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CLINICAL ARTICLE

Evidence-based maternal and perinatal healthcare practices in public hospitals in Argentina

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ABSTRACT

Objective: To investigate the use of beneficial maternal and perinatal healthcare practices in a network of public maternity hospitals in Argentina. *Method:* A multicenter, prospective, descriptive study of 6661 deliveries in 9 hospitals. The use of 5 obstetric care practices that reduce maternal and perinatal morbidity and mortality was evaluated. *Results:* Median use rates for the selected practices were: continuous support for women during childbirth (17.9%); corticosteroids for preterm birth (35.3%); avoidance of episiotomy in primiparous women (41.2%); iron and folate supplementation (52.5%); active management of third stage of labor (93.5%). *Conclusion:* There is limited use of the selected evidence-based maternal and perinatal practices in public hospitals in Argentina and a large variation in their use among and within hospitals. Efforts should be made to increase the use of these evidence-based practices.

1. Introduction

There is a broad consensus that to improve the quality of maternal and perinatal health care during pregnancy and childbirth, the provision of healthcare practices should be based on the best scientific evidence available [1]. The World Health Organization (WHO), through the Reproductive Health Library (RHL), disseminates a list of maternal and perinatal healthcare practices that recommends beneficial forms of care and discourages ineffective or harmful practices [2].

Despite the dissemination of this and other information [3], recent studies have shown that in several low-income countries, many ineffective or harmful practices are still used during pregnancy and childbirth, while beneficial interventions are not systematically used [4–7]. Limited access to new knowledge, restricted time and physical resources, and the use of passive dissemination of information are some of the barriers preventing the adoption of evidence-based maternal and perinatal care worldwide, and particularly in hospitals in Latin American [3,8].

The prevalence of the use of healthcare practices during pregnancy and childbirth in Argentina is not well known. The aim of the present study was to investigate the use of evidence-based maternal and perinatal practices to evaluate the quality of care in a network of public maternity hospitals in Argentina.

2. Materials and methods

We conducted a multicenter, prospective hospital-based study using data routinely collected in a network of 10 public hospitals in the Buenos Aires Metropolitan Area (AMBA: Ciudad Autónoma de Buenos Aires and its associated suburbs) in Argentina, known as the AMBA Perinatal Network [9]. The study was part of a special program designed to improve the quality of care and to conduct collaborative research among the network's hospitals [9]. The network's participating hospitals were selected to represent the geographical distribution of the AMBA. At the selected hospitals, there are approximately 30 000 deliveries per year (from 1100 to 7000 deliveries per hospital). Five hospitals are located in the Province of Buenos Aires and 5 in Ciudad Autónoma de Buenos Aires. In the latter, 56.3% of the births in the public sector of Ciudad Autónoma de Buenos Aires occurred here in 2004 [10]. All hospitals provide comprehensive obstetric care and pre- and postgraduate training in obstetrics and gynecology. Maternal and perinatal health indicators of Ciudad Autónoma de Buenos Aires,

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Table 1
Maternal and perinatal health indicators [a].

	Low birth weight rate [b] (%)	Preterm rate [c] (%)	Perinatal mortality rate [d] (‰)	Early neonatal mortality rate [e] (‰)	Adolescent pregnancy [f] (%)
Argentina	7.5	8.1	13.3	6.2	15.4
Buenos Aires Province (associated suburbs of Buenos Aires City)	7.8	8.7	12.6	5.8	13.0
Buenos Aires City	6.8	7.7	7.6	3.6	7.1

[a] Source of data: Ministry of Health, Statistics and Health Information Direction. National Program of Health Statistics. 2006 Vital Statistics. Series 5, Number 50.
[b] Low birth weight: number of live births with birth weight less than 2500 g/total live births.
[c] Preterm rate: newborns of gestational age less than 37 weeks/total live births.
[d] Perinatal mortality rate: (late fetal deaths plus early neonatal deaths)/(live births plus late fetal deaths).
[e] Early neonatal mortality rate: neonatal deaths less than 7 days of age/total live births.
[f] Adolescent pregnancy: number of neonates delivered from adolescent mothers (less than 20 years old)/total live births.

