



**MACARTHUR FOUNDATION'S INITIATIVE TO PROMOTE MIDWIFERY IN MEXICO
COMPLETE BASELINE REPORT**

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The MacArthur Foundation—working in tandem with a wide array of partners—believes that professional midwifery can improve the quality of maternal health care in Mexico; strengthen the primary health care system; and expand the number of skilled, basic level health care providers working in rural, marginalized areas of the country where maternal mortality ratios are highest. After decades of working to improve reproductive health, in 2015 the Foundation launched a capstone initiative designed as a finely tuned portfolio focusing on the institutionalization of professional midwifery. This document describes the baseline evaluation data collected close to the beginning of that Initiative.

1. THE CURRENT SITUATION

Ninety-six percent of births in Mexico take place in hospitals, mainly in second level facilities, many of which are overburdened, underfunded and lack staff and resources, with overqualified doctors attending large numbers of uncomplicated deliveries. Numerous maternal health experts in Mexico see this as a critical situation in which most births are over-medicalized, as exemplified by cesarean section rates that are fourth highest in the world and second in Latin America.¹

The scenario described above can be traced to a health ministry mandate developed between 2002 and 2004, stipulating that all births take place in hospitals. The mandate was intended to reduce the national maternal mortality ratio (MMR), and was accompanied by a concomitant decrease in support for primary healthcare. Mexico successfully reduced maternal mortality by 52% between 1990 and 2014 to a MMR of 39 per 100,000 live births. But the country did not reach the Millennium Development Goal of reducing the MMR to 22, and has a long way to go to achieve quality of care for all women and newborns. The MMR is even higher in the poorest states: In 2014, 12 states had a MMR above the national average; of these, the top five states were Durango, Chiapas, Hidalgo, Guerrero and Chihuahua.² According to a widely used analytical framework designed to guide efforts to end preventable maternal deaths,³ as more women are attended in health units in Mexico quality of care becomes a major determinant of outcomes, especially in overloaded health facilities such as general hospitals.

With these challenges in mind, the Foundation—in concert with a wide array of allies—perceived that the time was ripe for expanding the role of skilled midwives and returning to a focus on primary healthcare for uncomplicated births with swift and reliable backup care close at hand. A transition of this nature would be reinforced by global efforts to advance professional midwifery as a means to ensure high quality obstetric care for all women, as promoted by the World Health Organization (WHO), the Pan American Health Organization (PAHO) and the United Nations Population Fund (UNFPA); the last two of which have an important presence in Mexico. In 2011, the International Confederation of Midwives (ICM) and the UNFPA launched the first State of the World's Midwifery. In 2014 the two agencies published their second report, which found only 78 professional midwives in Mexico. The report further estimated that Mexico meets only 61 percent of workforce demand of health professionals available for maternal health care and recommended greater investment in developing midwifery.⁴

¹ Lazcano Ponce, E. et al., 2013. Cobertura de atención del parto en México. Su interpretación en el contexto de la mortalidad materna. *Salud Pública Mex*: 55 (Supl. 2): S214-S224.

² Freyermuth, G. et al. 2016. Indicadores 2014. Mortalidad Materna en México. México: Observatorio de Mortalidad Materna en México/ Centro de investigaciones y Estudios Superiores en Antropología Social. *Note. The other states with above average ratios are* Tabasco, Mexico City, Yucatán, Veracruz, Oaxaca, Michoacán, Tlaxcala. *Morelos has a low rate of 9.1.*

³ Souza, J. P. et al. 2014. Obstetric transition: The pathway towards ending preventable maternal deaths. *BJOG* 121 (Suppl. 1): 1-4.

⁴ Population and Reproductive Health Program/Mexico Plan for Capstone Grant making 2015-2019, October 2014.

Efforts to move in this direction must take into account midwifery's long history in Mexico, originating with the centuries old practice of traditional midwifery widespread in many parts of the country. In the 1950s and 1960s the National Indigenist Institute (INI) established the first training courses for indigenous midwives in rural regions. These efforts were resumed in the late 1970s and 1980s by the public health system, which made efforts to ensure that traditional midwives were trained to implement safe practices, emphasizing clean births and increased access to family planning. At the same time in the early 1980s, the national health policy was focused on expanding first level health services, including childbirth, through a growing presence of physicians in rural areas.⁵

As for professional midwifery, there were midwifery schools in Mexico ever since the 19th century. In 1945, the National School of Obstetric Nursing (ENEO) of the UNAM was formed, where midwives were also trained; but it was not until 1968 that the ENEO curricula were updated to include the latest medical improvements. Meanwhile the midwifery program had disappeared and its tasks were transferred to obstetrical nurses, both those with specializations and undergraduate degrees. Obstetric nursing had been declining since the beginning of the 1960s. From the 1960s on, new midwife positions were cancelled and midwives functions were restricted to assisting physicians, and nurses took their place in hospitals.⁶ By the early 1980s all undergraduate and short-term specialization programs in nursing and midwifery had disappeared or had been replaced by undergraduate programs in nursing and obstetrics or general nursing.⁷

In 1987, the risk assessment approach in maternal healthcare became prevalent with the Safe Motherhood Initiative's focus on maternal mortality reduction. This approach continued in the 1990s in Mexico with a focus on promoting prenatal care and screening to ensure that high-risk cases were referred to obstetric care in hospitals. The health system continued to train traditional midwives in safe delivery procedures, often within a limited scope of practice without acknowledging them as cultural or clinical assets. In 1987, a private obstetric clinic was opened based on care offered by obstetric nurses with an interdisciplinary risk prevention focus. The program-CIMIgen- continues to operate with the same comprehensive focus and currently is a central pillar of efforts to educate nurses as perinatal specialists.⁸

In the late 1990s, emergency obstetric care became the preferred approach. New research showed that obstetric complications could arise at any moment, even in low risk pregnancies. Though not predictable, these complications could be managed successfully with swift access to skilled emergency obstetric care.⁹ Consistent with its Millennium Development Goals' commitment to reducing maternal mortality by 75% by 2015, in the early 2000s Mexico mandated that all babies be delivered in hospitals where emergency care was supposedly already available.

⁵ Carrillo, A.M. 1999. Nacimiento y muerte de una profesión. Las parteras tituladas en México. *DYNAMIS. Acta Hisp. Med. Sci. Hist. Illus.* 19: 167-190.

⁶ Pérez Cabrera, Iñiga y M^a Cristina Castañeda Godínez. 2012. Antecedentes Históricos De Las Parteras En México. <http://enfeps.blogspot.mx/2012/07/antecedentes-historicos-de-las-parteras.html>. (downloaded May 31, 2017).

⁷ Carrillo, A.M. 1999. Nacimiento y muerte de una profesión. Las parteras tituladas en México. *DYNAMIS. Acta Hisp. Med. Sci. Hist. Illus.* 19: 167-190.

⁸ Centro de Investigación Materno Infantil del Grupo de Estudios al Nacimiento, la primera clínica y hospital de maternidad sin fines de lucro para habitantes de bajos ingresos de la Ciudad de México desde 1987. <http://comminit.com/?q=la/node/37725>.

⁹ Rosenfield, A. and Maine, D. 1985. Maternal mortality-A neglected tragedy. Where is the M in MCH? *The Lancet*, July 13. [\[http://www.eldis.org/vfile/upload/1/document/0708/DOC18134.pdf\]](http://www.eldis.org/vfile/upload/1/document/0708/DOC18134.pdf).

As this shift was taking place, a countercurrent was also emerging. In 1994, a private three-year post-secondary midwifery school known as CASA¹⁰ opened in Guanajuato to train young women from rural, indigenous communities in women-centered birthing practices. The school helped to forge a new type of personnel to work in communities and primary care facilities. CASA successfully became the first accredited technical midwifery school in Mexico in 1997 and later spawned another school in Tlapa, Guerrero. Technical midwifery graduates are recognized in the public health care system with a specific job code. However, expansion and acceptance throughout the health sector has been inconsistent at best, and certainly less than desired by midwifery advocates.

Additional efforts to counter the trend toward over-medicalized obstetric care include the work of autonomous (freelance or direct entry) midwives, most of who were trained outside of Mexico (e.g., in the US National College of Midwifery, and other programs). They work and train others without official recognition from the Mexican health system. Though relatively few in number, they practice in several states working almost exclusively with private patients and often incorporating traditional or holistic, as well as evidence-based, practices into the care they provide.

In recent years, advocates have turned their attention to the elimination of what some call “obstetric violence”¹¹ and the need for a “humanized”, or as many actors prefer to call it “respectful birth” approach, along with increasing awareness of the importance of quality throughout the entire continuum of obstetric care. This more comprehensive approach could be incompatible with attending most complication-free births in hospitals. Although some advances have been made, greater momentum is needed to fully realize the goal of quality maternal health care for Mexican women. The MacArthur Foundation hopes to cultivate such momentum through its recently launched capstone Initiative to Promote Professional Midwifery, which represents the culmination of more than 20 years of grant making from 1990 to 2014 in the field of population, reproductive health and maternal health.

Although there clearly have been advances, greater efforts are still needed to achieve high quality maternal care for all Mexican women. The MacArthur Foundation hopes to build on these efforts through its Initiative to Promote Professional Midwifery, which represents the culmination of over 20 years of work—from 1990 to 2014—to provide support for work in the population, reproductive health and maternal health fields.

2. FINDINGS AND CONCLUSIONS

Seeking input to guide the Initiative, the MacArthur Foundation hired a team of four evaluators familiar with maternal health and public policy in Mexico to design and implement a comprehensive evaluation and learning framework over a three to five year period starting in May 2015. The baseline findings in this report represent the first step in this process. A second report in early 2018 will evaluate the Initiative’s effectiveness in reaching its three-year objectives.

2.1. Overall Methodology

Employing a developmental evaluation approach, the evaluation methodology has evolved along with the Initiative. Building on the framework in the evaluation’s terms of reference, the team undertook preliminary open-ended interviews with 20 key informants. The interviews covered all five thematic areas prioritized by the Initiative: key actors, policy and normative environment, education,

¹⁰ Centro de Atención para la Salud de la Adolescente

¹¹ Worldwide, WHO, FIGO and other agencies recognize this as “mistreatment and lack of respect”

employment of midwives and quality of care. The team received thoughtful feedback on the specific evaluation questions they had developed from an Evaluation Advisory Committee of 17 experts in maternal and neonatal care and the promotion of midwifery in Mexico. Table 1 shows the evaluation questions that guided the entire baseline data collection effort.

Based on this input, the team's previous knowledge in the maternal health field, and extensive internet research to identify schools and employment sites, policies and activist organizations, the team designed semi-structured questionnaires and survey instruments to collect quantitative and qualitative data from each type of actor to be interviewed. Additionally the evaluation developed a data collection sheet for capturing institutional statistics at employment sites and a checklist of each institution's infrastructure and material and human resources. Between August 2015 and February 2016, the evaluation team collected data from 441 people in 12 states including Mexico City including 73 midwifery students and graduates who were surveyed individually or in a group. During interview sessions, the evaluators sometimes applied data collection instruments from more than one thematic area since many actors have more than one role or job in the field. Table 2 describes basic characteristics of the actors from whom we collected data.

The following key terms were used throughout the study:

Midwives. We use the term professional midwives to encompass nurse midwives (general, obstetric and perinatal nurses who attend births whether or not they identify with the term midwife) and technical midwives.¹²

Nurse midwives. We use the term "nurse midwives" to refer to nurses who attend deliveries even if they do not identify as midwives. While we are aware that this is not a common or widely accepted terminology in Mexico, it is the most appropriate one to encompass all nurses (general, obstetric and perinatal) who attend births and who in many cases use midwifery practices in their obstetric labor.

Evidence-based practices. In order to systematically describe the kind of care provided and received, the evaluation developed a list of 20 evidence-based practices,¹³ 17 of which are supported by WHO¹⁴ as essential components of women-centered care that have been demonstrated to contribute to higher quality health outcomes for both mother and child. Two of the 20 are practices that reflect issues of respect for cultural differences and one represents an important practice from a women's rights perspective. This list was used in each thematic area of inquiry, adding additional practices in the quality of care component of the evaluation.

¹² A technical midwife is a person graduated from a midwifery training school, whose studies are recognized by the educational authorities and corresponds to a technical degree.

¹³ The 20 practices are: Woman can choose who will accompany her, Avoid routine IV line, Avoid routine application of oxytocin during labor, Avoid external rupture of membranes, Free to walk during labor, Liquids allowed, Light food allowed, Avoid pubic shaving, Avoid application of enema, Woman can choose position for delivery, Avoid routine episiotomy, Avoid Kristeller maneuver, Immediate skin-to-skin contact with newborn, Delayed cut of umbilical cord, Avoid routine manual exploration of uterine cavity, Avoid routine use of antibiotics, Avoid routine neonatal aspiration, Respect for cultural practices, Decision making autonomy for the woman, Woman can wear her own clothing.

¹⁴ This list of practices promoted and avoided was developed from Sachse, M., Sesia, P. et al. 2012. Calidad de la atención obstétrica, desde la perspectiva de derechos, equidad e interculturalidad en centros de salud en Oaxaca. *Revista CONAMED* 17 (Supl.1): S4-S15, originally developed from WHO, 1985. Appropriate technology for birth. *The Lancet* 326(8452): 436-7; Chalmers, I. et al. 1989. *Effective care in pregnancy and childbirth*, Oxford University Press; and Enkin, M. et al. 2000. *A guide to effective care in pregnancy and childbirth*, Oxford University Press.

Levels of care. Primary level refers to primary health centers or clinics as well as maternity clinics with no surgical facilities. Intermediate level includes basic community level hospitals and specialized maternity clinics with operating facilities. Secondary level refers to general hospitals.

2.2. Legal and normative framework

A central tenet of the Initiative is that a favorable policy environment is needed in order to achieve lasting institutionalization of professional midwifery in the health care system. With this in mind, the baseline analysis sought to understand how the legal and normative framework currently treats midwifery, as well as to identify perceptions that decision makers hold with respect to different types of midwifery, the factors that influence those perceptions, and what might influence them to have more favorable opinions.

Methodology: We documented the framework that governs midwifery – from international agreements and norms to Mexico’s Constitution and National Health Law, specific norms and codes of practice, and state specific initiatives—and interviewed 47 public officials, 14 at the federal level and 33 at the state level. We asked the interviewees what they consider to be the principal laws or norms that impact midwifery today. Our questions focused on aspects that favor institutionalization of midwifery in the public health system, aspects that impede progress, and what is needed for midwifery and/or evidence-based practices to be more fully supported by the legal framework. In addition, we commissioned a scan of national and state media outlets from July to November 2015 to understand how midwifery is reported in print and virtual media.¹⁵

Findings on the legal and normative framework:

The current legal framework allows midwives (obstetric nurses, technical midwives and trained traditional midwives) to work in the health system but does not define where they should work or what role they should play.

Until very recently, midwifery was largely invisible in Mexico’s legal and normative framework beyond recognition of the role of traditional midwives in rural, indigenous areas. In April 2016, just after baseline data collection had finished, a revised version of the Official Mexican Norm 007 (NOM-007) for Care to Women during Pregnancy, Birth and Puerperal and Newborns¹⁶ became law after an unusually prolonged review, making reference to midwives for the first time as qualified providers for low risk obstetric care. NOM-007 is widely recognized as the most important standard relating to maternal and perinatal health. It establishes minimum criteria for medical attention and compliance is mandatory for all health personnel working in public or private health establishments.

The Health Ministry previously had established employment codes for obstetric nurse specialists and traditional midwives and extended that recognition to technical midwives in 2011. Those codes made it

“The health system needs to identify the topic of midwifery as a strategic priority capable of resolving many of the problems the system faces.” (Non-governmental actor)

possible to employ professional midwives in the health system. The federal government has also made limited resources available to states with high MMR to hire midwives, although those funds are often underutilized and only a handful of states are using the codes at all.

¹⁵ Comunicación e Información de la Mujer (CIMAC), *Monitoreo y análisis de la partería en los medios de comunicación, January 2016.*

¹⁶ Available at <http://www.salud.gob.mx/unidades/cdi/nom/007ssa23.html>.

The new language in NOM-007 and the existing employment codes indicate progress toward a more favorable environment. Nevertheless, it is still difficult for midwives to find a place in the current health system. This is due largely to a systemic preference for attending births in hospitals, the result of the Health Ministry directive referred to above that has yet to be revoked or replaced.

“The government, in this case federal, needs to instruct service directors and their employees to hire midwives, and to tell state health ministries that this is an option. If this impulse comes from the federal government, it will have much more success than if it is done a bit in each state.” (Federal government official)

Even prior to the publication of the new NOM-007, when the baseline interviews took place, many health ministry officials expressed openness to a midwifery model of care at the primary level for normal births. However, medical providers were more likely to believe that physicians must attend all births in hospitals in order to be safe. Stiff consequences for personnel deemed responsible for unnecessary complications or maternal death continue to reinforce this thinking, making it difficult for some providers to believe that a midwife or an alternative model of care could be a desirable, or even permissible, option.

“We lack guidelines or a model of midwifery care. At the operational level, we have to fit into what is there. We need to know clearly where, how, what scope, and what responsibilities each person has.” (State government official)

Even in situations where midwifery programs already exist, the lack of a federal policy mandate or endorsement means these experiences usually depend on the initiative of one or more key people. This makes them vulnerable to changes in government or leadership and personal priorities. A lack of

specificity in the framework similarly leaves health officials who are interested in promoting midwifery to find their own way to operationalize the idea. They often have to fight rigid regulatory requirements or resistance from unconvinced personnel.

The normative framework supports many evidence-based practices that characterize a midwifery model. But inconsistencies leave room for interpretation and variation in what is practiced at the service delivery level.

The team looked at how the framework treats evidence-based practices and found a trend toward greater incorporation of many in key norms. One such example is the Clinical Practice Guide (CPG) for Management of Low Risk Birth, an important reference to inform clinical and managerial decisions at all levels of care that was approved in 2014. See Table 3 for a comparison of how evidence-based practices appear in different normative documents.

The review also revealed inconsistencies in language and approach with regard to the 20 evidence-based practices, most notably between NOM-007 and the CPG. For example, NOM-007 directs providers to cut the umbilical cord 30 to 60 seconds after birth while the CPG says to wait one to three minutes until the pulse has stopped and breathing normalized (one of the evidence-based practices the team assessed). While these discrepancies may seem minor, they make it difficult for midwives to convince medical personnel that their practices are safe and effective. The harmonization of procedures to be consistent with evidence-based practices is an

“There are many norms but to what extent are they applied? We need to create enabling environments... generate vertical accountability...and a regulatory environment that is far more comprehensive.” (Federal government official)

“There is so much resistance because it is not obligatory.” (Non-governmental actor/physician)

opportunity to legitimize midwifery by providing support for elements of that practice.

Oversight and implementation of the norms and guidelines present another challenge to overcome, particularly given that the most advanced guidelines such as the CPG are not mandatory. The difficulty of implementing norms and guidelines was evident in an interview with senior officials from two federal government agencies that promote evidence-based practices through state level training. Their programs target health system managers and practitioners to discourage certain practices (routine use of IV, enema, episiotomy, manual exploration of uterine cavity) and encourage others (freedom to walk during labor, choice of position for delivery, and having someone of her choice to accompany her throughout the process). In both cases, the senior level officials noted the difficulty of changing habits of personnel in their own agencies. This contrast between individual openness at the higher levels and the reality on the ground reflects the lack of clarity, oversight and enforcement mechanisms in the normative framework.

Regardless of their perception of midwifery, decision makers have limited knowledge about different types of professional midwives, their skills or competencies, and what they do or can do in a care setting.

While most of the public officials interviewed (33 of 47) expressed openness to midwifery, the term was often associated with traditional midwives and the concept of professional midwifery was less understood. More than .90 of these officials did not consider obstetric or perinatal nurses to be midwives. Some felt it is inappropriate to use the word “professional” to refer to technical midwives since they do not have a university degree.

People who expressed positive perceptions of midwives were often influenced by personal experience with a midwife (either having been delivered by a traditional midwife, or having worked with midwives at some point in their career) or by convincing evidence about midwifery models from other countries. And while the emphasis on reducing maternal mortality has been associated with the medicalization of birth at a systemic level, we found that health sector officials and providers in states like Guerrero, Chiapas and Morelos—with numerous isolated communities and insufficient medical personnel—are more likely to view midwifery as part of the solution. But even those who are open to midwifery had questions about what a midwifery-based model of care would look like in practice and the role of each type of personnel.

Those who are less supportive of midwifery demonstrated a lack of information about professional midwives (who they are, skills or competencies, what they do in a care setting), or lack of confidence in midwives to provide safe and skilled care. Nobody reported having had a negative experience with a midwife directly. Several knew or had heard of doctors who were held responsible for complicated situations that initiated under the care of midwives.

“Why did I change my perception? Because [midwives] intervene less, they work better, the woman is better accompanied and there are fewer interventions and less work for the gynecologists. If gynecologists learn to work with the nurse midwives it would be better...but they don’t want to because the birthing process takes longer.... The majority of patients have a normal evolution and the nurses are capable of attending them. They provide good care and refer women on a timely basis.... Here they opened my eyes, it’s beautiful, all gynecologists should come see the work here; they opened my perspective, my mind.” (Ob-gyn, maternity clinic)

The media scan¹⁷ provides insight into why this information and confidence deficit is so pervasive. Midwifery as a concept barely registers in the media today allowing existing misperceptions to go unchallenged. The messages that do register tend to reinforce the already strong association of midwifery with traditional midwives, and the perceived linkage with the important but polemical topic

“We have midwives with knowledge (gained through experience)...it is important that there be a certification unit to provide more certainty, to validate competencies.” (Federal government official)

of obstetric violence. Favorable attitudes among women service users and high-level government officials, such as those found in our research are largely absent in the media.

Certification is a controversial topic within the community of midwives, some of whom fear it would become a control tool of the medical establishment. But there is also considerable support from diverse actors, including many professional midwives, who believe it is absolutely necessary to protect women users as well as midwives, and to build credibility for midwifery more broadly.

2.3. Ecosystem of actors

The research looked closely at the ecosystem of actors and institutions that influence the midwifery agenda in Mexico to understand their achievements and the obstacles they face. The Foundation’s strategy prioritizes support to champions who help strengthen professional midwifery, viewing them as critical for making progress toward institutionalization of midwifery in the health system. Given the opportune moment for advancing systemic change, it is more important than ever that these advocates be prepared to inform and influence debate and drive progress in the policy agenda.

Methodology: We conducted semi-structured interviews with 20 nongovernmental actors in Mexico City and eight states. These individuals represent civil society, academia, multilateral agencies and donors, and practitioners who work directly or indirectly on the issue of midwifery, either in favor or against the practice. The purpose of our interviews was to identify the principal actors who are shaping the midwifery agenda in 2015. We also identified their strengths and challenges as leaders and advocates, the agendas they are pursuing, the relationships they have built to advance those agendas, and those whose voices are underrepresented.

