions with others, including their husband.

It is important to note that while the study revealed promising findings with regard to increases in joint decision making and decreases in the proportion of men who were the primary decision makers on contraceptive use, it

is possible that men's involvement in joint decision making could actually have decreased women's agency and access to services. Although program sites generally experienced better family planning outcomes, the study does not allow definitive conclusions with regard to whether the joint decision making positively affected contraceptive use.

In addition, the SMART intervention seemed to have had a positive effect on knowledge of optimal pregnancy spacing in Upper Egypt (where intervention coverage was higher), as well as on intention to delay pregnancy following a birth by at least two years in Lower Egypt and on pregnancy risk in both regions. Since knowledge of optimal pregnancy spacing at baseline was greater in the comparison group than in the intervention group, it is perhaps not surprising that knowledge in the comparison group did not grow as steeply over the study period. The effect on reproductive intentions is important, as women in Upper Egypt who desire a pregnancy within two years have been shown to contribute a larger share of mistimed births than those with an unmet need to space or limit births, those using family planning to space births and those using family planning to stop childbearing.²⁰

Limitations

This study has several limitations that should be acknowledged. Although SMART's program strategy focused on community-based interpersonal activities, it also included efforts to strengthen service delivery and advocate for contraceptive availability; it is not possible to tease out to what extent each element of the programmatic approach contributed to the program outcomes. We had hoped to explore several additional postpartum family planning-related indicators (for example, active use of LAM and perceptions of optimal timing of contraceptive uptake after childbirth); however, inaccuracies in the English-to-Arabic translation when the instruments were administered resulted in omission of those questions from the analysis. The research team had also hoped to examine men's responses to the postpartum family planning questions; however, those data were not available for analysis at the time this publication was prepared. Data on who within couples makes the decisions about contraceptive use were captured only for family planning users (not for nonusers); thus we were unable to determine whether men's involvement in the decision directly affected contraceptive use outcomes.

It would have been ideal to choose both intervention and comparison districts from among those with higher local NGO capacities to avoid a source of potential bias, but this was not possible. Intervention districts were selected because they had higher local NGO capacity, but matched comparison districts were selected on the basis of population size and health indicators; however, the quasi-experimental pre-post design with comparison group compensates for this limitation to some extent. This design allowed us to compare differences in the amount of change observed over time between intervention and comparison

districts. In addition, multivariate analyses were performed to control for possible confounding variables.

Lessons Learned and Implications

Important lessons learned from the SMART project include the feasibility of implementing an integrated package of maternal and child health and family planning services within a challenging sociopolitical context. The deterioration found in contraceptive use among women with children younger than two is truly alarming and points to the need for a revitalized effort to bolster family planning efforts within the country, including efforts to strengthen provision of long-acting methods, to avert further losses and get the country back on track toward increasing contraceptive use. This may require revisiting policies, ensuring translation of policy to implementation and integrating family planning within existing community-based programs similar to the SMART approach.

Recent developments in Egypt since this study was conducted show promise, including acknowledgment by the government of declines in contraceptive use, adoption of a new strategy to strengthen national family planning programs, and the assignment of a new Minister of Population. It is hoped that these efforts and others will contribute to a revitalized approach for improving family planning outcomes in the country.

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RESUMEN

Contexto: Existe información limitada acerca de la planificación familiar posparto y la implementación de programas integrados de salud reproductiva y materno-infantil en países que experimentan una transición sociopolítica.

Métodos: Entre 2012 y 2014 se condujo una evaluación cuasi experimental de un programa integrado de salud reproductiva y materno-infantil implementado en sitios selectos del Alto y Bajo Egipto. Se realizaron encuestas pre y postintervención en hogares a 12,454 mujeres que en el momento de la encuesta tenían un hijo menor de 24 meses, tanto en sitios de intervención como en sitios sin intervención con fines comparativos. Mediante análisis bivariados y multivariados se estimaron los efectos de la intervención en los resultados relacionados con la planificación familiar posparto, incluido el uso de anticonceptivos, el conocimiento del espaciamiento óptimo de los nacimientos, las intenciones reproductivas y la toma de decisiones acerca del uso de anticonceptivos.

