

# Empowering nurses in rural eastern Dominican Republic: a pathway to improved quality care for maternal and neonatal patients through education



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## Abstract

Despite near-universal maternal and neonatal health care coverage, high maternal and neonatal mortality rates remain significant challenges in the Dominican Republic. Therefore, the Ministry of Health has prioritized efforts to improve the quality of reproductive, maternal, and child health services and recognizes nurses' education in obstetrics and perinatal care as a core strategy for this goal. In line with these national priorities, a multidisciplinary team, in collaboration with the Regional Health Service, developed a program to empower 30 obstetric and neonatal nurse leaders from critical facilities through education in the Eastern Dominican Republic, the region with the third-highest concentration of live births.

The program's initial phase, which began in July 2019, consisted of a year-long, five-part workshop that addressed topics ranging from newborn baby care and resuscitation to pregnancy, labor and delivery, and postpartum evaluation and complications. In addition, participants were provided with ongoing support through a video gallery and a web-based chat for sharing questions, successes, and challenges directly with program staff and regional authorities. Feedback from participant nurses was overwhelmingly positive, with many reporting improved clinical knowledge, skills, and confidence and an increased sense of empowerment. Many communicated being able to, for the first time, successfully manage maternal hemorrhages, diagnose hypertensive disorders of pregnancy, counsel breastfeeding mothers facing latch issues, and provide neonatal resuscitation.

Recognizing nurses' value, particularly in settings where their abilities are often underestimated, can increase their sense of empowerment and confidence in serving others, enabling them to fulfill the critical role they play in the health of mothers and infants in the Dominican Republic. As a result, the Dominican Foundation for Mothers and Infants (DOFMI) acknowledged the importance of establishing similar programs on a national level, while also continuing to concentrate their long-term maternal and child health efforts on this specific region, which was particularly impacted by the COVID-19 pandemic.

## Background

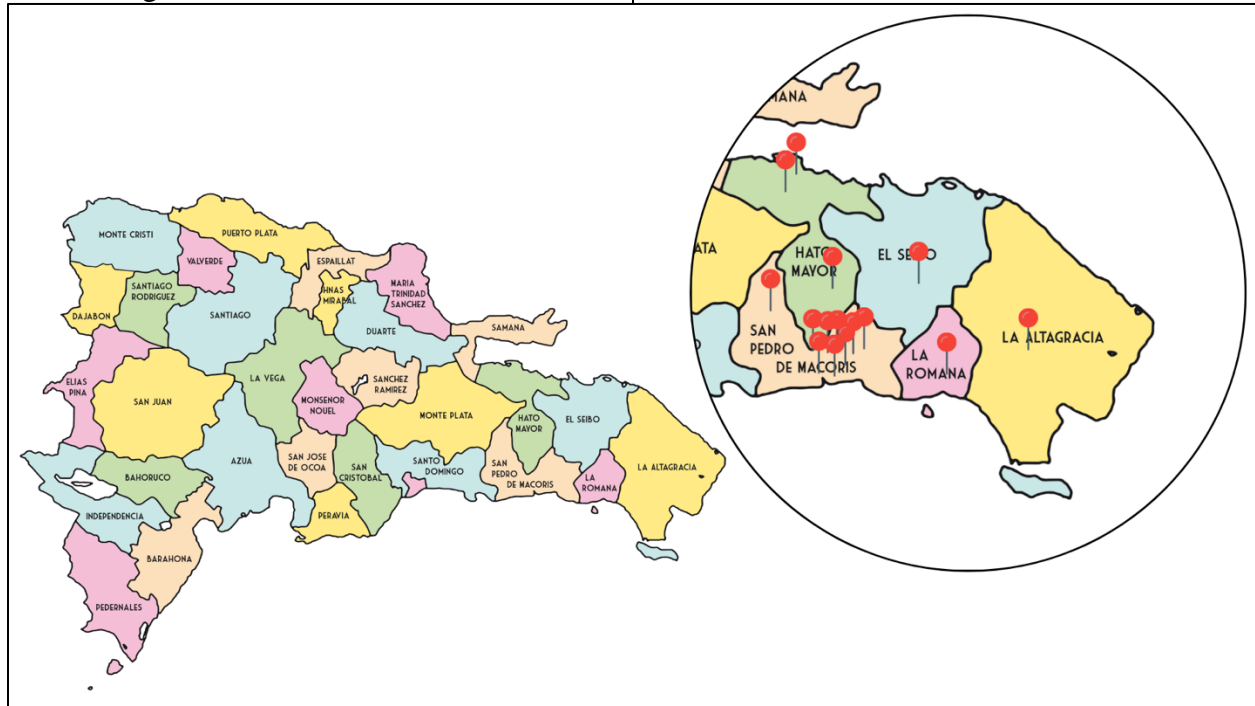
Substantial efforts have been made to ensure women and their newborns reach their full potential for health and well-being; however, high maternal and neonatal mortality rates (MMR and NMR, respectively) are still significant challenges for the Dominican Republic (DR). Approximately 200,000 babies are born each year, and over 95% of antenatal, perinatal, and neonatal health care is covered by qualified workers [1, 2]. Nevertheless, more than 2,830

