

# Characterization of Obstetric Assistance at Labor and Childbirth in Low-Risk Women on a Maternity of Reference to Maternal and Child Health

ORIGINAL

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## Abstract

**Objectives:** To describe the prevalence of the implementation of obstetric interventions for labor and birth in normal-risk women in reference to maternity Stork Network.

**Methods:** cross-sectional study was performed from April 2014 to January 2015, with 421 participants in the Maternity School Assis Chateaubriand - UFC, admitted during spontaneous or induced labor with a live fetus and single pregnancy term and their fetuses weighing between 2,500 and 4,499g. The data collection instrument was divided into blocks with sociodemographic and clinical characteristics, obstetric, data care during labor, delivery and birth, maternal morbidity, maternal outcome and obstetric practices in categories A and B from WHO and perinatal outcomes. The values are presented as mean  $\pm$  standard deviation.

**Results:** The age ranged from 13 to 44; the average gestational age at admission was  $38.9 \pm 1.1$  weeks; 52.2% with only one child; 8.6% had a previous cesarean section. There was 96.2% of pre-natal coverage with an average of 6.4 consultations. 76.2% had vaginal delivery. Obstetric practices in category A were more prevalent oxytocin in the third stage (97.1%), partograph (95%), non-invasive methods for pain relief (87.2%), companion (84.6%). While in section B were more of a vaginal examination at 2 hours (50.4%) and intravenous infusion (44.9%) and oxytocin in the expansion phase (28.8%). The present study had as limitations the loss of some data, which depended on

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the filling of third parties, which are characteristic of searches in medical records, or any documentary archive because it is a collection of secondary data.

**Conclusions:** It was possible to identify that the "Good labor assistance practices" has been developed in a good proportion considered; however some practices that should be discouraged are still performed relatively frequently.

**Keywords**

Health Services Evaluation;  
Labor; Obstetric; Parturition.

## Introduction

Healthcare of women has undergone significant changes since 1980, with direct influence of healthcare policies and programs, which have allowed greater access to prenatal care and enabling births to take place increasingly in health facilities. However, the increased use of healthcare services comes with excessive medicalization and exposure to unnecessary - and sometimes controversial – procedures [1]. In Brazil, in the data presented by DATASUS for the year 2013, the rate of hospital delivery arrived near 98% [2].

The recognition of association between the healthcare process and the perinatal outcomes did not achieve its due visibility in Brazil. The implementation of good practices in labor (TP) and delivery is a powerful action for prevention of preventable neonatal deaths and, consequently, reduction of child mortality. Against this context, there are the situations of stress to which pregnant women are subjected, that can reflect poorly on perinatal outcomes, and as examples of these situations there are fasting, solitude and insecurity [3].

Most of the complications that can occur during childbirth and along the TP have the possibility to be minimized through adequate obstetric care, using appropriate technologies. Its misuse, in contrast, or the performance of unnecessary practices

that should be avoided and that have no backing of science approving them, may cause injury to women in labor as well as for newborns [4].

The "Born in Brazil" multicenter study pointed out problems in the quality of care related to the care process in childbirth, even after so many government investments in healthcare programs and professional awareness actions to the topic [3].

In this context, the ordinance instituted in the context of the Unified Health System - the "Cegonha Network" [5] has reinforced the importance of holding "Good practices of attention to labor and birth", based on scientific evidence. The WHO classifies the obstetric assistance into four categories: A, B, C and D; having highlighted the category A (practices deemed useful and that should be encouraged) and B (ineffective practices that should be eliminated) [4].

This study aimed to describe the prevalence of the implementation of obstetrical interventions in categories A and B for the labor and birth, recommended by the Health Ministry, and to describe the maternal and perinatal outcomes in normal-risk women in the Maternity School Assis Chateaubriand - Federal University of Ceará (reference maternity for Cegonha Network).

## Methods

This is a cross-sectional study with retrospective collection, whose data were collected from medical records and SISPRENATAL records of pregnant women treated at humanizing delivery center of Maternity School Assis Chateaubriand (MEAC), in Fortaleza-CE, from April 2014 to January 2015.

