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ORIGINAL ARTICLE

Hospitalizations leading causes for maternal disorders*

PRINCIPAIS CAUSAS DE INTERNAÇÕES HOSPITALARES POR TRANSTORNOS MATERNOS

LAS PRINCIPALES CAUSAS DE HOSPITALIZACIONES POR TRASTORNOS MATERNOS

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ABSTRACT

Objective: Presenting the rates of obstetric admissions of women living in Paraná in 2010. **Method:** A descriptive study in which the admission information of the hospital system of the Unified Health System was analyzed. Data from women aged between 10 to 49 years available on the DATASUS website were analyzed, using percentage and according to primary diagnosis, age and Regional Health area. **Results:** The Rate of Obstetric Complications (RtOC) was 38%, increasing with the age of women. Complications of labor and delivery (10.5%), and pregnancy with abortive outcome (9.1%) were the diagnoses with highest RtOC. The RtOC ranged between 8.4% in Telêmaco Borba, until 62.6% in Ponta Grossa. **Conclusion:** The healthcare team should monitor the rates of admissions for obstetric complications as these indicate the quality of health care of women, mainly focused on labor, delivery and women of older age.

DESCRIPTORS

Pregnancy
Hospitalization
Information systems
Obstetrical nursing
Maternal mortality

RESUMO

Objetivo: Apresentar as taxas de internações obstétricas de mulheres residentes no Paraná em 2010. **Método:** Estudo descritivo em que as internações do Sistema de Informação Hospitalar do Sistema Único de Saúde de mulheres de 10 a 49 anos foram analisadas, por meio de percentuais, segundo diagnóstico principal, idade e Regionais de Saúde, disponível no *site* do DATASUS. **Resultados:** A Taxa de Intercorrência Obstétrica (TxIO) foi de 38%, aumentando com a idade da mulher. As complicações do trabalho de parto e do parto (10,5%) e a gravidez que termina em aborto (9,1%) foram os diagnósticos com as TxIO mais elevadas. As TxIO variaram de 8,4% para Telêmaco Borba a 62,6% para Ponta Grossa. **Conclusão:** A equipe de saúde deve monitorar as taxas de internações por complicações obstétricas, pois estas indicam a qualidade da atenção à saúde da mulher, voltada principalmente ao trabalho de parto, ao parto e às gestantes com mais de idade.

DESCRITORES

Gravidez
Hospitalização
Sistemas de informação
Enfermagem obstétrica
Mortalidade materna

RESUMEN

Objetivo: Describir las tasas de hospitalizaciones obstétricas de las mujeres que viven en Paraná durante el año 2010. **Método:** Estudio descriptivo en el cual se analizaron las hospitalizaciones de mujeres de 10 a 49 años del Sistema de Información Hospitalaria del Sistema Único de Salud por medio de: porcentajes, diagnóstico principal, edad y Regional de Salud disponible en el sitio web DATASUS. **Resultados:** La Tasa de complicaciones obstétricas fue del 38%, la que aumenta con la edad de la mujer. Las complicaciones del trabajo de parto y del parto (10,5%) y el aborto (9,1%) fueron los diagnósticos con mayor tasa de complicaciones obstétricas. Las tasas variaron de 8,4% en Telêmaco Borba a 62,6% en Ponta Grossa. **Conclusión:** El equipo de salud debe vigilar las tasas de hospitalizaciones por complicaciones obstétricas, con especial énfasis en aquellas por trabajo de parto, parto y de las gestantes de mayor edad, ya que éstas demuestran la calidad de la atención de salud de la mujer.

DESCRIPTORES

Embarazo
Hospitalización
Sistemas de información
Enfermería obstétrica
Mortalidad materna

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INTRODUCTION

Everyday approximately 1,500 women die worldwide due to complications in pregnancy, delivery and puerperal period. Such complications have been used as the main indicator to assess the health of women in the community. The causes of maternal mortality are well known: obstetric complications including hemorrhage, puerperal infection, eclampsia, prolonged labor and complications of abortion[1], of which 98% are considered preventable if the health care during the prenatal, labor and delivery has a better quality[2].