newborns and 200 women died during and following pregnancy and childbirth in the DR in 2018 due to preventable or treatable causes [3]. In the same year, the Eastern health region, the region with the third-highest concentration of live births in the country, reported an MMR that exceeded 80 per 100,000 live births and an NMR of 10 per 1,000 live births [3]. The discrepancies between the almost universal maternal and neonatal health care coverage and the high morbidity and mortality rates suggest issues with the quality of services provided [4].

Accordingly, in 2019 the Ministry of Public Health prioritized actions to strengthen human resources competencies in all disciplines and levels of care directly related to reproductive, maternal, and child health services [1].

One such action was the timely engagement of the Dominican Foundation for Mothers and Infants (DOFMI), a non-profit organization established in the 1980s in both the DR and the United States. Initially, DOFMI was focused on identifying the reasons behind the high incidence of meningitis and pneumonia that led to fatalities and disabilities among Dominican children in the 1980s.

They also aimed to accelerate the introduction of vaccines that could prevent those infections. After successfully contributing to the significant control of infectious diseases, the organization redirected its efforts in 2018 toward the pressing needs of premature newborns, as well as mothers with high-risk pregnancies and deliveries. A few years before this shift, the organization addressed maternal and neonatal concerns in Barahona Province, which is in the southern part of the country [5]. In 2019, DOFMI was determined to create positive changes in Eastern DR (see Illustration 1).



**Illustration 1.** Map of the Dominican Republic. See magnified: Eastern region and selected facilities (red pin)

Maternal and infant nurses in Latin America have a long-standing history of reducing MMR and NMR. The evidence and experience validated in the region support nurses' education in obstetrics and perinatal care as a core strategy to reduce MMR and NMR [1]. In the DR, nurses are the frontline of care for infants and their mothers, representing an essential component of the healthcare system. In rural communities, nurses also function as leaders and health advocates, serving as liaisons between the patients and the healthcare system.

The Eastern Regional Health Service (known in Spanish as Servicio Regional de Salud Este or SRS Este) oversees five provinces: Hato Mayor, El Seibo, La Altagracia, La Romana, and San Pedro de Macorís. Within these provinces, which are significantly rural or transitioning from rural to urban, ten hospitals and five primary care units

were identified as critical facilities to address maternal and neonatal concerns (see Illustration 1). SRS Este personnel selected 30 nurse leaders (nursing degree: 14 ancillary nurses, 12 bachelor, and 4 technical) from these facilities to initiate an education program on maternal and neonatal care.

### Rural Nurse of the Eastern Region Education Program

The main objective of the program was to empower obstetric and neonatal nurses through education in rural Eastern DR. This effort was focused on the long-term goal of improving quality of care and reducing morbidity and mortality rates. The program's initial phase started in July

2019 with the introductory module of a year-long five-part workshop (see Table 1) developed by a multidisciplinary team of a nurse practitioner-midwife and physicians. The workshop contents were continuously tailored to meet the

specific needs and priorities of the nurses' work settings. Upon completing the workshop, the nurses earned a Certificate of Specialization in Maternal and Neonatal Care from DOFMI and the National Health Service.

**Table 1.** *Maternal and Neonatal Care Workshop*

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**Module I: Introduction. Held on July 11th, 2019 in San Pedro de Macorís (SPM), DR.**

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1. Discussion: How do you provide prenatal care?
2. Overview of pregnancy history-taking, abdominal examination, and stages of labor
3. Overview of pregnancy complications
4. Overview of newborn baby care and neonatal resuscitation

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**Module II: Preserving the Lives of Mothers and Babies. Held on August 15th, 2019 in SPM, DR.**

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1. Discussion: Maternal and neonatal deaths. Why do mothers and babies die? What can the nurse do to improve maternal and neonatal outcomes?
2. Newborn baby care, including the initial newborn evaluation and follow-up: history-taking and physical examination; neonatal resuscitation or “the golden minute”; risk factors for infections, jaundice, and hypoglycemia; proper handwashing and hygiene; breastfeeding; and local care protocols.

