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Maternal and Child Survival Program

MCSP Egypt

Improving Maternal, Child Health and Nutrition (IMCHN) Project

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United States Agency for International Development

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The Maternal and Child Survival Program (MCSP) is a global, $560 million, 5-year cooperative agreement funded by the United States Agency for International Development (USAID) to introduce and support scale-up of high-impact health interventions among USAID's 25 maternal and child health priority countries, as well as other countries. MCSP is focused on ensuring that all women, newborns, and children most in need have equitable access to quality health care services to save lives. MCSP supports programming in maternal, newborn, and child health, immunization, family planning and reproductive health, nutrition, health systems strengthening, water/sanitation/hygiene, malaria, prevention of mother-to-child transmission of HIV, and pediatric HIV care and treatment.

This report is made possible by the generous support of the American people through USAID under the terms of the Cooperative Agreement AID-OAA-A-14-00028. The contents are the responsibility of MCSP and do not necessarily reflect the views of USAID or the United States Government.

* USAID's 25 high-priority countries are Afghanistan, Bangladesh, Burma, Democratic Republic of Congo, Ethiopia, Ghana, Haiti, India, Indonesia, Kenya, Liberia, Madagascar, Malawi, Mali, Mozambique, Nepal, Nigeria, Pakistan, Rwanda, Senegal, South Sudan, Tanzania, Uganda, Yemen, and Zambia.
Cover photo: Sarah El Sweify/MCSP

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Acknowledgments

The Maternal and Child Survival Program (MCSP) thanks the United States Agency for International Development (USAID) staff in Cairo and Washington, DC, as well as the American people, for providing the technical and financial assistance needed to implement this project. MCSP Egypt, known in Egypt as Improving Maternal, Child Health and Nutrition, or IMCHN is privileged to have worked closely with the Government of Egypt, particularly the Family Planning Sector at the Ministry of Health and Population, in efforts to improve maternal, child health, and nutrition services for Egyptian families, including the most vulnerable. IMCHN acknowledges the commitment of the 23 governorates and 4,839 primary health care units and their staff and appreciates their collaboration and ownership that resulted in the project's successful completion. IMCHN extends deep appreciation to the thousands of *Raedat Refiat* (RRs) who were gracious with their time and insights, providing detailed feedback for the betterment of the national RR program. Without these women and their dedication, the RR program would not exist in its present state.

Acronyms and Abbreviations

C3	Community Health Worker Coverage and Capacity
CHW	community health worker
CNCD	communicable and noncommunicable diseases
FIGO	International Federation of Gynecology and Obstetrics
HMIS	health management information system
IMCHN	Improving Maternal, Child Health and Nutrition
IT	information technology
LDHF	low dose, high frequency
LiST	Lives Saved Tool
LoP	Life of Project
MCSP	Maternal and Child Survival Program
M&E	monitoring and evaluation
MoHP	Ministry of Health and Population
RR	*Raedat Refiat*
RRS	*Raedat Refiat* supervisor
SDG	Sustainable Development Goal
TAG	technical advisory group
TOT	training of trainers
USAID	United States Agency for International Development

Country Summary

Program Dates	April 2015–June 2019
Cumulative Spending Through Life of Project	$5,915,635

Demographic and Health Indicators

Indicator	# or %
Total fertility rate[2]	3.5
MMR (per 100,000 live births)[1]	33
NMR (per 1,000 live births)[2]	14
U5MR (per 1,000 live births)[2]	27
TFR (births per woman)[2]	3.5
CPR (modern methods)[2]	59%
ANC 4+[2]	82.8%
SBA[2]	91.5%
Postnatal care < 48 hours of birth[2]	14%
Stunting (height for age < 5)[2]	21%

Geographic Implementation Areas

Governorates:	**Districts:**	**Facilities:**
23/27 (85%)—9 in Upper Egypt, 9 in Lower Egypt, 5 border governorates*	216/308 (70%)	4,839/5,098 (95%)

Population

Country:	**IMCHN supported areas:**
Estimated at 91,500,000	Strategy development at the national level; training and capacity-building in 23 governorates

*Governorates include Aswan, Assiut, Beni Suef, Faiyum, Giza, Luxor, Minya, Qena, Sohag (Upper Egypt); Al Sharqia, Beheira, Dakahlia, Damietta, Gharbia, Ismailia, Kafr el-Sheikh, Monufia, Qalyubia (Lower Egypt); Matruh, Port Said, North Sinai, Red Sea, South Sinai (border).

Technical Areas

Strategic Objectives Through the Life of Project

- Provide technical assistance to the Ministry of Health and Population (MoHP) to develop a national strategy for Egypt's community health workers, the Raedat Refiat (RR), that reflects the Family Health Package and will support the MoHP in reaching Sustainable Development Goal targets.
- Provide technical assistance to the MoHP to develop and implement at scale a national training system for the RR programs in 23 governorates (all 18 governorates of Upper and Lower Egypt plus five border governorates: Matruh, North Sinai, Port Said, Red Sea, and South Sinai).

Highlights Through the Life of Project	• IMCHN worked closely with Egypt's MoHP to develop and initiate a national strategy for its approximately 14,000 RRs, with explicit strategic goals, objectives, and performance management indicators for the RR program, including an updated training program. • IMCHN strengthened the skills and knowledge of more than 10,000 frontline RRs in 23 governorates, promoting them as key actors in Egypt's journey to self-reliance by increasing the reach of community-based service delivery. As the accompanying graph shows, these RRs are now better equipped to provide Egyptian households with timely and accurate health information. • IMCHN launched a digital health management information system (HMIS) to capture RR program data from more than 1,200 RRs in five pilot governorates. The new system promises to reduce RRs' administrative burden by eliminating the need for the current paper-based reporting system—giving RRs more time to serve the families in their communities.

Executive Summary

Egypt established the *Raedat Refiat* (RR) community health worker cadre in 1994 to increase demand for family planning services. From an initial 5,000 positions, the RR workforce has grown to 14,000+ RRs tasked with promoting a range of health services reflective of the national Family Health Package. In 2015, at the request of the Ministry of Health and Population (MoHP) and with support from the United States Agency for International Development, the MoHP and the Maternal and Child Survival Program (MCSP) assessed the RR program and found that although RRs were essential members of Egypt's frontline health team and despite the government's significant financial investment, the program as designed did not demonstrate desired results or impact. MCSP, known in Egypt as Improving Maternal, Child Health and Nutrition (IMCHN), in collaboration with the MoHP, thus undertook a two-pronged approach to strengthen the RR program: develop a new national strategy and an updated training program to target RR knowledge and skills development to better meet the health needs of women of reproductive age in 23 of Egypt's 27 governorates.

To build on findings and recommendations of the 2015 RR program assessment, the Minister of Health and Population established a technical advisory group (TAG), with IMCHN as secretariat, for the development of a national RR strategy. In keeping with assessment recommendations, IMCHN supported the MoHP to establish explicit strategic goals, objectives, and performance management indicators for the RR program within the context of the MoHP's family health strategy, linking its targets to Egypt's Sustainable Development Goal (SDG) for maternal and child health. The TAG's success in part inspired the MoHP to expand the committee's scope to include monitoring and evaluation of the strategy's implementation. Through this MoHP-led "high committee," IMCHN introduced a matrix for a unified RR evaluation process at the governorate level, resulting in multi-stakeholder consensus on indicators, milestones, and timelines aligned with Egypt's SDG targets.