In 2000, the Program for the Humanization of Prenatal and Birth (PHPN – Programa de Humanização do Pré-natal e Nascimento)[3] standardized the assistance to pregnant women, establishing since the minimum number of prenatal consultations and complementary exams, until the correct gestational age to start prenatal care.

The expansion of the Family Health Strategy (FHS), aiming at the reorganization of health care services, seeks to reduce the maternal mortality, which has been happening in recent years, but still at a slow pace. This shows that Brazil is still far from achieving the Millennium Development Goals of reducing maternal mortality rates by a third until the year 2015[4].

The maternal death is a devastating event for the family and community, but it represents only the tip of the huge iceberg of health problems typical of the pregnancy and childbirth periods[5]. It is necessary to expand the field of studies on women's health, seeking information about maternal morbidity related to the main grievances, its frequency and severity levels.

Maternal disorders during pregnancy can be defined as a group of physical conditions resulting from or aggravated by pregnancy and with potential to compromise a woman's health. These adverse conditions, also called obstetric complications, depending on its severity, may result in hospitalizations during pregnancy, childbirth or after delivery, and may be considered an indicator for assessing women's health[6].

In the United States, between 8 and 27% of women were hospitalized at least once during pregnancy and the most common causes were: preterm labor, hyperemesis gravidarum, urinary tract infection and hypertensive disorders of pregnancy[6]. In Brazil, it is estimated that 26.7% of all hospital admissions in women of reproductive age were due to obstetric complications[7]. Hospitalizations for obstetric complications represent the most serious fraction of these problems worthy of hospital care, which explains the importance of studying it to assess to what extent the health care, especially prenatal care, has responded to the needs of women in this period.

Although there are studies evaluating the health of women according to indicators of maternal mortality, so far no studies examining the health status of women living in Paraná during pregnancy have been identified, specifically those related to hospital admissions for obstetric complications. This fact, added to the existence of regional inequalities in health profiles of the community (which must be known) justify carrying out this study. Its objective was to describe the rates of obstetric admissions and the main causes of these hospitalizations.

METHOD

This is a descriptive study of all hospitalizations of women living in Paraná in 2010, which were financed by the public sector. That year, the population was 10,439,601 inhabitants distributed in 399 municipalities and 22 Regional Health Areas. Data were collected in the information system of the Unified Health System (SIH-SUS), available to the public on the website of the Department of SUS (DATASUS). The research was done by looking up in the fields, namely: *primary diagnosis*, *type of hospital discharge*, *procedure adopted* and, for some cases, the fields *secondary diagnosis* and *daily of ICU*.

The process of building the database followed the steps outlined in Figure 1. First were selected all hospitalizations of residents in Paraná in the year 2010, and then 246,048 women aged between 10 and 49 years. Among them were selected 34,472, which had the primary diagnosis inserted in the fifteenth chapter (XV) of the International Classification of Diseases (ICD-10)[8] – pregnancy, childbirth and puerperal period (codes O00 to O99), except for delivery. Considering the existence of diseases or complications in admissions with the primary diagnosis of delivery, were evaluated and selected 141 cases in which hospital discharge was due to death and/or with daily in ICU, or which had procedure indicative of severe maternal morbidity.

Hospital admissions with primary diagnosis found in other chapters of ICD-10 were also researched. It were found nine admissions with secondary diagnosis in Chapter XV, and 1,605 procedures indicating obstetric complications. Among the 1,605 admissions, only 525 were selected, because the others were not considered complications, but *cesarean section with tubal ligation* with the primary diagnosis of *sterilization*. The study database comprised 35,147 admissions (Figure 1).