Province of Buenos Aires (associated suburbs of Ciudad Autónoma de Buenos Aires), and the entire country are shown in Table 1 [11].

We prospectively collected data on all births that occurred in 9 hospitals between December 1, 2004 and March 31, 2005, and 1 hospital between September 16, 2005 and January 15, 2006 (because of the temporary closure of this hospital during the main data collection period).

The data source was the Perinatal Information System (SIP) [12], which consists of a basic perinatal clinical record with complementary forms and charts, the perinatal card, and a software package. Data collected by practitioners in the perinatal clinical record included demographic information; reproductive history; maternal characteristics; information on prenatal care; labor management; maternal complications during pregnancy, delivery, and puerperium; as well as neonatal outcomes from the first prenatal visit until the discharge of both mother and infant.

Hospital research teams were trained to fill in the SIP data forms and to perform data entry. Databases were consolidated and supervised by the study coordinating team. Hospitals with data coverage of 80% or more of the births that occurred during the study period were included. One hospital was excluded because less than 80% of the births were recorded in the SIP, leaving data from 9 hospitals for analysis.

Five pregnancy and childbirth practices that reduce maternal and perinatal morbidity and mortality were selected [2]: iron and folate supplementation in pregnancy (iron and folate) [13]; administration of prophylactic corticosteroids for preterm birth (corticosteroids) [14]; continuous support for women during childbirth (support) [15]; active management of the third stage of labor (AMTSL) [16]; and routine use of episiotomy in primiparous women [17]. Use of episiotomy is described as "avoided episiotomy" to indicate the restrictive use of episiotomy for preventing perineal lacerations in primiparous women. Active management of the third stage of labor was defined as prophylactic administration of oxytocin during or immediately after delivery for preventing hemorrhage; it does not include other components of AMTSL. We based this decision on evidence of oxytocin use on maternal hemorrhage and also on the difficulties in obtaining information about cord traction and time of cord clamping in the clinical records. The selected practices are described in Table 2.

The outcomes were the use of the 5 selected practices (iron and folate, corticosteroids, support, AMTSL, and avoided episiotomy) in the hospitals. The prevalence of use for each practice was calculated for each hospital (for avoided episiotomy, the rate was calculated as 100 minus the percentage prevalence of episiotomy use). Median and interquartile ranges were reported as summary measures and are presented as box-plot graphs.

Data were analyzed using Epi Info version 3.3.2 (Database and statistics software for public health professionals, Centers for Disease Control and Prevention, Atlanta, GA, USA) and STATA version 8.0 (Stata Corporation, College Station, TX, USA).

The protocol was approved by the Ethics Committee of the Durand Hospital. Hospitals included in the study provided a written agreement of participation. The confidentiality of all the information was guaranteed.

In addition, to compare our findings with those of other studies, we did a comprehensive nonsystematic bibliographic search of similar studies from different low-income countries and regions. We searched for articles in two relevant electronic databases (Medline and Lilacs) that were reported between January, 1997 (when RHL started) and May, 2008. We searched for the following medical subject heading (MeSH) terms: maternal–child health centers; clinical practice patterns; utilization review; quality of health care.

3. Results

During the study period, data on 6661 births were collected in the 9 hospitals (range, 395–1615 births), which represents 82.3% of the total births that occurred in the participant hospitals. The characteristics of the women and hospitals included in the study are presented in Table 3. In Argentina, there were more physicians than midwives in most of the participating hospitals. Missing data accounted for less than 5% for each of the selected practices, except for iron and folate, for which it was 10.5% (Table 4).

Table 2
Description of selected maternal and perinatal practices.

