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Chapter

Quality Care for Mothers and Newborns at Birth in Mexico

Bonifacio Caballero Noguéz, Roberto Aguli Ruíz Rosas and Ernesto Calderon Cisneros

Abstract

Estimates of the United Nations (UN) consider that in the world 2.5 million neonates died in the last year from preventable causes such as prematurity, complications during childbirth, and infections. Some died because the care they received was of poor quality. The most striking is that 1.7 million newborns could be saved by improving access to quality care for all pregnant women in humanitarian settings, especially those considered as low- and middle-income countries by the World Bank. Neonatal mortality can be considered as a sensitive indicator of the well-being of a population, the degree of development of a country, as well as health conditions in the mother's environment and the good quality of prenatal and intrapartum care. This will seek the achievement of the Sustainable Development Goals (SDGs) of the United Nations, through universal health coverage (UHC), by 2030. The medical advances that obstetrics has had around history show the interest and importance for the health sector of all countries in the world, the attention of women, especially during the reproductive stage in which it is located at stake the life and health of the human capital of the future. Today, obstetrics is the health science recognized worldwide because it addresses the health of women during the preconception, conception, prenatal, childbirth, postnatal, and postconception stages, as well as the newborn. Every day more progress is made, not only in the increasingly early diagnosis, but also in the care, attention during the months of gestation, and studies and tests to be carried out to have a greater certainty of what happens inside the uterus-definitely, we are going forward. But the latter is not available to all pregnant women, or in all regions of Mexico, because of the asymmetry in the structure, with imbalance in qualified human resources and technology that detract from this quality of care that is intended. Therefore, we are still reporting preventable maternal deaths and preterm infants, and the interest of this chapter is to show the need, as referred by the World Health Organization (WHO), to improve the quality of care with qualified personnel: obstetricians for women and neonatologists or pediatricians for newborn care.

Keywords: childbirth, birth care, newborn, prematurity, sustainable development goals, Mexico

1. Introduction

"There is no concept of normalcy during labour and childbirth." Because complications that increase morbidity and mortality of the mother-child binomial may occur during the process.

In 2015, the United Nations Organization (UN) established Agenda 2030 for Sustainable Development Goals (SDGs) as an action plan for people, where it highlights the importance of measures to ensure maternal and child health.

Under the SDGs, specifically, SDG 3 sets targets for 2030 to reduce maternal mortality rates below 70 per 100,000 live births and neonatal mortality for all countries to no more than 12 per 1000 live births [1].

Achieving this will require effective strategies and targeted actions, as well as monitoring progress against basic indicators of maternal and child health (MCH). In this regard, one of the key indicators, which is explicitly adopted in the SDGs and the Global Strategy for Women's, Children's and Adolescents' Health 2016–2030, is the proportion of births attended by skilled health personnel [2].

This approach is aimed at preventing the highest number of preventable deaths, including mothers, fetuses, and newborns.

2. Preterm birth is a syndrome

Premature childbirth should be considered a syndrome by the multiple processes that trigger it, some pathological and others still unknown [3].

In essence, both the beginning of term labor and premature delivery share a similar clinical process: increased uterine contractility, cervical dilation, and rupture of the chorioamniotic membranes [3].

However, despite efforts to reduce these risk factors, the rate of preterm births continues to rise.

Intra-amniotic infection has been causally associated with premature delivery [4].

One third of newborns have the history that their mother has, which is an intra-amniotic infection from the association of isolated germs in the amniotic fluid and the similarity of those found in the genital tract. Similarly, bacteria have been found involved in periodontal pathology, suggesting the possibility of hematogenous dissemination and transplacental passage, although the ascending pathway is considered the most frequent route of infection. Since bacteria have been found in the circulation of premature patients, it suggests that there is a systemic inflammatory response (infection/inflammation) [5, 6].

The microbiological diagnosis of an intra-amniotic infection has been based on the use of culture techniques (adequate nutritional and environmental conditions) with the growth of bacteria obtained from the amniotic fluid.

The theory that describes the biofilm process described in 1978 states that bacteria grow in communities called "biofilms," which generally adhere to surfaces, and that most bacteria grow in biofilms enclosed within a matrix, so they differ from their isolated forms observed in Gram staining tests of biological fluids or pure cultures (planktonics, so named for their similar shape to marine plankton) [7].

Biofilms are now recognized as playing an important role in human diseases.

Infections outside the genitourinary area such as periodontitis, otitis media, endocarditis, and many others where there is a device (prosthetic valves or catheters) involve bacterial biofilms [8].

In view of this possibility, molecular microbiological techniques have recently been used to detect microorganisms in the amniotic cavity [9].

On the other hand, about 25% of premature newborns are born as a result of a medical intervention to interrupt pregnancy when complications such as preeclampsia or maternal comorbidity occurs (heart disease and systemic lupus erythematosus, among others) [10].