In addition to individual interviews, we utilized an electronic mapping application—www.es.lome.io—as a complementary way to document the depth and nature of the pro-midwifery network at this moment in time. While this network map is intended to grow in an organic way, we sent an initial invitation to all MacArthur Foundation grantees and members of the Evaluation Advisory Committee to systematically initiate the process. The evaluation team will repeat the invitation periodically and measure the characteristics of the network maps as they develop over time as a way to register changes or deepening of relationships in the midwifery field.

Findings on the ecosystem of actors:

The midwifery ecosystem is comprised of diverse interests and perspectives that greatly enrich the field but represent a challenge for the emergence of a cohesive or influential agenda for change.

¹⁷ The CIMAC media analysis looks at seven of the most influential newspapers and seven electronic portals at the national level, as well as four print and four electronic portals in each of four states: Hidalgo, Morelos, Oaxaca and Tlaxcala.

The midwifery ecosystem is comprised of diverse actors working to advance evidence-based models of care in which midwifery represents an important alternative for the care of low risk pregnancies. But not all of these actors promote midwifery per se. Several people emphasized that their objective is to define new models of care in which women—informed and empowered to make decisions about their own birth experience—are at the center. Various terms are used to describe this alternative paradigm, including “*parto humanizado*” (humanized birth), “*parto digno*” (dignified birth), “*atención centrada en la mujer*” (woman-centered care), “*parto libre*” (free birth), and “*parto respetado*” (respectful birth), each with its own set of protagonists and detractors. In this report we sometimes use the term “humanized birth” because it is the term used most frequently by practitioners on the ground, but we recognize that it is not universally accepted. Titles and terminology aside, our ecosystem map is comprised of actors who practice or promote a model of care grounded in scientific knowledge and evidence-based practices that are consistent with a midwifery approach.

Midwives are at the center of our ecosystem because of their potential to serve as a force for change. They have advanced the field by opening schools and developing midwifery practice sites with limited political support and often faced with skepticism from the medical establishment. While some individuals who we define as midwives—namely obstetric and perinatal nurse specialists—do not think of themselves as such, we include them in this group because of their dedication to a woman-centered non-medicalized “midwifery” model of practice. Like other professional midwives, their persistence and commitment is helping to shift mindsets and demonstrate what is possible.

“This argument about who is more of a midwife is affecting us. It doesn’t benefit midwifery or the mothers, it only benefits the gynecologists.” (Midwife and advocate)

“Even they, the midwives, can’t tell us what a midwife is....” (Government official)

While not all types of midwives are interested in working within the medical system, virtually all are impacted when the legitimacy of their trade is questioned, or hostility from medical personnel makes referral difficult, or certificates are denied for births they attend.

The potential for midwives to influence policy-level change is significant but can be augmented by overcoming the current underlying tensions about who is or is not a midwife. The tensions only reinforce the information gap among decision makers about who midwives are, what policy change is important, and what is needed for such change to succeed.

The midwifery agenda is also shaped by civil society organizations and networks that provide important advocacy and programmatic support to other actors within the context of work in the areas of sexual and reproductive health and rights, abortion, reduction of maternal mortality and leadership development. The biggest challenge facing this group of actors as well as the midwives mentioned above is a lack of cohesion or collaboration—at times even tension—among subgroups. What could be a strong, unified voice promoting the practice of midwifery seems to devolve into separate voices arguing about who is or is not a midwife, which in turn reinforces the misunderstanding that is already prevalent among decision makers about who midwives are and what they want.

“This debate between LEOs and midwives, for example, is tense...to find one or two or a few areas in common, really in common. To get together as a block or an actor, let’s say. We don’t have this yet and it is a big challenge. I think that a... challenge... is that in the process we move forward without consensus. We end up even more fragmented and creating resentment among the actors that are here today. We either agree and work together or we don’t and each one does their own thing as best they can and it ends up even more fragmented and generating even more rancor than we thought possible.” (Non-governmental actor and academic)

Within the research community, a small but active set of actors has helped to position midwifery on the public agenda and inform debate, in many cases working in close collaboration with civil society organizations and other activists. The information deficit around midwifery in Mexico continues to be enormous, carrying with it a host of myths and misperceptions. The research community can play a vital role going forward by focusing their studies even more directly on the current situation of midwifery in Mexico, and increasing the visibility of their findings in support of an agenda for social and policy change.

Government agencies such as the National Center for Gender Equity and Reproductive Health (CNEGySR, for its initials in Spanish) and the Office for Traditional Medicine and Intercultural Development, both within the federal Ministry of Health, promote specific aspects of midwifery within their own programs and in collaboration with others. The strength of these governmental actors as part of a pro-midwifery agenda is their ability to support new initiatives and models of care that have the possibility of seeding change in the larger health system. Our data show that even within these agencies, perceptions about midwifery vary and not everybody is convinced that it should be part of a new model of care. In addition, we found a surprisingly limited level of dialogue and coordination between agencies, and similarly limited influence at the state level.

*"It seems to me that ... the Health Ministry obviously is not a homogenous actor. It is not an actor that is convinced...it is an actor with internal contradictions."
(nongovernmental actor)*

Multilateral agencies such as the UNFPA, PAHO, the UN Children's Fund, and private foundations such as MacArthur and Kellogg, play an important role in advancing a midwifery agenda by establishing dialogue with other high level actors, financing studies, advocacy and pilot experiences, and disseminating best practices and achievements at the international level. Many advocates perceive these institutions to be key points of leadership in the field, noting specifically the Inter-Institutional Working Group (GIIP) as an important space for dialogue and collaboration. However, several interviewees felt the GIIP was not as transparent or inclusive as they would want it to be so that it can help form strategic alliances with midwifery practitioners.

We interviewed several physicians who are either proponents of midwifery or who advocate a model of care that is consistent with midwifery practice. Several of the latter explained that the emphasis should not be on "who" provides the care but rather "how the care is given," whether by midwives or other practitioners who follow evidence-based, humanized practices centered on the rights and choices of women. Others openly support the incorporation of midwives into the health system and speak of the advantages this would offer. They all emphasize that confrontational language does not help encourage collaboration.

The study did not identify any organized opposition to midwifery but did find medical personnel whose individual attitudes range from skeptical to outright rejection of midwives as qualified personnel. The Mexican Federation of Colleges of Obstetrics and Gynecology (FEMECOG) has tremendous influence over the field of practice at the national level and the potential to influence medical schools through its membership and board of directors. While FEMECOG does not actively oppose midwifery, its leaders demonstrated limited knowledge and significant skepticism about the training and competencies of technical and traditional midwives. Labor unions also represent a powerful potential obstacle given their significant influence over clinical practice and the functions of different types of personnel.

The midwifery network, while diverse, is characterized by low levels of density and connectivity, particularly between activist organizations and practitioners.

The LOME¹⁸ mapping provides additional information on the depth and nature of the network. During the baseline period, 85 organizations or institutions (and a few individuals) registered as members of the midwifery network and listed 133 relationships between groups (an average of 1.6 per member), indicating low levels of network density and connectivity.

Members of the network were asked which of their relationships involved “information and advice”, “collaboration”, and/or “resource sharing.” The results showed that sharing “information and advice” was the predominant form of interaction, followed by “collaboration.” Relationships that users categorized as financial and technical “resource sharing” were infrequent.

The electronic map also shows two fairly separate constellations of actors and relationships. On the one side are activist and international organizations, while on the other side are institutions representing technical and nurse midwives. There are few linkages between the two clusters. However, there was no indication that this distance is linked to tension or differences of opinion.

The significance of the LOME mapping results is limited by the fact that the mapping tool only captures reported relationships. This means that someone who makes multiple entries and asks many allies to join is likely to register as a more important node of activity. Even with this bias, the mapping provides an important snapshot of the midwifery ecosystem at the baseline and at subsequent times when further populated. It confirms that the network has considerable room for improvement and greater collaboration.

2.4. Educational programs

Background: The Foundation seeks to build on and scale up educational options for professional midwifery that are high quality and officially accredited, and that encompass diverse options to meet the anticipated demand for midwifery-based services. The Foundation has also supported networking and educational activities of high quality autonomous midwifery programs. Accordingly, this baseline research describes existing technical midwifery and obstetric and perinatal nursing programs as well as autonomous midwifery educational programs. It describes their strengths and weaknesses, the numbers and kinds of students enrolled, and practices taught during theoretical and clinical training.

Methodology: The assessment focused on educational programs that train nurses, technical midwives, and autonomous midwives to attend births. We did not look at traditional midwives and programs that provide workshops for them, because they do not have formal training programs. Nevertheless, we recognize their importance in attending births, providing services, teaching others, and in linking communities and the health system.¹⁹ We also excluded obstetric nursing programs that do not currently require students to attend a minimum number of births in order to graduate.

Based on an extensive Internet search, and input from key actors and advisors, we developed a list of over 60 programs that mention obstetric or neonatal care in their materials. We eliminated all but 11

¹⁸ An organizational network mapping tool. <https://www.lome.io/#/organizational--network--analysis>

¹⁹ Traditional midwives learn their skills from other midwives in an apprentice relationship. For almost thirty years, state and federal health agencies have ‘trained’ midwives by holding workshops on a monthly or periodic basis, in a form that might be considered continuous education in risk detection and management, as well as other health practices (hygiene, etc.). For example, IMSS Prospera and the Health Ministry’s Traditional Medicine Department (MTyDI) have on-going programs to train traditional midwives.

after verifying that they do not include actual training in attending births. The 11 include four academic training programs, four autonomous training programs and three perinatal nursing residencies. We interviewed 17 program directors, sub directors, and clinical coordinators, most of whom are also faculty. We also interviewed five directors at hospitals that host students, as well as state officials who coordinate or support training programs.

The findings presented here summarize the numbers and kinds of midwifery educational programs and the models they teach, their institutional accreditation and midwife certification, as well as an assessment of program sustainability and the potential for expansion in the Mexican context.

Programs: (See Table 4)

Technical Midwifery Programs (2 programs with 80 students)

Technical midwives are trained in a three-year post-secondary program that requires them to attend at least 80 births. Currently both technical training programs have been officially recognized as educational programs having obtained their RVOE (Registration of Official Validation of Studies) from a joint commission headed by the Ministry of Education and the Ministry of Health.

Undergraduate Degree Programs (2 programs with 171 students)

There are two undergraduate models for midwife training in which students learn to attend births and get clinical practice doing so: (a) an obstetric nursing degree (LEO) and (b) an undergraduate degree in reproductive health and midwifery (Red Cross):

(a) Undergraduate Degree in Obstetric Nursing (LEO) (150 students): The National Polytechnic Institute's (IPN) Escuela Superior en Enfermería Obstétrica (ESEO) has 150 undergraduate students in obstetric nursing at state-of-the-art on-campus facilities in Mexico City. Students are required to attend 100 births in order to graduate, although not all of their clinical practice sites actually allow them to do so. The ESEO program has recently undergone a major transformation to expand obstetric studies from one semester to two and adding one semester of gynecology and two or more courses in self-care.²⁰ In gearing up for this increased emphasis on attending births, ESEO faculty underwent additional training in the perinatal specialist nursing program (EEP) of the National School of Obstetric Nursing (ENEO) of the National Autonomous University (UNAM) with a clinical site at CIMIgen. The ESEO is one of the largest and most stable training models studied due to the fact that it receives funding through the Ministry of Education.

(b) Undergraduate Degree in Reproductive Health and Midwifery (Red Cross, Morelos) (21 students): In 2015, the Department of Health Services of the State of Morelos, in conjunction with the Red Cross, founded an undergraduate program in reproductive health and midwifery in which students begin clinical practice in hospitals, community clinics and regional health centers in their first semester (fall 2015).

Perinatal specialist nurses (EEP-UNAM) (3 sites with 40 students)

The UNAM's post-graduate specialization program for undergraduate nurses is a one-year clinical residence in perinatology designed to give clinical experience to complement an undergraduate general or obstetric nursing degree. Agreements with clinical sites are negotiated on an annual basis depending on availability of facilities and access to clinical birthing experience. The UNAM currently

²⁰ See the IPN, ESEO, LEO Curricular Map [http://www.eseo.ipn.mx/Documents/MAPA_CURRICULAROCA7.PDF].

lists six clinical practice sites in Mexico City and the states of Mexico, Morelos and Guerrero,²¹ but these offer varying levels of experience attending births. For this reason, only the three sites that allow practice attending births are included in this baseline and each site is treated as a separate program.²²

Autonomous Midwifery Educational Programs (4 programs with 26 students)

We studied the educational programs of four organizations run by autonomous midwives: Nueve Lunas (Oaxaca), Luna Maya (Chiapas), Luna Maya (Mexico City) and Osa Mayor (Quintana Roo). These programs usually feature one-on-one relationships with a practicing midwife and last up to three years. Nueve Lunas in Oaxaca is an exception to the individual apprentice format, training up to 20 students at a time. Nueve Lunas also refers to its model as midwifery within traditions (*partería en la tradición*), emphasizing techniques drawn from traditional midwifery practice and engaging renowned traditional midwives as instructors. However, without certification in Mexico, and in many cases without recognition from the Mexican health system, these midwives practice almost exclusively with private patients. Even without official certification, the competencies they teach more than comply with international standards, including skills development and clinical practice requirements of attending at least 50 (and up to 95) births.

A special case: The obstetric nursing program at the UNAM (ENEO) is a special case that we did not include in this review because at the time of the baseline data collection it did not stipulate a requirement of attending a certain number of births. The school's web page described the skills students acquire without mentioning births: "*Students are trained to interact with professionals in the health team, provide nursing care to healthy and ill patients. Community practice sites are in public health and present an opportunity for training in illness prevention and health promotion....*".²³ This lack of requirement was confirmed in interviews with directives. However we found a number of the ENEO's graduates attending births in the employment sites we visited.

The ENEO program has a strong potential in the near future for graduating obstetric nurses with training in attending deliveries. A new revised curriculum with a strengthened obstetric focus and a gender-based perspective went into effect in 2015 and will graduate its first generation in 2018.

Findings on education:

The number of midwifery graduates is expected to increase but requires considerable expansion to meet future demand.

The 317 students enrolled in the five program models in 2015 is a good start but do not come close to meeting projected need. If the goal is for midwives to attend 20% of Mexico's 2,400,000 annual births (i.e. 480,000 births), Mexico needs at least 2,700 skilled midwives (based on the WHO estimate that each skilled midwife can attend 175 annual births²⁴). Many more midwives are needed if a higher

²¹ CIMIgen, Hospital General de México, Maternidad Atlacomulco, Hospital General de Taxco, Hospital del Niño Morelense, Instituto Nacional de Perinatología [<http://www.eneo.unam.mx/posgrado/especialidades/>]. Note that these differ from the sites surveyed in this baseline.

²² Because of scheduling conflicts we were not able to interview the third site, and thus have only partial information about this site, even though it follows roughly the same model as the other two.

²³ (*Translation Rees*), from the course requirements of the UNAM-ENEO-LEO program [https://escolar1.unam.mx/planes/e_enfermeria_obstetricia/Enf.pdf] "...interactuar con los profesionales del equipo de salud sino también prestar cuidados de enfermería a personas sanas o enfermas. Las prácticas comunitarias son uno de los campos de la salud pública y representan la oportunidad de formarse en la prevención y promoción de la salud como uno de los atributos fundamentales del egresado." Courses include integral care during birth, obstetric *gestión* (management, or advocacy) and emergencies. Interviews with directors, and follow-up communication did not clarify the content of obstetric training or practice.

²⁴ World Health Report 2005. Make every mother and child count. WHO, Geneva.

percentage of midwife-attended births were the goal (for example 60 to 70% as is the case in Chile and Peru, countries that have successfully institutionalized midwifery).

There is a potential five-fold increase in the number of trained midwives over the next five years, especially as the Obstetric Nursing Program at the National Autonomous University (ENEO-UNAM) implements its new curriculum, especially if students get practical experience attending births. With 2000 enrolled students, the ENEO-UNAM may graduate as many as 400 students per year by 2017. An additional 17 obstetric nursing programs affiliated with and using the same curriculum as the ENEO-UNAM may double this number.

New midwifery programs are scheduled to open by 2017 in Michoacán and Oaxaca. The Oaxaca program, based on the CASA curriculum, opened in early 2016. Additional efforts to open a program in Michoacán were also underway. These are projected to have up to 20 students each in three-to four-year programs. These programs may produce up to 40 or so trained midwives each year.

If new technical midwifery programs open and obstetric nursing programs (including ENEO-UNAM and affiliates) expand and have adequate clinical practice sites, by 2017 Mexico may produce as many as 840 trained midwives each year, making it possible to incrementally meet significantly increased demand over the coming decade.

A number of constraints on enrollments need to be addressed. They include: (1) lack of physical space, (2) lack of clinical practice sites, and for students (3) high costs, low support (scholarships) and unfavorable or uncertain job market. Many programs have limited space and no funds for expansion, and they are further limited by lack of availability of clinical sites that allow students to practice midwifery. Students are limited in what they can pay, especially when they expect to work in rural communities earning low salaries. Some may not apply to private programs (e.g., the Red Cross) unless they are guaranteed scholarships. Students may not pursue a career in midwifery given the lack of jobs, and low salary and job security. Perinatal nurse programs (EEP) are one-year, post university clinical residencies that produce professional midwives. However, for a year or so more, students could get a medical degree in Mexico, which may make the midwifery option potentially less appealing.

More education programs that are accredited, staffed and stable are needed to produce enough midwives to meet future demand.

Program accreditation: All current institutional academic training programs are accredited as educational programs at the state or federal level, or soon will be. CIFRHS, a joint commission of the Ministries of Education and of Health issues technical recommendations for the accreditation of all academic programs (thus not including autonomous training programs).²⁵ Higher education programs in health are evaluated and the CIFRHS issues technical recommendations while the SEP grants the Registration of Official Validation of Studies (RVOE).²⁶ In order to meet the RVOE criteria, teaching staff must have degrees in the appropriate fields; installations must fulfill the safety, hygienic and pedagogical requirements of the program; and the curriculum must be sound, among other things.²⁷

²⁵ Secretaría de Educación Pública. SALUD. Comisión Interinstitucional para la Formación de Recursos Humanos para la Salud [<http://www.cifrhs.salud.gob.mx/>].

²⁶ See Ministry of Education—(Secretaría de Educación Pública) SEP [<http://www.sirvoes.sep.gob.mx/sirvoes/>], and [<http://www.sirvoes.sep.gob.mx/sirvoes/jspMarcoNormativo.jsp>].

²⁷ The UNAM and other major institutions have internal processes for proposing, approving, modifying and evaluating education programs.

Recently (2014) CIFRHS established a subcommittee for the review of midwifery training programs, which is an important step towards the issuance of favorable technical recommendations to these programs, which is the first step towards their accreditation as health care training programs.²⁸

Midwife certification: The CIFRHS also issues technical recommendations regarding certification processes and mechanisms for the different professions of health workers²⁹ and, as in the case of program accreditation, inter-agency committees are headed by general nurses³⁰. Nurses are certified through national exams for undergraduate degree programs. To date professional midwifery is not mentioned as a profession in the list and certification criteria of the SEP.³¹

Faculty: While one program could not entice an obstetric nurse specialist to move to their state to teach, no one mentioned a *lack* of potential staff; the roadblock is program accreditation. Therefore, it seems as if there are enough midwives to teach students, especially under the Mexican model where professors teach part-time as a complement to their professional careers. Undergraduate (non-nursing), technical and autonomous programs often cannot hire their own graduates because their programs are not certified by the RVOE process described above (program accreditation: faculty must have degrees in the appropriate field). An important step would be to establish a system of certification of midwives as health care workers, so they could be officially accredited teachers, and for programs to meet the accreditation requirements.³²

Most faculty work under variable and complex forms of employment contracts. Program accreditation, i.e. RVOE, requires that professors and instructors have appropriate degrees, thus ensuring that accredited nursing programs have qualified faculty.

The large obstetric nurse programs in Mexico City, which have the greatest potential for expansion, have a large pool of trained personnel from whom to draw as part-time faculty.

The Nueve Lunas program in Oaxaca is instructive: their midwife instructors do not hold advanced degrees in a recognized field, as required for program accreditation. As a result, the Oaxaca office of the Federal Commission for the Protection against Sanitary Risk (COFEPRIS)³³ forced them to close down their website and does not allow them to advertise as a midwife training program. They can only advertise as an “introduction to midwifery” program. Despite this, they have trained 34 midwives and continue to train more autonomous midwives than any other program in Mexico.

²⁸ Secretaría de Educación Pública. SALUD. Comisión Interinstitucional para la Formación de Recursos Humanos para la Salud [<http://www.cifrhs.salud.gob.mx/>].

²⁹ Secretaría de Educación Pública. SALUD. Comisión Interinstitucional para la Formación de Recursos Humanos para la Salud [<http://www.cifrhs.salud.gob.mx>]

³⁰ Secretaría de Educación Pública. SALUD. Comisión Interinstitucional para la Formación de Recursos Humanos para la Salud [http://www.cifrhs.salud.gob.mx/descargas/pdf/COMITES_CIFRHS_2014.pdf].

³¹ Secretaría de Educación Pública. SALUD. Criterios Esenciales para Evaluar Planes y Programas de Estudio de las Carreras de Enfermería [http://enarm.salud.gob.mx/documentacion/criterios_esenciales/120228_criterios_esenciales_enfermeria_v1.pdf].

³² In addition to their degree program, all higher education students in Mexico are required to give a year's social service, as coordinated by the National Association of Higher Education Institutions (ANUIES) (see Cantón, A. and Ramos, E. 2013. Mandating Service: Mexico's National Requirement. *AAUP* Fall 2013, Vol. 16, No. 4 [<https://www.aacu.org/diversitydemocracy/2013/fall/see-ramos>] for a summary in English), although individual institutions have their own requirements for completing service. A student who has completed all the requirements for the degree, as well as their social service gets a diploma from the Ministry of Education.

³³ A decentralized organ of the Department of Health with technical, administrative and operational autonomy, whose mission is to protect the population against sanitary risks, through sanitary regulation, control and promotion under a single command, which provides unity and homogeneity to the policies which are determined. <http://www.cofepris.gob.mx/Paginas/Idiomas/Ingles.aspx>

We ranked programs according to their stability (see Table 5) based on interviews with program directors in terms of number of students, fiscal stability, accreditation, ownership of property or infrastructure and equipment. In this scheme autonomous programs score as less stable because they have fewer students, borrowed or rented space, and inadequate or variable funding. One of the obstetric nursing programs was ranked as most stable because of its large number of students, secure sources of federal funding, and permanent installations and equipment.³⁴

The curriculum in all training programs would benefit from a core component of basic competencies while respecting diversity.

