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Comparison of childbirth care models in public hospitals, Brazil

ABSTRACT

OBJECTIVE: To compare collaborative and traditional childbirth care models.

METHODS: Cross-sectional study with 655 primiparous women in four public health system hospitals in Belo Horizonte, MG, Southeastern Brazil, in 2011 (333 women for the collaborative model and 322 for the traditional model, including those with induced or premature labor). Data were collected using interviews and medical records. The Chi-square test was used to compare the outcomes and multivariate logistic regression to determine the association between the model and the interventions used.

RESULTS: Paid work and schooling showed significant differences in distribution between the models. Oxytocin (50.2% collaborative model and 65.5% traditional model; p < 0.001), amniotomy (54.3% collaborative model and 65.9% traditional model; p = 0.012) and episiotomy (collaborative model 16.1% and traditional model 85.2%; p < 0.001) were less used in the collaborative model with increased application of non-pharmacological pain relief (85.0% collaborative model and 78.9% traditional model; p = 0.042). The association between the collaborative model and the reduction in the use of oxytocin, artificial rupture of membranes and episiotomy remained after adjustment for confounding. The care model was not associated with complications in newborns or mothers neither with the use of spinal or epidural analgesia.

CONCLUSIONS: The results suggest that collaborative model may reduce interventions performed in labor care with similar perinatal outcomes.

DESCRIPTORS: Midwifery. Perinatal Care. Maternal-Child Health Services. Outcome Assessment (Health Care). Unified Health System. Cross-Sectional Studies.

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INTRODUCTION

Obstetric care in the collaborative model (CM) of hospital care means integrating doctor and obstetric nurse, as well as other health care professionals, such as the doula, into the team. The obstetric nurse looks after women at low risk, with the possibility of immediate referral to an obstetrician in case of complications. Both work closely together in caring for women with some type of pathology.[7] The benefits are attributable to the continued presence of a professional obstetric nurse/midwife, focusing on the physiological and emotional aspects of giving birth, and the possibility of the immediate presence of a doctor in cases of risk.[6,7] The participation of the obstetric nurse/midwife may favor finding the balance between necessary interventions and the physiological process of giving birth, even for women needing more complex care.[2]

There is evidence of the potential of midwife-led care to reduce interventions in the care of women at low risk, as long as the health care professionals are duly qualified and follow protocols and directives.[3,11,17] There is limited literature evaluating interventions in shared care, comparing it with the doctor-centered model as the sole care provider in secondary care, although the CM is the predominant form of organization in obstetric care in industrialized countries such as England, Germany, the Scandinavian countries, New Zealand, Canada and Australia.[16]

A study of a North American cohort evaluated CM and found a positive association with spontan,eous vaginal delivery in women of low risk, as well as interaction between the model and cervical dilation upon admission.[12] An ecological study in the Netherlands observed an increase from 8.3% to 26.1% concomitant with the participation of obstetricians in secondary care and a reduction in assisted vaginal delivery from 44.0% to 39.0%. However, conclusions could not be drawn from the study on the association between the increased participation of these health care professionals and the results.[25]

The predominant and traditional model of obstetric care in Brazil is obstetrician- and hospital-centered. The Brazilian Ministry of Health encourages incorporating obstetric nurses into hospital teams and counts on their contribution to reduce the unnecessary interventions and cesarean deliveries that characterize obstetric care in this country. Incorporating an obstetric nurse into several public maternity wards in the city of Rio de Janeiro, RJ, Southeastern Brazil, from 1998 onwards, was the first initiative taken by the government in this direction.[1,6] Organizing CM care is the exception, with the share of this type of care estimated at between 10.0%

and 15.0%.[a] As yet, there have been no assessments of the results of the CM in the Brazilian context.

The aim of this study was to compare collaborative and traditional models of childbirth care.

METHODS

This was a cross-sectional study conducted in four of the seven maternity hospitals connected to the Brazilian Unified Health System (SUS) in Belo Horizonte, MG, Southeastern Brazil, between March and July 2011. These maternity hospitals were selected for similarities in their structures and clinical protocols and in the characteristics of their clientele, and were responsible for around 72.0% of births to first time mothers in the SUS in Belo Horizonte in 2008.

The inclusion of pregnant women followed the flow of care in the four maternity hospitals, regionalized according to their addresses.