The Management System of the Table of Procedures, Drugs and Orthotics, Prosthetics and Special Materials of the SUS (SIGTAP) was used for selection of procedures. This table of obstetric procedures unifies and standardizes the codes of the SIH-SUS and the Outpatient Information System (SIA-SUS)[9]. As some codes of maternal complications are missing from the SIGTAP classification, were also used criteria of researchers in Campinas-SP, who drew up a list of procedures and codes/diagnostics of ICD-10, validated in Brazil in

2006[10]. For the analysis of admissions according to the 22 Regional Health areas, the code of municipalities was identified in the database, where these were grouped by the respective Health Regional.

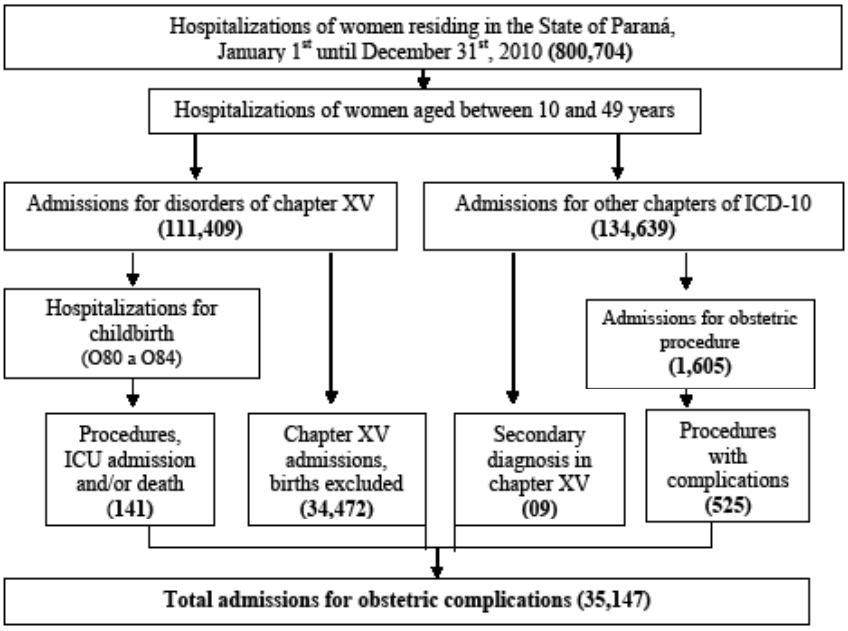


Figure 1 – Process of selection of admissions at SIH-SUS.

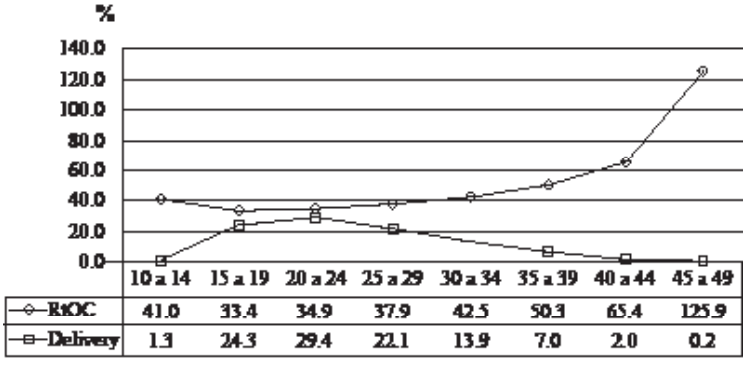
The maternal morbidity was analyzed using the total rate of obstetric complications (RtOC), according to the diagnosis, the woman's age and the Regional Health Area. The RtOC is the percentage of admissions for obstetric complications in relation to total deliveries[11]. In 2010, the total number of childbirths in public hospitals by women in the state of Paraná was 92,397, of which 76,937 were identified by the primary diagnose of hospitalization and 15,460 according to the procedure carried out.

The primary diagnosis was analyzed according to the more frequent groups and subcategories of ICD-10 by age (10-19, 20-34 and 35 and over). It is noteworthy that the primary and secondary diagnoses listed in the database of the SIH-SUS are encoded by technicians – in general of the billing sector of hospitals – where hospitalization occurred and based on information collected from patient charts.