As the TAG was revising the RR strategy, IMCHN helped to establish technical committees and subgroups to lead the development of a new training system, including a modular approach to technical content areas, revised operational guidelines, and a focus on competency-based skills acquisition. The subgroups developed an operational module in addition to four training modules reflective of the MoHP's Family Health Package—newborn and child health, reproductive health, communicable and noncommunicable diseases, and nutrition—incorporating social and behavior change approaches within each. IMCHN trained 63 master trainers and 132 lead trainers in these modules. These trainers cascaded the training to 1,280 RR supervisors (RRSs). In turn, these RRSs built the capacity of 10,183 RRs in 23 governorates using a hands-on, interactive, low-dose, high-frequency (LDHF) approach with a focus on workplace-based learning and practice. Across the 23 governorates, RRs who participated in the LDHF sessions consistently demonstrated improvements in thematic knowledge (an average increase of 30%) and skills (an average increase of 16%) from pre-test to post-test, and were better equipped to provide timely, quality information and services to their communities. As one RR reported after having completed her training, "ladies were asking me in all topics.... While the ladies followed my advice, their lives became better. For me, I became more precisely able to answer and keep trust with the women."[1]

To address two other assessment recommendations, IMCHN collaborated with the MoHP to design, launch, iterate, and resource a digital health management information system to capture RR program and workforce data. IMCHN distributed digital tablets and durable user manuals and developed a cadre of 15 trainers and 29 facilitators from MoHP information technology and technical staff in Luxor, Ismailia, Assiut, Damietta, and Port Said governorates to lead the training of RRSs and RRs in these five governorates,[2] reaching 1,228 RRs. The system promises to reduce RRs' administrative burden by eliminating the need for the current paper-based reporting system, giving RRs more time to provide services to families in their communities and enabling the MoHP to manage the RR program more effectively and efficiently.

[1] *Raedat Refiat* focus group participant. Giza, Egypt. March 2019.
[2] Luxor and Ismailia were initially envisaged as the two pilot governorates. In consultation with the MoHP and USAID, IMCHN later expanded the pilot to three additional governorates owing to changes in RR availability for training during the national hepatitis C campaign.

Introduction

The Maternal and Child Survival Program (MCSP) is a global, $560 million, 5-year cooperative agreement funded by the United States Agency for International Development (USAID) to introduce and support scale-up of high-impact health interventions among USAID's 25 maternal and child health priority countries, as well as other countries. MCSP engages government policymakers, private sector leaders, health care providers, civil societies, faith-based organizations, and communities in adopting and accelerating proven approaches to address the major causes of maternal, newborn, and child mortality and improve the quality of health services from household to hospital. MCSP also tackles these issues through cross-cutting approaches that focus on health systems strengthening, household and community mobilization, equity, gender, eHealth, and others. MCSP carries forward the momentum and lessons learned from USAID'S Maternal and Child Health Integrated Program, which made significant progress from 2008 to 2014 in improving the health of women and children in more than 50 developing countries throughout Africa, Asia, Latin America, and the Caribbean, including Egypt.

As one of only nine countries to have met its Millennium Development Goals related to maternal and child mortality, Egypt has demonstrated progress in the area of maternal and child health. However, greater efforts are needed to sustain this progress and protect the country from backsliding. Data from the 2014 Egypt Health and Demographic Survey showed that 59% of married women in Egypt were using a family planning method, a slight decrease from the 2008 contraceptive prevalence rate of 60%. Other health challenges—including stunting, which affects more than one-fifth of Egyptian children, overweight, and obesity—are expected to negatively affect the health of Egyptian women of reproductive age, newborns, and children.

Egypt established the *Raedat Refiat* (RR) community health worker (CHW) cadre in 1994 to increase demand for family planning services. From an initial 5,000 positions in 1994, the RR workforce has grown to 14,000+ RRs tasked with promoting a range of health services reflective of the national Family Health Package. In 2015, at the request of the Ministry of Health and Population (MoHP) and with support from USAID, the MoHP and MCSP assessed the RR program and found that although RRs were essential members of Egypt's frontline health team and despite the government has significant financial investment, the program as designed did not demonstrate desired results or impact. MCSP, known in Egypt as Improving Maternal, Child Health and Nutrition, or IMCHN, in collaboration with the MoHP, thus undertook a two-pronged approach to strengthen the RR program: develop a new national strategy and an updated training program to target RR knowledge and skills development to better meet the health needs of women of reproductive age in 23 of Egypt's 27 governorates.

IMCHN's **goal** for the Egypt project was the following:

Egypt's RR program is designed, equipped, and resourced to

- Support the MoHP's Family Health Package, and
- Contribute to the MoHP's efforts to achieve relevant Sustainable Development Goal (SDG) targets.

To meet this goal, IMCHN established the following **objectives**:

- Provide technical assistance to the MoHP to develop a national strategy for Egypt's CHWs that reflects the MoHP's Family Health Package and will support the MoHP in reaching SDG targets.
- Provide technical assistance to the MoHP to develop and implement at scale a national training system for the RR program in 23 governorates (all 18 governorates of Upper Egypt and Lower Egypt plus five border governorates: Matruh, North Sinai, Port Said, Red Sea, and South Sinai).

Major Accomplishments

Objective 1

Provide technical assistance to the Ministry of Health and Population (MoHP) to develop a national strategy for Egypt's community health workers that reflects the MoHP's Family Health Package and will support the MoHP in reaching Sustainable Development Goal targets.

Established Strategic Goals, Objectives, and Indicators for National RR Program

The findings and recommendations of the 2015 RR program assessment (see Box 1) directly informed the design of a new national strategy and the implementation phase of the IMCHN project. IMCHN served as secretariat for a technical advisory group (TAG) established by the then-Minister of Health and Population for the development of the national strategy. In keeping with assessment recommendations 1 and 2, IMCHN supported the MoHP to establish explicit strategic goals, objectives, and performance management indicators for the RR program within the context of the MoHP's full family health strategy, linking its targets to Egypt's SDG for maternal and child health.

As the TAG secretariat, IMCHN worked with and through the MoHP to bring diverse stakeholders to the table in an inclusive process, including not only the family planning sector but also the primary health, preventive, and curative sectors. IMCHN ensured cross-sectoral representation across relevant ministries, including Social Solidarity and Agriculture.[3] The new strategy, centered around four pillars—institutional frameworks and governance, partnership, capacity-building, and community health services and quality—prioritizes improvement of specific indicators of and contributors to morbidity and mortality based on recent data. A detailed Lives Saved Tool (LiST) analysis, conducted during the RR assessment, suggested potential areas of focus. The TAG considered this analysis along with assessment recommendations and additional relevant experiences from other countries' CHW programs.

Box 1. 2015 *Raedat Refiat* Assessment Recommendations

The RR assessment yielded 11 recommendations. IMCHN led or supported implementation of the recommendations in **bold**.

1. **Confirm or reverse the strategic direction of the RR program toward a full family health strategy.**
2. **Establish explicit strategic goals, objectives, and performance management indicators.**
3. Establish clear and recognized operational management and control of the RR program through a management unit at the governorate level.
4. **Provide practical and operational guidance to RRs at the governorate level to more strategically balance RRs' activities between home visits and community outreach, and mobilization and support of community groups for health promotion and social change.**
5. **Establish, resource, and implement a state-of-the-art training strategy adapted to the ambitions of the RR program.**
6. **Make use of mobile technology.**
7. **Improve the RR and community health promotion information system.**
8. Involve communities in setting and achieving health objectives with the RR program through systematic engagement of local leaders and organizations as partners.
9. Start planning for a future with RR career advancement opportunities.
10. Improve the RR motivation and incentive system.
11. Cost these recommendations and options to move the RR program forward in the next 5 to 10 years.