Resultados: En el Alto Egipto, el uso de anticonceptivos modernos disminuyó a lo largo del periodo de estudio tanto en los sitios de intervención como en los de comparación (en seis y 15 puntos porcentuales, respectivamente) y, en el Bajo Egipto, el uso de anticonceptivos permaneció sin cambios en los sitios de intervención y disminuyó ligeramente (en tres puntos

porcentuales) en los sitios de comparación. En ambas regiones la intervención se asoció positivamente con la diferencia existente en las diferencias entre los grupos (razón de probabilidades, 1.5 para el Alto Egipto y 1.3 para el Bajo Egipto). La intervención parece haber tenido un efecto positivo en el conocimiento del espaciamiento óptimo de los nacimientos en el Alto Egipto, en el deseo de retrasar el próximo embarazo en el Bajo Egipto, así como en el riesgo del embarazo y en la toma de decisiones conjunta en ambas regiones.

Discusión: Los hallazgos del estudio demuestran la factibilidad y efectividad de un programa integrado de salud reproductiva y materno-infantil implementado en un contexto sociopolítico cambiante. Es necesario revitalizar los esfuerzos para fortalecer la planificación familiar en el país con el fin de evitar pérdidas adicionales y provocar el regreso a tendencias positivas.

RÉSUMÉ

Contexte: La planification familiale post-partum et la mise en œuvre de programmes de santé reproductive, maternelle et infantile intégrés ne sont guère documentées dans les pays en transition sociopolitique.

Méthodes: Une évaluation quasi-expérimentale d'un programme intégré de santé reproductive, maternelle et infantile mis en œuvre sur certains sites de Haute- et de Basse-Égypte a été réalisée entre 2012 et 2014. Des enquêtes de ménage pré- et post-intervention ont été menées sur les sites d'intervention et sur d'autres de comparaison auprès de 12.454 femmes mères d'un enfant de moins de 24 mois au moment de l'enquête. Les effets de l'intervention sur les résultats de planification familiale post-partum (pratique contraceptive, connaissance de l'espacement optimal des naissances, intentions reproductives et prise de décision relative à la pratique contraceptive) ont été estimés par analyses bi- et multivariées.

Résultats: En Haute-Égypte, la pratique de la contraception moderne diminue sur la période de l'étude sur les sites d'intervention aussi bien que de comparaison (de six et 15 points de pourcentage, respectivement). En Basse-Égypte, elle demeure inchangée sur les sites d'intervention et diminue légèrement (de trois points) sur ceux de comparaison. Dans les deux régions, l'intervention présente une association positive avec l'écart de la différence entre les groupes (RC, 1,5 pour la Haute-Égypte et 1,3 pour la Basse-Égypte). L'intervention semble avoir produit un effet positif sur la connaissance de l'espacement optimal des naissances en Haute-Égypte, sur le désir de différer la prochaine grossesse en Basse-Égypte et sur le risque de grossesse et la prise de décision conjointe dans les deux régions.

Discussion: Les résultats de l'étude démontrent la faisabilité et l'efficacité de la mise en œuvre d'un programme de santé reproductive, maternelle et infantile intégré dans un contexte sociopolitique changeant. Les efforts de renforcement de la planification familiale dans le pays doivent être revitalisés si l'on veut éviter de plus grandes pertes et stimuler le retour à des tendances positives.

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APPENDIX TABLE 1. Overview of SMART program activities