For tabulation and data analysis, the Microsoft Office Excel and PASW Statistics 18 were used. The study was approved by the Standing Committee on Ethics in Research involving Humans of the Universidade Estadual de Maringá-PR (no. 093/2011).

RESULTS

In Paraná, in 2010, for every 100 deliveries financed by the SUS, occurred 37.8 hospitalizations for complications during pregnancy, childbirth and the puerperal period, with a minimum of 33.4 in women aged 15-19 years and a maximum of 125.9 in those aged between 45 and 49 years. Although the percentage of deliveries is declining among women aged from 25 years, the rates of obstetric complications grow with increasing age (65.4% for women aged 40-44 years, and 125.9% for those aged between 45 and 49 years) (Figure 2).



	10 a 14	15 a 19	20 a 24	25 a 29	30 a 34	35 a 39	40 a 44	45 a 49
RtOC	41.0	33.4	34.9	37.9	42.5	50.3	65.4	125.9
Delivery	1.3	24.3	29.4	22.1	13.9	7.0	2.0	0.2

Figure 2 – Rate of obstetric complications (RtOC) and percentage of births by age – Paraná, Brazil, 2010.

Both for the proportion and the RtOC, by groups of diagnoses, the complications in labor and delivery (27.6%, a rate of 10.5%) stand out, as well as the pregnancy with abortive outcome (24.1% or a 9.1% rate), the assistance to the mother for reasons related to the fetus, amniotic cavity and problems related to childbirth (17.9%, 6.8% rate), and other maternal disorders (13.5%, a rate of 5.1%) (Table 1).

Observing each diagnosis, the miscarriage was the most frequent, with 10.9% of total admissions (45.1% compared to the grouping), followed by bleeding in early pregnancy (5.8% or 43 1% in their group) and gestational hypertension with proteinuria (3.5% or 38.2% in their group) (Table 1).

Table 1 – Distribution of hospitalizations according to the primary diagnosis*, age and rate of obstetric complications (RtOC)** – Paraná, Brazil, 2010