[3] Interview with Dr. Ali Abdelmegeid, former IMCHN Chief of Party. Cairo, Egypt. February 2019.

In September 2017, the TAG shared a complete draft strategy with the Minister of Health and Population for his review and endorsement, and in December 2017, the MoHP and IMCHN launched the new national strategy at a high-level event in Cairo, followed by launching events for Upper and Lower Egypt governorates. During the national event, the Minister publicly recognized RRs for the important role they play in health awareness. As a token of his acknowledgment, he initiated the first phase of a commitment to distribute digital tablets to all RRs. Remarking that the tablets will allow for more efficient and effective communication between the RR cadre and the MoHP, he gave one tablet to each of the 36 RR supervisors (RRSs) at the event—an important foreshadowing of the MoHP, IMCHN, and partners' work to come in digital health.

> Before the strategy, "There [was] always lack of agreement if the RRs were to only work on family planning or cover the entire scope of health messages. But after the strategy was implemented, it combined all the important health messages that concerned Egypt. When this was built onto the strategy, with indicators, monitoring, and evaluation … things were prioritized in terms of what was most important, what the existing challenges were, what the RRs' role in the future would be. The strategy combined the program and gave it confidence."
>
> —Dr. Hossam Abbas, Head of Central Department of the Family Planning Services and Commodities, Egypt MoHP

The TAG's success in part inspired the MoHP to expand the committee's scope to include monitoring and evaluation (M&E) of the strategy's implementation. Through this MoHP-led "high committee," MSCP introduced a matrix for a unified RR evaluation process at the governorate level, ultimately reaching multi-stakeholder consensus on indicators, milestones, and timelines aligned with the four pillars of the RR strategy and Egypt's SDG targets for maternal and child health. IMCHN's support enabled the MoHP to bring the right information to the right people at the right time, facilitating sustained monitoring of strategy implementation.

Applied Community Health Worker Coverage and Capacity Tool to Egypt Context

Alongside the strategy development in 2017, IMCHN adapted the CHW Coverage and Capacity (C3) tool to the Egyptian and RR cadre context using illustrative data from two governorates. This Excel-based modeling tool examines possible scenarios for the use of a CHW cadre's time with the aim of optimizing CHW impact. Informed by available data from the assessment phase and assumptions from IMCHN staff and RRs, IMCHN compared two scenarios for RR coverage of target households during a 2-day workshop with national and governorate-level MoHP staff involved in the national RR program.[4] By the workshop's completion, participants:

- Established operational and time management priorities for the RR workforce of the two illustrative governorates, as well as governorate-specific recommendations for focusing RR efforts on key populations and interventions based on expected population coverage;
- Identified ways to improve subnational planning and RR workforce time and task prioritization; and
- Quantified the remaining gaps in achievable population coverage and in required RR numbers to reach full governorate coverage per intervention type.[5]

Immediately following the December 2017 workshop, the MoHP asked IMCHN to replicate the workshop at the MoHP national level to support improved analysis and decision-making for the RR workforce. But, as planning advanced under new MoHP leadership, and as the end date of IMCHN approached, the Ministry was concerned about the tool's sustainability absent partner support and decided to forgo a national-level workshop.

[4] The national MoHP was represented by various department heads (including RR, maternal and child health, family planning, primary health care, population, and childhood diseases). MoHP focal points from the Menoufia and Fayoum governorates included department heads of primary health care, maternal and child health, and preventive care, in addition to RRSs.
[5] The experience of the initial C3 tool workshop contributed to learning documented in a manuscript currently under peer review.

Objective 2

Provide technical assistance to the MoHP to develop a national training system for the RR program and implement it at scale in 23 governorates (all 18 governorates of Upper and Lower Egypt plus five border governorates: Matruh, North Sinai, Port Said, Red Sea, and South Sinai)

Developed National RR Curriculum, Providing RRs with Practical and Operational Guidance

As the TAG was revising the RR strategy, IMCHN helped to establish technical committees and subgroups to lead the development of a new training system, including a modular approach to technical content areas, revised operational guidelines, and a focus on skills acquisition, particularly in areas deemed core competencies for the RRs. The subgroups developed four training modules reflective of the MoHP's Family Health Package—newborn and child health, reproductive health, communicable and noncommunicable diseases (CNCD), and nutrition—incorporating social and behavior change approaches within each. A fifth module, the operational guidelines, outlined RR qualifications, the reporting structure, RR training and capacity-building, household registration, and a revised RR job description encompassing home visits, community mobilization and communication, community data collection and analysis, and support to referral systems. In October 2017, IMCHN received MoHP approval for the revised training modules.

With the approved training modules as a guide, IMCHN then built out a comprehensive training resource package, which included training manuals, visual aids, monitoring tools, and job aids corresponding to the four technical content areas and revised operational guidelines. Each resource was developed and refined through an iterative process with the MoHP and relevant stakeholders. For reference and ongoing use, the complete training resource package is available on the MoHP's national RR website,[6] as well as on each RR's tablet. For durable on-the-job reference, IMCHN also provided RRSs and RRs in the 23 governorates with printed copies of:

- Training modules (for RRSs),
- Training manuals (for RRs),
- Job aids, and
- MoHP's family demographic register and daily home visit register,[7] both updated to reflect the content of the operational guidelines and the MoHP's full family health strategy.[8]

[6] http://www.mohp.gov.eg/rr/ (in Arabic)
[7] *Raedat Refiat* still complete paper-based registers as the MoHP has not yet fully transitioned to an entirely paperless system.
[8] IMCHN collaborated with the MoHP to review and revise 15 key performance indicators and corresponding messages for monitoring household-level behavior change.