The population consisted of women in labor, and their concepts with gestational age between 37 and 42 weeks, identified by Capurro method [6]. The participants admitted in the Humanized Childbirth Centre (CPH) in spontaneous or induced labor (TP) were included in the study, with live fetus, unique pregnancy, negative VDRL and HIV, with birth weight between 2,500 g and 4,499 g, with no history of diabetes and/or chronic or gestational hypertension, being considered of usual risk, in similitude to the study of Leal and collaborators [7].

The selection of women and their concepts, which apparently fulfilled the inclusion criteria, was made through consultation initially to books of record of birth and the Neonatology Service book of the CPH. It was built a list with the names of women in labor to query the number of charts and the request of them was made in the Medical File and Statistical Service (SAME), for review and transfer of data to the data collection instrument.

Initially, 729 names were included. 172 women were removed from the list because they did not meet the criteria for inclusion. 136 records were requested to the SAME, but have not been found, remaining the final sample with 421 women and 421 newborns. There were no fetal or neonatal deaths.

The data collection instrument was divided into nine blocks, containing demographics characteristics, clinical characteristics, and obstetric assistance to TP, to childbirth and birth, maternal morbidity, maternal outcome, characteristics of the institution and the obstetric practices in categories A and B, plus a specific block to the concept called perinatal outcomes data. The data related to the puerperium were recorded until the 45th day of hospitalization

[8] or medical discharge, which occurred first. Since the data of the newborn were recorded until the 28th day of born or to medical discharge, when it has preceded the 28<sup>th</sup> day. The data related to the institution referred to the amount of births occurring in each of the shifts, being a daytime shift corresponding to the period when the birth happened between 7 a.m. and 6:59 p.m., and night shift when the birth occurred between 7 p.m. and 6:59 a.m.

To calculate the sample, were considered: number of births in the MEAC in a year from April 2014 to March 2015 (4,099), taken as a reference the delivery type proportion, established margin of error of 5% and confidence level of 95%. It used formula for finite populations reaching a sample of 395.

For statistical analysis, we used the SPSS program, version 20.0. The values were presented as averages  $\pm$  standard deviation.

The study was approved by the Ethics and Research Committee of Maternity School Assis Chateaubriand, respecting the principles which regulate research involving humans, Resolution No. 466/12 of the National Council of Health, under number 957.050. There were not obtained individual consent forms for women since the study did not conduct any intervention that would adversely affect their treatment. The information of interest was obtained retrospectively from medical records, after signing the Data Use Commitment Agreement by the institution Director.

## Results

The age of the mothers ranged from 13 to 44 years old, with an average of  $22.8 \pm 5.8$  years; 74.6% had a partner (314); 279 (66.3%) of nonwhite race; 150 (35.6%) had a profession; 82.0% of them reside in the state capital; 54.9% studied until high school (**Table 1**).

The gestational age average, on admission, was  $38.9 \pm 1.1$  weeks; 52% were primigravidae. The number of pregnancies including the current ran-

**Table 1.** Social, demographic and maternal obstetric characteristics. MEAC-UFC, 2014-2015.

Variable	N	%
Age (years)		
<20	180	42.8
20-34	219	52.0
>35	22	5.2
Race		
White	27	6.4
Not white	279	66.3
Ignored	115	27.3
Level of education		
Elementary School	173	41.1
High school	231	54.9
Higher education	17	4.0
Origin		
Capital	349	82.9
Interior	72	17.1
Number of pregnancies, including the current		
Primigravidae	219	52.0
Second pregnancy/Multiple pregnancies	178	48.0
Parity		
0	247	58.7
1 to 2	142	33.7
≥3	32	7.6
Previous Cesarean section		
Yes	36	8.6
No	385	91.4
Completion of prenatal care		
Yes	405	96.2
No	16	3.8
Membranes intact in hospitalization		
Yes	293	69.6
No	128	30.4
Dilation of the cervix on admission		
≤ 3 cm	126	29.9
>3 cm	289	68.7
Ignored	6	1.4
Contractions on admission		
Yes	392	93.1
No	28	6.7
Ignored	1	0.2
Total	421	100

ged from 1 to 8 with an average of  $1.9 \pm 1.3$ ; 178 (48%) had previous births, of those the total number ranged from 1 to 5, with an average of  $1.7 \pm 1.1$ . Sixty-five (15.4%) reported abortions, 36 (8.6%) presented history of Cesarean section with a maximum number of 2 and an average of  $1.1 \pm 0.2$ . 405 (96.2%) made at least one prenatal consultation with an average of 6.4.