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**Module III: Pregnancy. Held on December 4th, 2019 in SPM, DR.**

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1. Overview of reproductive anatomy and physiology
2. Fetal development and circulation
3. Before conception: how to prepare for pregnancy
4. Obstetric evaluation: maternal history-taking, physical examination, and additional tests
5. Common problems during pregnancy
6. Obstetric complications: pre-eclampsia, anemia, and kidney infections
7. Breastfeeding
8. The adolescent mother
9. Local obstetric care protocols
10. Prevention of domestic violence against women
11. Introduction to the S.T.A.B.L.E. program: post-resuscitation/pre-transport stabilization infant care

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**Module IV: Labor and Delivery\***

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1. Labor and delivery evaluation: history-taking and physical examination
2. Management of normal labor and delivery: stages of labor
3. Signs of danger during labor and delivery
4. Complications of the third stage of labor: uterine atony and hemorrhage
5. Episiotomy
6. Additional review of pre-eclampsia

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**Module V: Postpartum\***

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1. Postpartum evaluation: history-taking and physical examination
2. Postpartum complications
3. Family planning
4. Breastfeeding

\*Due to the COVID-19 pandemic restrictions, five two-hour interactive video conferences were held during August and September 2020 to discuss topics and study cases from Modules IV and V.

To provide ongoing support, a web-based chat (WhatsApp group) between the nurses, program staff, and regional healthcare authorities was made available at the beginning of the program. Nurses were motivated to use this channel to share their achievements, questions about patient care, workplace limitations and needs, and any other personal experiences or commentary. Even after completing the workshop's core components, nurses were still encouraged to use the chat to follow up and strengthen the team's relationship.

DOFMI's staff also recorded educational materials to be shared through the web-based chat and uploaded to an education video gallery (YouTube). Currently, the gallery contains videos in Spanish about basic concepts of sexually transmitted infections and TORCH infections, recordings of past modules, and proper procedures for cleaning and disinfecting incubators. Nurses received a work binder with crucial information for each workshop module. The provided information was adapted from the American College of Nurse-Midwives's publication *Life-Saving Skills: Manual for Midwives* [6] and several Ministry of Public Health national clinical practice guidelines for the care of pregnant women and their babies. Each facility also received donations of medical equipment and tools, including a newborn emergency resuscitation kit, Doppler fetal heartbeat monitors, infant stethoscopes, pulse oximeters, measuring tapes, thermometers, and pregnancy wheels.

## Key Results

### *Participants' Perspectives: Workshop Feedback*

In order to meet the needs and priorities of the nurses, mid-workshop (December 2019) and end of workshop evaluations (October 2020) were conducted (see Table 2). Most nurses had an excellent opinion of the workshop, had their expectations excellently met, affirmed it was very likely they would practice what they learned, and found the material sent through the chat useful. Nurses also had a very favorable opinion on the workshop's content, length, organization, and educators, and over 90% would recommend this experience to their colleagues.

The three most common new concepts or skills nurses learned during these modules based on the mid-workshop evaluation were taking adequate care of the mother and the newborn, gaining the trust from patients to identify domestic violence, and newborn resuscitation. A substan-

tial number showed interest in having more practical sessions and highlighted the need to learn about umbilical vein catheterization. One nurse suggested inviting their immediate supervisors, most of whom are OB-GYN physicians, to the workshop to confirm that the nurses can safely and correctly perform the procedures commonly done in their facilities and assert that they should be trusted more.

In the final feedback form, nurses were again asked to mention three concepts or skills they newly learned throughout the modules. Most answers included managing the stages of labor, breastfeeding counseling, and hypertensive disorders of pregnancy. The form asked what, if anything, might hinder them from putting into practice what they learned. Approximately 30% mentioned the lack of teamwork (physicians do not allow them or encourage them to participate actively) and lack of tools and equipment. From participants' perspective, the workshop's strengths were the ongoing support and encouragement from the educators and other participants, the constant reminder of the value of their roles, having a safe space to express themselves and be heard, and the educators' willingness to teach. The workshop's weaknesses included the inability to conduct the last two modules in person due to COVID-19, which did not allow for the simulated practice that is critical for the labor and delivery module. Many nurses mentioned their interest in being part of future workshops and suggested conducting learning sessions in their clinical facilities, preferably with patients.