Established and Implemented a Training Strategy Adapted to RR Program Ambitions

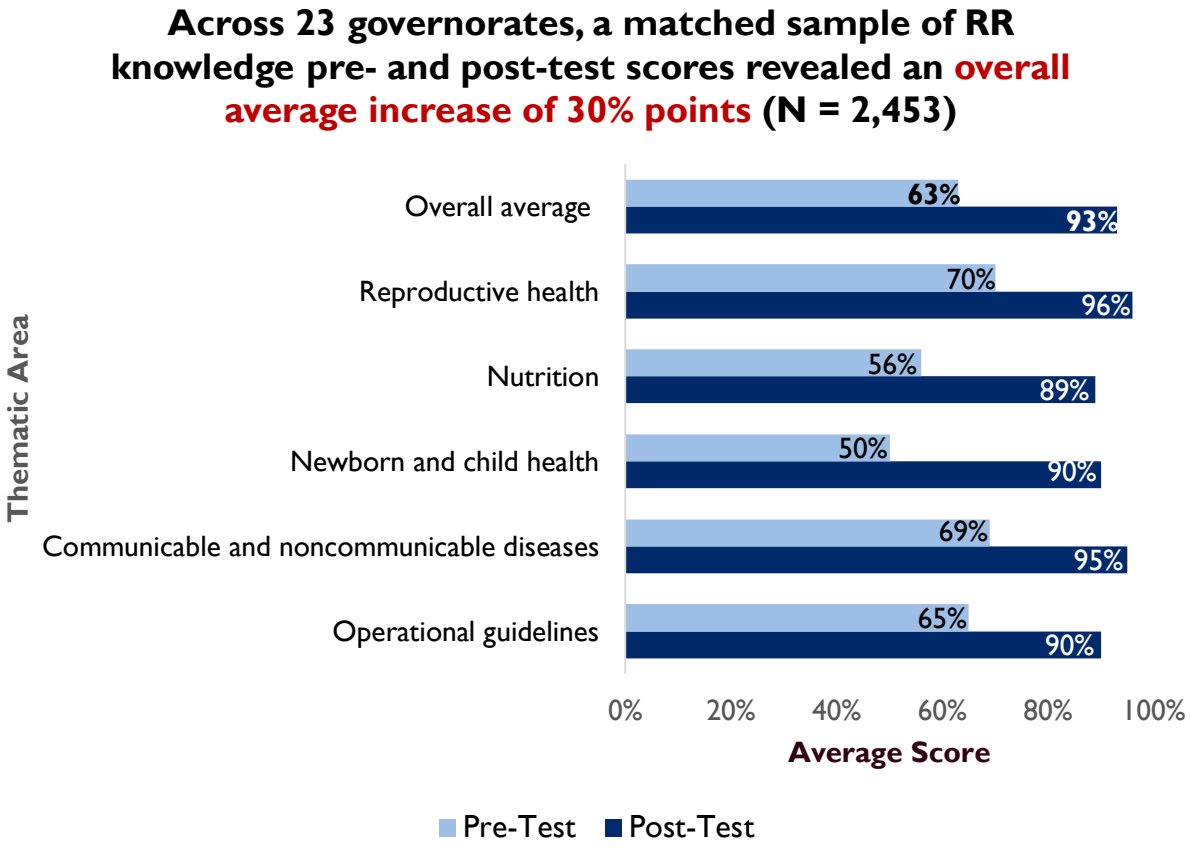
As the training package was being finalized, IMCHN developed a detailed timeline and management tools for planning and tracking training progress at both governorate and district levels. Beginning in mid-2017, IMCHN introduced the training modules to 63 master trainers and 132 lead trainers. These trainers cascaded the training to 1,280 RRSs, who are supervised by their respective governorate's RRS and family planning director. These trained RRSs in turn built the capacity of 10,183 RRs in the 23 governorates using a hands-on, interactive, low-dose, high-frequency (LDHF) approach (see Table 1). Unlike didactic training in a classroom setting, the LDHF approach focuses on team- and workplace-based learning and practice. The LDHF learning activities consisted of one primary health care unit training day per week, followed by daily practical application during which RRs conducted home visits with real-time coaching from an RRS. At the end of each month, RRSs held monthly meetings with their supervisees to share feedback on the RRs' performance (e.g., during a home visit) and discuss challenges faced in the course of the RRs' work.

Table 1. Number of individuals trained, by participant type and region

Participant type	Number trained by region				Training details
	Upper Egypt	Lower Egypt	Border	Total	
Master trainers	N/A	N/A	N/A	63	• National-level staff responsible for providing training sessions, coaching other staff, supportive supervision functions • Three rounds of 6-day trainings
Lead trainers	60	53	19	132	• Responsible for training *Raedat Refiat* (RR) supervisors with the help of master trainers • Eight rounds of 6-day trainings
RR supervisors	570	659	51	1,280	• Responsible for cascading trainings to all RRs • 62 rounds of 9-day trainings
RRs	4,686	5,194	303	10,183	• Received training using a low-dose, high-frequency approach sequenced as follows: – Operational guidelines (3 days) – Reproductive health (6 days) – Newborn and child health (4 days) – Nutrition (3 days) – Communicable and noncommunicable diseases (5 days)
Total	5,316	5,906	373		

RRs who participated in the LDHF sessions consistently demonstrated improvements in thematic knowledge from pre-test to post-test. A matched sample of 2,453 RRs demonstrated an average knowledge increase of 30% from pre-test to post-test across 23 governorates, as Figure 1 shows. RR knowledge increases in reproductive health, nutrition, newborn and child health, and CNCD enable RRs to serve as key actors in Egypt's efforts to better meet the health needs of women of reproductive age and their families. As one RR reported, "[After the training] ladies were asking me in all topics, not only family planning. While the ladies followed my advice, their lives became better. For me, I became more precisely able to answer and [gain the] trust [of] the women."[9]

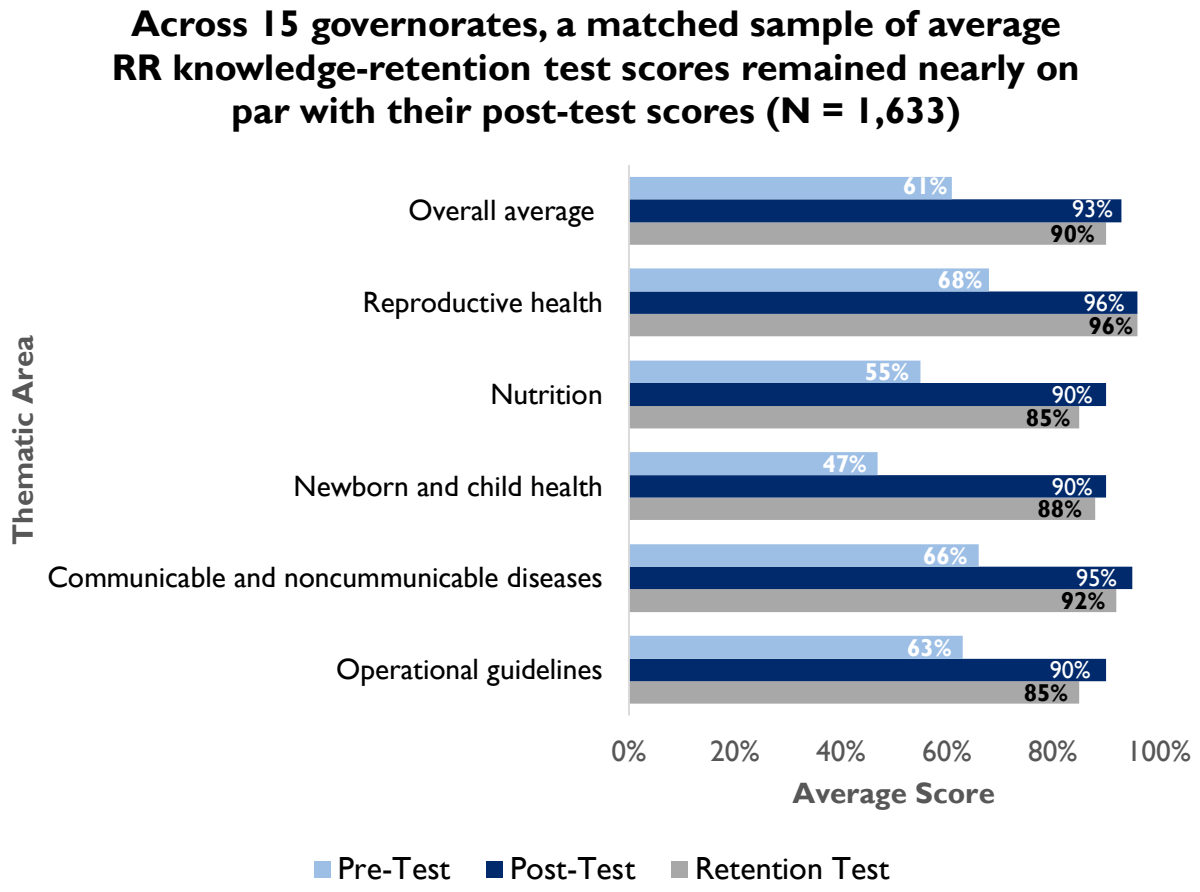
Figure 1. *Raedat Refiat* (RR) knowledge pre- and post-test scores across 23 governorates, by thematic area



Six months after completion of their training, IMCHN conducted a knowledge retention test with a matched sample of RRs in 15 governorates. Although experience shows that a reduction in knowledge is to be expected, retention assessment results demonstrated an average retention of 90% across the thematic areas, as Figure 2 shows. IMCHN hypothesizes that the combination of LDHF learning activities, practical application, and RRS coaching contributed to these results, and represents a promising capacity-building strategy for other CHW cadres.