Type of activity	Target audience	Timing/frequency	Purpose	Key family planning–related content
ANTENATAL Home visits for pregnant women	Pregnant women	≥once per week	<ul style="list-style-type: none"> •Remind about nutrition class •Review messages of the month •Remind about ANC visits at health facility •More attention given to women who are primiparous and those with risky pregnancies who may receive more frequent visits 	Importance of family planning and breastfeeding discussed
Nutrition classes	Pregnant women (their mothers are also invited)	Weekly	<ul style="list-style-type: none"> •Provide instruction on various MNCH topics •Food demonstration •One of 12 classes focuses on family planning •Classes conducted separately for primiparous and multiparous women •Physician invited to respond to pregnant women's questions •Review messages of the month 	Family planning session covers the importance of family planning, methods and timing, and location of services
Seminars	Pregnant women	Monthly	<ul style="list-style-type: none"> •CHW explains program, discusses past experiences and gains input 	A set of messages were developed to be highlighted each month, including the importance of child spacing and contraceptive options
Home visits for mothers-in-law	Mothers-in-law	Once, at the beginning of SMART program	<ul style="list-style-type: none"> •CHW explains program, discusses past experiences and gains input 	Includes questions about knowledge/perceptions regarding contraceptive use, birthspacing and reproductive intentions
POSTPARTUM First-week visits	Postpartum women	Twice, on the second and the seventh days postpartum (three visits, if special concerns arise)	<ul style="list-style-type: none"> •Reminder about postpartum/postnatal care visits at health facility •Weigh the child •Check for danger signs in mother and child •Emphasize exclusive breast-feeding and the importance of colostrum •Refer to primary health care for hemoglobin check and thyroid test for the child 	Importance of timely family planning uptake and contraceptive options discussed during second visit on the seventh day after birth
One-month visit	Postpartum women	One month postpartum	<ul style="list-style-type: none"> •Discuss postpartum/postnatal care •Counsel on family planning •Check for danger signs 	Check whether mother is using a family planning method; discuss importance of timely uptake

Additional visits	Primiparous women and those with a risky pregnancy	Six visits (every two months)	<ul style="list-style-type: none"> Identify danger signs Answering mother's questions Emphasize exclusive breast-feeding Check for danger signs 	Discuss importance of using a modern family planning method; discuss contraceptive options
Nutrition classes	Mothers and their children	Weekly for 12 weeks beginning six months postpartum	<ul style="list-style-type: none"> Discuss topics related to child nutrition and child care Food demonstrations 	Breast-feeding and LAM
Family seminars	Mothers, husbands and their children	Monthly	<ul style="list-style-type: none"> Review 12 main MNCH messages 	Family planning is one of the main messages—emphasizes spacing between pregnancies and use of family planning methods
CROSS-CUTTING Gender group meeting	Husbands	Monthly	<ul style="list-style-type: none"> Engage men in MNCH; share key MNCH messages Discuss decision making and couple/family communication to achieve health goals 	Family planning introduced within gender messages, including importance of birthspacing and use of family planning
Community members and stakeholders group meeting	Community members/leaders and stakeholders	Monthly	<ul style="list-style-type: none"> Discuss MNCH in the community Update on SMART activities including challenges faced Discuss role of stakeholders in supporting SMART activities 	Discuss family planning (emphasize that Muslim religion supports using family planning) and importance of child spacing
Mothers-in-law group meeting	Mothers-in-law	Monthly	<ul style="list-style-type: none"> Discuss how daughter-in-law is doing Identify strategies for providing support for recommended practices 	Discuss family planning and the importance of child spacing
Service provider training	Obstetrician/gynecologists, other physicians and nurses	Five days' training followed by quarterly meeting for update	<ul style="list-style-type: none"> Reinforce early (first-trimester) and frequent (≥4) ANC visits Improve the quality of ANC interventions delivered by private providers, including provision of tetanus toxoid vaccine and counseling pregnant women about danger signs, birth preparedness, essential newborn care, breast-feeding and complementary feeding, postnatal care and family planning Promote healthy diet during and after pregnancy 	Reinforce the importance of postpartum family planning at facility and at community levels, and of providing counseling not only to women, but also to their husband, their mother-in-law and important members of the community, such as religious leaders

Pharmacist training	Private pharmacists	One-day orientation followed by visits to provide IEC materials	<ul style="list-style-type: none"> •Train on MNCH/family planning messages, including the importance of taking iron/folic acid tablets and completing regular ANC visits during pregnancy, and the benefits of exclusive breast-feeding 	Benefits of postpartum family planning
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Notes: ANC=antenatal care. MNCH=maternal, neonatal and child health. CHW=community health worker. LAM=lactational amenorrhea method. IEC=information, education and communication.