Only one of the units worked with the CM. The obstetric nurse, together with the doctor, accompanied all of the women's labor according to the evolution documented in the partograph, monitoring fetal heartbeat, conducting cardiotocography and using non-pharmacological methods to relieve pain. All obstetric care was directed by institutional protocol, known to both professionals, regulating not only clinical conduct but also inter-disciplinary teamwork.

A total of 689 first time mothers, belonging to groups 1, 2 and 10 according to Robson, participated. Of these, 333 were in the institution with the CM and 322 in institutions with TM. There were 13 losses in the CM group, and 18 in the TM group – three refused to participate and 28 were discharged before they could be interviewed. Three women with psychiatric disorders were excluded (two in the TM and one in the CM), resulting in data for 655 women being collected.

In the other three maternity hospitals, defined as TM, the women were cared for exclusively by obstetricians during labor and delivery. All four hospitals cared for women with low and high risk and a neonatal or maternal intensive care unit, or both, was available in all. The hospital with the CM cared for 4,774 first time mothers in 2008, while the other three institutions, together, cared for 4,555 deliveries to first time mothers. A sample size was calculated with 95% confidence interval, power of 80.0% and 75.0% and 65.0% levels of prevalence in the collaborative and traditional models, respectively, for vaginal deliveries. The minimum sample necessary

was calculated as 325 first time mothers in each group, guaranteeing the same proportional distribution of births in the four hospitals as observed in 2008.

Data were collected consecutively, including first time mothers with a gestational age of > 22 weeks, single pregnancy and live fetus in cephalic presentation upon admission. The data were obtained using interviews with the mothers and complemented with information from medical records covering up to 48 hours after delivery.

Pearson's Chi-square test was used for the comparative description of the two groups. The following data were collected: socioeconomic data; biological and clinical conditions (medical history, pregnancy complications and classification according to the Robson system);[11] information concerning antenatal care; characteristics of the labor; presence of companion and of a doula. Five interventions were compared between the two models, described using the following variables: use of oxytocin, amniotomy, episiotomy, non-pharmacological methods of pain relief and epidural analgesia. Neonatal results were described (Apgar score in the first minute of life, admittance to a neonatal unit and resuscitation with positive pressure), and maternal complications during labor and delivery and postpartum were considered in evaluating possible negative repercussions of the care model.

Medical history and gestational risk factors were defined according to National Institute for Health and Clinical Excellence (NICE) criteria.[b] Complications during labor and delivery and postpartum (shoulder dystocia, cord prolapse, hemorrhage requiring treatment, eclampsia, postpartum hysterectomy, uterine rupture and cardiopulmonary resuscitation) were included as one single variable, as they were rare events. The variable "intervention free delivery", in women who went into labor spontaneously, included deliveries without oxytocin, amniotomy, episiotomy or pain relief and without ending in surgical or instrumental intervention.

The Robson classification system[21] classifies women into ten groups. Group one includes first time mothers with single, full term pregnancies, cephalic presentation and admitted after spontaneous onset of labor, while group two consists of first time mothers with full term pregnancy and cephalic presentation, but with induced labor or elective cesarean. Group ten refers to women of any parity, with gestational age < 37 weeks and cephalic presentation. According to Robson, this categorization enables stratification according to differences in clinical conditions determining how the labor is managed.

The five interventions were considered to analyze the association between the childbirth care model used and the interventions realized. Associations between the model and neonatal results were also evaluated.

Bivariate analysis was performed, analyzing the interventions and socioeconomic, clinical obstetric, antenatal and labor characteristics. Variables with significance below 0.20 were included in the multiple logistic regression model that estimated the odds ratio (OR) with 95% confidence interval of the association of the model with each of the five interventions, adjusted for confounding factors. The level of significance in the final multiple model was 0.05. The same procedure was used for neonatal results. The variables tested were maternal age < 18, maternal schooling and complications during pregnancy. In addition to the variables with up to 0.20 significance in the bivariate, the final multiple model was adjusted for gestational age and for birth weight.

SPSS version 17 software was used in the statistical analysis. The study was approved by the Research Ethics Committee of all institutions involved (*Santa Casa de Misericórdia de Belo Horizonte* – Process 009/2011; *Fundação Hospitalar do Estado de Minas Gerais* – Process 0022-B/2011, covering two of the four hospitals; *Hospital Sofia Feldman* – Process 02/2011). The women who participated and legal representatives, in the case of adolescents, signed an informed consent form before being interviewed.