Primary Diagnosis	10 to 19			20 to 34			35 to 49			Total		
	N	%	RtOC	N	%	RtOC	N	%	RtOC	N	%	RtOC
Complications of labor and delivery	**2407**	**30.2**	**10.2**	**6392**	**28.4**	**10.6**	**910**	**19.6**	**10.8**	**9709**	**27.6**	**10.5**
Abnormal uterine contraction	760	31.6	3.2	1748	27.3	2.9	229	25.2	2.7	2737	28.2	2.9
Obstructed labor due to pelvic abnormality	552	22.9	2.3	1570	24.6	2.6	215	23.6	2.5	2337	24.1	2.5
Others	1095	45.5	4.6	3074	48.1	5.1	466	51.2	5.5	4635	47.7	5
Pregnancy with abortive outcome	**1549**	**19.4**	**6.6**	**5209**	**23.1**	**8.6**	**1714**	**36.9**	**20.2**	**8472**	**24.1**	**9.1**
Miscarriage	712	46.0	3	2332	44.8	3.9	777	45.3	9.2	3821	45.1	4.1
Other abnormal products of conception	516	33.3	2.2	1701	32.7	2.8	571	33.3	6.7	2788	32.9	3
Others	321	20.7	1.4	1176	22.6	2	366	21.4	4.3	1863	22.0	2
Assistance to the mother for reasons linked to the fetus, amniotic cavity and problems of childbirth	**1587**	**19.9**	**6.7**	**4007**	**17.8**	**6.6**	**704**	**15.1**	**8.3**	**6298**	**17.9**	**6.8**
Membrane rupture	533	33.6	2.3	1322	33.0	2.2	289	41.1	3.4	2144	34.0	2.3
False labor	448	28.2	1.9	921	23.0	1.5	133	18.9	1.6	1502	23.9	1.6
Others	606	38.2	2.6	1764	44.0	2.9	282	40.1	3.3	2652	42.1	2.9
Other maternal disorders related to pregnancy	**1220**	**15.3**	**5.2**	**2994**	**13.3**	**5**	**531**	**11.4**	**6.3**	**4745**	**13.5**	**5.1**
Haemorrhage in early pregnancy	489	40.1	2.1	1308	43.7	2.2	247	46.2	2.9	2044	43.1	2.2
Urinary tract infections in pregnancy	489	40.1	2.1	863	28.8	1.4	118	22.2	1.4	1470	31.0	1.5
Others	242	19.8	1	823	27.5	1.4	166	31.3	2	1231	25.9	1.3
Edema, proteinuria, hypertension disorder in pregnancy, labor and puerperal period	**578**	**7.2**	**2.5**	**2157**	**9.6**	**3.6**	**501**	**10.8**	**5.9**	**3236**	**9.2**	**3.4**
Gestational hypertension with proteinuria	207	35.8	1	860	39.9	1.4	170	33.9	2	1237	38.2	1.3
Pre-existing hypertension with severe complication, labor puerperal	138	23.9	0.6	521	24.2	0.9	147	29.3	1.7	806	24.9	0.9
Others	233	40.3	1	776	36.0	1.3	184	36.7	2.2	1193	36.9	1.4
Other obstetric conditions not elsewhere classified	**325**	**4.1**	**1.4**	**1005**	**4.5**	**1.7**	**137**	**2.9**	**1.6**	**1467**	**4.2**	**1.6**
Puerperal complications	**154**	**1.9**	**0.7**	**332**	**1.5**	**0.6**	**59**	**1.3**	**0.7**	**545**	**1.6**	**0.6**
Childbirth with ICU admission and/or death	**35**	**0.4**	**0.2**	**78**	**0.3**	**0.1**	**28**	**0.6**	**0.3**	**141**	**0.4**	**0.2**
Diagnoses in other chapters of ICD-10	**124**	**1.6**	**0.5**	**345**	**1.5**	**0.6**	**65**	**1.4**	**0.8**	**534**	**1.5**	**0.6**
Total	**7979**	**100.0**	**33.8**	**22519**	**100.0**	**37.3**	**4649**	**100.0**	**54.9**	**35147**	**100.0**	**37.8**

*By groups and most frequent categories of ICD-10 **Rate of obstetric complications = ratio of hospitalizations and the number of births in each age.

In relation to diagnoses by age group, it was observed that the pregnancy with abortive outcome stood out for pregnant women aged 35 years, with 20.2 hospitalizations per 100 deliveries; in contrast, among women aged 10-19 years this number is 6.6, and 8.6 for those aged 20-34 years. Only for false labor (1.9%) and urinary tract infections in pregnancy (2.1%) were observed higher rates of hospitalization among pregnant adolescents (Table 1). The other diagnoses appear with high percentages of admissions, showing higher values for pregnant women above 35 years of age. Thus, in the profile of obstetric admissions there is variability among the grievances that can lead to an episode of hospitalization, exposing pregnant women in Paraná and their fetuses to some risk to health.

It was observed that for seven Regional Health Areas, the hospitalization rates were higher than average in the state of Paraná, of 37.8 hospitalizations per 100 deliveries. Admission rates varied: the lowest was in Telêmaco Borba (8.4%) and the highest in Ponta Grossa (62.6%). While in Telêmaco Borba the cesarean section rate was 20.3%, the Regional Health of Ponta Grossa had a rate of 34.2%. The rates of ob-

stetric complications in the Regional Health of Maringá was 50%, and in Campo Mourão 32.9%. These Regional areas also were the ones with the highest percentages of cesarean delivery (51.6 and 48.8%, respectively) (Table 2).