Approximately 50% of all premature births are due to unknown causes or multifactorial processes that cause the uterus to move from a state of inactivity to one

of active contractions. In other words spontaneous premature delivery of unknown etiology can be initiated in up to half of the cases by multiple causes (gene-gene and gene-environmental interactions, such as smoking cigarettes, short cervix, young maternal age, assisted reproduction technology (overdistension of the uterus caused by multiple pregnancy), socioeconomic and cultural aspects that condition late or nonprenatal care, and previous premature delivery) [11–15].

3. World situation

It is estimated that approximately 140 million births occur annually in the world, in women without risk factors or comorbidity to present complications for both them and their babies, at the beginning and during labor [16].

However, in addition to the possible complications that can occur during labor, there is the problem related to premature delivery that occurs between 5 and 18% of pregnancies and is one of the main causes of morbidity and mortality in the neonatal stage.

Premature newborns are at increased risk of short-term complications attributed to organic immaturity, especially at the central nervous system level with neurodevelopmental disorders such as cerebral palsy and intellectual, visual, and auditory disabilities [17].

Therein lies the importance for the prevention and treatment of premature labor and thus to remain under the goals of the SDGs [18].

It is estimated that approximately 15 million births will be premature (11%), half of which will be due to unknown or unclear causes [19–21].

In recent decades, advances in neonatal care have been significant and there are reports of survival of newborns with gestational age from 22 weeks (22–26 weeks, a period commonly considered "periviable").

In particular, pregnant women considered to be at high risk of periviable childbirth have been treated in tertiary care hospitals with neonatal intensive care units (NICUs) level 3 [22].

For this reason, reducing the rate of premature births requires a better understanding of the mechanisms responsible.

The mechanism that determines the beginning of the term or preterm birth is not known, although it is considered multifactorial.

In recent years, premature childbirth has increased globally, becoming a problem in obstetric care and one of the main causes of infant death worldwide, a serious problem for health systems. Premature birth accounts for more than 85% of all complications and perinatal deaths during the infant stage [23].

Morbidity, early mortality, and the presence of lifelong sequelae of a premature newborn will depend to a large extent on the country where he or she is born. In countries considered low income, disability problems are rare, particularly in newborns under 28 weeks of pregnancy or those with some pathology [24].

They die because of lack of adequate prenatal care or medical care with infrastructure and qualified personnel. In middle-income countries, newborns born between 28 and 33 weeks of gestation have improved the prognosis of survival but will have almost twice as many disability problems as those from high-income countries. In high-income countries, more than 95% survive with lower morbidity and sequelae [25].

Alternatives that can be applied, safe and available in all countries to prevent premature delivery, mainly before 34 weeks of gestation, should therefore be investigated [26].

Improvement in health care for women, children, and adolescents is included in the SDGs, which aim to ensure that the mother-children not only survive the

complications that may occur during childbirth but also achieve the maximum potential in health [27, 28].

It is important to emphasize that public health policies implemented to protect the binomial do not have to be specific; they must guarantee the quality of care, because there are differences in the world related to the infrastructure and quantity of human resources in the care services that are available for each country or region. And, they include the care of labor, labor, expulsion period, delivery, and resuscitation of the newborn and the mother after delivery [29].

4. Friendly obstetric care

Historically, birth was considered a natural process imbued with a strong cultural and social context, before its care and care by medical personnel was initiated, with what was modified the roles where the mother and the newborn had the leading role, becoming an "impersonal" process and often alien to their sociocultural condition, pathologizing pregnancy and especially labor, with abuse at times of medicalization [30, 31].

It is also important not only to identify but also to eradicate cultural barriers that hinder access to health services, because of the cultural and economic diversity that can exist among the population. In many countries, traditional and professional midwifery has emerged as an alternative to unconventional therapeutic models [32, 33].

In recent decades, a number of practices relating to labor have been increasingly developed with the aim of initiating to accelerate, finish, regulate, or monitor what should be considered a physiological process in order to achieve better results for the binomial [34–40].

While these have contributed to decreasing maternal and perinatal morbimortality, in countries with low and medium incomes, they promote the use of unnecessary interventions and neglect the emotional needs of pregnant women, leaving the mother to play a secondary role and contributing to the increase in the overall cost of medical services [41].

The gap in maternal and perinatal deaths is disproportionate between low- and middle-income countries compared to high-income countries [42].

It can also generate a perception, in women, of being excluded during their care by not having a participation in decision-making in the performance of some procedures.

Therefore, improving the quality of care around the time of birth, especially in low- and medium-income countries, has been identified as the most striking strategy for reducing fetal deaths and maternal and neonatal deaths, compared to prenatal or postpartum care strategies [26].