RESULTS

The distribution of the women between the care models with regards sociodemographic characteristics showed significant differences for paid work and schooling. The place where antenatal care took place was borderline significant (Table 1). The distribution of clinical conditions, obesity, smoking and alcohol use were similar in the models, as was the distribution of characteristics of the labor and the presence of a companion or of a doula (Table 2).

There were significant differences between the care models concerning labor, with the exception of analgesic use (Table 3). According to the multiple analysis, the CM remained associated with lower oxytocin and amniotomy use after adjusting for possible confounding factors. Although the use of non-pharmacological methods was higher in the CM, it was borderline (p = 0.052) after adjustment, whereas the care model remained in the model as the only factor associated with episiotomy (Table 4).

For the women in group one and with spontaneous onset of labor, the differences between the models were accentuated: oxytocin use fell to 43.9% in the CM and increased to 71.7% in the TM. There was a difference

Table 1. Sociodemographic aspects of first-time mothers according to care model. Belo Horizonte, MG, Southeastern Brazil, 2011.

Characteristic	p	Collaborative model		Traditional model		Total	
		n[a]	%	n[a]	%	n[a]	%
Age (years) (N = 655)	0.951						
< 18		68	20.4	66	20.5	134	20.5
18 to 35		259	77.8	249	77.3	508	77.6
> 35		6	1.8	7	2.2	13	2
Schooling (N = 655)	0.043						
Elementary education - incomplete		63	18.9	63	19.6	126	19.2
Elementary education - completed		126	37.8	149	46.3	275	42.0
High school - completed		144	43.2	110	34.2	254	38.8
Marital status (N = 655)	0.143						
In stable relationship		229	68.8	204	63.4	433	66.1
Not in stable relationship		104	31.2	118	36.6	222	33.9
In paid work (N = 655)	0.008						
Yes		116	34.8	145	45.0	261	39.8
No		217	65.2	177	55.0	394	60.2
Economic class (N = 655)	0.582						
A2, B1, B2		34	10.2	27	8.4	61	9.3
C		220	66.1	224	69.6	444	67.8
D, E		79	23.7	71	22.0	150	22.9
Self-reported skin color (N = 655)	0.115						
White		56	16.8	49	15.2	105	16.1
Black		52	15.6	72	22.4	124	18.9
Mixed race		206	61.9	178	55.3	384	58.6
Other		19	5.7	23	7.1	42	6.4
Antenatal							
Antenatal appointments (N = 647)	0.543						
1 to 5		80	24.2	70	22.2	150	23.2
≥ 6		251	75.8	246	77.8	497	76.8
Antenatal care (N = 653)	0.051						
Unified Health System		300	90.6	276	85.7	576	88.2
Plan/Private		31	9.4	46	14.3	77	11.8

[a] The sample n does not include unknown values.

in the prevalence of intervention-free care of 24.0% in the CM and 1.0% in the TM (data not shown).

Admission to the neonatal unit totaled 54 children (8.2%) with a rate of 7.5% for the CM and 9.0% for the TM. There were 28 newborns (8.4%) in the CM and 37 (11.5%) in the TM who were given an Apgar score of between zero and six in the first minute of life. Newborns in the CM had lower birth weight and gestational age than those of the TM (data not shown). In the bivariate analysis, no significant differences were observed between mother's age or schooling and neonatal outcomes (p > 0.20). The care model was not associated with neonatal hospitalization, low Apgar scores or resuscitation with positive pressure ventilation in the adjusted analysis (Table 5).

In 11 women in each model, 3.4% in the TM and 3.3% in the CM, complications were observed during the labor or delivery or postpartum (data not shown).

DISCUSSION

The samples for both models contained around 35.0% of women from group two of the Robson classification, with intervention in the birth process recommended. Even so, there was reduced oxytocin and amniotomy use in the CM, even after adjusting for possible confounding factors. This can be viewed as a positive result and indicates the potential of CM to reduce interventions, although the complexity of obstetric care also involves other factors.

In addition to age, parity, diabetes, prolonged rupture of membranes and meconium,[23] infusion of oxytocin, amniotomy and epidural analgesia may be associated with the prevalence of surgical delivery.[5] Strategies to reduce these deliveries should cover control of the use of non-recommended interventionist practices. In addition to causing the women discomfort, their use without recommendation may lead to complications.

Table 2. Clinical obstetric aspects of first-time mothers according to care model. Belo Horizonte. Belo Horizonte, MG, Southeastern Brazil, 2011.