The five models of midwifery education (autonomous, obstetric nurses, graduate perinatal nurses, technical, and university level reproductive health) share a requirement for a minimum number of 40 births for graduation (see Table 6). In all of them, students are taught most of the recommended evidence-based practices in the classroom or theoretical portion of their studies. Autonomous and technical midwifery programs teach all or most of the evidence-based practices. Nurse midwife programs are more variable, teaching only 11 of the 20 evidence-based practices we studied. As reported above, the data show that the nursing programs that are most stable and poised to expand currently do not teach evidence-based practices most consistently. It is important to reinforce core evidence-based competencies in existing, new and expanding programs. Programs need to develop a consensus around a core curriculum of competencies that will serve as the basis for a certification system applicable to midwives from diverse programs.

The curricula in educational programs generally cover evidence-based practices recommended by the International Confederation of Midwives. But deficiencies in clinical practice and lack of rights and gender-based content in the curricula are obstacles to achieving adequate training.

Even with an adequate basic curriculum, required clinical practice sites often do not allow students to apply what they have learned in class. Students who do their required clinical rotations in hospitals that do not adhere to evidence-based practices have to learn and undertake practices they were taught to avoid. Medical personnel in some clinical practice sites interpret that the stipulation that midwifery students should operate only under medical supervision means they shouldn't allow the students to practice what they were taught. Currently there are too few clinical sites that embrace evidence-based models of care to fulfill the demand for expanded educational opportunities.

"The ICM competencies do not mention cultural characteristics; the midwife must know, respect and protect women's cultures. In Mexico there are many cultures, and the midwife has to understand that women live in a family structure with cultural values that are important to them, whatever they may be." (Autonomous midwife)

"There is no coverage [of culture] in indigenous contexts, even though the term 'interculturality' is bandied about, it does not exist in practice, women's needs are not taken into account." (NGO representative)

Finally, most programs mention culture, rights and gender in their published materials but include little in practice. Few students identified themselves as indigenous and there are few classes or faculty teaching cultural diversities and the existence of ethno-obstetric practices that are widespread throughout the country.

³⁴ As described above, the obstetric nursing program at the UNAM has a modified, and approved, curriculum with a strengthened obstetric focus, and a gender-based perspective. This program is expected to become one of the strongest ones once they graduate the first generation of nurses who have been exposed to the new curriculum in 2017 including practical experience attending births. It will graduate up to 400 skilled obstetric nurses per year.

Autonomous programs offer more cultural- and rights-based content than others. In Oaxaca, Nueve Lunas, with 20 students in 2015, has the largest potential for training autonomous midwives. It refers to the kind of midwifery it teaches as *'partería en la tradición'* (tradition-based midwifery). Its program incorporates humanized birth and evidence-based practices following international standards, as well as including women-centered cultural, spiritual and psychological elements and emphasizes techniques drawn from traditional midwifery practice, and uses renowned traditional midwives as instructors. Diverse programs and curricula are needed to meet the cultural and rights needs of women.

Greater regional diversity and cultural sensitivity in education programs would be beneficial since most programs are concentrated in central Mexico (Mexico City, Morelos, Guanajuato) whereas the need is highest in states with higher maternal mortality.

In terms of gender and ethnicity, few faculty are of indigenous origin (although one program offers classes in the Nahuatl language), and women teach at least half of the courses. Only the technical programs and autonomous program of Nueve Lunas have significant numbers of students of indigenous origin.

Mexico City may be a key site to strengthen midwifery education because it has the greatest number of obstetric nursing training programs and students: currently a total 150 (about 40 graduates per year) in the National Polytechnic Institute's Obstetric Nursing program (ESEO), and potentially 2000 (about 400 graduates per year) total students enrolled in the ENEO obstetric nursing program at the UNAM with its revised curriculum. Although central Mexico currently has the largest number of midwifery students, another 30% are in technical and autonomous programs in the poor, indigenous southern states of Oaxaca (with 20 in Nueve Lunas) and Guerrero (with 60 in the Escuela de Tlapa).

Students and professors love their work despite fragmentation, lack of communication and tension at times among training models and with medical staff.

Schisms exist between programs and between models, ranging from lack of information about each other to overt hostility. Frequently program directors either did not know, or did not approve of, what other midwifery training programs were doing. Responses to queries about other programs or whether other programs teach evidence-based practices and have adequate clinical training, were most commonly that they didn't know. Yet some recognize the damage that this does:

"They [autonomous midwives] are not legal." (School director)

Do obstetric nurses follow the ICM competencies? "I wouldn't know. I've never trained obstetric nurses." (Autonomous midwife)

"One thing that bothers me a lot is this thing of saying that the technical midwives are cool, and the obstetric nurses aren't real midwives. This affects all of us...." (Autonomous midwife)

Directors and students with whom we spoke love their work despite the enormous challenges they face. Such challenges consist of program-related stress due to job insecurity, low pay, lack of benefits, and extensive travel; financial uncertainty since they often do not know when or if the next year's budget will arrive; and clinical demands from attending patients with serious health and economic challenges, and having to cover night shifts that physicians don't want; all often in the context of local violence: one technical school director told us about a woman who hemorrhaged but her husband wouldn't bring her into the clinic because he didn't want to get blood on his truck seat. Incest, child marriage and domestic violence are common in some areas.

Mexico's midwifery training sector has highly motivated and skilled people dedicated to educating both technical and nurse midwives in an evidence-based model of care. These are the foundation for expanded training programs in the future. For example, one of the perinatal nurse residencies is made up of students who are obstetric nurses working in a regional hospital. They know that their program of study will not bring them a higher salary or even the space to implement what they've learned. They are willing to work even in an institution that engages in practices that are not recommended (e.g., unnecessary caesarean sections), that demonstrate cultural insensitivity (referring to indigenous women as 'ignorant') and that sometimes under reports maternal mortality, saying "We do it '*por amor a la camiseta*' (out of love for midwifery)."

2.5. Employment

Background: The baseline sought to find out how many, where and in what kinds of settings midwives are employed. It also sought to find out how supportive their working conditions are, how successfully they are integrated into daily operations, and what kind of care they were taught and are allowed to provide.

Methodology:

We focused on professional midwives who were employed in public health facilities that serve low and mid-income women and also included two private sites that serve similar populations. We registered all employment sites mentioned in the preliminary interviews and identified sites through internet-based research and opportunity sampling. The sample does not include professional midwives practicing without an established interface with the public health care system.

We interviewed 51 midwives, 16 directors and other high echelon health facility authorities, and 22 physicians at a total of 15 employment sites. We requested and received institutional statistics on number and kinds of midwives attending births, their employment conditions and the number of births attended from 11 of those 15 sites and obtained partial descriptive statistical data on the others during interview sessions.

Findings in the area of employment:

There are more midwives currently practicing in the public health sector than originally estimated but the number is much lower than needed to fill the gap in available health care providers.

Initially the Foundation estimated that there were approximately 100 professional midwives employed in the public health system. We found 15 sites in which 187 non-physician birth care practitioners attend births: 14 general nurses, 81 obstetric nurses, 49 perinatal nurses, 18 nurse midwives doing their social service, 19 technical midwives and six technical midwives doing their social service.³⁵ Seven sites (four at primary level, one at intermediate and two at secondary level hospitals) employ nurse midwives; one primary care center employs nurse and technical midwives (with one traditional midwife as well); and seven sites employ only technical midwives. Six of these are public hospitals and one is a private maternity center (See Table 7).

³⁵ This total does not include one technical midwife who is currently working in a Ministry of Health facility in Chiapas, funded by a private non-profit since she is not employed by the health system itself. Given the instability of employment, we assume that there are probably a dozen or so other midwives inserted in isolated circumstances that were not mentioned to us by any of our informants.

In nine of the 15 sites, midwives are employed in an institutionalized midwifery program with an explicit institutional mandate for women-centered care provided by midwives (marked with an * in the table). In the others, the midwives' employment is an isolated phenomenon without an explicit institutional commitment to a midwifery or evidence-based model. Of the 51 midwives we interviewed, 40 work in institutionalized programs and 11 in isolated contexts.

The current institutionalized midwifery programs can serve as models worthy of being replicated—but only after the serious challenges they all confront are rectified.

Low productivity—As can be seen in Table 8, even the institutionalized midwifery programs have low numbers of pregnant women who come to the sites for obstetric care and large proportions of women who are then referred for delivery to higher-level facilities (40% to 81% in five of the six sites that make referrals). Midwives working in general hospitals attend low proportions of the births delivered at their institution.

Fifty of the 51 midwives interviewed said they could easily attend more births. Of these, 29 said it was due to the low number of patients who deliver in their institutions or services. The reasons given for such low productivity are basically because few women come to the institution, or those who come for prenatal care are referred to higher-level facilities either due to preference, resistance of the medical staff or because of risk factors detected according to standard state-level assessment tools. At least one of the risk assessment tools that we reviewed contains social and economic factors that do not seem to justify such referrals (such as the pregnancy being unplanned), and we were told that little research has been done to fine-tune the tool and make it more selective yet effective and relevant to the state and institutional contexts.

Another factor that nine midwives mentioned is incomplete coverage. When midwives are not available on all shifts—and at times only on one—it becomes difficult to offer natural childbirth assistance since delivery often lasts longer than a shift. In five cases—all situated in teaching institutions—midwives mentioned there being too many other staff, especially medical residents, who are given priority to “practice” attending births.

In some instances we heard about other reasons women prefer to deliver in a hospital because they are sent home during labor and don't come back or because they also get access to other services if they deliver in a hospital.

“There was one pregnant woman who was planning to give birth here...but [we sent her] home during labor and she decided to deliver in the hospital since there she can get an appointment for her baby with a pediatrician and here in the health center she can only see the perinatal nurse and a general doctor.” (Perinatal nurse, health center)

These programs could expand the number of births attended by midwives by generating greater demand

“...they refer many women to the general hospital for unnecessary reasons. The demand is not high. If the woman has one risk factor we send her to the general hospital, for example, if she had a previous cesarean or due to her age.” (Obstetric nurse, maternity clinic)

“...productivity is so low because we send them home to rest and then they don't come back, some want anesthetic or a cesarean...” (Perinatal nurse, maternity clinic)

and reducing the large number of unnecessary referrals to hospitals. More effective outreach and dissemination efforts are needed to attract reproductive-age women in the catchment areas around the existing midwifery employment sites. Efforts to adjust the risk assessment tools to make them more selective and accurate are also urgent.

Deficient referrals systems—Referral systems are plagued by lack of equipment, including ambulances, and strained relations with on-site physicians and second level institutions as reported above. Among 11 sites without emergency capabilities, only two have a functional ambulance and good relations with the referral institution. The rest either have to call private ambulances and/or are met with varying degrees of rejection when they arrive at the referral hospital as reported in Table 9.

Without smoothly running referral systems, fear of complications will continue to influence the midwifery staff. Many prefer to refer a patient rather than take the chance of complication, especially since they often lack official support if an emergency were to arise. In one site, we heard the opposite: the perinatal nurses could not get authorization from the on-site physicians for a number of urgent referrals.

Challenges to replication—Several states plan to replicate the institutionalized nurse midwifery sites and one state plans to employ technical midwifery graduates in primary level sentinel clinics. Thus while replication seems to be taking place once models are disseminated, the success of current and future programs will be compromised if these challenges and deficiencies are not addressed.

The setting within which midwives are employed determines to a large extent whether or not they can provide high quality care using practices based on evidence, human rights and cultural sensitivity. Enabling environments must be available for midwives to contribute to higher quality of care.

The employment setting has an enormous influence on midwives' ability to provide woman-centered healthcare. Overall, only a third of the midwives engaged in all of the 14 evidence-based practices we analyzed. A proportion of .58 of the midwives in institutionalized midwifery programs engage in all or almost all the evidence-based practices analyzed, as opposed to .18 in isolated settings (Table 10).

There were only three sites in which all the midwives consistently reported employing evidence-based practices. In the others there was either inconsistency among the midwives employed there or lower levels of evidence-based practices overall.

The autonomy with which a midwife is allowed to attend deliveries is highly associated with the kind of program in which she is employed. According to our measure of autonomy within the employment context, 38 report having high autonomy and 13 low autonomy of decision-making and team support.³⁶ The degree of autonomy that a midwife has is clearly related to the kind of practices she uses as shown in Table 11.

Why do some midwives engage in practices that are not supposed to be part of midwifery services? We explored if they reported having been taught the respectful women-centered practices or not and what practices they reported using once they were on the job. We already reported that, according to the school directors, the technical midwives were more often taught the ideal practices than were the nurse midwives. Our analysis of what the midwives themselves reported having learned and now are able to perform confirms this finding as shown in Figure 2. Technical midwives reported being taught evidence-based practices more consistently than nurse midwives. But once in their places of employment fewer

³⁶ Midwives who reported they always or often are the main responsible person or who work in a horizontal and equitable team with other midwives were scored as having high autonomy. The rest, who work under direct supervision of a physician or in a hierarchical team with doctors were scored as having low autonomy.

were able to carry them out. It is important to remember that ten of the 14 technical midwives are employed within hospital settings without the benefit of other midwives or an institutionalized program.

The reverse occurred for nurse midwives: fewer were taught evidence-based practices, but once in their employment setting—usually

institutionalized midwifery programs—more were able to carry out the recommended practices. A supportive, midwifery-friendly context encourages evidence-based practices even if one’s training did not, and vice versa in the case of isolated settings that limit their utilization.

*“I had to learn to attend births in gynecological position. I had to learn to repair episiotomies, especially when working with the gynecological residents. There is a lot of pressure since they interrogate you a lot and there is not much freedom...”
(Technical midwife, hospital)*

“I learned about humanized birth here and I am trying to apply it. In my training, they taught me hospitalized birthing care. I like the humanized approach better.” (Obstetric nurse, maternity clinic)

An enabling environment or setting can thus encourage good practices while the opposite can require non-evidence based practices. Of 29 midwives interviewed who explained reasons for changing their practices in a positive way, 15 mentioned they had learned on site or from mentors. Thirteen midwives

“...we have already seen there is no need for IV lines, nor episios. We have seen that it functions well, that’s why there are studies and practical clinical guides that describe these new practices. It’s all in the practical clinic guide”. (Perinatal nurse, maternity clinic)

“...I changed a lot during the [perinatal] specialty training. I became more conscious about pregnancy and motherhood...my professor in how to perform better; at a personal level through lots of self-reflection, seeking internal balance...I went to congresses and forums. (Perinatal nurse, health center)

mentioned that they had learned from the women themselves and from observing the good results that the “new” evidence-based practices produced. And 11 specifically mentioned that their vision was changed in the perinatal specialization they had taken. Eight midwives also mentioned that reading scientific literature, including the Health Ministry’s own Clinical Practice Guide for Care of Normal Births, as well as attending conferences and courses had strengthened their knowledge and willingness to

engage in the more humanized practices. All in all, they showed enthusiasm for the opportunity working in such contexts offers them as well as a high degree of initiative to test out and make sure what they are doing produces good results.

Fewer technical midwives engaged in evidence-based practices than the obstetric and perinatal nurses. Again, the context in which they are employed must be taken into account to understand these differences. One technical midwife, who is trained in and completely convinced of the benefits of humanized practices, described the situation and the pressures she is under to medicalize her practice which include infrastructure issues, institutional protocols and the high number of patients. She has become accustomed to doing episiotomies since women deliver on an old uncomfortable gynecological table that produces severe perineal tears she wants to avoid and she uses oxytocin to speed up labor since there are so many other women waiting to give birth. She has now changed her shift to work nights since the Ob-Gyn on that shift is more supportive of her work and together they and several residents and interns deliver about 8 births each night.

However, four people we interviewed commented that the training of the technical midwives seems deficient and may also be part of the problem. For example, the director of a hospital where technical midwives train commented:

"The (technical) midwives ...have a very deficient training. To such an extent that we only allow them to attend four or five births under supervision of a gynecologist when they do their clinical rotation here." (Director, hospital)

Another person who has trained technical midwives and worked with them in a hospital setting said that:

"The students are coming out with many deficiencies, they don't know how to evaluate patients, they don't know how to write clinical histories and in general they seem afraid to practice midwifery...." (Technical midwife, hospital)

These observations should not be ignored and do not contradict the findings that the technical midwives are trained more consistently in non-invasive practices. It is still possible that their training has other technical deficiencies—as manifested in the quality of care data we present below—and these may leave them more vulnerable to the more skeptical or hostile environments in which they are working.

Labor market conditions in which midwives currently work are unfavorable and under-resourced.

As shown in Table 12, almost half the 187 midwives have short-term or no contracts, most notably obstetric nurses (48%) and technical midwives (72%). Thirty-five percent of the perinatal nurses have no contract. Technical midwives are usually hired according to the technical midwife code. All nurse midwives are employed as general nurses³⁷, limiting not only their potential salary but also their job description. Such a situation can be used to prevent skilled nurse midwives from attending births. Salaries paid are lower than those stipulated by law. Over half (63%) receive incomplete or no benefits.

"There is a code for professional [what we are calling technical] midwives – this is a huge win – with a salary equivalent to an obstetric nurse. However, we don't have enough money in the budget to hire them. We need more funds, and we need them to be [fixed amounts]." (State level government official)

"She [a technical midwife] should be able to retain her position as a midwife and they should pay her well. She earns a fifth of what nurses earn and works five times as much." (Ob-gyn, hospital)

These issues are important to the midwives. When asked what changes they would like to see in their labor situation, 23 of 51 midwives said they want a salary commensurate with their skills and education, and a code that corresponds to the fact that they are midwives. Nine additional midwives added that they want to be able to do what they were taught to do and not be limited by their job description.

"I want to change my code. We are hired as general nurses, level C. There is no code for perinatal specialists. I only have a six month contract...we do not have permanent positions. It's because we are nurses." (Perinatal nurse, maternity clinic)

In terms of productivity, it is very difficult to know how many births the midwives attend, except in the institutionalized midwifery programs. In hospital contexts, births attended by midwives are registered under the name of a physician, often the head of the shift, who has to sign and take responsibility due to hospital protocol. This is of major concern for some doctors who worry that they will be held responsible for the results of problems that initiated under the care of the midwife.

"...the legal issue, it's the doctor who has to sign. If anything gets complicated...at a legal level it is the doctor who signs off. This is something that would have to change." (Ob-gyn, hospital)

³⁷ During the interviews, several nurse midwives told us that they were hired as nursing assistants even though their job positions were not described as such in the institutional statistics we were provided. Other people also confirmed that they were hired at this lower level.

Even in institutionalized midwifery programs, midwives often confront lack of awareness, distrust, and hostility from physicians and some general nurses. There is also a lack of clarity about the role they are to play and whether they can attend normal deliveries at the primary level.

Almost half the midwives mentioned difficulties that include professional jealousy, blame, fear and misunderstanding. This leads to lack of support and at times outright obstructionism from physicians and some nurses. As reported above (Table 7), in seven of eight institutions that refer complicated cases to hospitals, 23 of 37 respondents reported poor or bad relations with doctors and nurses who receive them.

There were 43 midwives who reported negative aspects of their jobs in addition to issues related to their job security as described above. By far the most common aspect mentioned by 20 midwives (14 perinatal nurses, 3 obstetric nurses and 3 technical midwives) was what some called professional jealousy, blame, fear and misunderstanding, all leading to lack of support and sometimes outright obstructionism from physicians, some nurses and more generally the broader health system. The second most common complaint, from 11 of the midwives, was the lack of infrastructure and equipment, which in some cases was quite dramatic.

"...we still don't have the physical locale, they blame us for complications, there is professional jealousy and it is difficult to work here under these conditions." (Obstetric nurse, hospital)

"...it's a struggle to have to be showing them all the time that we nurses can do it, to always be under scrutiny. If one makes a mistake they are all over you. If we were more united with the rest of the staff in the health center it would be much better." (Perinatal nurse, maternity clinic)

"...we don't have supplies, medicines, even the most essential things in order to be able to work...at the state level we still do not have support." (Perinatal nurse, health center)

"...we are criticized by the doctors" (Technical midwife, hospital)

Other sources of dissatisfaction mentioned by 4 or more midwives were: lack of legal support and malpractice insurance, lack of practice attending births, too many invasive practices and lack of recognition of the work they are doing, and in some specific places tensions within the midwifery team.

"There have to be norms stipulating what they can and cannot do. They don't listen to medical advice. They are usurping space in our clinic. They detract from our teaching of medical residents who are higher priority and the deliveries they attend take too much time." (Physician, primary health care clinic)

Further, frequently doctors said they did not understand what midwives can and cannot do, especially at the primary care level, where doctors are unsure who, if anyone, including physicians, can attend births.

Despite these tensions, many midwives are inspired, passionate and enthusiastic about their work. Twenty-eight described—with considerable enthusiasm—the opportunity to actually work in what they were trained for, specifically to provide services within the realm of humanized practices. Twenty-three mentioned the relationship with women and the opportunity to listen to women's needs and respect their rights. A good team working environment, the ability to make autonomous decisions and pride and recognition in doing a good and highly skilled job all were mentioned by 6 to 8 midwives.

"...I can fulfill my professional profile, we respect the integrity of the woman. She is free to express herself and to do what she wants, we have a good work team." (Perinatal nurse, hospital)

"...the way we work, prenatal, safe birth, respectful, the father can be there. They leave very happy because they don't suffer the obstetric violence that happens in other places." (Obstetric nurse, hospital)

In response to a question about whether or not they feel part of a midwifery movement, we again captured this sense of inspiration and dedication. Many of the nurse midwives we interviewed do not

"I don't consider myself a midwife ...but I am part of a movement for humanized birth. I foster, I carry it out and I believe, I contribute, I can help make it happen." (Obstetric nurse, maternity clinic)

"I am in favor of it and I push for it in my practice, but I don't belong to any group." (Perinatal nurse, health center)

"...yes. Because we are struggling for something we like, we do not just conform, it is a struggle, we can do it, studying is important, midwifery as such is associated with people of low income, where they transmit knowledge over generations." (Perinatal nurse, maternity clinic)

"We have the knowledge, we relate more and better with the patients. It would be very useful to promote this model more in Mexico." (Obstetric nurse, maternity clinic)

identify with the term "partera." They tend to associate that term with traditional midwives and we had to usually explain that we were referring also to nurse midwives and technical midwives. Further, many did not answer the question in terms of affiliation with any organized movement but rather referred to their own effort to promote more

humanized practices. While 44 said they were part of a movement to promote midwifery, even some who answered "no" shared the vision of promoting better practices.

These positive attitudes were also perceived by 11 of 15 health institution authorities who said the midwives were highly trained, competent, enthusiastic and dedicated.

There are a few promising efforts to encourage respectful interface with traditional midwives that will benefit from sustained efforts to be successful.

In seven of the states visited,³⁸ public health authorities enthusiastically talked about programs with "their" traditional midwives and frequently slid back into referring to traditional midwives whenever we asked questions about the entire range of non-physician birth care providers. This was the phrase we had to use repeatedly to get them to focus on technical and nurse midwives.