Mexico ranks fourth in the world (after China, Brazil, and the United States) in the use of cesarean sections without medical indication (38.5% of births); this percentage is above the World Health Organization (WHO) recommendation that the percentage of births per cesarean section should not exceed 15% [43].

WHO has proposed the model of friendly obstetric care. The pleasant and human experience of childbirth must nowadays be the desire of all women and also the goal of all doctors, especially obstetricians [44].

This is used as a strategy to reduce maternal morbidity by explicitly and directly taking back the emotional needs and values of women and their families in the care of pregnancy and birth and during puerperium, emphasizing the intercultural aspects that recognize the diversity that exists among women, and in order

to eradicate cultural barriers by promoting the right to scientific health care by health professionals who have the best obstetric skills, focusing on pregnant women empowering them to make decisions and returning them to their leading role [45].

5. "Support" for women during childbirth

5.1 Description of the condition

From the dawn of history and between different cultures, women were cared for and supported by other women during labor and childbirth, which has been called "continuous support," excluding the "man" during practically the labor, delivery, and birth of the baby.

However, since the middle of the nineteenth century, in many countries, especially in Europe, a large percentage of pregnant women had their births in hospital rather than at home.

Until Ignaz Philipp Semmelweis (Allgemeines Krankenhaus der Stadt Wien) in 1847 proposed to wash his hands, as the puerperal fever caused the death of 10–35%, which was three to five times higher than those attended by "midwives" is the word. Consequently, continued support during childbirth became the exception rather than the norm.

At the beginning of this century, the experiences of childbirth in women (especially in high-, middle-, and low-income countries) have led to the resumption of individual support for women during childbirth [46].

Recent publications show that many women benefit from and value the presence of a support person during childbirth, which provides them with psychological, physical, emotional, informative, and practical support, respecting their interculturality and privacy [47].

WHO recommends the presence of a companion of choice of woman during childbirth [48, 49].

In this same perspective, the aim is to "oversell" the care of low-risk childbirth. It is described in the literature as a highly medicalized care model that promotes the use of unnecessary interventions, neglects the emotional needs of pregnant women, promotes cesarean section intervention, and contributes to the increase in the overall cost of medical services [41].

In hospitals in middle-income countries, especially in Latin America, women in labor are without support and under a model of medicalized care [50].

This model of care is carried out mainly in urban areas, where more than 70% of the population currently resides.

6. Obstetric care in Mexico

In Mexico, more than 90% of women living in large cities have their births in hospitals, with a high number of unnecessary practices of little scientific value, such as trichotomy, amnesty, indiscriminate use of ocytocytics, episiotomies, and cesarean sections, indicators of a high level of medicalization [34, 38, 39, 41, 51].

The ratios of maternal mortality in countries such as Mexico in 2018 were 34 cases per 100,000 live births, with variations among the different federal entities, suggesting that many of the causes of maternal mortality are preventable [52].

In teenage girls, the risk of complications during pregnancy, childbirth, or puerperium has a greater impact.

In the period from 2004 to 2009, 8.6% of pregnancies ended in abortion, making it the 5th leading cause of maternal deaths.

In the last 12 years, the medicalized model has become a public health problem since approximately 50.3% of the births by women aged 20–49 years were obtained by cesarean section. Only 25.7% had emergency medical indication. The highest number is in private care institutions with 60.4% of the total [53–56].

Although efforts are being made to overemphasize the care of labor in childbirth and to reduce the percentage of cesarean sections to the figures recommended by WHO (15%), progress in this regard is slow [57, 58].

If prenatal care does not meet quality standards, the chances of a large number of pregnant women ending up with premature delivery are high. It is where cultural factors and social and economic conditions will influence its presence.

The institution where the authors work Mexican Social Security Institute (Instituto Mexicano del Seguro Social, IMSS) provides social security to more than 50% of the Mexican population.

Figure 1 shows the trend of the maternal mortality ratio recorded in the last 17 years in Mexico (upper line). In the lower line of the graph is the reason that corresponds to the IMSS during the same period.

The safety approach includes the obstetric skills that the first contact staff must have for identifying obstetric risks during pregnancy, as well as for delivery care in accordance with the recommendations of WHO and for the management and referral of complications of WHO. With regard to the level of the hospital, it should have all the competences, conditions, and interinstitutional agreements, in order to be able to identify, attend to, and resolve obstetric complications and emergencies in a timely manner, within a strategy of real functional flow networks in health services, to ensure timely care for women in labor, with or without complications, under the "zero rejection" initiative [59].

Each country should develop strategies to improve access to care, in line with different health care systems. In Mexico, there are several social security systems (public) to try to guarantee the health of its population, leaving a very low percentage of the population without social security coverage and those who have the possibility of being cared for in private institutions [60].