Characteristic	p	Collaborative model		Traditional model		Total	
		n[a]	%	n[a]	%	n[a]	%
Gestational risk factors							
Robson group (N = 655)	0.312						
Group 1		173	52.0	180	55.9	353	53.9
Group 2		121	36.3	115	35.7	236	36.0
Group 10		39	11.7	27	8.4	66	10.1
Medical history (N = 655)	0.640						
Yes		14	4.2	16	5.0	30	4.6
No		319	95.8	306	95.0	625	95.4
Complications during pregnancy (N = 655)	0.217						
Yes		80	24	91	28.3	171	26.1
No		253	76	231	71.7	484	73.9
Smoking (N = 655)	0.660						
Yes		29	8.7	25	7.8	54	8.2
No		304	91.3	297	92.2	601	91.8
Alcohol use (N = 655)	0.476						
Yes		54	16.2	59	18.3	113	17.3
No		279	83.8	263	81.7	542	82.7
Body mass index (N = 635)	0.762						
IMC > 30		21	6.4	18	5.8	39	6.1
IMC ≤ 30		306	93.6	290	94.2	596	93.9
Characteristics of the labor							
Amniotic membranes[b] (N = 655)	0.190						
Broken		112	33.6	93	28.9	205	31.3
Unbroken		221	66.4	229	71.1	450	68.7
Cervical dilation (cm)[b] (N = 655)	0.763						
0 to 3		158	47.4	149	46.3	307	46.9
4 to 10		175	52.6	173	53.7	348	52.6
Meconium[c] (N = 655)	0.612						
Yes		58	17.4	61	18.9	119	18.2
No		275	82.5	261	81.1	536	81.8
Non-reassuring fetal status[c] (N = 654)	0.095						
Yes		51	15.3	35	10.9	86	13.1
No		282	84.7	286	89.1	568	86.9

BMI: body mass index
[a] The sample n does not include unknown values.
[b] On admission.
[c] During the labor.

Studies have observed a lower prevalence of pain relieving medication and amniotomy,[13] more frequent use of non-pharmacological pain relief methods (88.1%), of ambulation (68.4%) and the possibility of ingesting liquids (96.9%) during the labor, as well as spontaneous vaginal delivery[4] for obstetric nurses in the CM compared with doctors. However, in Brazil, interventionist practices have also been observed in care provided by obstetric nurses.[18] Institutional, cultural and other factors concerning the organization of the Brazilian health system, as well as its position regarding the ongoing medicalization of health care, facilitate or make it more difficult for this professional to provide less interventionist practice.[18]

Reduced rates of oxytocin in women admitted already in labor (Group 1 of the Robson classification) in the CM and increased rates in the TM indicate more conscientious and selective use in the former service. Careful use of oxytocin is part of the recommendations for childbirth care, but percentages of < 30.0% are only achieved in birthing centers in women at low risk.[22,24] Its use in hospitals varies between 39.3% and 64.4% in Brazil.[8,10]

Table 3. Interventions used in the labor for first-time mothers according to care model. Belo Horizonte, MG, Southeastern Brazil, 2011.

Intervention in labor	p	Collaborative model		Traditional model		Total	
		n[a]	%	n[a]	%	n[a]	%
Oxytocin (N = 655)	< 0.001	167	50.2	211	65.5	378	57.7
Amniotomy[b] (N = 450)	0.012	120	54.3	151	65.9	271	60.2
Epidural[c] (N = 592)	0.196	125	41.4	105	36.2	230	38.9
Non-pharmacological (N = 655)	0.042	283	85.0	254	78.9	537	82.0
Episiotomy[d]	< 0.001	40	16.1	196	85.2	236	49.4

[a] The sample n does not include unknown values.
[b] The sample n includes women admitted with intact membranes.
[c] The sample n only includes women in active labor.
[d] The sample n only includes women with vaginal delivery.

An English survey[3] of 62,253 women cared for by obstetricians, the majority of whom had low risk, showed a decreasing gradient of intervention between hospital units, operating using the CM in that country, and home births, passing through peri-hospital and independent birthing centers. The hospital environment influence appears to diminish as the distance between the hospital and the place of birth increases, the frequency of interventions in the hospital units was lower than that of our study (23.5% for oxytocin use in women admitted to the hospital unit in labor and 30.7% for epidural). This suggests a specific national context, characterized by excessive medicalization, influencing all professionals.