These programs have in common an interest in training and certifying traditional midwives so that they will use seven key clean, safe practices if and when they deliver babies. More often they are urged or mandated to register pregnant women and refer them to health care services according to their risk level, which traditional midwives are taught to assess. In all cases this is done without paying them and with only minimal incentives. The midwives also receive forms to give to women so that they can subsequently register their baby's birth. In some states, such as Tlaxcala, traditional midwives have been trained to provide contraception, including IUDs. Only in that state did we hear about a collaborative effort in which the perinatal nurse would go to the woman's house when called by the traditional midwife to provide support.

We consistently heard testimonies of tension between the traditional midwives and medical personnel in which the midwives were made to feel

"...and the persecution. Because they [health care personnel] threaten the midwives, 'if you attend a birth we are going to fine you'...To the woman they say 'if you go with a midwife, we will take away your stipend' or 'we won't attend you in the health center.'" (Civil society advocate)

³⁸ Chiapas, Oaxaca, Guerrero, Tlaxcala, Morelos, Veracruz and the State of Mexico.

unwelcome and accused of wrongdoing, sometimes with threats of reprisals if women give birth with them.

This kind of training is widespread within the public health sector but is criticized frequently by advocates who see inherent value in the knowledge and practices of the traditional midwives.

“...in various projects ...they mention traditional midwives, but only in a utilitarian manner. In other words, everyone wants to include them...but how?...no one is going to pay them, as always, no one is going to recognize or respect them, simply they are going to use them so that the health professionals are accepted in the community and so that they take the women to the health center for care...its not fair ... I tell them OK, if you don't believe in traditional midwives, leave them alone, don't just take advantage of them if you really respect them.” (Civil society advocate)

The State of Puebla has created 15 sites in which a Traditional Medicine Module (Clinic) is located on the grounds of a general hospital. Traditional midwives are on call in the Module and can attend births there, knowing that if an emergency occurs, the patient could be instantly transferred to the hospital. However, no births have been attended in the module in Cuetzalan, a site

we visited, in the past year and only one in the five years of operation. Ministry of Health personnel described 14 other sites in the state designed on the same model. Few births have been delivered in the Modules thus far, depending at least in part on lack of support from the hospital staff and economic disincentives that may pose an obstacle. Traditional midwives say they can earn more attending women at home than in the Module and that if they refer a client to the hospital they no longer receive their fee.

Only one of these sites has recorded 6 births attended between December 2015 and February 2016, reportedly due to the total support of hospital staff for the model that included traditional midwives. In the other sites, such support is absent or only slowly developing.

Thus it is clear that a host of factors will need to be understood and taken into account for traditional midwives to accept closer interaction and collaboration with professional midwives and the broader medical establishment.

2.6. Quality of care

Background: Along with its allies, the Foundation assumes that reliance on highly qualified midwives will lead to higher quality, more women-centered, lower cost maternal and neonatal care and thus contribute to sustained decrease in maternal mortality and morbidity in Mexico. In order for this to happen, midwives need to be successfully integrated into health care services, use evidence-based obstetric practices, and closely follow evidence-based normative frameworks of prenatal, postpartum and newborn care. If they can work in healthcare facilities where they are allowed to do their job within a supportive environment, they would help avoid complications during labor and birth, especially those derived from excessive medicalization in hospitals. They can also help detect and prevent problems during pregnancy, postpartum and to the newborn, since they can provide a better continuum of care if allowed to do so. Demonstrating that midwives provide high quality care is an essential step to increase women's demand for their services, and to gain policy makers' and medical professionals' support for their deployment within the healthcare system.

Methodology: The evaluation team followed WHO's definition of quality of care,³⁹ including technical and interpersonal competencies as well as systemic organizational conditions of health service sites. The definition also includes a woman's right to receive these services in a safe, efficient, socially acceptable, economically accessible and individually satisfying fashion.

Based on data from the employment interviews, 12 sites were selected in which there were one or more professional midwives regularly employed and the number of births they attended was sufficient to permit us to find women who had delivered with midwives or physicians at that institution. In two sites where no physicians were available, we surveyed doctors who attend normal deliveries in nearby referral hospitals making the total number of sites 14 (Table 13). Women were selected if they had delivered vaginally within the prior 12 months. We interviewed 40 midwives (perinatal specialists, obstetric nurses, technical midwives and a few general nurses who attend births), 30 physicians (Ob-gyn, residents, general doctors and *pasantes*⁴⁰) (see Tables 14 and 15 for their basic characteristics) and 127 women service users⁴¹ (see Table 16 for their basic characteristics).

Data collection covered prenatal, labor and delivery, postpartum and newborn care, as well as basic knowledge and practices during obstetric and neonatal emergencies. In addition to service provider and user surveys, the infrastructure and human and material resource checklist was applied for each institution. Data presented is derived from questionnaires with service providers and women service users that we applied to answer the following questions:

1. Are different kinds of professional midwives qualified to provide prenatal, birth, postpartum, neonatal and emergency obstetric and neonatal care in comparison to other standard qualified medical providers?
2. Do the diverse healthcare environments and levels of care in which midwives work enable them to deploy their skills and knowledge or prevent them from doing so?
3. Do women who gave birth with midwives show greater satisfaction with care received, compared to women who delivered in more medicalized standard ob-gyn hospital units?
4. Do midwives employed in selected healthcare sites actually provide a continuum of care to women users?

To achieve the above, basic comparisons were made between physicians and midwives' quality of care and women's satisfaction with the care received; between physicians, nurse midwives and technical midwives; and then by level of care (primary, intermediate, and secondary). Whenever the numbers were sufficient, we performed a statistical test to see if the differences we encountered were significant or not.⁴²

Findings in the area of quality of care:

Most professional midwives tend to engage in evidence-based practices during labor and delivery.

³⁹ WHO 2006. *Quality of care: A process for making strategic choices in health systems*. Geneva, Switzerland: World Health Organization. Available at: http://www.who.int/management/quality/assurance/QualityCare_B.Def.pdf

⁴⁰ A *pasante* is a medical doctor who has completed all course work, except for a final thesis or one year of social service.

⁴¹ Data on 10 additional women who had surgical (C-section) deliveries was inadvertently collected during fieldwork, bringing the total of women interviewed to 137. Information collected on these women was only included for prenatal care.

⁴² We extend our thanks to José Alberto Muños (CONACyT/CIESAS-Pacífico Sur) and Martín Romero (National Institute for Public Health) for their support in reviewing our numerical results and running all statistical tests.

More midwives report engaging in evidence-based practices during childbirth than do medical personnel. For example, .83 of the midwives allow the woman to be accompanied during childbirth while only .37 of the physicians do so; .78 of the midwives allow the woman to choose in which position she wants to deliver, while only .33 of the doctors do; .80 of the midwives and .27 of the physicians avoid the routine application of an IV line; .95 of the midwives delay the cutting of the umbilical cord as opposed to .47 of the medical providers; and .95 of the midwives reported promoting immediate mother-baby contact while .57 of the physicians did so. Of these practices, differences found in the last three were statistically significant.⁴³ We included one negative, non-evidence based practice: providers' preference to have the woman in a lithotomy (horizontal) position during delivery; the difference between doctors (.73) and midwives (.23) who prefer this traditional gynecological position was highly significant statistically (Table 17). In general, these findings are consistent with other national and international research results.⁴⁴

Nurse midwives report engaging in more evidence-based practices than technical midwives, for example, in accompaniment, avoiding routine use of an IV line, women deciding their birthing position and active management of the third stage of labor (Table 18). It is very likely that the settings (more often hospitals) and the working conditions (isolated setting and less autonomy) in which technical midwives work explain these differences. These same patterns are found when we use an index of compliance with all the evidence-based practices. High compliance in obstetric care (i.e. using .90 or at least 20 of 23 practices about which we asked) is reported by only .23 of the physicians but .70 of the midwives (Table 19), with this difference being statistically significant. More nurse midwives reported high compliance (.78) than technical midwives (.59) during labor and birth care (Table 20).

Women⁴⁵ attended by midwives consistently reported having been exposed to more evidence-based practices during labor and birth than those attended by doctors. For example, among women attended by midwives .78 reported that they were allowed to choose who would accompany them during labor and childbirth in comparison with .33 of those attended by physicians; .80 of the former reported that they were allowed to walk during labor while only .42 of the latter said they were allowed to do so; .69 of those attended by midwives could choose freely their position during birth, while only .19 of those attended by physicians could do so; and .82 of the women attended by midwives said that their midwives promoted immediate skin-to-skin contact with their newborn, compared to .48 of the women attended by physicians (Table 21). All these differences were statistically significant.

There are practices that evidence-based medicine shows have no benefit (pubic shaving and enemas) or that are likely to be damaging (Kristeller maneuver) which seem to have fallen into disuse among all kinds of personnel, including physicians. On the other hand, we found that a fairly widespread practice is the routine manual exploration of the uterine cavity (a practice that is painful and potentially damaging and that evidence-based medicine strongly recommends be avoided as a routine practice).

⁴³ We refer to results as statistically significant when $p \leq 0.05$ or $p < 0.01$ depending on each case.

⁴⁴ Sandall, J. et al. 2016. Midwife-led continuity models versus other models of care for childbearing women. Cochrane database of systematic reviews (<http://onlinelibrary.wiley.com/doi/10.1002/14651858.cd004667.pub5/full>). Cragin, L. et al. 2007. Educating skilled birth attendants in Mexico. Do the curricula meet ICM standards? Reproductive Health Matters 15(30):50-60. Walker, D. Et al. 2012 Skilled birth attendants in Mexico: how does care during normal birth by general physicians, obstetric nurses, and professional midwives compare with who evidence-based practice guidelines? Journal Midwifery and Women's Health 57:18-27. Renfrew, M. J. et al. 2014 Midwifery and quality care: findings from a new evidence informed framework for maternal and newborn care. The Lancet 384:1129-45 ([http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(14\)60789-3/abstract](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(14)60789-3/abstract)).

⁴⁵ Note that we only included here women who delivered vaginally and who did not experience any kind of complication, neither maternal nor neonatal.

While more women attended by physicians than midwives reported this practice, it is nevertheless a maneuver that .50 of the women attended by midwives experienced.

More women attended by nurse midwives had experienced evidence-based practices than women who were cared for by technical midwives. However, more women attended by technical midwives experienced more evidence-based practices than those attended by medical personnel. Statistically significant differences were found among the following practices:

- Woman can choose who will continually accompany her
- Avoid routine IV line
- Liquids allowed
- Free to walk during labor
- Woman can choose position for delivery
- Immediate bonding encouraged between mother and newborn
- Family planning method offered after obstetric event and accepted by the woman voluntarily
- Explanations provided about post partum care
- Explanations provided about neonatal care (Table 22)

The majority of professional midwives who provide prenatal and postpartum health services tend to follow standard normative procedures during care. Still, there is room for improvement.

In prenatal care, .78 of the midwives reported providing services and practices that showed acceptable compliance with normative frameworks (with .85 or more of all prescribed practices), compared to .55 of the physicians (Table 23), although these differences were not statistically significant. Two prenatal care practices (measuring uterine growth and measuring fetal heart rate in each consultation) were significantly more frequently reported by midwives than by physicians (Table 25). In general, proportions of midwives who demonstrated compliance with specific prenatal practices ranged from .28 to a maximum of .72 (Table 25), showing that there is room for improvement, although in several cases non-compliance was due to lack of supplies or lab tests in the clinical setting. No major differences were found when comparing reported prenatal care by nurse midwives and technical midwives (Table 24 and 26).

Most women reported adequate prenatal care among attending midwives, with similar results also for attending physicians (Table 27). When differentiating prenatal care by nurse midwives and technical midwives, women did not report differences with the exception of HIV/AIDS testing where lower proportions of women attended by technical midwives reported having had tests (.50) in comparison with women attended by nurse midwives (.91) (Table 28). Technical midwives, on the other hand, tended to be more sensitive to cultural practices during prenatal care (Table 28).

In postpartum care, midwives reported performing most prescribed practices, as did physicians. There was a difference with respect to care for newborns: the proportions of reported prescribed neonatal practices (check their color, respiration and movement, temperature, size and weight, cord and breast feeding) were .40 or even .50 higher among midwives, although in only one practice (checking the umbilical stump) the difference reported between midwives (.83) and physicians (.27) reached statistical significance (Table 29). All technical midwives reported promoting immediate breastfeeding, while .77 of the nurse midwives and .40 of the physicians did so (Table 30). In general, the proportion of service providers who reported compliance with normative postpartum and neonatal care frameworks was .58 for midwives and .27 for physicians, this difference being statistically significant

(Table 31). No major differences were found among different types of midwives (Table 32). Non-compliance in postpartum care tends to reflect the lack of continuity in the care provided.

Women attended by midwives reported receiving appropriate postpartum care by midwives in high numbers, with no significant differences in the proportions of cases comparing care by physicians and midwives (Table 33).

The clinical environment in which midwives work has great influence on whether or not they can apply evidence-based practices during labor and delivery. The environment is so critical that both physicians and midwives who work at the primary healthcare level consistently provide more evidence-based obstetric care than physicians and midwives who work at intermediate level facilities; and even more so than those who provide care in general hospitals.

A comparison across levels of care (i.e., primary, intermediate, and secondary) shows the importance of institutional context. In prenatal care, the proportion of providers who were compliant was .81 among providers working in primary healthcare units, .67 in intermediate level and .50 in general hospitals (Table 35). Although these differences were not statistically significant, differences among several specific prenatal care practices across levels of care were (see Table 34).

The importance of context is even greater when examining obstetric care. A proportion of .93 of the service providers (midwives and physicians) at primary level reported high compliance with evidence-based obstetric practices compared to .45 at intermediate and 0 at general hospital level (Table 37), differences that are statistically significant. There were important differences between the following practices: avoiding routine use of an IV-line, freedom to walk, allowing consumption of liquids during labor, allowing women to decide their birthing position, delaying cutting the umbilical cord, and avoiding manual revision of the uterus. In all of these, compliance at the primary level of care was much higher (up to .6) than at the secondary level (Table 36). When asked about the only negative, non-evidence practice included in the questionnaire (preference for the adoption of the lithotomy position by women during birth), only .14 of the providers at primary level answered they preferred this position, in comparison with .55 in basic community hospitals and .73 at general hospitals, making these differences highly significant statistically. (Table 36)

Women who received care at the primary level from midwives and doctors more often experienced evidence-based practices than did women who were cared for at either intermediate or general hospital level (Table 38). For example, .94 of the women who delivered at the primary care level were free to walk during labor, while only .59 of them could so in intermediate level and .37 in general hospitals, regardless of the type of providers. Similarly, .81 of the women who delivered in primary healthcare clinics were able to choose the position they preferred at birth, while only .13 could do so in hospitals; .98 of the women who received care at the primary level were given their newborns immediately after birth for skin-to-skin contact, while .58 and .47 could do so in intermediate level and general hospitals, respectively. These data show again the importance of context for both midwives and physicians.

In postpartum and newborn care, the proportions of providers who were compliant were .5 in primary healthcare units, .71 at the intermediate level of care and .00 in general hospitals (Table 40); in general hospitals, these results are related to the fact that attending providers do not carry out basic newborn care practices (Table 39). Although differences in the level of compliance per se were not statistically significant, in specific newborn care practices across levels of care they were. (Table 39)

Altogether, results tend to confirm that the primary health care level and intermediate level are better suited places for midwives to work, provided they guarantee immediate access to transport and quality obstetric and neonatal emergency care when needed.

Despite highly positive results that are consistently better than obstetric care by physicians, there is room for improvement in the provision of midwifery services, especially in emergency obstetric and neonatal care (EmONC).

The baseline findings suggest that many deployed midwives have little experience with the management of obstetric and/or neonatal emergencies, while physicians tend to have more experience with such emergencies (Table 41). Technical midwives reported having more experience in the diagnosis and management of obstetric hemorrhage than nurse midwives (Table 43). In some cases, midwives' knowledge on EmONC is deficient (Tables 42 and 44). Although midwives are supposed to manage normal births, they need to be able to detect, stabilize and refer obstetric and neonatal emergencies. The window of opportunity to save a woman's life is short and for babies even shorter. More knowledge and hands-on training in this field is warranted if midwives are to help decrease maternal and neonatal morbidity and mortality. This is even more important considering that the baseline revealed that most midwives are eager to improve their knowledge and skills in this area. Also, it is necessary to improve knowledge and skills in EmONC for midwives to be more widely accepted by healthcare administrators, service providers and policymakers in general as a viable option.

Our results in EmONC are very limited because we lost many cases in the application of the surveys. Still, they do show that actual management and knowledge of EmONC need to improve for all types of providers, including physicians as well as across all levels of care (Tables 45 and 46). Particularly troublesome was the finding that in general hospitals the adequate management of EmONC was deficient, showing that the healthcare system as a whole needs to pay attention to improving knowledge and skills of all providers. This includes hospital settings that are supposed to be the appropriate place to care for and resolve obstetric and neonatal emergencies.

Women who received care by midwives were consistently more satisfied with the care they received during pregnancy, childbirth and postpartum, than women who were cared for by physicians.

When we measured satisfaction in terms of the quality of information received, how well they were treated, how pleasant they found the place in which they gave birth and whether or not they would return to give birth in the same place, higher proportions of women attended by midwives gave positive replies in comparison to those cared for by doctors. For example, almost double the number of women attended by midwives manifested they had received excellent labor and delivery care (.66) in comparison to women who were cared for by physicians (.38); and .98 of the women attended by midwives expressed that they would give birth with same person in the future, as opposed to .75 of those attended by physicians (the difference found in this variable being statistically significant) (Table 47). The differences found in rates of approval across type of providers were statistically significant: while .38 of the women attended by physicians, .56 who delivered with technical midwives and .84 attended by nurse midwives declared they had received excellent care (Table 48). But again, context matters, this time influencing women's perceptions of good care: .75 of the women cared for at primary care rated their care as excellent, compared to .59 of the women cared for at intermediate

level and .28 at secondary level; differences across levels of care were also statistically significant (Table 49).

Women recognize the difference between women-centered midwifery care and highly medicalized hospital care. They prefer the former to the latter when asked to distinguish advantages and disadvantages.

We asked 40 multiparous women who had given birth with both physicians and midwives what they thought the advantages and disadvantages of each kind of provider were (Tables 50 and 51). Only two said that midwives had no advantages over physicians, while 24 of the rest (.63) said there were no disadvantages. The advantages they identified were: better care in all aspects such as good treatment, instilling greater trust and security, and providing better explanations (Table 50). This suggests that the women who have gone through the actual experience of delivering their babies with midwives have the potential to become advocates for promoting increased demand for midwifery services.

The continuum of care that midwives are trained to provide is not always a reality in clinical settings where they are deployed.

Almost half of the midwives are deployed in settings that do not provide a continuum of care to women. The healthcare system tends to fragment prenatal care from delivery care and delivery care is separated from postpartum and newborn care. In prenatal care, this problem is much greater with physicians than with midwives: while .80 of the latter provide both obstetric and prenatal care, only .37 of the doctors do so. In postpartum care, the problem is exacerbated with only .60 of the midwives who also provide care to the mother and the newborn. As the available literature emphasizes⁴⁶ and our baseline data confirm, postpartum care is the weakest link in maternal healthcare. Only half of the women went back for checkups after delivery and only .60 of the surveyed midwives provide postpartum care in the clinical setting in which they are deployed. General hospitals are the settings where care is most fragmented. This finding reflects systemic problems within maternal healthcare in Mexico. It suggests that in order for midwives to display their entire potential of care, the context in which they operate needs to be taken into account.

2.7 General Conclusions

The Mexican health system has before it a great opportunity to solve or at least ameliorate many of the challenges it currently faces for providing high quality, woman-centered, evidence-based obstetric care to women and their newborns. Numerous challenges exist, but so do forces that can help resolve them.

Clearly a wide range of actors—including diverse kinds of midwives—are eager to help fill the gap and provide evidence-based and women-centered obstetric care, in ways that are encouraged by health agencies worldwide and by a number of key players within Mexico. These actors need to come together and join forces—overcoming internecine divisions and learning from each other—in ways that can build on their diversity and talents. The legal and normative framework offers windows of opportunity if inconsistencies are resolved and if forward-looking aspects of the framework can become more widely known and implemented. Further, efforts to strengthen primary care in general and specifically for low risk obstetric care—which appear to be in the offing—will greatly contribute to and indeed are necessary

⁴⁶ Heredia, I. et al. 2013. Brechas en la cobertura de atención continua del embarazo y el parto en México. *Salud Publica Mex* 55 (Supl. 2): S249-S258; Lazcano Ponce, E. et al., 2013 op. cit.

for enhanced institutionalization of midwifery at the primary and intermediate (basic community hospitals) levels of care, where it seems most appropriate.

The consistent finding that, once they are given supportive environments, midwives can provide care that is evidence-based and that contributes to healthier outcomes for mothers and infants is encouraging. Indeed, it confirms a key hypothesis of the MacArthur Foundation and its allies: that such practitioners can provide the kind of care women desire and appreciate, as they do now in many countries around the world. This should encourage physicians to rely on midwives to attend low-risk births, which would in turn enable medical specialists to care for women who present complications that only they can attend safely. Evidence suggests that the tensions currently found in some settings between midwives and doctors would be reduced as doctors gain experience with midwives, and as greater consistency is achieved in federal, state and hospital or clinic level mandates. Enhanced collaboration will ensue to the benefit of all involved.

Important challenges persist particularly given Mexico's current economic and political conditions; including and primordially, taking into account the change in the federal administration at the end of 2018. Also, given the need to expand educational programs and employment opportunities, current budgetary reductions in the health sector create unique challenges. Nevertheless, there is hope that, given the strengths and doggedness of the actors who are promoting professional midwifery, the health system can overcome these challenges, and will carry out efforts to fill the gap and meet the health care needs of women, slowly but steadily over the next decade. To help achieve such outcomes, the evaluation team offers a series of recommendations aimed at the entire ecosystem of actors.

3. RECOMMENDATIONS

Based on the findings in all five areas, the evaluation team offers the following recommendations. For each longer-term and medium-term⁴⁷ outcome in a highlighted box, a general recommendation is made, followed by a series of indications about what is needed to fulfill it. While organized by area, there is some natural overlap and interaction among the different recommendations. The intention of this section is to highlight changes and actions that the evaluators consider necessary for progress to be made. Recommendations are directed to the MacArthur Foundation and its grantees as well as all other actors, including the Foundation's civil society and health sector allies, and others who play a role in promoting the institutionalization of midwifery in Mexico.

3.1. Legal and normative framework

Longer-term outcome: High-level political commitment to the incorporation of midwifery in Mexico's healthcare system and clear guidelines to facilitate implementation of the mandate.

General recommendation: Promote a high level political mandate that states why midwives are important to the system, and operational guidelines that describe how to incorporate different types of midwives in diverse care settings at primary and intermediate levels of care. While it may not be possible to secure a mandate in the next two years, advocates can work to reframe the debate by

⁴⁷ "Longer-term" and "medium-term", as used here, do not imply a certain timeframe but rather refer to the extent to which other changes are needed before the outcome can occur. This implies that medium-term outcomes will most often occur before longer-term outcomes can take place. The small roman numerals following each outcome are used in Figure 5 to illustrate some of the relationships among them.

positioning midwifery as a key component of an evidence-based model of care and develop and disseminate specific operational proposals.