### *Limitations in Maternal and Child Health Services*

During module II of the workshop, nurses had a fruitful discussion prompted by the following questions: "Why do mothers and babies die in the DR?" and "What can the nurse do to improve maternal and neonatal outcomes?" Nurses were divided into five teams. Each team was assigned a category to guide their answers to the earlier mentioned questions: organization of care inside the hospital, (lack of) culture of patient safety, referrals and counter-referrals, infrastructure, and conditions of poverty and inequality. These categories were proposed by Castro to encompass the criteria usually associated with maternal mortality [7]. Nurses were asked to answer the aforementioned questions based on their experience during daily work in their facilities, which resulted in a discussion focused on understanding maternal and neonatal deaths in the DR and the role of nurses in the prevention of these deaths (see Table 3). During this module, SRS Este representatives were present to address nurses' concerns

**Table 2.** *Participants' Perspectives: Workshop Feedback*

Item	Mid- Workshop Dec. 2019 (n=27)  n (%)	End of Workshop Oct. 2020 (n=29)  n (%)
<b>What is your overall opinion of the workshop?</b>		
Excellent	<b>26 (96.3)</b>	<b>28 (96.6)</b>
Good	1 (3.7)	1 (3.4)
Regular	0 (0)	0 (0)
Bad	0 (0)	0 (0)
<b>My expectations were met.</b>		
Excellent	<b>25 (92.6)</b>	<b>24 (82.8)</b>
Good	2 (7.4)	5 (17.2)
Regular	0 (0)	0 (0)
Bad	0(0)	0 (0)
<b>How likely is it that you can practice what you learned?</b>		
	<b>20 (74.1)</b>	<b>22 (75.9)</b>
Very likely	7 (25.9)	5 (17.2)
Likely	0 (0)	2 (6.9)
Somewhat likely	0(0)	0 (0)
Unlikely		
<b>How helpful was the material sent through the chat?</b>		
	<b>21 (77.8)</b>	<b>28 (96.6)</b>
Very useful	6 (22.2)	0 (0)
Useful	0 (0)	1 (3.4)
Somewhat useful	0(0)	0 (0)
Not useful at all	0 (0)	0 (0)
I did not read it		
<b>The workshop content was appropriate and informative*.</b>		
	<b>23 (85.2)</b>	<b>24 (82.8)</b>
Totally agree	3 (11.1)	5 (17.2)
Agree	0 (0)	0 (0)
Disagree	0(0)	0 (0)
Totally disagree		
<b>What is your opinion on the workshop's length?</b>		
	<b>21 (77.8)</b>	<b>24 (82.8)</b>
Sufficient	6 (22.2)	5 (17.2)
Relatively sufficient	0 (0)	0 (0)
Relatively insufficient	0(0)	0 (0)
Insufficient		
<b>What is your opinion on the workshop's organization?</b>		
	<b>22 (81.5)</b>	<b>25 (86.2)</b>
Excellent	5 (18.5)	4 (13.8)
Good	0 (0)	0 (0)
Regular	0(0)	0 (0)
Bad		

<b>Would you recommend the workshop to your colleagues?</b>	<b>25 (92.6)</b>	<b>26 (89.7)</b>
Totally agree	2 (7.4)	3 (10.3)
Agree	0 (0)	0 (0)
Disagree	0(0)	0 (0)
Totally disagree		
<b>What is your overall opinion on the educators?***</b>		<b>28 (96.6)</b>
Excellent		1 (3.4)
Good		0 (0)
Regular		0 (0)
Bad		

\*n=26, \*\*Question not included on the first evaluation.

and reiterate their commitment to improving these circumstances.

### *Achieving Nurses' Empowerment*

The empowerment of nurses was evidenced through discussions during meetings and in the web-based chat group. On multiple occasions, nurses proudly mentioned how, for the first time, they could successfully stop maternal hemorrhages, diagnose hypertensive disorders of pregnancy, counsel breastfeeding mothers facing latch issues, receive and refer preterm newborns, and provide neonatal resuscitation when required. Nurses affirmed that this workshop enriched their knowledge and skill set and increased their motivation to practice their abilities. Nurses mentioned how this experience reaffirmed their skills and increased their confidence in serving mothers and infants. This is of great importance as the abilities of nurses are often underestimated. Nurses also stated their commitment to giving their best for their patients' welfare and staying vigilant in the face of present and possible complications with the same dedication as if these mothers and infants were their close relatives.