[9] *Raedat Refiat* focus group participant. Giza, Egypt. March 2019.

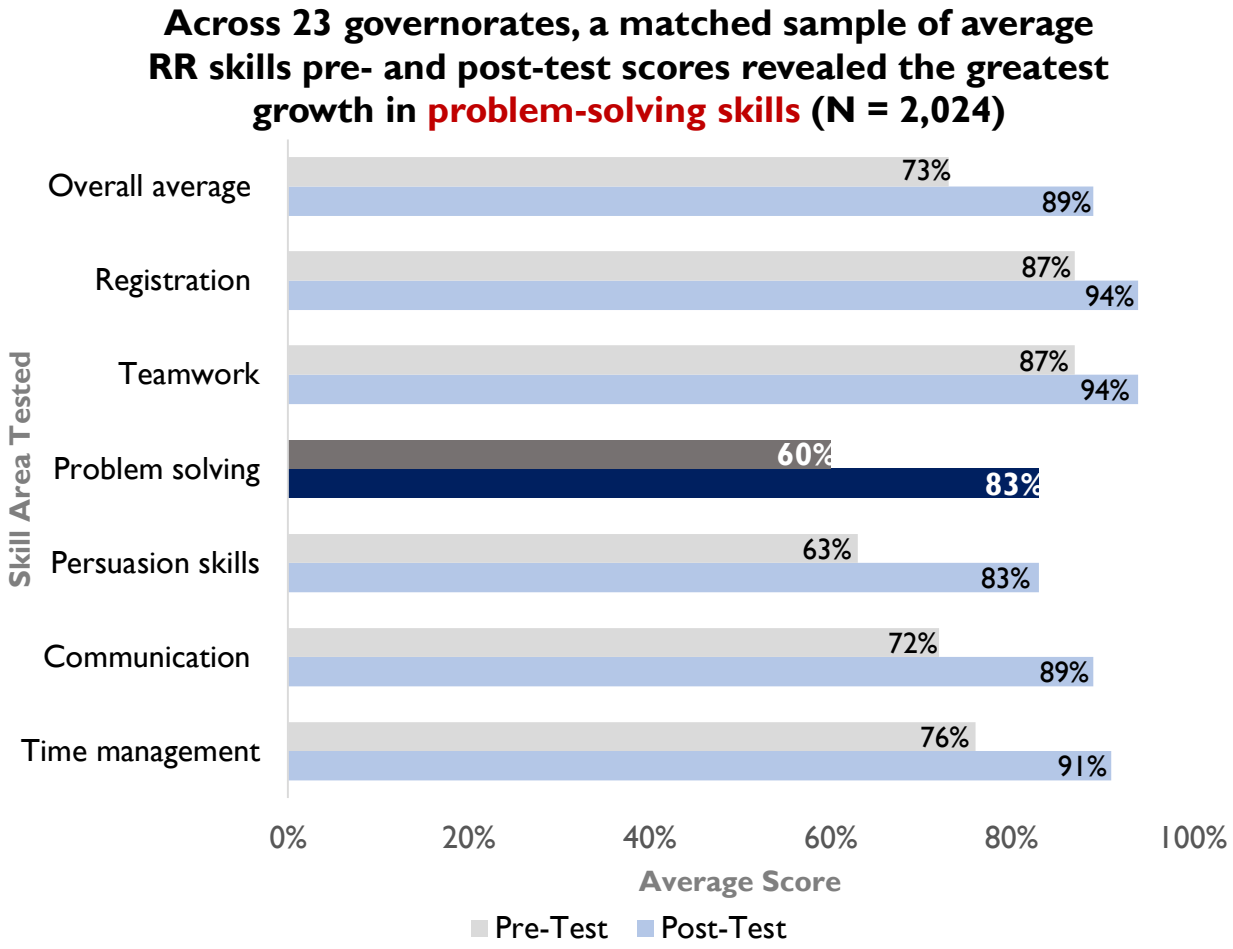
Figure 2. *Raedat Refiat* (RR) knowledge pre-, post-, and retention test scores across 15 governorates, by thematic area



IMCHN additionally developed, administered, and handed over to the MoHP two critical RR skills assessment tools for its use and adaption: a home visit checklist and a community feedback form. A line supervisor uses the home visit checklist when accompanying an RR as part of the monthly monitoring and coaching visits. The evaluative checklist provides a scaled rating of 1 to 3 for each of six skill areas: household registration, teamwork, problem-solving, persuasion, communication, and time management. Skills assessment results from 23 governorates reflect improvements in all areas assessed, with problem-solving skills demonstrating the greatest improvement, as Figure 3 shows. In the words of one RR, "As an RR, every day I meet different people and face different situations requiring different skills and responses. The high-frequency, on-the-job training provided me with the necessary mix of skills…to be able to adapt to new and changing conditions."[10]

[10] Sherihan, *Raedat Refiat* in Assiut, Egypt. 2018.

Figure 3. *Raedat Refiat* (RR) pre- and post-test skills scores across 23 governorates, by home visit skill area



RRSs used the 10-question community feedback form to solicit optional feedback from three randomly selected women on their respective RR's household visit. Questions ranged from the content of the RR's visit, to whether the RR offered the woman an opportunity to ask questions, to whether or not the woman would want the RR to visit her household again. They employ the same scaled rating of 1 to 3 used in the home visit checklist. Across 23 governorates, a matched sample of average community feedback scores on RR performance increased by 14% from baseline to endline, demonstrating the greatest improvement in the border governorates (from 73% at baseline to 91% at endline).

Better equipped with knowledge, skills, and applied social and behavior change approaches, RRs reported feeling capable and confident in their role in the community and beyond. As one explained, "I have young daughters. I don't feel shy to speak with them about menstruation. Now I'm speaking about topics I was never able to speak about [with] them. I become more confident."[11]

Designed and Launched Model Health Management Information System for the RR Program

To address assessment recommendations 5 and 6, IMCHN collaborated with the MoHP to design, launch, iterate, and resource a pilot digital health management information system (RR HMIS) model to capture RR program and workforce data, such as RR demographics and training history. IMCHN distributed durable user