Regarding the assistance data to TP, it was found that spontaneous initiation was in 399 (94.8%) women, misoprostol induced in 10 (2.4%) and induced with oxytocin in three (0.7%). More than half (69.6%) of the participants came to the ER with the intact ovular membranes, of the 128 who arrived with the pregnancy stock broken, the average time of breakup was of 15.2 hours. The partogram was completed in 95% (400) of cases (**Table 2**).

**Table 2.** Features of care during labor and delivery MEAC-UFC, 2014-2015.

Variable	N	%
Delivery Type		
Vaginal	321	76.2
Abdominal	100	23.8
Companion during TP		
No	45	10.7
Yes	356	84.6
Ignored	20	4.8
Companion during Delivery		
No	84	20
Yes	289	68.6
Ignored	48	11.4
Position in the expulsive Period		
Lying	31	9.7
Semi-sitting	258	61.3
Squatting	9	2.1
Lateral	16	3.8
Another	3	0.7
Ignored	4	1.0
Total	321	100
Episiotomy		
No	270	84.1
Medial-lateral	38	11.8
Median	9	2.8

Variable	N	%
<b>Episiotomy</b>		
Yes Ignored	2	0.6
Ignored	2	0.6
Total	321	100
<b>Professional who attended the birth</b>		
Doctor	296	70.3
Nurse	101	24.0
Multi-professional	19	4.5
Ignored	5	1.2
<b>Delivering</b>		
Spontaneous	60	14.3
Active	285	67.7
Curing	66	15.5
Ignored	11	2.6
Total	421	100

As for obstetrical results: 321 (76.2%) gave birth vaginally, seven (2.2%) with the aid of forceps, and 100 (23.8%) underwent caesarean section, two of them after failure of forceps (0.5%). The main indications for cesarean section were: fetal distress in 24 (24%) participants, 15 (15%) iterativity, 21 (21%) disproportion cephalopelvic and 14 (14%) dystocia/dyskinesia.

Regarding complications during childbirth: 89.3% evolved without complications; 1.2% with bleeding; 0.2% placental retention; 0.2% shoulder dystocia, in 8.1% of these data were ignored. 57.5% of the patients presented birth canal laceration, with 25.2% of first degree, 22.7% of second degree, 2.8% of third degree and 0.6% of the fourth degree. At 5.9%, the information of laceration wasn't registered.

Childbirth assistance had a slightly larger concentration during the daytime shift (54.9%) and on weekdays (75.1%). 55.5% of abdominal deliveries and 53% of the daytime period vaginal. And, during the week, 78% of abdominal deliveries and 74.1% of vaginal. There was an average of  $6.4 \pm 2.6$  births per 12-hour shift with minimal of 1 (one) and the maximum of 16 (sixteen) births in each shift in the period of the study.

As for the prevalence of morbidity: 2.1% evolved with puerperal infection, 0.7% with severe bleeding and the need for blood transfusions, one of them required hysterectomy (0.2%). There was the need of hospitalization in the Intensive Care Unit for two participants (0.5%).

The prevalence of obstetric interventions category A are considered useful and should be encouraged, and these are shown in **Table 3** of the women studied, 362 (85.9%) had a companion in at least one time between TP, childbirth and postpartum; 75% (319) of the sample had the ability to feed during TP; 87.2% of them were able to try non-pharmacological techniques for pain relief, such as walking, breathing control and relaxing massage applied by a professional of the humanized birthing center or even by the companion. Oxytocin applied in the third phase of the TP was registered at 97.1% of patient records.