Amniotomy is frequent practice in hospitals. A Brazilian study showed prevalence rates of between 40.5% and 87.8% in Rio de Janeiro[8] and rates of 65.3% and 71.1% in first time mothers in birthing centers.[22,24] Although the regression showed an association between CM and a decrease in this procedure, the frequencies in both models indicate routine use. The procedure should be used with correct indications, as with any intervention in labor, as it increases contractions and contributes to the need for subsequent interventions that could be avoided if it were not used.[5]

The differences in interventions between models are reflected in the higher prevalence of intervention-free

Table 4. Multivariate model for each intervention used during first-time mothers' labor. Belo Horizonte, MG, Southeastern Brazil, 2011.

Variable	Interventions									
	Oxytocin		Artificial rupture		Analgesia		Episiotomy		Non-pharmacological methods	
	OR_{aj}	IC95%	OR_{aj}	IC95%	OR_{aj}	IC95%	OR_{aj}	IC95%	OR_{aj}	IC95%
Marital status/Stable relationship									1.65	1.08;2.53
Economic class										
C					1					
D, E					0.77	0.51;1.17				
A, B					0.47	0.24;0.92				
Robson Group										
Group 1	1		1		1					
Group 2	1.73	1.19;2.51	0.24	0.11;0.53	1.28	0.88;1.84				
Group 10	0.44	0.21;0.90	0.96	0.52;1.80	0.36	0.16;0.80				
Waters broken on admission					0.58	0.40;0.86				
Non-reassuring fetal status	0.52	0.32;0.83							0.37	0.22;0.63
Complications during pregnancy	0.61	0.38;0.96							0.36	0.24;0.56
Cervical dilation (4 cm to 10 cm)			1.88	1.05;3.36						
Meconium			1.75	1.02;2.99						
Collaborative model	0.52	0.37;0.72	0.61	0.40;0.91	1.31	0.92;1.87	0.03	0.02;0.05	1.52	1.00;2.31

OR^{aj}: adjusted odds ratio
The final multivariate model for each intervention includes significant variables (p < 0.05).

Table 5. Odds ratio (OR) of neonatal results for first-time mothers, adjusted for gestational age and birth weight. Belo Horizonte, MG, Southeastern Brazil, 2011.

Variable	Apgar in 1st minute 0-6		Resuscitation with VPP		Admitted to neonatal unit	
	OR_{aj}	IC95%	OR_{aj}	IC95%	OR_{aj}	IC95%
Weight > 2,500 g	0.45	020;1.06	0.35	0.16;0.77	0.27	0.12;0.62
Gestational age ≤ 36 weeks	0.55	0.19;1.60	1.52	065;3.56	6.78	2.15;21.32
Complications during pregnancy	1.23	0.63;2.40	1.04	0.50;2.16	0.86	0.31;2.35
Collaborative model	0.71	0.42;1.19	0.65	0.38;1.10	0.61	0.32;1.16

VPP: Ventilation using positive pressure; OR_{aj}: adjusted odds ratio

vaginal delivery in the CM. Obstetrician training, directed towards complications and higher risk pregnancies, shapes preferences for technology and intervention, even with women of low risk and in spontaneous labor.[6] The difference between the two models suggests that an obstetric nurse acting autonomously is a factor that limits interventions, as they care for women during complication-free labor without the supervision of a doctor.

Non-pharmacological pain relief methods, offering liquids and ambulation offer comfort to the women, facilitating a less traumatic experience of giving birth. The frequency with which non-pharmacological pain relief methods are used was higher, for both groups, than that observed in a study of 12 maternity hospitals in the interior of Sao Paulo, Southeastern Brazil, with TM at 11.9%,[19] but favored the CM. Its use is part of, although not restricted to, obstetric care provided by the obstetric nurse or midwife.[20] Without presenting risks, it requires guidance, encouragement and emotional support, which can be offered by this professional if they form part of the team and if their continuous presence at the side of the woman is guaranteed.

Epidurals were used in both models, with no significant differences, and the prevalence was greater than that observed in hospitals in Rio de Janeiro, Southeastern Brazil, 15 years ago, and recently in Goiânia, GO, Central Western Brazil.[10] Demand reached 1/3 of first time mothers in both models, even when considerable use was made of non-pharmacological pain relief methods. Although it is associated with assisted vaginal delivery and cesarean for fetal suffering,[14] it is an effective pain relief method and may contribute to the woman having a positive experience of childbirth. Pain relief during labor, either in the context of encouragement to use non-pharmacological methods or an epidural or of it being restricted to cases in need of intervention during the labor, is an important focus for the humanization policy of childbirth care within the SUS.