Table 2 – Distribution of hospitalizations per delivery, type of delivery and rates of obstetric complications, according to the health region – Paraná, Brazil, 2010

Regional Health Area	Total admissions*	Delivery		Delivery (%)		Complications	
		n(a)	%	vaginal	cesarean	n(b)	rate (b/a)
01st Paranaguá	3111	2457	79.0	66.3	33.7	687	28.0
02nd Metropolitana	36381	29949	82.3	68.2	31.8	13457	44.9
03rd Ponta Grossa	8658	6717	77.6	65.8	34.2	4203	62.6
04 th Irati	2347	1755	74.8	68.5	31.5	752	42.8
05 th Guarapuava	5728	5151	89.9	69.4	30.6	999	19.4
06 th União da Vitória	2310	1833	79.4	62.7	37.3	961	52.4
07 th Pato Branco	2906	2508	86.3	66.1	33.9	599	23.9
08 th Francisco Beltrão	2919	2593	88.8	57.8	42.2	1091	42.1
09 th Foz do Iguaçu	5253	4199	79.9	66.1	33.9	1256	29.9
10 th Cascavel	5973	5215	87.3	56.5	43.5	1335	25.6
11 th Campo Mourão	3750	2953	78.7	51.1	48.9	971	32.9
12 th Umuarama	1975	1622	82.1	56.5	43.5	451	27.8
13 th Cianorte	1346	1001	74.4	76.6	23.4	360	36.0
14 th Paranavaí	2338	1794	76.7	57.9	42.1	627	34.9
15 th Maringá	6187	4521	73.1	48.3	51.7	2260	50.0
16 th Apucarana	3033	2417	79.7	56.1	43.9	933	38.6
17 th Londrina	7146	6393	89.5	62.1	37.9	2148	33.6
18 th Cornélio Procópio	2393	2041	85.3	74.7	25.3	448	22.0
19th Jacarezinho	2752	2207	80.2	73.2	26.8	753	34.1
20th Toledo	2569	2369	92.2	61.2	38.8	567	23.9
21st Telêmaco Borba	1820	1722	94.6	79.7	20.3	144	8.4
22nd Ivaiporã	1048	980	93.5	65.0	35.0	145	14.8
Paraná	**111943**	**92397**	**82.5**	**64.5**	**35.5**	**35147**	**37.8**

*Sum of admissions for primary (111,409) and secondary diagnosis (09) of the pregnancy, childbirth and postpartum chapter, and admissions with complications (525).

A total of 28 deaths were identified, among which 16 (57.1%) were in women aged between 20 and 34 years. In 42.9% of cases, the reason that led the woman to the hospital was the diagnosis of delivery (Table 3).

Table 3 – Distribution of maternal deaths by age and primary diagnosis at admission – Paraná, Brazil, 2010

Primary diagnosis on admission	10 to 19		20 to 34		35 to 49		Total	
	N	%	N	%	N	%	N	%
Pregnancy with abortive outcome	-	-	1	6.3	-	-	1	3.6
Edema, proteinuria and hypertensive disorders in pregnancy, birth and puerperium	-	-	5	31.3	3	30.0	8	28.6
Assistance to the mother for reasons linked to the fetus, amniotic cavity and problems of childbirth	-	-	-	-	2	20.0	2	7.1
Complications of labor and delivery	-	-	2	12.5	1	10.0	3	10.7
Delivery	1	50.0	7	43.8	4	40.0	12	42.9
Other obstetric conditions not elsewhere classified	-	-	1	6.3	-	-	1	3.6
Shock not elsewhere classified	1	50.0	-	-	-	-	1	3.6
Total	**2**	**100.0**	**16**	**100.0**	**10**	**100.0**	**28**	**100.0**

DISCUSSION

In the state of Paraná, in 2010, for every 100 births financed by SUS, there were 38.7 hospitalizations due to obstetric complications. The incidence was higher in women older than 40 years, reaching 65.4% among those aged between 40 and 44 years and 125.9% for those aged 45 to 49 years.