What is needed to achieve this?

- well documented consensus-based proposals for implementing comprehensive midwifery models of care to prepare the terrain for influencing the new government policy analysis to outline political opportunities and roadblocks and to define strategies for promoting a high level mandate on midwifery
- dynamic, multi-stakeholder alliances working to define and promote consensus-based agendas and proposals.

3.2. Ecosystem of actors

Medium-term outcome: Consolidation of durable multi-stakeholder networks and alliances that strategically define and promote policy agendas and proposals and monitor their implementation.

General Recommendation: Encourage cross-sector collaborations in ways that forge common agendas and lead to policy-relevant proposals and initiatives.

What is needed to achieve this?

- willingness by diverse actors to overcome their differences and seek common ground to promote midwifery widely
- supportive but previously uninvolved actors commit to promote midwifery
- opportunities to explore mutual benefits through working with actors in sectors other than one's own
- examples of successful cross-sector collaborations
- leaders skilled at encouraging dialogue and ameliorating tensions through common agendas and awareness of mutual benefits.

Medium-term outcome: Diverse types of midwives, including obstetric and perinatal nurses, accept and identify with an inclusive professional definition of midwifery.

General Recommendation: Forge an inclusive definition of midwifery and a shared sense of professional identity, and establish strong and long-term collaboration among diverse kinds of midwives.

What is needed to achieve this?

- positive images and language that encompass the entire spectrum of midwives in respectful ways that embrace their diversity
- obstetric and perinatal nurses are involved in, identify with, and are accepted within efforts to promote midwifery
- dialogue and information exchange among different midwifery training programs and institutionalized midwifery care sites to achieve recognition of shared objectives, practices and values

- opportunities for traditional midwives to share their knowledge with others and, in states where traditional midwives are active, mutually beneficial collaboration and interface between traditional, technical, autonomous and nurse midwives.

Longer-term outcome: Widespread appreciation of midwifery as a key component of an evidence-based model of care that can improve maternal and neonatal outcomes throughout the continuum of care.

General recommendation: Broadly disseminate information and effective messages and undertake sensitization endeavors for policy makers, health service managers and providers, media, women, and the general public to position midwifery as an option that is safe, beneficial and consistent with the goals of the healthcare system.

What is needed to achieve this?

- effective communication and sensitization strategies designed, tested and implemented to overcome prejudices and misunderstandings among policy makers, health administrators, and clinical providers about the safety and relevance of midwifery in terms of the goals of the health system
- inclusive messaging that is positively constructed in order to avoid antagonizing other stakeholders such as physicians, nurses or other midwives
- in communication messages and information sharing, emphasis on the high quality of care provided by midwives and benefits such care offers, both for women’s satisfaction and for the improved health outcomes that evidence shows are related to high quality care
- messages that situate midwifery as a key component of an evidence-based model of care, not just a type of service provider independent of the surrounding clinical environment
- generation and use of supportive evidence that highlights successful results, especially from experiences in Mexico.

3.3. Education

Longer-term outcome: Education opportunities for midwives include multiple high-quality programs with growth potential to meet the country’s expanding need for skilled professional midwives.

General recommendation: Encourage expansion of high-quality education programs, especially those that have most potential to graduate increasing numbers of well-trained midwives, without jeopardizing cultural sensitivity.

What is needed to achieve this?

- improved curricula and clinical training sites that provide evidence-based, women-centered content with a rights-based and sensitive cultural perspective for all types of midwives as a minimum level of competency
- clear process toward educational and health care accreditation for diverse programs

- expanded collaboration and information sharing among different educational programs, beginning with clear descriptions of each model, to strengthen the programs and differentiate between them so students can make more informed choices
- expeditious ways of training personnel on-site or through specialized post-formative programs that ensure required skills while expanding the numbers of skilled midwives available in the health system
- information systems to help schools and educational programs track their graduates so they can analyze factors that facilitate or prevent successful post-graduate employment.

3.4. Employment

Longer-term outcome: Midwives employed in the health system are consistently able to use evidence-based and culturally sensitive practices throughout the continuum of care, including EmONC, in supportive working environments.

General Recommendation: Foment the creation of employment conditions and clinical environments that allow midwives to engage in high quality evidence- and rights-based and culturally sensitive practices throughout the continuum of care.

What is needed to achieve this?

- clinical and hospital directors' willingness to accept and mandate recommended practices, and to support and enable midwifery models of care in their institution
- job descriptions and salaries that authorize midwives to engage in midwifery practices with autonomy and provide dignified working conditions
- resources to hire midwives at levels commensurate with their expanded training, skills and responsibilities
- a well-defined and widely publicized competency-based certification system that ensures that midwives have knowledge of, and experience in, evidence-based practices and other required skills, including EmONC, to assure employers that the midwives they hire are competent.

Longer-term outcome: Midwives, physicians and other health care providers engage in constructive teamwork at all levels of the health care system.

General recommendation: Foster communication and collaboration between midwives and physicians in clinical practice sites and other employment venues with the goal of building confidence and expanding midwives' functions, autonomy, and authority.

What is needed to achieve this?

- sensitization of medical personnel and health care administrators where midwives work, especially sites that have potential to become midwifery models for the health sector
- materials and approaches that have proved successful in Mexico to encourage teamwork and constructive collaboration among midwives and other healthcare providers.

3.5. Quality of care

Longer-term outcome: Expanded high quality midwifery services with access to swift and reliable emergency care in well-resources primary health care clinics and basic community hospitals.

General recommendation: Enhance the quantity, quality and productivity of midwifery-based models of care in Mexico, strengthening their liaison to higher level effective EmONC referral units.

What is needed to achieve this?

- diagnoses of challenges facing existing institutionalized midwifery care sites and recommendations for optimizing their functioning including their interface with higher-level referral units
- resources for facilitating the recommended enhancements
- improved midwifery skills along the continuum of care, including in EmONC training and practice in all institutionalized midwifery care sites
- protocols that encourage and facilitate replication while ensuring and documenting high quality results

Longer-term outcome: Health care personnel throughout the system comply with official norms and guidelines that support high quality, evidence-based maternal and neonatal care, are skilled in EmONC, and recognize the central role of midwives in providing such care.

General Recommendation: Expand knowledge of evidence-based practices and EmONC and promote compliance with official norms and guidelines by working with key allies in the Ministry of Health and other relevant agencies.

What is needed to achieve this?

- widespread dissemination and education about the importance of evidence-based norms and guidelines among maternal healthcare providers within the health system
- analysis of inconsistencies among norms and guidelines that generate confusion about recommended practices in ways that foster compliance with the most advanced practices
- effective supervision mechanisms and positive reinforcements to foster compliance with evidence-based practices that are already in the legal and normative framework.

It is hoped that by analyzing and discussing the data provided in this report and taking into account the recommendations the evaluation team has put forth for consideration, actors throughout the ecosystem can work together to achieve effective institutionalization of high quality midwifery throughout the Mexican health system. Such an achievement will no doubt contribute to healthier outcomes and greater satisfaction for women and their families.

TABLE 1: EVALUATION QUESTIONS

ACTORS AND EFFORTS TO PROMOTE MIDWIFERY	
Description	<ul style="list-style-type: none"> • What are the characteristics of the efforts to promote midwifery at the state and national levels (number, composition, diversity)? <ul style="list-style-type: none"> ➤ Who are its leaders and opponents, and what are their strengths and weaknesses? ➤ What groups or voices are absent in these efforts' leadership?
Efficacy	<ul style="list-style-type: none"> • How effective are the efforts in advancing the practice of midwifery? <ul style="list-style-type: none"> ➤ How many initiatives have been championed, either successfully or unsuccessfully? ➤ What are the main accomplishments (campaigns, consensus-building, visibility, strength and clarity of message, influence over decision-makers or gatekeepers)?
Obstacles	<ul style="list-style-type: none"> • What challenges or obstacles (including tensions or lines of fracture) must these efforts overcome to be more effective?
Legitimacy	<ul style="list-style-type: none"> • How does the target population (women, families, health service providers, policy makers) view midwifery in contrast to current medical model? • What knowledge, attitudes, and/or prejudices do they hold with regard to different types of midwives?
Demand	<ul style="list-style-type: none"> • To what extent do women from diverse socioeconomic and cultural backgrounds seek or desire midwife services, and of what type? • What are the factors that influence that demand? • What information or options would make them more likely to request midwife care?
Theories of Change	<ul style="list-style-type: none"> • What do key actors think is needed to enhance the effectiveness of the efforts to promote midwifery?
POLICY AND NORMATIVE ENVIRONMENT	
Description	<ul style="list-style-type: none"> • What policies, norms and practices (federal, state and health district levels) currently influence access to a midwifery model of care? <ul style="list-style-type: none"> ➤ What aspects of the policy and normative environment support midwifery practice? ➤ What policies, norms or practices hinder full implementation of the midwifery model? ➤ What is missing?
Perceptions	<ul style="list-style-type: none"> • What knowledge, attitudes or perceptions do policy and decision-makers have about different forms of midwifery?

<p>Needs</p> <p>Theories of Change</p>	<ul style="list-style-type: none"> • What factors (e.g. data, research, assumptions, prejudice) influence these perceptions? • What data or research is needed to influence decision-makers to be more supportive of a midwifery model of care? • What do key actors think is needed to create a more facilitating policy and normative environment?
EDUCATION, ACCREDITATION AND CERTIFICATION	
<p>Description</p> <p>Availability</p> <p>Quality</p> <p>Needs</p> <p>Theories of Change</p>	<ul style="list-style-type: none"> • What training/education models and schools exist in Mexico? <ul style="list-style-type: none"> ➤ How are knowledge and skills taught in each? ➤ What is the make-up of teaching staff across different training models/schools (training, gender, ethnicity, work load, etc.)? ➤ What is the make-up of attending students across different training models/schools? ➤ What are financial, recruitment, completion, and enrollment structures? • What procedures or approaches exist for accreditation of training schools or programs? <ul style="list-style-type: none"> ➤ What are the steps in accreditation of programs? ➤ Which of these steps are regularly fulfilled? • What procedures or approaches exist for certification of midwives? <ul style="list-style-type: none"> ➤ What are the steps in certification of midwives? ➤ Which of these steps are regularly fulfilled? • What continuing education pathways exist? <ul style="list-style-type: none"> • What is the current training capacity and ability to meet the need for midwives (staff, infrastructure, etc.)? <ul style="list-style-type: none"> • How many and which of the ICM-WHO standards for midwifery knowledge and skills does each school or program meet? <ul style="list-style-type: none"> • What is needed to expand training capacity in the future (space, recruitment, etc.)? • What do training programs need in order to meet the criteria they don't meet? • What is needed to expand or improve accreditation and certification processes? • What continuing education pathways are needed? <ul style="list-style-type: none"> • What do key actors think is needed to expand high quality training, accreditation and certification?

EMPLOYMENT AND INTERFACE	
Description	<ul style="list-style-type: none"> • How many and what kinds of midwives are presently employed or interfacing with the health system, and in what settings? • What are their employment conditions (e.g. salary, benefits, contracts, structure of medical staff) and in what kinds of activities do different types of midwives engage? • How do traditional midwives interface with the health system?
Quality of interaction	<ul style="list-style-type: none"> • What is the quality of the interaction between medical personnel and various kinds of midwives? <ul style="list-style-type: none"> ➤ How do the interactions differ between various kinds of medical personnel and various kinds of midwives?
Needs	<ul style="list-style-type: none"> • What obstacles or challenges exist to high quality insertion and interface between midwives and the medical system? How can they be overcome?
Potential for expansion	<ul style="list-style-type: none"> • What factors lead to successful insertion and interface? • How could successful insertion and interface be expanded?
Theories of change	<ul style="list-style-type: none"> • What do key actors think is needed to ensure sufficient high quality insertion and interfacing of midwives and health care services?
QUALITY OF MATERNAL / NEONATAL CARE	
Description	<ul style="list-style-type: none"> • To what extent does the bio-medical model of care meet WHO standards of obstetric care? • To what extent does the bio-medical model of care meet women's needs? • What costs (for women and the health system) are associated with each option?
Quality of standards of care	<ul style="list-style-type: none"> • What is the quality of the continuum of care provided by different kinds of midwives and medical personnel? • What are the obstacles to higher quality of care?
MATERNAL AND NEONATAL HEALTH OUTCOMES	
Comparative outcomes	<ul style="list-style-type: none"> • How do maternal and neonatal health outcomes vary among different models of care that include midwifery and medical-based options? Outcomes include: numbers of cesareans/total births, neonatal mortality and morbidity (asphyxia, etc.) maternal mortality and morbidity (pre-eclampsia/eclampsia, hemorrhage, sepsis, dystocia), etc.

TABLE 2: ACTORS INTERVIEWED⁴⁸

State	Total	Federal Official	State Official	Hospital Officials	Doctors	Nurses ⁴⁹	Midwives	Education Program Directors	Researchers, Advocates & Organizations	Health Promoters	Multilateral Agency
Oaxaca	9		5		1			2	1		
Chiapas	15		3	3	1		5	1	2		
Colima	1						1				
Guanajuato	28		2	2	9		11	3	1		
Guerrero	31		6	6	5		9	3		2	
Mexico City	61	14	1	3	9		15	6	11		2
Mexico State	28		3	3	6	2	13	1			
Michoacán	1								1		
Morelos	9		4	1			1	1	2		
Puebla	12		1	4	3		4				
Tlaxcala	23		8	4	6		5				
Veracruz	13			4	6	1	2				
Totals	231	14	33	30	46	3	66	17	18	2	2

Surveys and Group interviews	
Students	69
Graduates	4
Women Service Users	137
	210

⁴⁸ While many actors have more than one role or position in the field, these categories reflect the main one that determined the primary data collection instrument that was applied.

⁴⁹ The category “nurses” refers only to those nurses who do not deliver babies, while “midwives” includes all those who deliver babies, including nurses.

TABLE 3: EVIDENCE-BASED PRACTICES IN MEXICAN NORMATIVE DOCUMENTS

<p>NOM-007-SSA2-2016 Attention to Women and Newborns during Pregnancy, Birth and Puerperium, DOF 07-04-2016</p>	<p>Clinical Practice Guide: Attention and Management of Low Risk Birth, Master Catalogue of Clinical Practice Guides: IMSS-052-08 (2014)</p>	<p>Integration Guide: Model of Attention to Women in Pregnancy, Birth and Puerperal with Focus on Humanized Care, Interculturalism and Safety (MTyDI)</p>	<p>Program for Specific Action for Maternal and Perinatal Health (PAE-SMP) 2013-2018 (CNEGySR)</p>	
<p><i>Establishes mandatory standards applicable to all health personnel in public, private and social sectors</i></p>	<p><i>Guidelines based in scientific evidence to inform clinical and management decision making; recognized by the National Health System but not mandatory or enforced</i></p>	<p><i>A model grounded in WHO recommendations, scientific evidence, human rights and the Mexican normative framework, intended to inform practice throughout the health system; not mandatory</i></p>	<p><i>The Health Ministry's principle instrument of national policy on maternal and perinatal health</i></p>	
<p>Evidence-based Practices</p>				
<p>Continuous accompaniment of woman by person of her choice</p>		<p>Procure continual accompaniment during the entire process of labor and birth in accordance with the conditions, be it hospital personnel (including those in training), non-hospital professionals and a family</p>	<p>Respect the woman's decision about who will accompany her in birth (p. 26). Encourage the presence of a person that the woman chooses to accompany her during labor and birth... this will</p>	

		member if at all possible. (p 23)	provide security, lessen the period of labor and increase satisfaction. (p. 71)	
Freedom to walk during labor	5.5.5. Promote walking alternated with bed rest... to improve labor... provided there is no medical counter indication.	Walking during the first stage of labor (active phase) reduces the duration of labor and does not appear to be associated with adverse effects in the mother or the newborn. (p. 9)	Walking and use of various positions will facilitate the process... use cloth shoes to prevent woman's feet from getting cold... always under the attentive watch of the responsible person. (p. 73)	
Ability to select positions	5.1.12. The woman should have the option of giving birth in a vertical position, provided trained personnel and sufficient infrastructure is available for that purpose.	It is recommended that during birth, women adopt the position that they find most comfortable provided there is no medical counter indication (p. 9)A vertical position can be appropriate when requested by the patient... Because not all units have the required infrastructure, it is important to promote adaptation and offer the option of vertical birth in a gradual manner (p. 12)	Explain to the woman the different positions she can choose during labor and birth, and how to use (tables and obstetric benches) (p. 72)	

Immediate skin-to-skin contact	5.6.1.3 Initiate lactation on demand within the first 30 minutes of birth when the health conditions of the mother and newborn allow.	Early skin-to-skin contact between mother and healthy newborns is recommended... given that it stabilizes the cardio-respiratory function and increases glucose in newborns (p. 16)	Provide immediate attention to the newborn, ensuring immediate skin-to-skin contact...putting the newborn on the chest or abdomen of the mother... (p. 76)	
Delayed cutting of umbilical cord	5.5.16 The umbilical cord should be cut 30 to 60 seconds after birth...	It is recommended the delayed cutting of the umbilical cord ... (1-3 minutes after birth) or when the pulse has stopped (p. 13)	Do not rush to cut the umbilical cord... wait 1-3 minutes until the pulse has stopped, or until the breathing has normalized, while the baby is with its mother (p. 77)	
Non-routine use of IV		The routine use of IV solutions is not recommended during labor in low risk patients given the lack of strong evidence to show that it is beneficial. (p. 6)	Avoid use of routine and mandatory IV to enable the woman to move freely. Apply the IV only when risk factors are identified (p. 73)	
Non use of Oxytocin during labor		In cases of normal birth... avoid unnecessary interventions (unnecessary C-section, use of oxytocin...), if there is no medical indication (p. 5)	The use of synthetic oxytocin and epidural inhibit the production of natural oxytocin.... it has been shown that immediate lactation produces oxytocin and	

			promotes the delivery of the placenta (p. 51)	
Non-routine rupture of membranes	5.5.7 Induction of labor and artificial rupture of membranes should be used according to physical recommendation...	Artificial amniotomy should not be performed routinely (p. 11)	Induction of labor should only be performed in case of potential complications (p. 72)	
No pubic shaving	5.5.9 Public shaving... should not be mandatory, except in cases of physician recommendation.	Avoid pubic shaving given that it has no benefit and is shown to cause irritation.... (p.7)	Pubic shaving... will be done only under medical indication in preparation for surgery and not in a routine manner... (p. 72)	
Non-use of enema	5.5.9 Application of enema...should not be mandatory, except in cases of physician recommendation.	Do not use enema in a routine manner during birth.... It should only be used by medical indication and informing the patient (p. 7)	The application of enemas will be done only under medical indication in preparation for surgery and not in a routine manner... (p. 72)	
Non-routine episiotomy, favoring other forms of perineal preparation	5.5.9 Episiotomy should be done selectively based on clinical evaluation.	The use of hot compresses and perineal massage is recommended during the second period of labor, given that it reduces the risk of third and fourth degree tears, and the frequency of use of episiotomy. (p. 12)	Evaluate the perineal and vagina to determine the need for episiotomy instead of using it routinely. (p 76)	

Non routine exam of uterine cavity without anesthetic	5.5.18 Manual review of the uterine cavity or with an instrument will not be performed routinely...	Clinical studies have shown no difference in complication levels of patients with or without review of cavity, thus it should not be done in a routine manner... (p. 15)	... should only be performed when necessary if there are signs of retention of placenta, always under anesthesia and never routinely (p. 78)	
Midwives recognized	5.1.11 Full term low-risk births can be attended by obstetric nurses, technical midwives and trained traditional midwives .	Potential users (of GPC): General physician, gynecologist and obstetrician, urgent care personnel, nurses, midwives and health personnel in training... (p. 10 Evidence and Recommendations)	These obstetric competencies are applicable to personnel who attend birth , including physicians, nurses or midwives (p. 65)	<i>(Does not mention midwives)</i>

TABLE 4: EDUCATION: SCHOOLS AND PROGRAMS, 2015

# of programs	Program Models	Students	Births required	Accreditation
4	Autonomous (freelance)	26	40-95	Not applicable
2	Technical midwife	80	80	RVOE ⁵⁰
1	Obstetric nurse (LEO)	150	100	RVOE
1	Reproductive Health and Midwifery	21	100	State RVOE ⁵¹
3	Perinatal specialist nurse (EEP)	40	60	RVOE
11		317		

⁵⁰ Registration of Official Validation of Studies

⁵¹ Federal RVOE pending. Program just opened in 2015.

TABLE 5: PROGRAM STABILITY

KEY:	0	1
number of students	< 20 students	> 21, the median
fiscal stability	Year-to-year budget	Greater than 1 year budget
accreditation	None	RVOE
property	Borrowed or year-to-year	Own property or stable tenure > 5 years
equipment	None provided by program	Computers and Internet for students

	INSTITUTION	=SUM variables (max 5)	N enrolled 2015 (median = 21)	Fiscal	Accreditation	Property	Equipment
Freelance	Freelance 1	1	0.5	0	0	0.5	0
	Freelance 2	1	0.5	0	0	0.5	0
	Freelance 3	0.5	0.5	0	0	0	0
	Freelance 4	0.5	0.5	0	0	0	0
Technical	Technical 1	3.5	1	0.5	1	0	1
	Technical 2	4.5	1	0.5	1	1	1
Obstetric Nurse & Reproductive health	Nursing 1	3.5	1	0.5	1	1	0
	Nursing 2	5	1	1	1	1	1
Perinatal Specialist	Perinatal 1	3.5	0.5	1	1	1	0

TABLE 6: EVIDENCE-BASED PRACTICES TAUGHT BY MODEL⁵²

	Autonomous (4)	Technical (2)	Obstetric and Reproductive Health (2)	Perinatal Specialist (2 of 3)⁵³
	<i>4 programs</i>	<i>2 programs</i>	<i>2 programs</i>	<i>2 of 3</i>
PRACTICES PROMOTED				
Choice of person to accompany	4	2	2	2
Freedom to walk and move about	4	2	2	2
Consumption of liquids	4	2	2	2
Light food allowed	4	2	2	2
Immediate skin-to-skin contact	4	2	2	1
Respect for customs	4	2	2	2
Woman decides in what position	4	2	1	2
Delayed cutting of umbilical cord	4	2	1	2
Woman uses her own clothes	4	2	1	1
Woman chooses position	4	1	1	1

PRACTICES TO AVOID				
Routine or Prophylactic use of antibiotics	0	0	0	0
Enema	0	0	0	0
Routine episiotomy	0	0	0	0
Kristeller maneuver	0	0	0	0
Pubic shaving	0	0	0	0
Routine external rupture of membranes	0	0	0	0
Manual exploration of uterine cavity without anesthetic	0	0	0	1
Routine use of IV	0	0	2	1
Nasal aspiration of newborn	0	0	1	0
Use of oxytocin during labor	0	0	1	1

⁵² This list of interventions promoted and avoided was developed from (Sachse, M., P. Sesia, et al. 2012), originally developed from (OMS, 1985) and reviewed in (Enkin et al., 1989; OMS, 1996; Chalmers et al., 2001; and WHO, 2011).