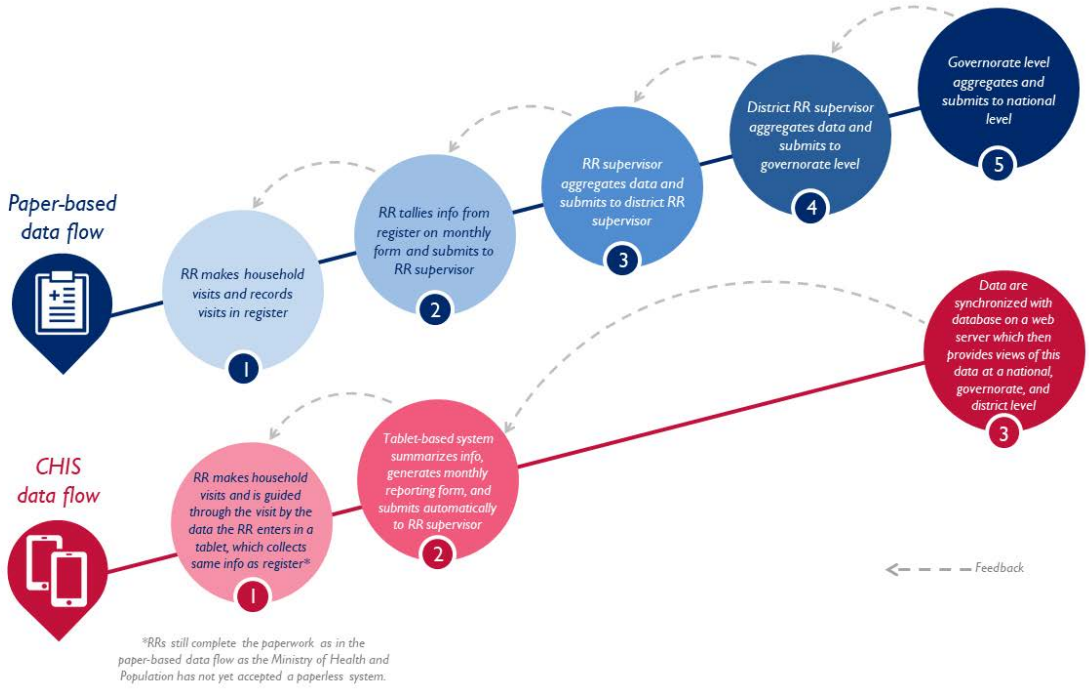
[11] *Raedat Refiat* focus group participant. Beheira, Egypt. March 2019.

manuals and developed a cadre of 15 trainers and 29 facilitators from MoHP information technology (IT) and technical staff in Luxor, Ismailia, Assiut, Damietta, and Port Said governorates to lead the training of RRSs and RRs in these five pilot governorates.[12] These master trainers cascaded the training to 1,228 RRs in the five governorates:

- 250 RRs in Luxor
- 103 RRs in Ismailia
- 523 RRs in Assiut[13]
- 207 RRs in Damietta
- 45 RRs in Port Said

Given its intent to scale the RR HMIS, the MoHP provided tablets to Damietta and Port Said governorates, while IMCHN distributed tablets in Luxor and Ismailia governorates and successfully advocated for Save the Children's sponsorship program to provide tablets to Assiut governorate (using non-USAID funds). The system promises to reduce RRs' administrative burden by eliminating the need for the current paper-based reporting system, giving RRs more time to provide services to families in their communities and enabling the MoHP to manage the RR program more efficiently and effectively, as depicted in Figure 4. To this end, IMCHN purchased and installed a server at the MoHP to host the HMIS. The server will securely store national RR program data, demonstrating the Ministry's commitment to moving another step closer to a paperless HMIS.

Figure 4. Comparison of *Raedat Refiat* (RR) program data flows



[12] Luxor and Ismailia were initially envisaged as the two pilot governorates. In consultation with the MoHP and USAID, IMCHN later expanded the pilot to three additional governorates owing to changes in RR availability during the MoHP's national hepatitis C campaign.
[13] IMCHN collaborated with Save the Children's sponsorship program to pilot the HMIS in Assiut governorate, where sponsorship programming is active, using sponsorship funds.

Cross-Cutting Theme: Community Health

Through the development and endorsement of the national strategy for the RR program, IMCHN supported the MoHP to institutionalize community health as a central component of its health system. The national RR strategy reflected the MoHP's Family Health Package and aligned with Egypt's broader efforts to prevent child and maternal deaths and strengthen the health system.

To support strategy implementation within the health system, IMCHN developed a training resource package that comprehensively covers all tasks in an RR's portfolio, combining technical, management, and communication skills to holistically build the capacity of Egypt's CHWs. Having trained and built the capacity of hundreds of MoHP trainers and more than 10,000 RRs, the national RR program has the knowledge, skills, and social and behavior change approaches needed to address citizens' health priorities and concerns across the reproductive, maternal, newborn, and child health spectrum. IMCHN's emphasis on practical application and real-time coaching supports RRs in engaging with women and families in their communities in culturally appropriate ways, with messaging specifically designed and tested to reflect cultural and faith-based beliefs.

IMCHN's collaboration with the MoHP to develop and pilot an electronic HMIS in five governorates strengthened the MoHP's understanding of data needs, HMIS capacity, and the linkages between them, resulting in an RR HMIS that is more responsive to the community health program's needs in the present and for the long term.

Recommendations and Way Forward

IMCHN's contributions to the national RR program, as represented by the development and launching of the strategy and comprehensive training resource package alongside a pilot HMIS model, encouraged donors and other implementing partners to "continue on the work already done"[14] in partnership with the MoHP. Building on successes and lessons learned over the past 4 years, IMCHN offers the following recommendations to the MoHP and its partners as they support the Government of Egypt writ large in its journey to self-reliance.

Recommendations on the National Strategy

- Given the distinctive epidemiological, geographic, and cultural profile of the five border governorates, review the national RR strategy for its applicability in these governorates. As needed, develop a differential strategy, substrategy, and/or implementation plan aligned with their needs. IMCHN's forthcoming case study on the development of the national strategy may be useful as a resource and reference.
- Review and validate the World Bank-developed national RR strategy implementation plan. Once validated, IMCHN suggests costing the 5-year plan to facilitate advocacy and fundraising.
- Continue to convene regular meetings of the high committee for sustained monitoring of the strategy's implementation, including use of the RR evaluation matrix.

Recommendations on RR Training and Capacity-Building

- Replicate the LDHF approach for initial training of RRs across the remaining governorates of Alexandria, New Valley, and Suez. The approach has proven effective in improving RR knowledge and skills, and ranked highly in terms of satisfaction among those RR surveyed.
- As outlined in the operational guidelines module, and based on IMCHN's experience training and building the capacity of more than 1,000 RRSs and 10,000 RRs, IMCHN recommends:
    - Conducting interactive, hands-on refresher trainings at the primary health care unit for RRs twice a year through a 1-day session for each technical content area.
    - Continuing regular supportive supervision and coaching visits to RRSs and RRs.

Recommendations on the RR HMIS

- To promote sustainability of future iterations of the RR HMIS, ensure the continued engagement of the MoHP's technical and IT staff in the thoughtful redesign, resourcing, technical support, and maintenance of the electronic information system.
- As Egypt continues to iterate and scale digital health models, such as those currently being designed by USAID's Strengthening Egypt's Family Planning Program, IMCHN recommends:
    - Planning for initial trainings in IT skills and basic hardware use before moving to more complex tasks and operations. IT knowledge and tablet proficiency should not be assumed.
    - Keeping an eye to systems interoperability, with the aim of more efficient and effective management and timely decision-making for the national RR program.

[14] Interview with Dr. Hossam Abbas, Head of Central Department of the Family Planning Services and Commodities, Egypt MoHP. Cairo, Egypt, February 2019.