A study carried out in Ukraine found a 52% rate of hospital admissions due to complications during pregnancy in relation to childbirth[12]. The most frequent and severe complications are those of labor and delivery that reach 31.2 per every 100 births in the United States[13].

In the present study, the most frequent diagnoses were *complications of labor and delivery*, *pregnancy with abortive outcome* and *assistance to the mother for rea-*

sons linked to the fetus, amniotic cavity and problems related to childbirth. The most common diagnoses for women aged between 10 and 34 years repeat this same order. However, over 35 years the most frequent diagnosis was *pregnancy with abortive outcome*.

The highest RtOC were observed among women over 35 years, supporting the findings of a study carried out in Chile, which found the occurrence of 16.9% of hospitalizations for bleeding and 13.1% for glucose alterations in women of this age[13].

In addition to the complications for women's health, pregnancies in older age can have adverse perinatal outcomes. In a study with two groups of pregnant women – under 35 years, and 35 years and older – in the second group was found a greater number of complications for the newborn, such as low birth weight, macrosomia, prematurity, Apgar score less than 7 at 1 and 5 minutes after birth, and fetal deaths[14].

A study on complications that occur during labor showed that there is a relationship between the lack of user embracement and humanization of the healthcare team, and increased obstetric complications. Interviews with professionals in a public hospital in a city of Paraná revealed that the care of patients in labor is depersonalized, with unnecessary interventionist practices, which contributes to the increase in obstetric complications[15].

As for the high percentage of admissions for *pregnancy with abortive outcome*, it is important to emphasize the need for the team to rethink the strategies of care for women, both for family planning, which covers all ages, and for the risk of complications that increases with age.

Admissions due to *assistance to the mother for reasons linked to the fetus, amniotic cavity and problems related to childbirth* had complications such as premature rupture of membranes (34%) and false labor (23.9%). In a case-control study carried out in a city in southern Brazil it was found association between the rupture of amniotic membranes and prematurity, which shows that maternal disorders resonate with increased perinatal morbidity[16].

Among the admissions due to *other maternal disorders predominantly related to pregnancy*, the bleeding in early pregnancy (43.1%) and urinary tract infections (31%) called attention. Urinary tract infection is considered preventable because it is sensitive to the actions developed in primary health care, and hospital admissions for this reason may indicate poor quality of care at this level of attention[17]. It should be noted that the highest percentage of hospitalizations for urinary infections observed in this study occurred in pregnant adolescents, adding another complication to be considered by the health team in the care for pregnant women in this age group.

In this study, hospitalizations for *edema, proteinuria and hypertensive disorders in pregnancy, labor and puerperal period*, although less frequent (9.2% of all complications), occurred predominantly in older women (10.8%) than in the age group of 20-34 years (9.6%), and among adolescents (7.2%).

Hypertensive diseases of direct obstetric causes are the greatest responsible for maternal mortality worldwide and in Brazil[17]. Hence, monitoring the blood pressure at each visit for prenatal care is essential for the early identification of hypertensive disorders in order to prevent the development of signs and symptoms potentially fatal [18].

Considering the inequality in access to health services, and also the profile of the served population, one of the objectives of the study was to analyze the variations in admissions for obstetric disorders in smaller geographic areas, which was done by comparing the RtOC in each Regional Health with the proportion of cesarean sections. It was assumed that the medicalization of childbirth, expressed in the high number of cesarean deliveries would be present in Regional Health areas with high RtOC too.

The surgical birth can be the most suitable for women with any risk identified during pregnancy, for example, diagnosis of congenital heart disease and some other previously diagnosed pathological cases[19]. The elective cesarean, on its turn, may increase the occurrence of infections and bleeding, besides the possibility of accidental laceration of some organ[20].