⁵³ See note 22.

TABLE 7: SITES THAT EMPLOY NURSES

Sites that Employ Nurse Midwives					
Name of Institution / State	Type of Institution	General Nurses	Obstetric Nurses	Perinatal Specialist Nurses	Students (Social Service)
1. Atlacomulco,* State of Mexico	Primary Level—Public—Specialized Maternity Clinic	6	14	6	0
2. Cuautitlán,* State of Mexico	Primary Level Public—Specialized Maternity Clinic	0	27	16	0
3. CIMIgen,* Mexico City	Intermediate level Private Maternity Clinic	0	25	3	5
4. Sta Catarina,* Mexico City	Primary level Public Specialized Clinic within Primary Care Health Center	2	13	4	13
5. State of Tlaxcala	12 primary level Health Centers, 2 Basic Community Hospitals, all public	0	0	15	0
6. Teocelo,* Veracruz	Intermediate level Public Community Hospital	2	0	3	0
7. Tlahuac, Mexico City	Secondary level Public General Hospital	0	0	2	0

Sites that Employ Technical Midwives						
Name of Institution	Type of Institution	General nurses	Obstetric Nurses	Technical midwives	Traditional midwives	Students (Social Service)
8. San Juan Chamula,* Chiapas	Public Specialized Maternity Clinic	4	2	4	1	2
9. CASA,* Guanajuato	Private Maternity Hospital	0	0	8	1	0
10. Tlapa,* Guerrero	Public General Hospital	0	0	4	0	0
11. San Luis de la Paz, Guanajuato	Public Maternity Hospital	0	0	0	0	1
12. San Felipe,* Guanajuato	Public Basic Community Hospital	0	0	0	0	3
13. Cuetzalan, Puebla	Public General Hospital	0	0	1	26	0
14. San Martin Texmelucan, Puebla	Public Integral Community Hospital	0	0	1	0	0
15. Hospital Regional Univ., Colima	Public Teaching Hospital	0	0	1	0	0

Totals	General Nurses	Obstetric Nurses	Perinatal Nurses	Technical Midwives	Traditional midwives	Students in Social Service
	14	81	49	19	1	24 =18 nurses + 6 technical midwives

* Institutionalized midwifery programs.

TABLE 8: DESCRIPTION OF OBSTETRIC ACTIVITY BY SITE*(Statistics Reported for Jan-Sept 2015 unless otherwise indicated)*

Institution	Referral system	# Pregnant women on roster	Total births, (on-site and referred)	Total births referred to higher level	Vaginal deliveries on site	Deliveries on site by MWs	% C-sections
1. Atiacomulco , State of Mexico	15 min, ambulance available	255	468	108 (23%)	360 (100%)	315 (87.5%)	NA –no surgery facilities
2. Cuautitlán , State of Mexico	30-40 min, non-functional ambulance	4969	1026	835 (81.3%)	191 (100%)	191 (100%)	NA –no surgery facilities
3. CIMIgen , Mexico City	Complications resolved on site	1333	508	29 (5.5%)	251 (52%)	251 (100%)	228 (47.6%)
4. Sta Catarina , Mexico City	30-40 min	2591	345	169 (49%)	176 (100%)	176 (100%)	NA—no surgery facilities
5. State of Tlaxcala	Variable, must call private rescue ambulance	NA	NA	Almost all referred to 2 nd level facilities	1 or 2 per midwife	1 or 2 per midwife	NA – no surgery facilities
6. Teocelo, Veracruz	30 min.	56	619	250 (40.4%)	290 (46.8%)	111 (38.3%)	79 (12.8%)
7. Tlahuac , Mexico City	Complications resolved on-site	94	3688 (Jan-Dec)	NA	2562 (69.5%)	Not credited to MW	1126 (30.5%)
8. San Juan Chamula , Chiapas	5 min to referral hospital	5	21	15 (71.4%)	6 (28.6%)	6 (100%)	NA – no surgery facilities
9. CASA , Guanajuato	NA	62	228	4 (1.8%)	224 (98.2%)	224 (100%)	NA—no surgery facilities
10. Tlapa , Guerrero	15 min, ambulance available	62	838	NA	657 (78.4%)	385 (58.6%)	181 (21.6%)
11. San Luis de la Paz , Guanajuato		NA		NA	NA	30 (100%)	NA – no surgery facilities
12. San Felipe , Guanajuato	30 min	NA		NA	757	20%	
13. Cuetzalan , Puebla	NA—complications resolved on site	NA	797	NA –	595 (74.6%)		202 (25.3%)
14. San Martin Texmelucan , Puebla	30 min – ambulance available	NA	1386	15 (1%)	879 (63.4%)	150 (17.1%)	492 (47.8%)
15. Hospital Regional Universitario, Colima	NA – complications handled on site	NA		NA		Over 7 yrs MW attended 1254 births of which none is credited to her	

TABLE 9: QUALITY OF RELATIONS WITH REFERRAL INSTITUTIONS

(as reported by midwives interviewed)

Institution	Good relation	Poor or bad	Texts showing negative relations
Primary and intermediate level—maternity clinics	11	12	<p>Several instances were cited in which authorities ignored the nurses' requests for referrals jeopardizing the safety of mother and child "They ask a lot of questions, they don't believe us, they ask us to take the patient with IV line in place". "They don't trust the nurses, but the gynecologist is now helping us make contact with them". "They complain a lot about us. They complain that we always send them the most complicated cases". "They say that we refer everything. But they don't understand that we do not have the capacity here to resolve complications". "The doctors use a lot of sarcasm, so do the nurses. They say 'why are you referring if you aren't doctors'. It is necessary to review the terms, standardize the care. So each person does his or her job, and so they stop bothering us".</p> <p>"They don't have information about the model we use in our Complex...They say I am not specialized, they think its just an ordinary Maternity clinic and they get bothered with us since we can't resolve complications".</p> <p>"The nurses are very impolite, the doctors don't pay attention to us, they ignore us completely. Its necessary to treat them very delicately (with kid gloves) and try to get along with them." "They don't like each other but they try to take care of the patients. What we disagree on is how to treat the women. They don't treat her like a human being but rather just like another number. Also, first they judge our work and then they receive the patient".</p> <p>"The directors and specialists are particularly closed-minded and don't support us".</p>
Community hospitals	1	8	<p>"Sometimes they say they don't have a gynecologist but they do".</p> <p>"In [the referral hospital] they always are saying that we refer everything and they are not in agreement that we attend deliveries". "But there are problems especially in the area of obstetrics and gynecology. They don't have enough specialists. There are problems of oversaturation." "Because they always question why we ordered the transfer".</p>
General hospitals	2	3	<p>"Despite the fact that we communicate with the doctors, their response is that they don't understand why we refer 'everything' to them".</p>
# of respondents	14	23	

TABLE 10. INDEX OF EVIDENCE-BASED PRACTICES BY TYPE OF INSERTION AND INSTITUTION
10A: INDEX OF EVIDENCE-BASED PRACTICES BY TYPE OF INSERTION

		Type of Insertion	
		Isolated Insertion	Institutionalized Midwifery Program
Index of Evidence-based Practices	13 or 14	2 .18	23 .58
	<13	9 .82	17 .42
Total		11 1.00	40 1.00

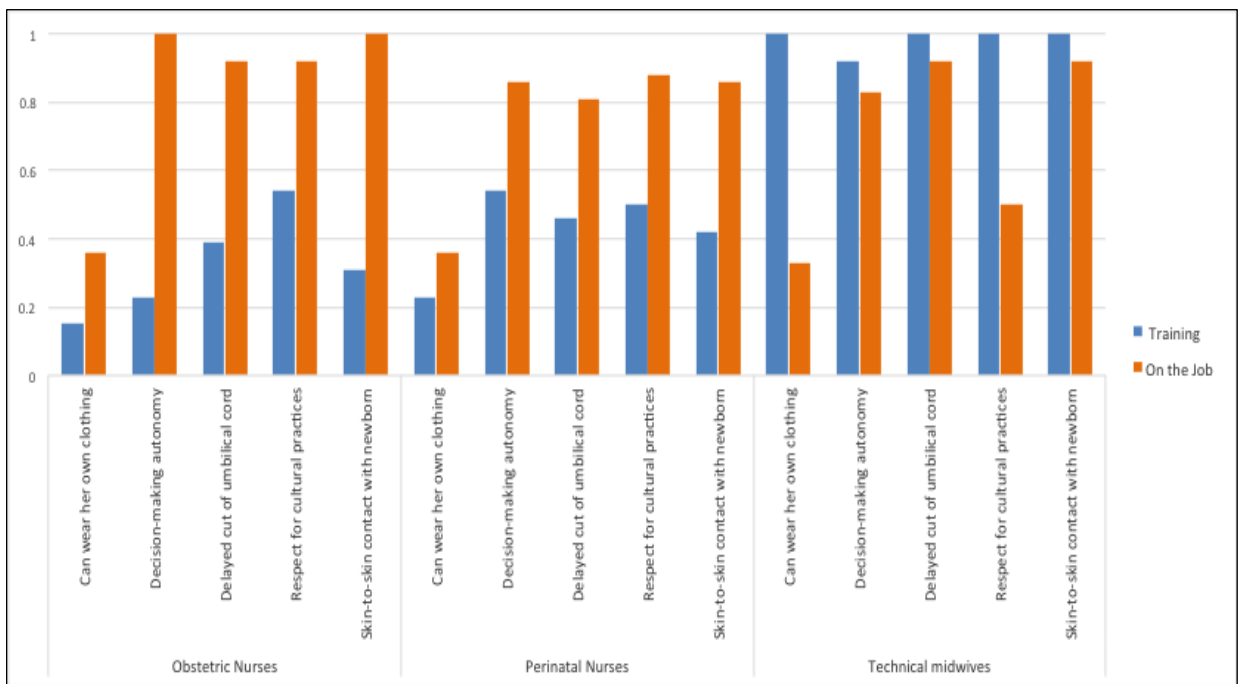
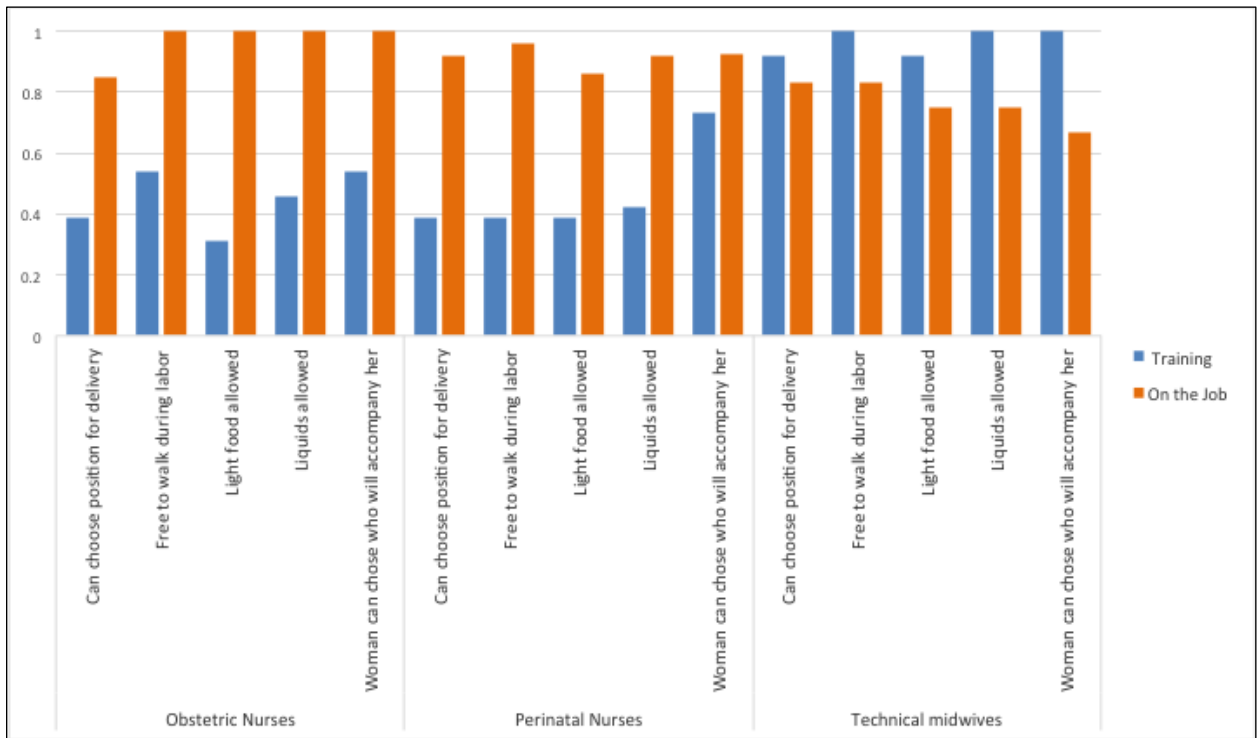
TABLE 10B. INDEX OF EVIDENCE-BASED PRACTICES BY INSTITUTION

	Index of Evidence-based Practices # of midwives who reported <13 vs. 13 or 14 practices		Total #midwives interviewed
	13 or 14	<13	
Health center	1	1	2
Health center	1	1	2
Health center	0	1	1
Health center	0	1	1
Primary level – maternity clinic	3	3	6
Primary level – maternity clinic	7	1	8
Intermediate level – maternity clinic	1	6	7
Primary level – maternity clinic	7	0	7
Primary level – maternity clinic	4	0	4
Community hospital	0	3	3
Community hospital	0	1	1
Community hospital	0	2	2
Community hospital	1	0	1
General hospital	0	2	2
General hospital	0	1	1
General hospital	0	2	2
Maternity hospital	0	1	1
Total	25	26	51

**TABLE 11: PROPORTION OF MIDWIVES WHO USE EVIDENCE-BASED PRACTICES
BY LEVEL OF AUTONOMY**

Evidence-based Practice	High Autonomy	Low Autonomy	Overall
Woman can chose who will accompany her	.95	.69	.88
Free to walk during labor	1.00	.85	.96
Liquids allowed	.97	.69	.90
Light food allowed	1.00	.54	.88
Can choose position for delivery	.92	.77	.88
Skin-to-skin contact with newborn	1.00	.69	.92
Delayed cut of umbilical cord	.95	.61	.86
Respect for cultural practices	.95	.39	.80
Decision-making autonomy for the woman	.97	.69	.90
Avoid routine IV line	.74	.31	.63
Avoid oxytocin during labor	.68	.39	.59
Avoid routine manual exploration of uterine cavity without anesthesia	.79	.46	.71
Avoid routine use of antibiotics	.76	.77	.77
Avoid routine neonatal aspiration	.50	0.00	.38

FIGURE 1: EVIDENCE-BASED PRACTICES TAUGHT VS. USED ON-THE-JOB



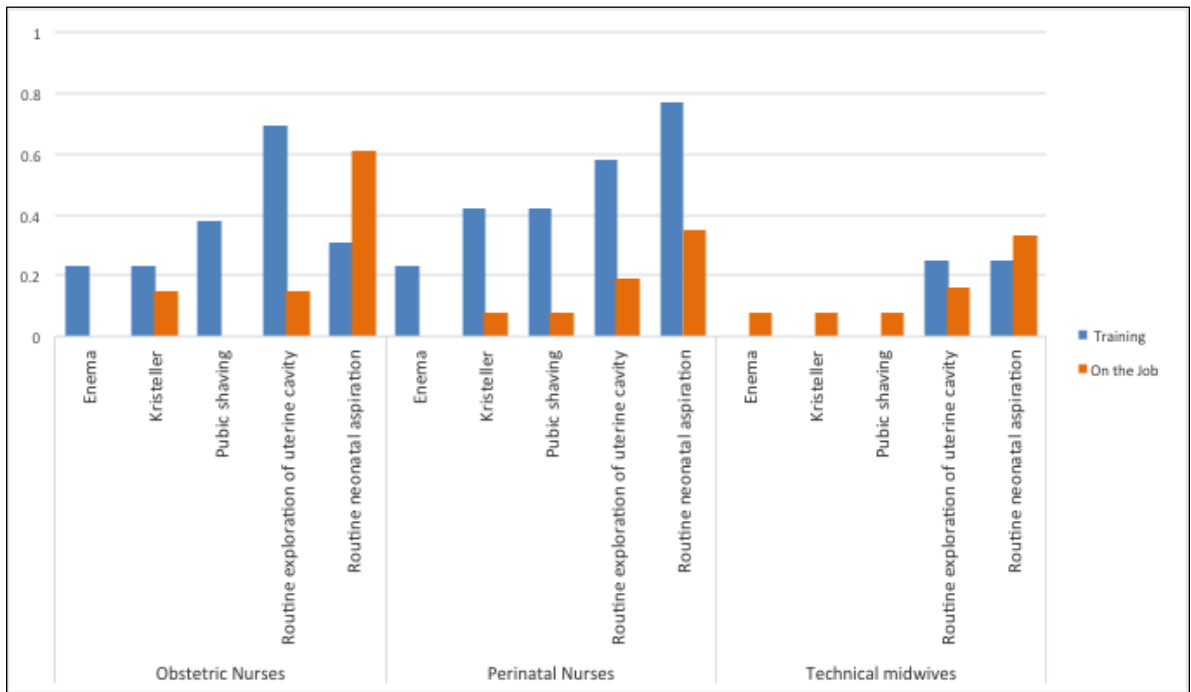
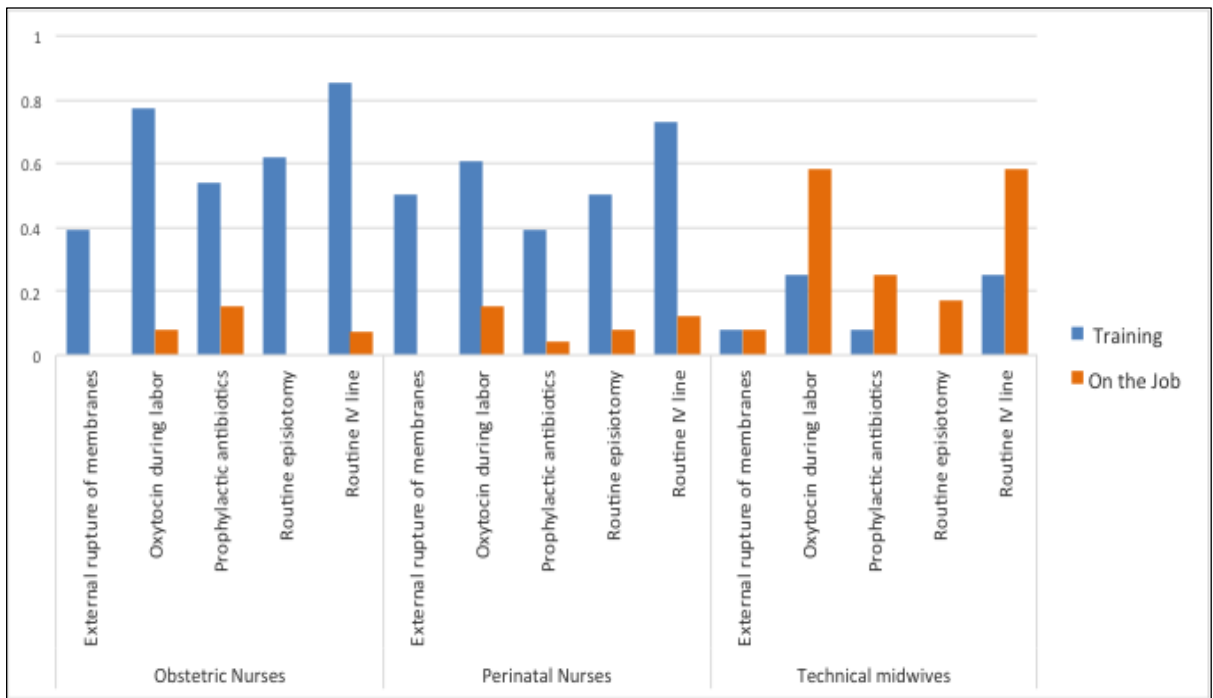


TABLE 12: EMPLOYMENT CONDITIONS IN PUBLIC INSTITUTIONS

(Based on statistical data provided by each facility)

			Perinatal Nurses	Obstetric nurses	General Nurses	Technical midwives	Totals
Job Security	Base	#	30	16	6	1	52
		%	65%	29%	75%	14%	45%
	Contract	#		13	2		15
		%		23%	25%		13%
	Short-term contract	#		27		5	32
		%		48%		72%	28%
	Contract pending or absent	#	16			1	17
		%	35%			14%	15%
	Total	#	46	56	8	7	116
		%	100%	100%	100%	100%	100%
Job Category by code	Nurse specialist	#	1				1
		%	2%				1%
	General nurse A	#	23	27	8	1	59
		%	50%	93%	57%	10%	60%
	General nurse C	#	6	2	2	0	10
		%	13%	7%	14%		10%
	General nurse	#	16		4		20
		%	35%		29%		20%
	Technical Midwife	#				8	8
		%				80%	8%
	Admin assist or other	#				1	1
		%				10%	1%
	Total	#	46	29	14	10	99
		%	100%	100%	100%	100%	100%
Benefits	None or pending	#	16	13	2	9	40
		%	36%	24%	20%	33%	30%
	Incomplete	#		27		17	44
		%		50%		63%	33%
	Complete	#	28	14	8	1	51
		%	64%	26%	80%	4%	37%
Total		44	54	10	27	135	
		100	100	100	100	100	

TABLE 13: MEDICAL INSTITUTIONS FOR QUALITY OF CARE DATA

Name of the medical institution	Location	Level of care	Sector	Surveys with providers	Surveys with women users	Check-lists
Community Clinic Santa Catarina	Mexico City	Primary	Public	8	19	YES
CIMIGen Private Maternity Clinic	Mexico City	Intermediate	Private	7	19	YES
Tláhuac General Hospital	Mexico City	Secondary	Public	7	—*	No
San Juan Chamula Specialized Maternity Clinic	Chiapas	Primary	Public	1	—**	YES
Atlacomulco Specialized Maternity Clinic	State of Mexico	Primary	Public	8	20	YES
Cuautitlán Specialized Maternity Clinic	State of Mexico	Primary	Public	4	9	YES
José Vicente Villada, Cuautitlán General Hospital	State of Mexico	Secondary	Public	4	5	YES
Private Maternity Hospital CASA	Guanajuato	Primary	Private	7	12	YES
San Felipe Basic Community Hospital	Guanajuato	Intermediate	Public	6	22	YES
Dr. Felipe G. Dobarganes General Hospital	Guanajuato	Secondary	Public	5	7	NO
San Luis de la Paz Maternity Hospital	Guanajuato	Secondary	Public	1	—**	NO
Tlapa de Comonfort General Hospital	Guerrero	Secondary	Public	5	12	YES
San Martín Texmelucan Integral Community Hospital	Puebla	Intermediate	Public	2	4	YES
Teocelo Community Hospital	Veracruz	Intermediate	Public	5	8	YES
TOTAL				70	137***	

*We didn't apply the users' survey for lack of time.