Practice (abbreviation)	Description	Indicator (%)
Iron and folate supplementation in pregnancy (iron and folate)	Routine intake of supplements containing iron sulfate (~100 mg) and folic acid (~350 mg) daily during pregnancy to prevent anemia	Number of mothers who received iron and folate supplementation during pregnancy divided by the total number of births
Prophylactic corticosteroids for preterm birth (corticosteroids)	Prenatal betamethasone or dexamethasone (24 mg) administration for women at risk of preterm spontaneous or induced delivery to prevent neonatal respiratory distress syndrome	Number of mothers who delivered newborns with gestational age ≤35 weeks of amenorrhea and who received at least one dose of prenatal corticosteroids divided by total deliveries with gestational age ≤35 weeks at birth
Continuous support for women during childbirth (support)	Psychosocial support during labor and delivery provided by specialized hospital staff, relatives, or another person chosen by the patient	Number of mothers who received continuous support during labor and delivery divided by the total number of births
Active management of the third stage of labor (AMTSL)	Defined as prophylactic administration of oxytocin during or immediately after delivery to prevent hemorrhage	Number of mothers who received oxytocin during or immediately after delivery to prevent hemorrhage divided by the total number of vaginal deliveries
Avoided episiotomy in primiparous (avoided episiotomy)	Avoided episiotomy: the restrictive use of episiotomy in primiparous women to prevent perineal lacerations.	100 – (the number of primiparous women who received episiotomy divided by the total number of primiparous vaginal deliveries excluding deliveries with forceps)

Table 3
Characteristics of the deliveries at the network hospitals and of the women in the study.

		H 1	H 2	H 3	H 4	H 5	H 6	H 7	H 8	H 9
Characteristics of hospital deliveries										
No. of births in 2004		1369	2198	1543	1132	2864	2568	2375	3221	7000
No. of births included in the study		403	633	413	395	749	685	536	1232	1615
No. and type of birth attendant										
Physicians/midwives ratio		2.1	2.5	1.1	2.4	3.2	4.3	0.7	10.2	2.3
Health providers/deliveries ratio (per 1000)		35.1	25.0	24.6	46.8	14.0	19.9	50.9	36.9	19.6
Characteristics of women in study										
Adolescents (<20 years)	n/N	81/401	81/628	92/413	71/395	146/749	159/685	98/535	207/1232	270/1606
	(%)	(20.2)	(12.9)	(22.3)	(18.0)	(19.5)	(23.2)	(18.3)	(16.8)	(16.8)
Education (primary level or lower)	n/N	161/397	201/597	190/412	171/393	380/731	320/659	233/523	531/1232	639/1591
	(%)	(40.6)	(33.7)	(46.1)	(43.5)	(52.0)	(48.6)	(44.6)	(43.1)	(40.2)
Primiparous	n/N	158/344	379/633	197/413	129/395	184/669	74/511	230/532	607/1232	847/1611
	(%)	(45.9)	(59.9)	(47.7)	(32.7)	(27.5)	(14.5)	(43.2)	(49.3)	(52.6)

Abbreviations: H, hospital; n, number of women with the characteristic; N, total number of women in the study.

Table 4
Rates of use of selected maternal and perinatal practices at the network hospitals.