A low RtOC (8.4%) and low rate of cesarean section (20.3%) were observed in the Regional Health of Telêmaco Borba, and a high RtOC (50%) and high rate of cesarean section (51.7%) in the Maringá Regional Health. This behavior was not uniform in the state of Paraná, as there were Regional areas with lower rates of cesarean delivery but with high RtOC, as occurred in Ponta Grossa and União da Vitória. Considering that hospitalization may be associated with variation of indicators in each region, further studies should be carried out to check the number of doctors for the care of pregnant women per Regional Health and the number of nurses per capita, the number of hospitals, access to health services and also, depending on the region, the standards of care, such as the coverage of the Family Health Program (Estratégia Saúde da Família).

The rate of obstetric complications analyzed in this study consists of an assistance parameter quoted in Ordinance of the Ministry of Health[11]. This indicator can be used to evaluate, even if indirectly, the quality of care given to women during pregnancy, be it related to education, promotion, prevention, early diagnosis or treatment. I.e., the better the access and quality of care, the lower will be the hospitalization rates for obstetric complications.

The database on hospital admissions from the Ministry of Health (SIH-SUS) can be used for studies of hospital

morbidity, because in addition to control and examine obstetric complications, it has important information for understanding the circumstances of maternal death[21]. It is noteworthy that these hospital data are used in analyzes and investigations carried out by the Regional Committees and the State Committee on Maternal Mortality in the state of Paraná.

Some limitations should be considered when evaluating the results of this study. Data from the SIH-SUS depict only the events that led to hospitalization due to its severity. Other events that occur during pregnancy were not included, where women are treated in outpatient sectors of urgency and/or emergency care, and which should also be monitored.

There is also a classic consideration that as the SIH-SUS database includes only hospitalizations financed by the public sector, it does not portray all the cases occurring in the population of pregnant women. It is also noteworthy that hospitalizations analyzed in this study refer to the total number of hospitalizations, and not of pregnant women, i.e., the same woman may have been admitted more than once during the year 2010, therefore, to calculate the rate, all admissions were included in the numerator.

The quality of data in the SIH-SUS is also often questioned[22], especially data on admission diagnosis. The inaccurate assignment of codes may happen, or the misclassification of the diagnosis because the technicians of hospitals billing sectors are often not trained for the task of coding of diagnoses. In this regard it is essential that municipal managers and employees of the audit sectors are prepared and aware for the assessment and control of hospital admissions, in order to ensure the coverage and quality of SIH-SUS information so that it is useful in local and regional decisions related to the access and quality of health care for the population[23].

Although there are limitations, the SIH-SUS database must be used in epidemiological studies because it represents the universe of hospitalizations funded by the public sector in Brazil and, when analyzed together with results from other sources, it shows the most prevalent diseases, and may support the establishment of political plans and the allocation of public resources in a community.

CONCLUSION

In this study, the description of admissions for obstetric complications, with selection of primary and secondary diagnoses for admission to the ICU and hospital mortality, the adopted procedures, and also the procedures in the list of severe cases of maternal morbidity may consist of an analysis model to be adopted for monitoring the health of pregnant women and the quality of services.

The results allowed the finding that hospitalizations were proportionately more common for pregnant women aged above 40 years, especially for pregnancy with abortive outcome, early rupture of membranes and hypertension in pregnancy. In pregnant adolescents, a larger RtOC due to admissions for urinary infection called the attention.

In relation to the primary diagnosis of admission represented by *complications of labor and delivery*, other more localized studies should be carried out to investigate whether these conditions result from pre-existing maternal conditions or the possibility of over-medicalization during labor.

In this regard, hospital committees for control of maternal and infant mortality could expand its activities, also evaluating admissions for obstetric complications, its causes and the care provided to pregnant women hospitalized, raising the issue of recognizing the problems and proposing solutions.

Besides the control and examination of cases of complications during labor and delivery by hospitals, the obstetric hospitalizations and complications during labor and delivery could also be included in the grievances list of indicators monitored by municipalities, institutions and employees of Primary Care and Family Health Program.

It is expected that further studies on hospital or obstetric complications during pregnancy are carried out in different states and regions of Brazil to enable comparisons, and expand knowledge about women's health, helping to make motherhood safer in the country.

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