In Mexico, the "Comprehensive Interinstitutional Partnership Agreement for Obstetric Emergencies" was developed to provide immediate medical care to women in the severe puerperal period, with an emergency that endangers their lives, where care for newborns is also included.

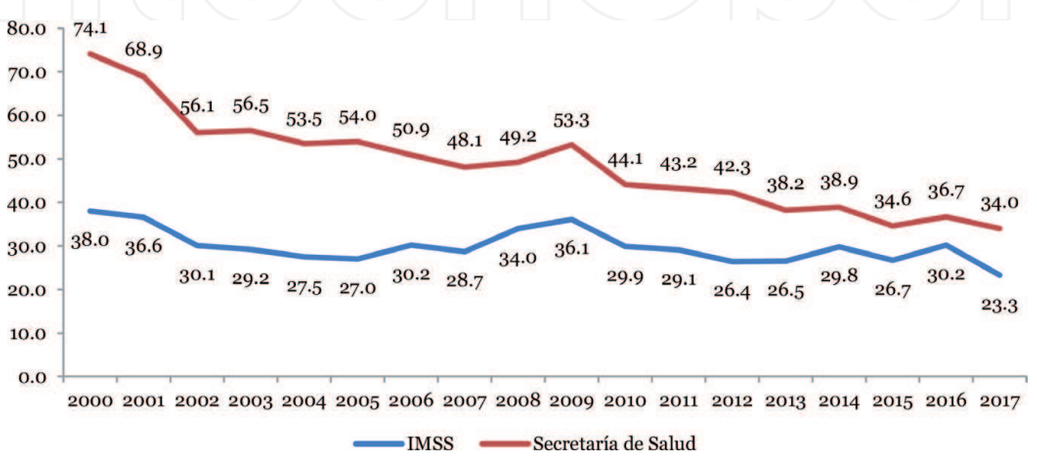


Figure 1.
*Maternal mortality ratio in Mexico (2000–2017). *Source: Secretaria de Salud and Instituto Mexicano del Seguro Social.*

This agreement is a written agreement between the health institutions that set out the general guidelines for the medical units of the SS of the Institute for Social Security and Services of State Workers (ISSSTE) and the Mexican Social Security Institute (IMSS), with capacity for complex obstetric care by providing these services through immediate response teams, to women with an obstetric emergency.

Table 1 shows the top 10 causes of hospital discharge in IMSS. It is noted that obstetric care (pregnancy, childbirth, and puerperium), while not being an illness, was the first reason for hospital discharge, representing 25% (517,800) of total discharges, in the period from July 2018 to June 2019.

Causes		**Discharges**	
		Thousands	**%**
1	Pregnancy, childbirth, and the puerperium	517.8	25
2	Injuries and poisonings	164.8	8
3	Heart diseases	97.4	5
4	Malignant tumors	91.4	4
5	Cholelithiasis and cholecystitis	85.6	4
6	Renal insufficiency	85.0	4
7	Conditions originating in the perinatal period	72.3	3
8	Diabetes mellitus	55.5	3
9	Hernias	41.2	2
10	Pneumonia and influenza	40.7	2
Sum of the 10 main causes		**1251.0**	**59**
Total		**2112.3**	**100**

The numbers from March to June 2019 were calculated. Source: IMSS.

Table 1.
The 10 main hospital discharge in the Mexican Social Security Institute (July 2018 to June 2019).



Figure 2.
A premature newborn treated at IMSS, from the "early intervention" program.



Figure 3.
A premature newborn treated in IMSS close to his hospital discharge.



Figure 4.
The economic cost and technological equipment required in the care of the premature newborn.

The IMSS serves almost 50% of all public sector births in the country. In 2017, 425,516 births were registered; of these, 9.8% (41,664) were premature under 37 weeks of gestational age and 7320 (1.7%) weighed less than 1500 g.

In **Figures 2–4**, we show preterm newborns treated in IMSS.

7. Conclusions

Measures to contain prematurity should essentially aim at improving the quality of pregnancy care. In countries such as Mexico, it is necessary to define, in addition

to what we described, the measures that impact to reduce premature delivery due to avoidable conditions.

Despite all measures for monitoring and care, the rate of premature births in the world has risen steadily. Medical efforts should be directed at improving results in the care of premature newborns and diminishing the impact on the neurodevelopment of infant and their families, as they would represent a high social impact and economic cost.

It would be advisable to prolong premature births to 34–36 weeks of gestation in order to reduce infant mortality, especially in medium- and low-income countries. This measure would significantly benefit from and would make reasonable use of the highly specialized technological and human resources that are usually limited.

What are needed are prevention, prenatal surveillance with a risk approach, and care during childbirth and of the newborn with qualified personnel, and current research is directed toward achieving this goal.

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