**Table 3.** Prevalence of obstetric interventions (practices considered useful and that should be encouraged - Category A) held in CPH. MEAC-UFC, 2014-2015.

Variable	N	%
Vitamin K	421	100
Silver nitrate	421	100
Oxytocin in the 3rd Stage	409	97.1
Partogram	400	95
Non invasive methods for pain relief	367	87.2
Companion in the TP	356	84.6
Food/liquid	319	75.8
Immediate skin-to-skin contact	297	70.5
Clamping of the cord after 1 min	281	66.8
Breastfeeding in 1 <sup>st</sup> Hour of life	213	50.6

Umbilical cord clamping occurred between one and three minutes in 54.2% of registered births. Twenty-three cases had absence of record in the chart (5.5%). All newborns received the prophylaxis of neonatal bleeding and gonococcal ophthalmia with the administration of vitamin K and silver nitrate, respectively.



The data on obstetric interventions considered by WHO, which should not be taken routinely, are shown in **Table 4**, which highlights amniotomy showing a frequency of 25.2% (106), and of these, 68.9% (74) were made with expansion lower than 10, and 23.3% (24) cases were made with lower expansion than or equal to 7. Pharmacological analgesia was held in 9 women in labor (2.1%).

Electronic monitoring (Cardiotocography) was held in 228 (54.2%) patients ranging from 1 to 9, with an average of  $1.8 \pm 1.5$  records. In 100% of women in labor, it was carried out the evaluation of uterine activity, and 327 (67.8%) of them had uterine dynamics evaluated quantitatively.

As for the characterization of the population of newborns in the study: 53.2% were female, 71.3% (300) weighed between 2,501 and 3,500 g and 28.7% (121) between 3,501 and 4,499 g; the Apgar score was equal to or greater than 7 in the first

minute in 93.1%, and in the fifth minute in 99.3% of cases.

There was no fetal or neonatal death, early and late: 14% (59) of newborns needed oxygen; 4.8% (20) were revived in the delivery room and 17.3% (73) were sent to NICU; 276 (65.6%) presented jaundice and 53.4% (225) were submitted to phototherapy.

Infection was recorded in 11.1% of newborns, while three (0.7%) were transfused with packed red blood cells. At the time of medical discharge, 420 left in breastfeeding and of these, 405 (96.2%) were in exclusive breastfeeding (**Table 5**).

**Table 4.** Prevalence of obstetric interventions (ineffective practices that should be eliminated) held in CPH. MEAC-UFC, 2014-2015.

Variable	N	%
Electronic fetal monitoring	228	54.2
More than 1 vaginal touch in 2 hours	212	50.4
Intravenous infusion in TP	189	44.9
Oxytocin in the 1st or 2nd TP stage	121	28.8
Amniotomy	106	25.2
Episiotomy	49	15.8

**Table 5.** Prevalence of neonatal outcomes in the CPH. MEAC-UFC, 2015.

Variable	N	%
Breastfeeding on medical discharge	420	99.8
Exclusive Breastfeeding	405	96.2
Jaundice	276	65.6
Phototherapy	225	53.4
NICU	73	17.3
Oxygen	59	14
Infection	47	11.1
Resuscitation in the delivery room	20	4.8
Blood transfusions	3	0.7

## Discussion

The use of practices considered useful and that should be encouraged (oxytocin in the third stage of TP, partogram filling, use of non-invasive methods for pain relief, the presence of a companion in TP and food during TP) presented, in this study, frequencies above 75%. Peripartum -related practices (skin-to-skin contact, clamping of the cord after one minute and breastfeeding in the first hour of life) were present in more than 50% of the sample. On the other hand, ineffective obstetric interventions, that must be eliminated, still showed large prevalence, being them the intravenous infusion during the TP and more than one vaginal touch in 2 hours, the more frequent, above 44%.

To improve obstetric assistance in the country, the Ministry of Health, through its standards, ensures the woman the right to have a companion during the TP, as well as the freedom of choice of the position to give birth, the provision of pain control measures in the expulsive period and breastfeeding in the delivery room [5, 9].