Practice		H 1	H 2	H 3	H 4	H 5	H 6	H 7	H 8	H 9	Total	Total missing data
Support [a]	n/N [a]	128/402	179/627	60/413	7/394	5/745	341/663	93/518	816/1226	125/1581	1754/6569	92/6661
	(%)	(31.8)	(28.5)	(14.5)	(1.8)	(0.7)	(51.4)	(17.9)	(66.6)	(7.9)	(26.7)	(1.4)
Corticosteroids [a]	n/N [a]	3/8	39/60	5/18	16/34	2/54	18/51	3/15	65/143	29/85	180/468	22/490
	(%)	(37.5)	(65.0)	(27.8)	(47.1)	(3.7)	(35.3)	(20.0)	(45.5)	(34.1)	(38.5)	(4.5)
Iron and folate [a]	n/N [a]	344/389	369/600	172/370	180/343	485/709	423/595	140/404	504/1228	512/1324	3129/5962	699/6661
	(%)	(88.4)	(61.5)	(46.5)	(52.5)	(68.4)	(71.1)	(34.7)	(41.0)	(38.7)	(52.5)	(10.5)
AMTSL [a]	n/N [a]	124/328	412/416	302/323	271/290	597/598	477/483	155/427	810/817	1107/1229	4255/4911	101/5012
	(%)	(37.8)	(99.0)	(93.5)	(93.4)	(99.8)	(98.8)	(36.3)	(99.1)	(90.1)	(86.6)	(2.0)
Avoided episiotomy [a]	n/N [a]	49/119	31/212	18/137	47/88	114/146	28/51	28/165	157/342	117/572	589/1832	27/1859
	(%)	(41.2)	(14.6)	(13.1)	(53.4)	(78.1)	(54.9)	(17.0)	(45.9)	(20.5)	(32.2)	(1.5)

Abbreviations: H, hospital; AMTSL, active management of third stage of labor.
[a] See Table 2 for definitions and description of each indicator (n/N).

Median utilization prevalence of 3 practices was below 50%: support 17.9% (interquartile range [IQR] 7.9%–31.8%); corticosteroids 35.3% (IQR 27.8%–45.5%); and avoided episiotomy 41.2% (IQR 17.0%–53.4%). The median utilization prevalence of iron and folate was 52.5% (IQR 41.0%–68.4%), and AMTSL had the highest prevalence at 93.5% (IQR 90.1%–99.0%) (Fig. 1).

There was a large variation in the use of practices among and within hospitals, and none of the hospitals showed a uniformly high pattern in the use of the practices. Among hospitals, the use of support ranged from 0.7% to 66.6%; administration of corticosteroids from 3.7% to 65.0%; avoided episiotomy from 13.1% to 78.1%; iron and folate supplementation from 34.7% to 88.4%; and AMTSL from 37.8% to 99.8% (Table 4). As an example of the variation in the use of practices within each institution, one hospital showed a utilization prevalence of 0.7% for support and 99.8% for AMTSL.

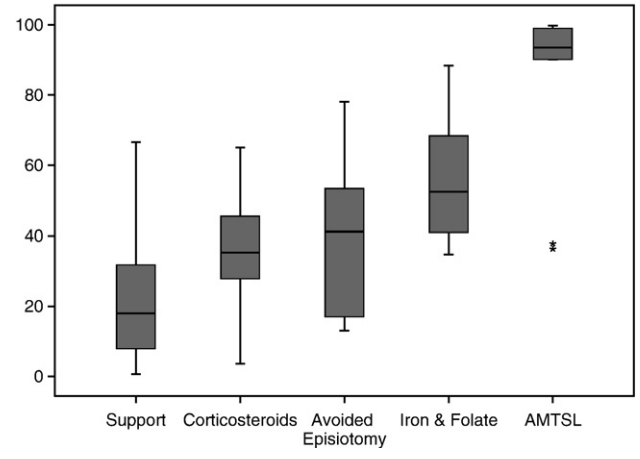

Fig. 1. Use of maternal and perinatal healthcare practices in 9 hospitals of the AMBA Perinatal Network. The frequency distribution of the practices is presented as box plots. The y axis shows the percentage use. Abbreviations: support, continuous support for women during childbirth; corticosteroids, prophylactic corticosteroids for preterm birth; avoided episiotomy, restrictive use of episiotomy in primiparous women; iron and folate, iron and folate supplementation in pregnancy; AMTSL, active management of the third stage of labor.