Appendix A: Performance Monitoring Plan

Indicator	Frequency	Baseline data	Program year				Cumulative[15]	Life of project (LoP)	
			(1) Oct. 2015– Sept. 2016	(2) Oct. 2016– Sept. 2017	(3) Oct. 2017– Sept. 2018	(4) Oct. 2018– June 2019		Target[16]	% of target achieved
Strategic objective 1: National strategy for Egypt's *Raedat Refiat* (RR) program endorsed and disseminated									
Intermediate result 1.1 Strategic goals, objectives, and performance management indicators for the RR program established									
1.1 Number of policies drafted /changed with Improving Maternal, Child Health and Nutrition project support	Annual	0 (2015)	0	2	0	0	2	2	**100%**
1.1.1 Number of technical support workshops with expert's attendance to review pillars of the strategy	Quarterly	0 (2015)	0	6	0	0	6	6	**100%**
1.1.2 RR performance monitoring and evaluation system established and piloted	Quarterly	0 (2015)	0	1	0	0	1	1	**100%**
Intermediate result 1.2: National strategy in line with the MoHP's Family Health Package									
1.2.1 Number of technical workshops conducted by the high committee to follow up the formulation of the strategy and provide continuous support to the RR program	Quarterly	N/A	0	3	0	0	3	3	**100%**
1.2.2 Number of project conferences to launch and disseminate the strategy	Annual	N/A	0	0	0	3	3	4	**75%**[17]

[15] "Cumulative" refers to the aggregated total result across the LOP.
[16] "Life of project (LoP) target" refers to the intended target by completion of project implementation.
[17] At the MoHP's request, MCSP/Egypt did not organize a strategy launching event for the five border governorates.

Indicator	Frequency	Baseline data	Program year				Cumulative[15]	Life of project (LoP)	
			(1) Oct. 2015–Sept. 2016	(2) Oct. 2016–Sept. 2017	(3) Oct. 2017–Sept. 2018	(4) Oct. 2018–June 2019		Target[16]	% of target achieved
Strategic objective 2: Robust national RR training system implemented in selected governorates									
2.1 Percentage improvement of RR knowledge scores	Quarterly	63.2%[18]	0	0	0	30%[19]	30%	25%	**120%**
2.2 Percentage improvement of RR skills scores	Quarterly	72%[20]	0	0	0	16%	16%	25%	**64%[21]**
2.3 Percentage improvement of trainers' skills scores	Quarterly	80%[22]	0	0	0	10%	10%	25%	**40%[23]**
Intermediate result 2.1: New RR curriculum developed and disseminated									
2.1.1 Number of training modules developed to cover the training content, by topic	Quarterly	0	0	5	0	0	5	5	**100%**
2.1.2 Number of technical support workshops to review the training package, by topic	Quarterly	0	0	15	0	0	15	15	**100%**
2.1.3 Percentage of trainees who reported the appropriateness of training module	Quarterly	N/A	0	0	0	0	97%	80%	**121%**

[18] Baseline data source: average knowledge pre-test score from a sample of 23 governorates.
[19] Percentage improvement data source: average knowledge post-test score from a sample of 23 governorates.
[20] Baseline data source: average skills pre-test score from a sample of 23 governorates.
[21] Although the ambitious target of 25% was not reached, average skills test results increased from 72% to 89%.
[22] Baseline data source: average trainer pre-test score.
[23] Given that trainers' baseline skills scores were high (i.e., 80%), a 25% improvement LoP target would have resulted in a score greater than 100%.

Indicator	Frequency	Baseline data	Program year				Cumulative[15]	Life of project (LoP)	
			(1) Oct. 2015–Sept. 2016	(2) Oct. 2016–Sept. 2017	(3) Oct. 2017–Sept. 2018	(4) Oct. 2018–June 2019		Target[16]	% of target achieved
Intermediate result 2.2 Operational guidelines developed									
2.2.1 Operational guidelines module reviewed and updated to incorporate RR core competencies by operational area, management skills, and tools/job aid for RRs and supervisors	Annual	N/A	0	24	0	0	24	24	**100%**
Intermediate result 2.3 Automated electronic information system for RRs developed and piloted									
2.3.1 Number of governorates that piloted the electronic information system	Annual	0	0	0	0	5	5[24]	2	**250%**
Intermediate result 2.4 Human resources capacity improved									
2.4.1 Number of trainers who completed training of trainers	Quarterly	0	0	0	195	1,280	1,475	1,460	**101%**
2.4.2 Number of RRs who received the training package	Quarterly	0	0	0	9,880	303	10,183	11,500[25]	**89%**
2.4.3 Number of individuals receiving nutrition-related professional training through US Government-supported programs	Quarterly	0	0	176	11,179	303	11,658	11,500	**101%**

KEY	
Color codes for LoP target achieved	**> 110%**
	85–110%
	< 85%

[24] Luxor and Ismailia were initially envisaged as the two pilot governorates. In consult with the MoHP and USAID, IMCHN later expanded the pilot to three additional governorates owing to changes in RR availability during the MoHP's national hepatitis C campaign.
[25] At the outset of trainings, IMCHN estimated the number of RRs to be trained based on MoHP records. Actual numbers trained are based on actualized training records.

Appendix B: Success Story

Egypt's Community Health Workers—the *Raedat Refiat* (RR)—Gain the Knowledge They Need to Stop Child Marriage

Nadia Mohamed lives in Al Sharqia governorate of Lower Egypt, El Heseneya district. She has been a *Raedat Refiat* (RR) since 2005 and has a strong passion for helping others and changing lives.

In January 2018, after completing a training organized by the Maternal and Child Survival Program (MCSP) known in Egypt as Improving Maternal, Child Health and Nutrition, or IMCHN, Nadia was promoted to the role of an RR supervisor (RRS). In this role, Nadia is responsible for training and supervising six RRs. RRs complete a 6-month training that follows a low-dose, high-frequency capacity-building approach. The methodology consists of a weekly facility-based trainings followed by "high-frequency" daily practice. The trainings cover health education and health promotion for nutrition, reproductive health (including child marriage), newborn health, and communicable and noncommunicable diseases. RRs also complete an operational guidelines module, which aims to build their capacity in communication, negotiation, and other job skills (e.g., data collection). As an RRS, Nadia conducts a once-weekly RR training related to these topics. On non-training days, Nadia accompanies RRs during their visits to households in the community. These visits give Nadia, and other RRSs like her, an opportunity to provide on-the-job training as RRs practice their communication and negotiation skills.

Nadia Mohamed, a *Raedat Refiat* in Sharqeya governorate.
Photo by Sara El Sweify/IMCHN

> "I am passionate about my work and dedicated to help people."
> —Nadia Mohamed

During a recent home visit with one of the RRs under her supervision, Nadia and the RR passed by a woman sitting outside her house. The woman seemed upset. Nadia approached her and asked what was wrong. Ataya Mohamed, a 35-year-old mother of three, began to cry. Ataya explained that her husband, Ayman, had decided that their 15-year-old daughter, Aya, was soon to be married. Ataya asked Nadia to help convince the father not to do so.
Nadia asked when the father would be home and promised to come speak to him. Through her IMCHN training, Nadia understood the potential dangers and consequences of child marriage and fixed her mind and her heart on helping Aya. Nadia returned later that day to meet the father, who wasn't as welcoming as Ataya had been.

At first, he refused to talk with Nadia. But, thanks to the communication and negotiation skills training she had received from IMCHN, she was able to ease into the conversation by asking the father questions to understand his point of view. She patiently listened to the father's perspective and his reasoning. After he finished talking, Nadia began to address his reasons and viewpoints.