The Maternity School Assis Chateaubriand has as its mission to promote teaching, research and tertiary healthcare, working in an integrated manner and as a support to other levels of care, of the current healthcare model. The humanized childbir-

th center has multidisciplinary team for attention to labor and birth following what recommends the Brazilian Ministry of Health. They are part of the care team: Obstetricians, anesthesiologists, neonatologists, obstetric nurses, gynecological-obstetrics medical residents, obstetric nursing residents and multiprofessional in women's health and children, and undergraduates in the healthcare area.

Restricting fluids and food during labor is a common practice in many birth settings. The restriction of oral intake can be unpleasant for some women and can influence negatively their labor experience, and lack of nutritional balance may be associated with longer and more painful TP [10]. Feeding during labor, that is one of the category A practice, was observed in 75.8% of cases in this study, probably due to the team's awareness for this more humanized care.

The use of non-pharmacological strategies for pain relief has the possibility of reducing the use of analgesic drugs and the administration of oxytocin in pregnant women, without causing adverse effects injurious to the laboring woman and the fetus [11].

The electronic fetal monitoring was done in about half of the cases, taking into account that women are part of the normal risk group. This was an unnecessary procedure performed that generated extra costs to the healthcare system. The values found are much higher than the 32.5% found by Gomes in 2011, in a retrospective study with 810 records [12].

Electronic monitoring is very sensitive to detect fetal distress, but has low specificity, which may lead to a high rate of false-positive index and thus further enhance the possibility of unnecessary interventions, including increased rates of Cesarean section, especially in low-risk TP [4].

More than half of the population received more than one vaginal touch in two hours, being totally contrary to what is recommended by the Ministry of Health, which states that repeated touches should be avoided [13]. And it must be conducted in a con-

trolled manner under certain conditions to prevent potential maternal and fetal repercussions [14].

The rate of amniotomy in this study was of 25.2%, and the use of oxytocin in the expansion was of 28.8%; however, the rates found in our study were not as high as those found in other national studies [15, 16, 17].

Silva et al. (2013), in a retrospective study, held in a birthing house in the city of São Paulo, with a population of 1,079 women, in order to characterize the intrapartum assistance, found 53.4% of amniotomy and 31% of use of oxytocin in expansion [15]. In 2009, Rocha found amniotomy rates between 63.3% in delivery occurrence zone I in partogram and 92.3% in zone I and 39.2% to 76.2% of use of oxytocin, depending on the stage the partograph in low-risk women attended in a Normal Birth Center (CPN) in the metropolitan region of São Paulo [16]. In another CPN which assists women of usual risk, also in São Paulo, the amniotomy was registered in 62.6% of the cases [17].

In another study with a stratified sample in 20 maternities of SUS in Rio de Janeiro, in which Oliveira and contributors evaluated the labor assistance, the rate of amniotomy was of 24.3% and 61.3% of oxytocin during the expansion phase [18].

The findings of this study on the use of intravenous infusion during labor corroborate Schneck and Riesco study, in 2006, with 830 cases in which it was observed that 44.5% of the oxytocin infusion was performed and in 75.1% of pregnant women had amniotomy held [19], still high values for an intervention that should be performed only in specific cases, given that the study population was composed of usual risk parturient.

The venoclysis and infusion of liquids must be carried out only by specific indications. The infusion of glucose solution should not be performed routinely, because its use can alter insulin production by the fetal pancreas [20].

Prenatal coverage in the country has been increasingly expanded and have reached values above

90%, as well as what was observed in the present study, where there was a frequency of 96.2% of prenatal coverage, very close to the values found in recent nationwide research with 23,894 women who identified 98.6% coverage [21].

In relation to institutional characteristics, Barros et al., in 2011, in study on birth patterns in a Brazilian cohort, identified that the majority of births by caesarean section occurred on weekdays,  $p < 0,001$  mostly on Tuesdays and Wednesdays and daytime period, being the cesarean section less frequent in the period from midnight to 6 a.m. The patterns described are compatible with the hypothesis that the cesarean section is made, in large part, to meet the convenience of the schedules of the doctors [22]. The data found in our study did not corroborate with these findings, since 78% of abdominal deliveries took place during the week and 53% occurred in daytime shifts.