In the bibliographic search, we found 6 studies on the use of maternal and perinatal practices in low-income countries: 3 from Latin America, 2 from Africa, and 1 from Asia (Table 5). There was a large variation in the use of maternal and perinatal practices among these studies. Use of support ranged from 9.5% (Brazil) to 90% (Uruguay); administration of corticosteroids ranged from 10.2% (Cameroon) to 42.3% (Uruguay); avoided episiotomy ranged from 7% (Egypt) to 23% (Chile); iron and folate supplementation ranged from 47.7% (Uruguay) to 94.8% (Cameroon); and AMTSL ranged from 10% (Uruguay) to 71.5% (Cameroon).

4. Discussion

This study shows that some beneficial maternal and perinatal practices are not used systematically in public hospitals in Argentina. Use of 4 of the 5 selected practices was below 60%. There was a large variation in the use of the selected practices among and within the participant hospitals. The practice with the highest use was AMTSL, which ranged from 37.8% to 99.8% among the hospitals.

The main strengths of the study were the use of a common data collection system in all of the hospitals, as well as a central network coordination that supervised data quality. The hospitals participating in this study are representative for the public sector of the Buenos Aires Metropolitan Area (AMBA) since they attend approximately half of the deliveries in Ciudad Autónoma de Buenos Aires. A potential weakness of the study is that AMTSL was defined only as the administration of oxytocin and did not include other components of AMTSL.

Table 5
Variation in the use of maternal and perinatal practices among hospitals of low-income countries.

Region	Country [Reference]	Perinatal and maternal health care practices [a]					Study population	
		AMTSL[b]	Iron and folates [b]	Avoided episiotomy [b]	Cortico-steroids [b]	Support [b]	Hospitals (n)	Women (n)
Latin America	Argentina [c]	93.5	52.5	41.2	35.3	17.9	9	6661
	Brazil [21]	–	–	–	–	9.5	2	897
	Chile [6]	42	–	23	–	17 [d]; 46 [e]	2	205
	Uruguay [4]	10	47.7	8	42.3	56 [d]; 90 [e]	12	773
Africa	Cameroon [7]	71.5	94.8	–	10.2	28.7	188	–
	Egypt [5]	15	–	7	–	–	1	175
Asia	China [22]	–	–	18	–	27	4	599

[a] Values are given as percentages.
[b] See Table 2 for definitions.
[c] Present study.
[d] Labor.
[e] Delivery.

We observed a large variation in the use of practices among several studies performed in low-income countries. A study undertaken in 15 university-based obstetric centers in 10 low-income and high-income countries showed a prevalence use of 24.6% for AMTSL and a significant variation between and within countries [18].

Observational studies on the use and variation in practices can be an important tool for establishing a baseline that allows new interventions to be implemented to improve the quality of obstetric and perinatal care [19].

The results of the present study are of great concern considering that the training needs of professionals are met by continuing pre- and postgraduate education programs. One of the AMBA Perinatal Network's activities performed before the data collection period was the training of 3 professionals per hospital in the critical appraisal of scientific literature and in the development of evidence-based guidelines. Moreover, there are national, provincial, and municipal policies and norms that clearly state that these beneficial practices should be used and that episiotomy should be avoided. Also, in Argentina, there are national, provincial and municipal laws that establish the right of women to be accompanied during labor [20]. All these hospitals have enough supplies of drugs, such as corticosteroids, iron and folate supplements, and oxytocin, to implement these interventions.

Traditional approaches for improving translation of research findings into practice that are mainly focused on improving availability and presentation of evidence together with continuing medical education courses and conferences have been shown to have little impact on changing professional behavior [8]. Innovative strategies are needed to increase the use of evidence-based practices and consequently achieve an improvement in the quality of care.

The results of the present study show the gap between scientific evidence and clinical practice. The prevalence of beneficial interventions to improve maternal and perinatal outcomes is low, and harmful practices are still used, despite the wide dissemination of information about their usefulness in the participant hospitals. Studies promoting the use of selected beneficial maternal and perinatal practices that reduce maternal and neonatal mortality and morbidity could contribute toward reaching Millennium Development Goals 4 and 5. New strategies are needed to improve the use of evidence-based practices in maternal and perinatal health care.

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