Ayman cited financial reasons for marrying his daughter off at 15. Nadia countered that marriage would ultimately cost him more than what he intended to save. Furthermore, Nadia spoke convincingly of Aya's health and the dangers she would face if she were to have a child of her own at such a young age. By the end

of their discussion, Ayman had not only decided to call the marriage off, he asked Nadia to speak to his brother, who also intended to marry off his young daughter.

Aya went to Nadia and thanked her for her help. During their conversation, Nadia discovered that Aya had a talent for drawing. She encouraged Aya to take drawing classes to improve her skills, practice her hobby, and live her childhood to the fullest.

Appendix C: List of Presentations at International Conferences and Publications

Conference Presentations (4)

Month, year	Conference	Presenter(s)	Presentation/poster title
October 2018	Fifth Global Symposium on Health Systems Research (HSR)	Eric Sarriot	Skills session, "Introducing tools and resources to advance community health policy and planning: Addressing operational realities for CHW time use through the CHW Coverage and Capacity Tool (C3)"
October 2018	International Federation of Gynecology and Obstetrics (FIGO) World Congress XXII	Sayeda El Zeiny	Poster presentation, "Adapting a low-dose, high-frequency training approach to Egypt's community health workers"
December 2018	Global Digital Health Forum	Mohamed El Ghazaly	Panel presentation, "Adapting the principles for digital development to provide a digital aid for Egypt's community health worker cadre, the Raedat Refiat"
May 2019	2019 Global Health Practitioner Conference	Issam El Adawi and Maha Sabry	New information circuit table, "Adapting a 'low dose, high frequency' capacity building approach to improve competence, confidence, and performance among Egypt's community health workers" Poster presentation, "The power of partnership: collaborating to develop and deploy a digital system for Egypt's community health workers"

Journal Publications (2)

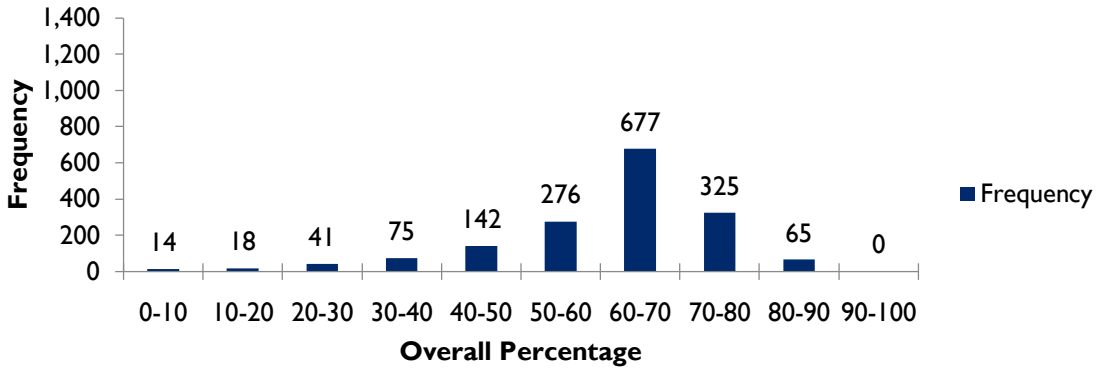
Month, year	Article title	Journal	Authors	Status
Estimated August 2019	Policy ambitions and operational realities: introduction of the CHW Coverage and Capacity (C3) tool to rationalize community health workforce operational plans in two Egyptian governorates	*Global Health Science and Practice*	Eric Sarriot, Bill Winfrey, Mai Dawoody, Melanie Morrow, Injie Kotb, Ochi Ibe, Rachel Taylor, and Ali Abdelmegeid	Forthcoming; in peer review
Estimated August 2019	Adopting and implementing a low-dose, high-frequency learning approach to improve CHW performance in Egypt	*Global Health Science and Practice*	Mai Ali, Mostafa Mamdouh, Ahmed Farahat, Mohammed Helaly, and Sally Saher	Forthcoming; in development

Appendix D: List of Materials and Tools Developed or Adapted by the Program

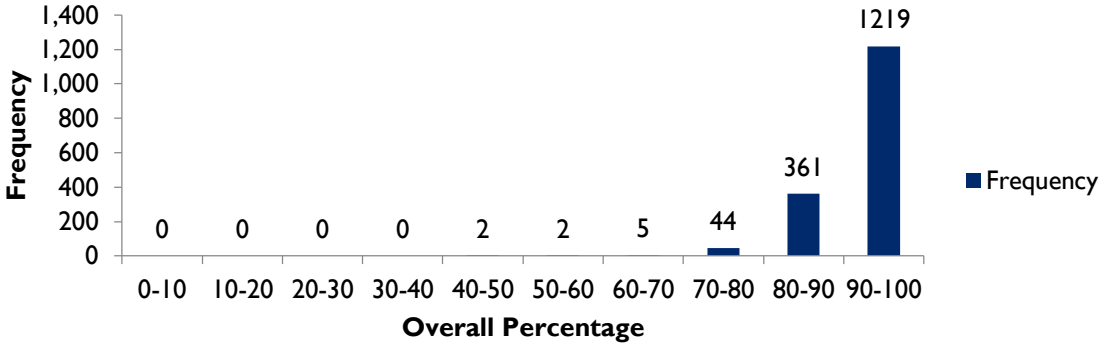
#	Material or tool name	Technical area/document type
1	Training of trainers training toolkit, including trainer guides and agendas	Community health training toolkit
2	RR training manual in operational guidelines (participant guide)	Community health training manual
3	RR training manual in reproductive health (participant guide)	Maternal health and family planning training manual
4	RR training manual in newborn and child health (participant guide)	Newborn and child health training manual
5	RR training manual in nutrition (participant guide)	Nutrition training manual
6	RR training manual in communicable and noncommunicable diseases (participant guide)	Communicable and noncommunicable diseases (CNCD) training manual
7	RR training module in operational guidelines (trainer guide)	Community health training module
8	RR training module in reproductive health (trainer guide)	Maternal health and family planning training module
9	RR training module in newborn and child health (trainer guide)	Newborn and child health training module
10	RR training module in nutrition (trainer guide)	Nutrition training module
11	RR training module in communicable and noncommunicable diseases (trainer guide)	CNCD training module
12	Training PowerPoint presentations	Maternal health, family planning, newborn and child health, nutrition, and CNCD training presentations
13	Visual job aids	Maternal health, family planning, newborn and child health, nutrition, and CNCD visual job aids
14	Raedat Refiat talking point booklets	Maternal health, family planning, newborn and child health, nutrition, and CNCD job aids
15	Basic computer skills training for RRs and RRSs	Digital health training guideline
16	HMIS manual for RRs	Digital health
17	HMIS manual for RR supervisors	Digital health
18	Referral cards	Maternal health, family planning, newborn and child health, nutrition, and CNCD
19	Family demographic and home visit registers	Maternal health, family planning, newborn and child health, nutrition, and CNCD
20	Program assessment report	Community health report
21	National RR strategy book	Community health strategy
22	RR supervisors leadership skills development workshop material	Community health training material

Appendix E: Distribution of *Raedat Refiat* Knowledge Pre-test, Post-test, and Retention Test Scores

Across 15 governorates RR Knowledge Pre-test Score Frequency Distribution (N = 1,633)



Across 15 governorates, RR Knowledge Post-test Score Frequency Distribution (N = 1,633)



Across 15 governorates, RR knowledge Retention-test Score Frequency Distribution (N = 1,633)