**There were too few births attended by midwives to apply the users' survey.

***Ten women gave birth through Cesareans. They were included for prenatal care but excluded for obstetric and postpartum care.

TABLE 14: GENERAL CHARACTERISTICS OF SERVICE PROVIDERS*Source: Providers' Survey—Results: General Characteristics of Providers*

Characteristics	Physicians				Midwives			
	Ob/Gyns	Residents	MDs	<i>Pasante</i> ⁵⁴	Nurse Midwives (LEO)	Perinatal Specialist Nurse (EEP)	Technical Midwife	General Nurse
Women	6	0	5	4	5	13	17	2
Men	11	1	3	0	0	3	0	0
Identifies as of indigenous origin	0	0	1	0	2	1	7	0
Speaker of indigenous language	0	0	0	0	1	1	4	0
Works at primary care level	6	0	1	0	3	10	8	0
Works in intermediate level	1	0	6	0	2	5	4	2
Works in secondary level	10	1	1	4	0	1	5	0
Less than 1 year work in profession	1	0	1	4	1	1	3	0
2-3 years work in profession	0	0	1	0	1	5	3	1
4-5 years work in profession	6	1	1	0	2	5	4	0
6-10 years work in profession	2	0	2	0	1	3	4	0
More than 10 years work in profession	8	0	3	0	0	2	2	1
Less than 1 year working at this site	5	0	2	2	2	1	8	0
2-3 years working at this site	6	1	3	0	2	6	6	1
4-5 years working at this site	4	0	1	0	1	4	2	0
6-10 years working at this site	1	0	2	2	0	3	0	1
Over 10 years working at this site	1	0	0	0	0	2	0	0
Morning Shift	6	1	3	4	1	8	7	0
Afternoon Shift	4	0	4	0	2	2	3	2
Night Shift	4	0	1	0	1	5	1	0
Variable shift or other	3	0	0	0	1	1	6	0
Health Ministry	17	1	8	4	3	12	10	1
Private Sector	0	0	0	0	2	4	7	1

⁵⁴ A *pasante* is a medical doctor who has completed all course work, except for a final thesis or one year of social service.

TABLE 15: SERVICE PROVIDERS BY EMPLOYER

Source: Providers' Survey—Results: General Characteristics of Providers

Employer	Physicians				Midwives				Total
	Ob/Gyns or Pediatricians	Residents	MDs	<i>Pasantes</i> ⁵⁵	Nurse Midwives (LEO)	Perinatal Specialist (EEP)	Technical Midwife	General Nurse	
CIMIgen Clínica-Hospital, Mexico City	0	0	0	0	2	4	0	1	7
Clínica Comunitaria Santa Catarina, Mexico City	1	0	1	0	2	4	0	0	8
Hospital de la Comunidad de Teocelo, Veracruz	0	0	3	0	0	1	0	1	5
Hospital General de Tlapa de Comonfort, Guerrero	0	0	1	0	0	0	4	0	5
Hospital Materno San Luis de la Paz, Guanajuato	0	0	0	0	0	0	1	0	1
Hospital Básico Comunitario de San Felipe, Guanajuato	1	0	2	0	0	0	3	0	6
Hospital General de Tláhuac, Mexico City	6	0	0	0	0	1	0	0	7
Hospital General Dr. Felipe G. Dobarganes, Guanajuato	3	0	0	2	0	0	0	0	5
Hospital General José Vicente Villada, State of México	1	1	0	2	0	0	0	0	4
Hospital Integral de San Martín Texmelucan, Puebla	0	0	1	0	0	0	1	0	2
Hospital de Maternidad CASA, Guanajuato	0	0	0	0	0	0	7	0	7
UNEME Maternidad de Atlacomulco, State of México	2	0	0	0	1	5	0	0	8
Maternidad de San Juan Chamula, Chiapas	0	0	0	0	0	0	1	0	1
UNEME Maternidad Cuautitlán, State of México	3	0	0	0	0	1	0	0	4
Total	17	1	8	4	5	16	17	2	70

⁵⁵ A *pasante* is a medical doctor who has completed all course work, except for a final thesis or one year of social service.

TABLE 16: SOME CHARACTERISTICS OF WOMEN SERVICE USERS

Source: User Survey—Results: General Characteristics of Women Users

Median age: 25 years

39% with 7 to 9 years of school

28% with high school education

8% speaks an Indigenous language

88% with *Seguro Popular* coverage

All but 3 women received extensive prenatal care, with a mean of over 6 prenatal visits each.

47% were primiparous

20% had a second child

93% gave birth vaginally

Of those who gave birth vaginally, 8% experienced some obstetric emergency and 9% had their babies experiencing some neonatal complication.

81% gave birth in public health establishments

TABLE 17: OBSTETRIC CARE PRACTICES—PHYSICIANS & MIDWIVES

Source: Providers' Survey—Results: Care during Labor and Delivery

Evidence-based Practices	Physicians		Midwives	
	#	Proportion	#	Proportion
Woman can chose who accompanies her	11	.37	33	.83
Avoid routine IV line*	8	.27	32	.80
Periodic blood pressure check	30	1.00	40	1.00
Periodic fetal monitoring during labor	30	1.00	40	1.00
Liquids allowed	18	.60	38	.95
Avoid pubic shaving	29	.97	38	.95
Avoid enema	30	1.00	39	.98
Woman free to walk during labor	19	.63	38	.95
Avoid oxytocin during labor	24	.80	37	.93
Avoid breaking membrane	23	.77	39	.98
Woman decides birthing position	10	.33	31	.78
Lithotomy birth position preferred by provider**	22	.73	9	.23
Avoid routine episiotomy	22	.73	38	.95
Use of analgesia for episiotomy	4	.50	2	1.00
Avoid Kristeller maneuver	19	.63	11	.90
Avoid routine cleaning of baby's secretions*	10	.33	28	.70
Immediate mother-baby contact*	17	.57	38	.95
Encourage immediate breast-feeding*	24	.80	39	.98
Delay cutting cord*	14	.47	38	.95
Maintain newborn's body temperature	29	.97	39	.98
Active management of 3rd stage of labor (oxytocin before expulsion placenta)	24	.80	29	.73
Check placenta for completeness	30	1.00	40	1.00
Avoid manual revision of uterus	16	.53	33	.83
Use of anesthesia/analgesia in uterine revision	1	.07	1	.14

*Differences are statistically significant with a $p \leq 0.05$.

**Negative, non-evidence based practice. The difference found is significant statistically with a $p \leq 0.01$.

TABLE 18: OBSTETRIC CARE PRACTICES—PHYSICIANS & MIDWIVES BY TYPE**Source: Providers' Survey—Results: Care during Labor and Delivery*

Evidence-based Practices	Physicians		Nurse Midwives		Technical Midwives	
	#	Proportion	#	Proportion	#	Proportion
Woman can choose who will continually accompany her	11	.37	22	.96	11	.65
Avoid routine IV line	8	.27	21	.91	11	.65
Periodic blood pressure check	30	1.00	23	1.00	17	1.00
Periodic fetal monitoring during labor	30	1.00	23	1.00	17	1.00
Liquids allowed	18	.60	23	1.00	15	.88
Avoid pubic shaving	29	.97	22	.96	16	.94
Avoid enema	30	1.00	22	.96	17	1.00
Woman free to walk during labor	19	.63	23	1.00	15	.88
Avoid routine oxytocin during labor	24	.80	21	.91	16	.94
Avoid breaking membrane	23	.77	22	.96	17	1.00
Woman decides birthing position	10	.33	20	.87	11	.65
Lithotomy birth position preferred**	22	.73	6	.26	3	.18
Avoid routine episiotomy	22	.73	22	.96	16	.94
Use of analgesia for episiotomy	4	.50	4	1.00	1	1.00
Avoid Kristeller maneuver	19	.63	21	.91	15	.88
Avoid routine cleaning of baby's secretions	10	.33	17	.74	11	.65
Immediate mother-baby contact	17	.57	23	1.00	15	.88
Encourage immediate breast-feeding	24	.80	23	1.00	16	.94
Delay cutting cord	14	.47	22	.96	16	.94
Maintain newborn body temperature	29	.97	23	1.00	16	.94
Active management of 3rd stage of labor (oxytocin before expulsion placenta)	24	.80	21	.91	8	.47
Check placenta for completeness	30	1.00	23	1.00	17	1.00
Avoid manual revision of uterus	16	.53	18	.78	15	.88
Use of anesthesia/analgesia in uterine revision	1	.7	0	.0	1	.50

*No statistical significance test was performed because numbers within comparison groups were too small.

**Negative, non-evidence based practice.

TABLE 19: PROPORTION OF PHYSICIANS & MIDWIVES WHO USED EVIDENCE-BASED PRACTICES DURING LABOR AND DELIVERY

Source: Providers' Survey—Results: Care during Labor and Delivery

		Physicians	Midwives	Total
Compliance Index (.90 or more=20/23 evidence-based practices)	.90 or more	7	28	35
		.23*	.70*	.50
	<.90	23	12	35
		.77	.30	.50
Total		30	40	70
		1.00	1.00	1.00

* Differences are statistically significant with a $p \leq 0.05$.

TABLE 20: PROPORTION OF PHYSICIANS & MIDWIVES BY TYPE WHO USED EVIDENCE-BASED PRACTICES DURING LABOR AND DELIVERY*

Source: Providers' Survey—Results: Care during Labor and Delivery

		Physicians	Nurse midwives	Technical Midwives	Total
Compliance Index (.90 or more= 20/23 evidence-based practices)	.90 or more	7	18	10	35
		.23	.78	.59	.50
	<.90	23	5	7	35
		.77	.22	.41	.50
Total		30	23	17	70
		1.00	1.00	1.00	1.00

*No statistical significance test was performed because numbers within comparison groups were too small.

TABLE 21: OBSTETRIC CARE RECEIVED—PHYSICIANS & MIDWIVES
Practices Reported by Women by Type of Service Provider Who Attended her Birth

Source: Users' Survey—Results: Care Received during Labor and Delivery

Evidence-based Practices	Attended by physicians		Attended by midwives	
	# women	proportion of women*	# women	proportion of women*
Woman can choose who will accompany her**	14	.33	58	.78
Avoid routine IV line**	4	.09	40	.54
Liquids allowed**	9	.21	45	.61
Periodic fetal monitoring during labor	37	.86	70	.95
Avoid pubic shaving	41	.95	70	.95
Avoid application of enema	42	.98	71	.96
Avoid external rupture of membranes	20	.47	42	.57
Free to walk during labor**	18	.42	59	.80
Avoid routine application of oxytocin during labor	16	.37	40	.54
Woman can choose position for delivery**	8	.19	51	.69
Avoid routine episiotomy	21	.49	59	.80
Use of analgesia before episiotomy**	14	.42	18	.67
Avoid Kristeller maneuver	40	.93	65	.88
Avoid routine manual exploration of uterine cavity**	7	.16	36	.49
Use of analgesia/anesthesia during manual exploration of uterine cavity	3	.09	3	.09
Immediate skin-to-skin contact with newborn**	19	.48	56	.82
Able to latch baby onto the breast immediately**	25	.63	59	.87
Immediate encouragement of breastfeeding**	23	.58	54	.80
Delayed cut of umbilical cord*	3	.08	34	.50
Other practices according to Mexican norms				
Family planning method offered after obstetric event and accepted by the woman voluntarily	20	.47	40	.54
Explanations provided about self-care postpartum	23	.54	56	.76
Explanations provided about neonatal care	24	.56	53	.72

* Proportions of total number of women change because of missing answers in some variables.

** Differences are statistically significant with a $p \leq 0.05$.

TABLE 22: OBSTETRIC CARE RECEIVED—PHYSICIANS & MIDWIVES BY TYPE
Practices Reported by Women by Type of Service Provider Who Attended her Birth

Evidence-based Practices	Attended by physicians		Attended by nurse midwives		Attended by technical midwives	
	# women	proportion of women	# women	proportion of women	# women	proportion of women
Woman can choose who will accompany her*	14	.33	42	1.00	16	.50
Avoid routine IV line*	4	.09	34	.81	6	.19
Liquids allowed*	9	.21	32	.76	13	.41
Periodic fetal monitoring during labor	37	.86	39	.93	31	.97
Avoid pubic shaving	41	.95	42	1.00	28	.88
Avoid application of enema	42	.98	42	1.00	29	.91
Avoid external rupture of membranes	20	.47	25	.60	17	.53
Free to walk during labor*	18	.42	36	.86	23	.72
Avoid routine application of oxytocin during labor	16	.37	26	.62	14	.44
Woman can choose position for delivery*	8	.19	34	.81	17	.53
Avoid routine episiotomy	21	.49	35	.83	24	.75
Use of analgesia before episiotomy	14	.42	10	.63	8	.73
Avoid Kristeller maneuver	40	.93	41	.98	24	.75
Avoid routine manual exploration of uterine cavity	7	.16	23	.55	13	.41
Use of analgesia/anesthesia during manual exploration of uterine cavity	3	.07	0	.00	3	.09
Immediate skin-to-skin contact with newborn*	19	.48	36	.97	20	.65
Able to latch baby onto breast immediately	25	.63	32	.87	27	.87
Immediate encouragement of breastfeeding	23	.58	32	.87	27	.87
Delayed cut of umbilical cord	3	.08	19	.51	15	.48
Other practices according to Mexican norms						
Family planning method offered after obstetric event and accepted by the woman voluntarily*	20	.47	22	.52	18	.56
Explanations provided about self-care postpartum*	23	.54	34	.81	22	.69
Explanations provided about neonatal care*	24	.56	32	.76	21	.66

*Differences are statistically significant with a $p \leq 0.05$.

TABLE 23: PROPORTION OF PHYSICIANS & MIDWIVES WHO USED ADEQUATE PRENATAL CARE PRACTICES

Source: Providers' Survey—Results: Prenatal Care

		Physicians	Midwives	Total
Compliance Index (.85 or more=11/13 evidence-based practices)	.85 or more	6	25	31
		.55*	.78*	.72
	< .85	5	7	12
		.46	.22	.28
Total		11	32	43
		1.00	1.00	1.00%

*Differences are not statistically significant.

TABLE 24: PROPORTION OF PHYSICIANS & MIDWIVES BY TYPE WHO USED ADEQUATE PRENATAL CARE PRACTICES*

Source: Providers' Survey—Results: Prenatal Care

		Physicians	Nurse Midwives	Technical Midwives	Total
Compliance Index (.85 or more=11/13 evidence-based practices)	.85 or more	6	15	10	31
		.44	1.00	.83	.72
	< .85	5	5	2	12
		.56	0	.17	.28
Total		11	20	12	43
		1.00	1.00	1.00	1.00

*No statistical significance test was performed because numbers within comparison groups were too small.

TABLE 25: PRENATAL CARE PRACTICES-PHYSICIANS & MIDWIVES

Source: Providers' Survey—Results: Prenatal Care

Prenatal care practices	Physicians		Midwives	
	#	proportion	#	proportion
Prescribes Iron	6	.55	20	.63
Prescribes Folic Acid	6	.55	19	.59
Applies Tetanus Toxoid	4	.36	9	.28
Requests blood tests	6	.55	21	.66
Requests urine analysis	6	.55	16	.50
Requests or performs ultrasound	6	.55	18	.56
Requests VDRL (Syphilis) test	5	.46	16	.50
Requests HIV test	6	.55	16	.50
During consultations:				
Takes blood pressure	6	.55	22	.69
Weighs the pregnant woman	6	.55	22	.69
Measures height of pregnant woman	6	.55	22	.69
Measures uterine growth*	6	.55	23	.72
Measures fetal heart rate*	6	.55	23	.72

*Differences are statistically significant with a $p \leq 0.05$.

TABLE 26: PRENATAL CARE PRACTICES-PHYSICIANS & MIDWIVES BY TYPE*

Source: Providers' Survey—Results: Prenatal Care

Prenatal care practices	Physicians		Nurse Midwives		Technical Midwives	
	#	proportion	#	proportion	#	proportion
Prescribes Iron	6	.55	13	.65	6	.50
Prescribes Folic Acid	6	.55	13	.65	7	.58
Applies Tetanus Toxoid	4	.36	4	.20	5	.42
Requests blood tests	6	.55	13	.65	8	.67
Requests urine analysis	6	.55	9	.45	7	.58
Requests or performs ultrasound	6	.55	11	.55	7	.58
Request VDRL (Syphilis) test	5	.46	10	.50	6	.50
Requests HIV test	6	55%	10	50%	6	50%
During consultations:						
Takes blood pressure	6	55%	14	70%	8	67%
Weighs the pregnant woman	6	55%	14	70%	8	67%
Measures height of pregnant woman	6	55%	14	70%	8	67%
Measures uterine growth	6	55%	15	75%	8	67%
Measures fetal heart rate	6	55%	15	75%	8	67%

*No statistical significance test was performed because numbers within comparison groups were too small

TABLE 27: PRENATAL CARE RECEIVED-PHYSICIANS & MIDWIVES
Practices Reported by Women by Type of Service Provider

Source: Users' Survey—Results: Prenatal Care

Prenatal care practices	Attended by physicians		Attended by midwives	
	# women	proportion of women	# women	proportion of women
Prescribed Iron	80	.86	43	.77
Prescribed Folic Acid	89	.96	48	.86
Requested blood tests	87	.94	51	.91
Requested urine analysis	86	.93	51	.91
Performed/requested ultrasound	87	.94	50	.89
Requested VDRL (Syphilis) test	41	.44	31	.55
Requested HIV test	75	.81	44	.79
During consultations:				
Blood pressure taken	91	.98	56	1.00
Weight registered	91	.98	55	.98
Height registered	90	.97	55	.98
Womb measured	89	.96	56	1.00
Fetal heart beat listened	89	.96	56	1.00
Adjusted the baby*	6	.07	15	.27
Recommended teas*	1	.01	4	.07
Asked how you feel*	57	.61	52	.93

*Differences are statistically significant with a $p \leq 0.05$.

TABLE 28: PRENATAL CARE RECEIVED-PHYSICIANS & MIDWIVES BY TYPES*

Practices Reported by Women by Type of Service Provider

Source: Users' Survey—Results: Prenatal Care

Prenatal care practices	Attended by physicians		Attended by nurse midwives		Attended by technical midwives	
	# women	proportion of women	# women	proportion of women	# women	proportion of women
Prescribed Iron	80	.86	37	.80	5	.63
Prescribed Folic Acid	89	.96	41	.89	5	.63
Requested blood tests	87	.94	45	.98	5	.63
Requested urine analysis	86	.93	45	.98	5	.63
Performed/requested ultrasound	87	.94	43	.94	5	.63
Requested VDRL (Syphilis) test	41	.44	26	.57	4	.50
Requested HIV test*	75	.81	40	.87	3	.38
During consultations:						
Blood pressure taken	91	.98	46	1.00	8	1.00
Weight registered	91	.98	46	1.00	8	1.00
Height registered	90	.97	46	1.00	8	1.00
Womb measured	89	.96	46	1.00	8	1.00
Fetal heart beat listened	89	.96	46	1.00	8	1.00
Adjusted the baby*	6	.07	11	.24	4	.50
Recommended teas*	1	.01	0	.00	3	.43
Asked how you feel*	57	.61	43	.94	8	1.00

*Differences are statistically significant with a $p \leq 0.05$.

**TABLE 29: POSTPARTUM & NEWBORN CARE PRACTICES—
PHYSICIANS & MIDWIVES**

Source: Providers' Survey—Results: Postpartum and Newborn Care

Postpartum care practices	Physicians		Midwives	
	#	<i>proportion</i>	#	<i>proportion</i>
Check bleeding	13	.87	24	1.00
Check size and tone of uterus	14	.93	24	1.00
Monitor heart rate	14	.93	22	.92
Monitor blood pressure	14	.93	24	1.00
Monitor temperature	14	.93	23	.96
Ensure that the woman can urinate	10	.67	14	.58
Ensure that the woman can walk	11	.73	14	.58
Ensure that the woman can tolerate oral intake	11	.73	16	.67
Newborn care practices				
Check color, breathing, movement	4	.27	18	.75
Take temperature	6	.40	18	.75
Measure weight	4	.27	13	.54
Ensure adequate breastfeeding	6	.40	21	.88
Measure length	4	.27	12	.50
Measure cephalic size	3	.20	9	.38
Check umbilical stump*	4	.27	20	.83
Give instructions for woman and newborn care	11	.73	24	1.00

*Differences are statistically significant with a $p \leq 0.05$.

**TABLE 30: POSTPARTUM & NEWBORN CARE PRACTICES—
PHYSICIANS & MIDWIVES BY TYPE***

Source: Providers' Survey—Results: Postpartum and Newborn Care

	Physicians		Nurse Midwives		Technical Midwives	
	#	proportion	#	proportion	#	proportion
Postpartum care practices						
Check bleeding	13	.87	13	1.00	11	1.00
Check size and tone of uterus	14	.93	13	1.00	11	1.00
Monitor heart rate	14	.93	12	.92	10	.91
Monitor blood pressure	14	.93	13	1.00	11	1.00
Monitor temperature	14	.93	12	.92	11	1.00
Ensure that the woman can urinate	10	.67	8	.62	6	.55
Ensure that the woman can walk	11	.73	8	.62	6	.55
Ensure that the woman can tolerate oral intake	11	.73	9	.69	7	.64
Newborn care practices						
Check color, breathing, movement	4	.27	9	.69	9	.82
Take temperature	6	.40	9	.69	9	.82
Measure weight	4	.27	7	.54	6	.55
Ensure adequate breastfeeding	6	.40	10	.77	11	1.00
Measure length	4	.27	8	.62	4	.36
Measure cephalic size	3	.20	6	.46	3	.27
Check umbilical stump	4	.27	12	.92	9	.82
Give instructions for woman and newborn care	11	.73	13	1.00	11	1.00

*No statistical significance test was performed because numbers within comparison groups were too small.

**TABLE 31: PROPORTION OF PHYSICIANS & MIDWIVES WHO USED ADEQUATE PRACTICES
IN POSTPARTUM & NEWBORN CARE**

Source: Providers' Survey—Results: Postpartum and Newborn Care

		Physicians	Midwives	Total
Compliance Index (.80 or more=13/16 evidence-based practices)	.80 or more	4	14	18
		.27*	.5*	.46
	<.80	11	10	21
		.73	.42	.54
Total		15	24	39
		1.00	1.00	1.00

*Differences are statistically significant with a $p \leq 0.05$.