Almost half of parturient who gave birth vaginally had laceration in varying degrees, being the first and second degrees the more prevalent, corroborating with the findings of a retrospective study in order to associate the perineal integrity, spontaneous laceration and episiotomy in childbirth with maternal age, parity, gestational age, weight and vitality of newborn in 6,365 births, by identifying that 45.5% of women had spontaneous laceration [23].

Of a sample of 8,244 women interviewed by phone in a Canadian study in 2009, 67.7% of the deliveries were conducted by Obstetricians and Gynecologists, 16.5% by family physicians, 4.9% by nurses and 3.7% by midwives [24]. In our study, vaginal births and those that contained clear data on the charts, 61.4% were performed by doctors, 31.2% for nurses.

Maternal morbidity prevalence was low, showing the same characteristics of a cohort in the year 2011, with 1,678 women in Denmark, in order to compare perinatal and maternal morbidity and interventions in low-risk women. It was observed that there was no significant difference in perinatal mor-

bidity among women served in obstetric units than those served in units of independent midwives. The group which gave birth in units with midwives was exposed to fewer interventions and had lower rates of maternal morbidity [25].

A significant number of newborns (65.6%) developed jaundice and phototherapy has been prescribed for more than half of the entire sample, for which it is suggested to carry out a few more studies that can determine the actual need of the therapy for this audience and the determination of possible causes.

In a meta-analysis, it was possible to identify a causal relationship between the need of using phototherapy and late clamping of the umbilical cord, in which early clamping decreased the need for phototherapy when compared to late clamping group (data from seven clinical trials, 2,324 children), but increased the reserves of iron in the late clamping group, increasing at twice the chance of a child from the early clamping group develop anemia when compared with the group of late clamping (884 children) [26]. The authors suggested that, in order to increase the initial hemoglobin and iron stores in infants, the late clamping of umbilical cord may be beneficial, where access to treatment of jaundice and phototherapy is available [26].

Almost all newborns were discharged from the hospital in breastfeeding, being a very important fact for the generation of the mother-son bond and for the health of the newborn. Mahipatrao et al., 2016 point out that breastmilk is a dynamic biological fluid, containing nutrients, growth factors and bioactive substances, which may be a therapeutic source potent in treating of neonatal diseases [27].

With this study, it was possible to draw a picture of how to find assistance to TP and childbirth in the referred maternity, and it is possible to observe that even with some necessary advances, much of the practice is already according to what health agencies advocate, especially those responsible for maternal and child health programs. The number of



participants was representative for the population studied, being composed of a homogeneous sample in an attempt to reduce the biases.

Data found are very important from both epidemiological point of view as from the management and support point of view, as it provides information for evaluating the implementation of public policies focused on maternal and child healthcare, generating feedback for all members of the multidisciplinary team responsible for this service. By knowing how obstetric care actually occurs, it is possible to search for a service with the quality it deserves, and to base the practice on scientific evidence.

Some data, however, ended up being lost, since the data collected in this study were secondary and depended on the completion of third parties who knowingly comply just with bureaucratic obligation, without the rigor necessary to be considered as scientific information. These limitations are specific to research in medical records or any document file.

Yet, new studies are needed to show the association of variables presented in this study with its outcomes, including labor way, in order to find a causal relationship between them. In addition to enabling studies to quantify the attendance, further making more objective comparisons, for example, in the form of scores.

Anyway, there is still a lot to advance in obstetrical care pre-, intra- and post-partum, although it was possible to identify that the "Good care practices during labor and delivery" has been developed in a considered good proportion when compared to studies developed in other centers, but they are still short compared to what was recommended by the Ministry of Health. It was possible to conclude that many unnecessary interventions are perpetuated even in reference centers with teaching units, then requiring the direction of actions for these details, so that the main goal - which is to promote qualified healthcare to the population - can be reached.

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