### **Conclusion**

After more than a year of interacting with these 30 nurses, their desire for knowledge and working aptitudes, motivation to improve themselves, and willingness to work hard to achieve this goal were continuously made evident. This motivation, driven by their commitment to better serve their patients, was vital to nurturing the close partnership between the nurses, the program staff, and local authorities.

Numerous factors, most of which are beyond nurses' control, prevent them from carrying out their work efficiently. In addition to the organizational, safety, infrastructural, and unequal conditions that threaten the quality of care given to patients, nurses are often undervalued, and their abilities are underestimated by those who should instead encourage them. These nurses have a powerful desire to contribute to decision-making processes, risk assessments, and care plans related to their patients. This dedication is shown in their continuous and active participation through the web-based chat by sharing stories, pictures, and videos of their successes during and after the workshop's conclusion.

In addition to discussing five maternal and neonatal care theory and practice modules, the meetings allowed the nurses to share their victories and hardships. The nurses were able to hone in on important clinical concepts, acknowledge their resilience, and acquire a sense of empowerment, as was highlighted by their feedback throughout the in-person and web-based discussions. Believing in themselves and their knowledge is essential for these nurses to effectively contribute to the health system they work in. Furthermore, they recognized the importance of their daily actions (e.g. home visits, patient counseling, etc.) in increasing mothers' and newborns' survival in the Eastern region of the DR and the need to continue advocating to improve the working conditions that currently threaten the quality of care received by patients.

At the conclusion of the workshop in 2020, amidst the COVID-19 pandemic, the Eastern region of the DR recorded an MMR of 136 per 100,000 live births and an NMR of 11 per 1,000 live births [8]. These rates were higher than the initial rates observed at the start of the

**Table 3.** *Understanding Maternal and Neonatal Deaths in the DR and Nurses' Role: Discussion Summary*

Categories	Why do mothers and babies die in the DR?	What can nurses do to improve maternal and neonatal outcomes?
<b>Organization of care inside the hospital</b>	Lack of continuous prenatal and newborn care	Local and regional authorities are responsible for addressing most of the reasons cited by the nurses. Nevertheless, nurses affirmed their commitment to advocate for the structural improvement and organization of their facilities.
	Lack of coordinated care across providers	
	Specialists do not know the clinical history of the mother and the newborn and are not always present at the time of delivery	
	Language barriers between patients and providers	
<b>(Lack of) culture of patient safety</b>	Patient perinatal record is not entered into the digital platform	Nurses are aware of the relevance of actions within their daily role that may improve maternal and neonatal outcomes, including:
	Lack of adherence to national clinical practice guidelines	
	Equipment in poor conditions (e.g., incubators, hospital sterilizers)	
	Long wait in requesting and obtaining results from medical testing	
<b>Referrals and counterreferrals</b>	Providers' burnout that impacts patient care and safety	- Conducting home visits, particularly during the postpartum/newborn period
	Lack of ambulances to transfer patients	- Filling out complete and detailed medical histories
	Insufficient communication between referring-transferring facilities	- Discussing national clinical practice guidelines and encouraging care providers to adhere to them
<b>Infrastructure</b>	Receiving hospitals send patients back to original facilities	- Improving patient counseling efforts (e.g., the importance of prenatal visits and tests, the impact of nutrition on health during pregnancy)
	Inadequate blood supply at hospital	
	Limited number of beds and incubators	- Creating patient information materials in multiple languages
	Water leaks in ceilings and walls	
	Lack of structure to room-in mother and infant	
	Lack of elevators to transport patients between floors	
	Inappropriate hygiene	
<b>Conditions of poverty and inequality</b>	Patients cannot afford medications or medical tests	
	Malnutrition in women	
	Patients miss appointments for not being able to afford transportation or do not have someone to take care of their children	
	Limited access to quality prenatal education	

program. This prompted DOFMI to concentrate their long-term efforts on this specific region. Nevertheless, through the nurses' feedback, DOFMI also recognized the value of establishing this kind of program on a national level. The knowledge and skills acquired through education could certainly increase the quality of care provided. However, most importantly, the recognition of the nurses' value contributes to increasing their sense of empowerment and confidence in serving others, enabling them to fulfill the critical role they play in the health of mothers and infants in the Dominican Republic.

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