TABLE 32: PROPORTION OF PHYSICIANS & MIDWIVES BY TYPE WHO USED ADEQUATE PRACTICES IN POSTPARTUM & NEWBORN CARE*

Source: Providers' Survey—Results: Postpartum and Newborn Care

		Physicians	Nurse midwives	Technical Midwife	Total
Compliance Index (.80 or more=13/16 evidence-based practices)	.80 or more	4	7	7	18
		.27	.54	.64	.46
	<.80	11	6	4	21
		.73	.46	.36	.54
Total		15	13	11	39
		1.00	1.00	1.00	1.00

*No statistical significance test was performed because numbers within comparison groups were too small.

**TABLE 33: POSTPARTUM AND NEWBORN CARE RECEIVED
—PHYSICIANS & MIDWIVES***

Practices Reported by Women by Type of Service Provider

Source: Users' Survey—Results: Care Received during Postpartum

Postpartum practices	Attended by physicians		Attended by midwives	
	# women	Proportion of women	# women	Proportion of women
Vaginal exploration	1	.50	37	.80
Revision of bleeding	1	1.00	39	.91
External revision to assess reduction in size of uterus	2	1.00	43	.90
In case of perineal tear, revision of wound and sutures	1	1.00	30	.86
Blood pressure monitored	3	1.00	46	.98
Temperature measured	3	1.00	45	.94
Contraceptive method offered	0	.00	27	.61
Newborn care practices				
Revision of general state of health (color, breathing, heart, movements, body temperature)	24	.89	34	.94
Height and weight	25	.96	33	.94
Check umbilical stump	25	1.00	35	1.00
Maintain body heat	13	.59	28	.82
Neonatal screening	25	.89	33	.94

*Differences are not statistically significant

TABLE 34: PRENATAL CARE PRACTICES BY LEVEL OF CARE*Source: Providers' Survey—Results: Prenatal Care*

	Level of Care					
	Primary		Intermediate		Secondary	
Prenatal care practices	#	Proportion	#	Proportion	#	Proportion
Prescribes Iron*	24	.92	8	.89	6	.75
Prescribes Folic Acid*	25	.96	8	.89	6	.75
Tetanus Toxoid*	15	.58	6	.67	1	.12
Requests blood work*	26	1.00	9	1.00	6	.75
Requests urine analysis*	24	.92	6	.67	4	.50
Requests or performs ultrasound*	25	.96	8	.89	5	.62
Requests syphilis test	21	.81	8	.89	4	.50
Requests HIV test*	22	.85	8	.89	3	.37
During consultations:						
Takes blood pressure	24	.92	8	.89	8	1.00
Weighs the pregnant woman	24	.92	8	.89	8	1.00
Measures height of pregnant woman	23	.88	8	.89	8	1.00
Measures uterine growth	25	.96	8	.89	8	1.00
Measures fetal heart rate	25	.96	8	.89	7	.87

*Differences are statistically significant with a $p \leq 0.05$.**TABLE 35: PROPORTION OF SERVICE PROVIDERS WHO USED ADEQUATE PRENATAL PRACTICES BY LEVEL OF CARE***Providers' survey-results: Prenatal care*

		Level of Care			Total
		Primary	Intermediate	Secondary	
Compliance Index (.85 or more=11/13 evidence-based practices)	.85 or more	21	6	4	31
		.81*	.67*	.50*	.72
	< .85	5	3	4	12
		.19	.33	.50	.28
Total		26	9	8	43
		1.00	1.00	1.00	1.00

*Differences are not statistically significant.

TABLE 36: OBSTETRIC CARE PRACTICES BY LEVEL OF CARE*Source: Providers' Survey—Results: Care during Labor and Delivery*

Evidence-based Practices	Level of Care					
	Primary		Intermediate		Secondary	
	#	Proportion	#	Proportion	#	Proportion
Woman can choose who will continually accompany her	28	1.00	16	.80	0	.00
Avoid routine IV line*	27	.96	11	.55	2	.09
Periodic blood pressure check	28	1.00	20	1.00	22	1.00
Periodic fetal monitoring during labor	28	1.00	20	1.00	22	1.00
Liquids allowed*	28	1.00	19	.95	9	.41
Avoid pubic shaving	27	.96	19	.95	21	.96
Avoid enema	27	.96	20	1.00	22	1.00
Woman free to walk during labor*	28	1.00	19	.95	10	.46
Avoid routine oxytocin during labor	26	.93	19	.95	16	.73
Avoid breaking membrane	28	1.00	20	1.00	14	.64
Woman decides birthing position*	27	.96	13	.65	1	.05
Lithotomy birth position preferred by provider**	4	.14	11	.55	16	.73
Avoid routine episiotomy	27	.96	17	.85	16	.73
Use of analgesia for episiotomy	0	.00	2	.67	4	.67
Avoid Kristeller maneuver	28	1.00	16	.80	11	.50
Avoid routine cleaning of baby's secretions	21	.75	10	.50	7	.32
Immediate mother-baby contact	28	1.00	17	.85	10	.46
Encourage immediate breast-feeding	28	1.00	20	1.00	15	.68
Delay cutting cord*	27	.96	17	.85	8	.36
Maintain newborn body temperature	28	1.00	20	1.00	20	.91
Active management of 3rd stage of labor (oxytocin before expulsion placenta)	21	.75	12	.60	20	.91
Check placenta for completeness	28	1.00	20	1.00	22	1.00
Avoid manual revision of uterus*	26	.93	14	.70	9	.41
Use of anesthesia/analgesia in uterine revision	0	.00	0	.00	2	.15

*Differences are statistically significant with a $p \leq 0.05$.**Negative, non-evidence based practice. The difference found is significant statistically with a $p \leq 0.01$

TABLE 37: PROPORTION OF SERVICE PROVIDERS WHO USED EVIDENCE-BASED PRACTICES DURING LABOR AND DELIVERY BY LEVEL OF CARE

Source: Providers' Survey—Results: Care during Labor and Delivery

		Level of Care			Total
		Primary	Intermediate	Secondary	
Compliance Index (.90 or more=20/23 evidence-based practices)	.90 or more	26	9	0	35
		.93*	.45*	.0*	.50
	<.90	2	11	22	35
		.7	.55	1.00	.50
Total		28	20	22	70
		1.00	1.00	1.00	1.00

*Differences are statistically significant with a $p \leq 0.05$.

TABLE 38: OBSTETRIC CARE RECEIVED BY LEVEL OF CARE
Practices Reported by Women by Type of Service Provider Who Attended her Birth

Source: Users' Survey—Results: Care Received during Labor and Delivery

	Attended by x Level of Care					
	Primary		Intermediate		Secondary	
Evidence-based Practices	#	Proportion	#	Proportion	#	Proportion
Woman can choose who will accompany her	47	1.00	15	.47	10	.26
Avoid routine IV line*	33	.70	7	.22	4	.11
Liquids allowed*	36	.77	10	.31	8	.21
Periodic fetal monitoring during labor	45	.96	30	.94	32	.84
Avoid pubic shaving	47	1.00	27	.84	37	.97
Avoid application of enema	47	1.00	29	.91	37	.97
Avoid external rupture of membranes	28	.60	18	.56	16	.42
Free to walk during labor*	44	.94	19	.59	14	.37
Avoid routine application of oxytocin during labor	26	.55	15	.47	15	.40
Woman can choose position for delivery*	38	.81	16	.50	5	.13
Avoid routine episiotomy*	41	.87	20	.63	19	.50
Use of local analgesic before episiotomy	7	.44	11	.65	14	.52
Avoid Kristeller maneuver	45	.96	27	.84	33	.87
Avoid routine manual exploration of uterine cavity*	21	.45	7	.22	15	.40
Use of analgesic/anesthesia during manual exploration of uterine cavity	1	.02	2	.08	3	.14
Immediate skin-to-skin contact with newborn*	40	.98	18	.58	17	.47
Able to latch immediately	35	.85	26	.84	23	.64
Immediate encouragement of breastfeeding	35	.85	18	.58	24	.67
Delayed cut of umbilical cord	20	.49	11	.36	6	.17
Other practices according to Mexican norms						
Family planning method offered after obstetric event & accepted by the woman voluntarily	27	.57	16	.50	17	.45
Explanations provided about self-care postpartum	43	.92	18	.56	18	.47
Explanations provided about neonatal care*	40	.85	19	.59	18	.47

*Differences are statistically significant with a $p \leq 0.05$.

TABLE 39: POSTPARTUM & NEWBORN CARE BY LEVEL OF CARE*Source: Providers' Survey—Results: Postpartum and Newborn Care*

	Level of Care					
	Primary		Intermediate		Secondary	
Postpartum care practices	#	Proportion	#	Proportion	#	Proportion
Check bleeding	24	.92	7	1.00	6	1.00
Check size and tone of uterus	25	.96	7	1.00	6	1.00
Heart rate monitoring	23	.89	7	1.00	6	1.00
Blood pressure monitoring	25	.96	7	1.00	6	1.00
Monitor temperature	24	.92	7	1.00	6	1.00
Ensure that the woman can urinate	15	.58	5	.71	4	.67
Ensure that the woman can walk*	16	.62	5	.71	4	.67
Ensure that the woman can tolerate oral intake*	17	.65	6	.86	4	.67
Newborn care practices						
Check color, breathing, movement	17	.65	5	.71	0	.0
Take temperature	18	.69	6	.86	0	.0
Measure weight*	15	.58	2	.29	0	.0
Ensure adequate breastfeeding*	20	.77	7	1.00	0	.0
Measure length*	13	.50	3	.43	0	.0
Measure cephalic size*	11	.42	1	.14	0	.0
Check umbilical stump	19	.73	5	.71	0	.0
Give instructions for woman and newborn care	26	1.00	7	1.00	6	1.00

*Differences are statistically significant with a $p \leq 0.05$.**TABLE 40: PROPORTION OF SERVICE PROVIDERS WHO USED ADEQUATE POSTPARTUM & NEWBORN CARE BY LEVEL OF CARE***Source: Providers' Survey—Results: Postpartum and Newborn Care*

		Level of Care			Total
		Primary	Intermediate	Secondary	
Compliance Index (.80 or more—13/16 evidence-based practices)	.80 or more	13	5	0	18
		.50*	.71*	.0*	.46
	<.80	13	2	6	21
		.50	.29	1.00	.54
Total		26	7	6	39
		1.00	1.00	1.00	1.00

*Differences are not statistically significant.

**TABLE 41: EMERGENCY OBSTETRIC & NEWBORN CARE (EmONC)—
PHYSICIANS & MIDWIVES**

Source: Providers' Survey—Results: Emergency Obstetric and Newborn Care

Emergency care experience and management	Physicians		Midwives	
	#	Proportion	#	Proportion
<i>Have you diagnosed and cared for pre-eclampsia / eclampsia (YES)*</i>	27/30	.90	19/40	.48
○ Adequate management	8	.30	11	.58
○ Inadequate management	0	.0	1	.5
○ Insufficient data to evaluate management	19	.70	7	.37
Total	27	1.00	19	1.00
<i>Have you diagnosed and managed obstetric hemorrhage (YES)*</i>	26/30	.87	21/40	.53
○ Adequate management	11	.42	10	.48
○ Inadequate management	1	.4	5	.24
○ Insufficient data to evaluate management	14	.54	6	.29
Total	26	1.00	21	1.00
<i>Have you diagnosed or cared for neonatal asphyxia (YES)</i>	6/30	.20	13/40	.33
○ Adequate management	3	.50	10	.77
○ Inadequate management	0	.0	1	.8
○ Insufficient data to evaluate management	3	.50	2	.15
Total	6	1.00	13	1.00

*Differences are statistically significant with a $p \leq 0.05$.

TABLE 42: EmONC KNOWLEDGE*—PHYSICIANS & MIDWIVES**

Source: Providers' Survey—Results: Emergency Obstetric and Newborn Care

Emergency obstetric and newborn care knowledge	Physicians		Midwives	
	#	Proportion	#	Proportion
<i>Knowledge of diagnosis and care of pre-eclampsia/eclampsia</i>				
○ No or incorrect knowledge	1	.50	6	.29
○ Partially adequate knowledge	1	.50	8	.38
○ Adequate knowledge	0	.0	6	.29
○ Insufficient data to evaluate knowledge	0	.0	1	.5
<i>Knowledge of diagnosis and care for obstetric hemorrhage</i>				
○ No or incorrect knowledge	1	.33	6	.32
○ Partially adequate knowledge	1	.33	5	.26
○ Adequate knowledge	1	.33	7	.37
○ Insufficient data to evaluate knowledge	0	.0	1	.5
<i>Knowledge of diagnosis and care for neonatal asphyxia</i>				
○ No or incorrect knowledge	1	.4	6	.22
○ Partially adequate knowledge	2	.8	2	.7
○ Adequate knowledge	2	.8	6	.22
○ Insufficient data to evaluate knowledge	19	.79	13	.48

*We requested information on EmONC knowledge only for those practitioners who reported that they had not experienced an emergency in the 12 months previous to the application of the questionnaire.

**No statistical significance test was performed because of missing data.

TABLE 43: EmONC—PHYSICIANS & MIDWIVES BY TYPE*

Source: Providers' Survey—Results: Emergency Obstetric & Newborn Care

	Physicians		Nurse midwives		Technical midwives	
	#	Proportion	#	Proportion	#	Proportion
Emergency care experience and management						
<i>Have you diagnosed and cared for pre-eclampsia / eclampsia (YES)</i>	27/30	.90	12/23	.52	7/17	.41
Adequate management	8	.30	7	.58	4	.57
Inadequate management	0	.0	0	.0	1	.14
Insufficient data to evaluate management	19	.70	5	.42	2	.29
Total	27	1.00	12	1.00	7	1.00
<i>Have you diagnosed and managed obstetric hemorrhage (YES)</i>	26/30	.87	10/23	.44	11/17	.65
Adequate management	11	.42	5	.50	5	.46
Inadequate management	1	.4	1	.10	4	.36
Insufficient data to evaluate management	14	.54	4	.43	2	.18
Total	26	1.00	10	1.00	11	1.00
<i>Have you diagnosed or cared for neonatal asphyxia (YES)</i>	6/30	.20	9/23	.39	4/17	.24
Adequate management	3	.50	8	.89	2	.50
Inadequate management	0	.0	0	.0	1	.25
Insufficient data to evaluate management	3	.50	1	.11	1	.25
Total	6	1.00	9	1.00	4	1.00

*No statistical significance test was performed because numbers within comparison groups were too small.

TABLE 44: EmONC KNOWLEDGE*—PHYSICIANS & MIDWIVES BY TYPE**

Source: Providers' Survey—Results: Emergency Obstetric and Newborn Care

	Physicians		Nurse Midwives		Technical Midwives	
	#	Proportion	#	Proportion	#	Proportion
Emergency obstetric and newborn care knowledge						
<i>Knowledge of diagnosis and care of pre-eclampsia/eclampsia</i>						
No or incorrect knowledge	1	.50	2	.18	4	.40
Partially adequate knowledge	1	.50	3	.27	5	.50
Adequate knowledge	0	.0	5	.46	1	.10
Insufficient data to evaluate knowledge	0	.0	1	.9	0	.0
<i>Knowledge of diagnosis and care for obstetric hemorrhage</i>						
No or incorrect knowledge	1	.33	4	.31	2	.33
Partially adequate knowledge	1	.33	2	.15	3	.50
Adequate knowledge	1	.33	6	.46	1	.17
Insufficient data to evaluate knowledge	0	.0	1	.11	0	.0
<i>Knowledge of diagnosis and care for neonatal asphyxia</i>						
No or incorrect knowledge	1	.4	1	.7	5	.39
Partially adequate knowledge	2	.8	1	.7	1	.8
Adequate knowledge	2	.8	5	.36	1	.8
Insufficient data to evaluate knowledge	19	.79	7	.50	6	.46

*We requested information on EmONC knowledge only for those practitioners who reported that they had not experienced an emergency in the 12 months previous to the application of the questionnaire.

**No statistical significance test was performed because numbers within comparison groups were too small.

TABLE 45: EmONC BY LEVEL OF CARE

Source: Providers' Survey—Results: Emergency Obstetric and Newborn Care

Emergency care experience and management	Primary		Intermediate		Secondary	
	#	Proportion	#	Proportion	#	Proportion
<i>Have you diagnosed and cared for pre-eclampsia / eclampsia (YES)*</i>	12/28	.43	14/20	.70	20/22	.91
Adequate management	4	.33	10	.71	5	.25
Inadequate management	1	.8	0	.0	0	.0
Insufficient data to evaluate management	7	.58	4	.29	15	.75
Total	12	1.00	14	1.00	20	1.00
<i>Have you diagnosed and managed obstetric hemorrhage (YES)</i>	16/28	.57	13/20	.65	19/22	.86
Adequate management	7	.44	9	.69	5	.26
Inadequate management	4	.25	1	.8	1	.5
Insufficient data to evaluate management	5	.31	3	.23	13	.69
Total	16	1.00	13	1.00	19	1.00
<i>Have you diagnosed or cared for neonatal asphyxia (YES)</i>	11/28	.39	6/20	.30	2/22	.9
Adequate management	7	.64	5	.83	1	.50
Inadequate management	1	.9	0	.0	0	.0
Insufficient data to evaluate management	3	.27	1	.17	1	.50
Total	11	1.00	6	1.00	2	1.00

*Differences are statistically significant with a $p \leq 0.05$.

TABLE 46: EmONC KNOWLEDGE* BY LEVEL OF CARE**

Source: Providers' Survey—Results: Emergency Obstetric and Newborn Care

Emergency obstetric and newborn care knowledge	Primary		Intermediate		Secondary	
	#	Proportion	#	Proportion	#	Proportion
<i>Knowledge of diagnosis and care of pre-eclampsia/eclampsia</i>						
No or incorrect knowledge	5	.31	1	.17	1	1.00
Partially adequate knowledge	7	.44	2	.33	0	
Adequate knowledge	3	.19	3	.50	0	.0
Insufficient data to evaluate knowledge	1	.6	0	0	0	.0
<i>Knowledge of diagnosis and care for obstetric hemorrhage</i>						
No or incorrect knowledge	4	.33	2	.29	1	.33
Partially adequate knowledge	2	.17	2	.29	2	.67
Adequate knowledge	5	.42	3	.43	0	.0
Insufficient data to evaluate knowledge	1	.8	0	.0	0	.0
<i>Knowledge of diagnosis and care for neonatal asphyxia</i>						
No or incorrect knowledge	5	.29	0	.0	2	.10
Partially adequate knowledge	4	.24	0	.0	0	.0
Adequate knowledge	5	.29	3	.21	0	.0
Insufficient data to evaluate knowledge	3	.18	11	.79	18	.90

*We requested information on EmONC knowledge only for those practitioners who reported that they had not experienced an emergency in the 12 months previous to the application of the questionnaire.

**No statistical significance test was performed because of missing data.

TABLE 47: WOMEN'S SATISFACTION—PHYSICIANS & MIDWIVES*Source: Users' Survey—Results on Respectful Treatment and User Satisfaction*

	Attended by Physicians		Attended by Midwives	
	#	Proportion	#	Proportion
Obstetric care				
If I had a question or concern, I got a clear and friendly response*	25	.66	60	.98
I liked the space where my baby was born	43	.81	76	.97
I was treated excellently	21	.38	52	.66
I would give birth with the same person again*	42	.75	77	.98

*Differences are statistically significant with a $p \leq 0.05$.**TABLE 48: WOMEN'S SATISFACTION WITH PHYSICIANS, NURSES, MIDWIVES***Source: Users' Survey—Results on Respectful Treatment and User Satisfaction*

	Attended by Physicians		Attended by Nurse Midwives*		Attended by Technical Midwives*	
	#	Proportion	#	Proportion	#	Proportion
Obstetric care						
If I had a question or concern, I got a clear and friendly response	25	.66	36	1.00	17	1.00
I liked the space where my baby was born	43	.81	36	1.00	32	.94
I was treated excellently**	21	.38	31	.84	19	.56
I would give birth with the same person again.	42	.75	37	1.00	33	.97

*Totals of nurse midwives and technical midwives do not add up to the total of midwives included in previous table, because we excluded women attended by general nurses as well as cases where women and/or researchers could not determine whether an attending midwife was a technical or a nurse midwife.

**Differences are very significant statistically with a $p \leq 0.01$.

TABLE 49: WOMEN'S SATISFACTION BY LEVEL OF CARE*Source: Users' Survey—Results on Respectful Treatment and User Satisfaction*

	Level of Care					
	Primary		Intermediate		Secondary	
Obstetric care	<i>#</i>	<i>Proportion</i>	<i>#</i>	<i>Proportion</i>	<i>#</i>	<i>Proportion</i>
If I had a question or concern, I got a clear and friendly response	47	.96	16	.94	22	.67
I liked the space where my baby was born	50	1.00	36	.95	33	.78
I was treated excellently*	38	.75	23	.59	12	.28
I would give birth with the same person again**	50	.98	36	.95	33	.72

*Differences are statistically significant with a $p \leq 0.05$.

TABLE 50: ADVANTAGES AND DISADVANTAGES OF MIDWIVES*Source: Users' Survey—Results on Respectful Treatment and User Satisfaction*

Advantages of Midwives		Disadvantages of Midwives	
Responses	#	Responses	#
None	2	None	24
Closeness	1	Structural limitations	2
More and better explanation	14	Training limitations	4
Good/Better attention	20	They need specialist back-up in the case of complications	3
Greater presence, support and help	14	They don't give anesthesia	1
Respectful, good treatment—friendly and understanding.	22	Cost (in the private sector)	
	1		
They give you confidence and make you feel better	15	Limited knowledge (lumping technical and traditional midwives).	2
They are patient and wait for the natural timing of the body	10		
Allow accompaniment	8		
A better attention space and more privacy	2		
Total of women respondents (multiple responses)	40		38

TABLE 51: ADVANTAGES AND DISADVANTAGES OF PHYSICIANS*Source: Survey of Service Users—Results on Respectful Treatment and User Satisfaction*

Advantages of Physicians		Disadvantages of Physicians	
Responses	#	Responses	#
None	19	None	8
They know how to care better/They know what they are doing	12	They don't attend you, they leave you alone	6
They treat you well	1	They treat you badly, they get angry, violent, rude, offensive, etc.	14
The physicians can do further studies (labs)	1	Unfavorable practices (Cesareans, no family accompanies her, horizontal position, they break your membranes, a lot of vaginal exams, etc.)	10
Structural advantages – there are pediatricians, better infrastructure, free medicine	2	They feel uncomfortable and don't make you feel confident	3
They can apply anesthesia	2	They don't give you information, they don't talk to you, they don't introduce themselves, and they don't ask permission.	9
There are physicians on hand to attend to emergencies	2	Mechanized attention, short consultations	4
		The hospital is cold and over-saturated.	2
Total of women respondents (multiple responses)	39		39