The study indicates the important role played by the care model in reducing the prevalence of episiotomy.

The frequency observed in the CM is lower than in the majority of European countries, where rates vary from 4.9% in Denmark to 72.9% in Portugal.[c] The low prevalence of episiotomy is common in studies involving care given by a non-doctor. In England, it varied between 19.3% in the hospital unit with the CM and 8.6% in the birthing center with midwife-led care.[3] A North American study found significant differences in the care practices of the obstetric nurse and obstetrician for 865 women of low risk, with rates of 32.1% and 50.9%, respectively.[15] In addition to the higher frequency of perineal integrity (22.5% for the obstetric nurse and 12.1% for the doctor), the chance of larger lacerations occurring was lower in the group of women cared for by the nurses. National data on first time mothers cared for by an obstetric nurse show episiotomy rates of between 30.6% in a hospital environment[9] and 7.2% in a normal Birthing Center.[24] Other national studies conducted in institutions with TM showed episiotomy rates of between 70.1% and 85.2%.[8,10]

The similarity of neonatal results and the rate of maternal complications suggest that the CM does not negatively affect care quality compared with the model in which only an obstetrician operates, even in the presence of women with complications, induced or premature labor or using analgesic medication.

Limitations of this study refer to the possible heterogeneity of the hospitals, despite selecting those considered to have the greatest similarity in infra-structure, clinical protocols and clientele characteristics. The lack of standardization in the operations of the obstetric nurse limits the external validity of the study. During the period of data collection there were restrictions on care and transfers for women giving birth in one of the TM hospitals due to a lack of pediatricians, which could have led to selection bias.

Including women from the three Robson category groups, implying the use of different levels of interventions, may have influenced the results, although their distribution into groups was similar in both models. On the other hand, this case-mix of women in the sample

reflects the realities of care in the maternity hospitals at the secondary care level and the viability of the CM.

The continued presence of confounding residuals cannot be ruled out, as this is an observational study. The distribution of the women between the models occurred according to regionalization of obstetric care in Belo Horizonte and the period during which data were collected was short. Both may have led to the inclusion of seasonal or location bias. However, the cesarean rate in the sample is similar to that of the hospitals participating in the research in 2011 (27.0% and 26.6%, respectively), as is the distribution of deliveries between the models (50.8% in the CM in the sample and 52.3% in 2011). The rate of premature births was higher during 2011 (14.9% *versus* 10.1% in the sample). The authors did not intend to achieve population representation, but rather to analyze the CM in its actual operating conditions. Inferences and conclusions drawn should consider the limitations of the study.

The CM has not been widely exploited as a strategy for qualifying childbirth care in the Brazilian context. More studies concerning the national scenario are necessary, as the focus of international literature is comparing the two levels of care and between hospital care and other types provided exclusively by obstetric nurses or midwives. Evaluating the impact of non-doctors on the team could be important for countries in which the doctor-centered model still predominates and which are seeking strategies to transform the obstetric practices in effect.

Methodological difficulties in evaluating multi-professional performance should be considered in future studies. The effectiveness of the models depends on collaboration between those involved, which varies in each institutional and systemic context. Attributing results to the degree and quality of collaboration in the team should be discussed with caution given the complexity of obstetric care.

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HIGHLIGHTS

In Brazil, the traditional organization of care during childbirth, centered on the physician, contributes to high rates of intervention during labor, while WHO recommended practices favoring normal delivery are still little used by health care professionals. The creation of a collaborative model incorporating an obstetric nurse or midwife in childbirth care, as in other countries, may contribute to changing the current technical model and to improving quality of care.

High rates of cesareans and other interventions compromise quality and increase the cost of care, as well as having unacceptable levels of repercussion on maternal and neonatal morbidity and mortality. Changing the technical model is an important goal of national health care policy and, therefore, successful and innovative experiences in this sense are valuable contributions supporting this.

The collaborative model, enabling the direct action by the obstetric nurse or midwife, encourages reductions in the use of oxytocin, in performing amniotomy and episiotomy and increased use of non-pharmacological methods of pain relief without causing higher maternal or neonatal morbidity

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