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Hospitalization during pregnancy according to childbirth financial coverage: a population-based study

Hospitalização durante a gravidez segundo financiamento do parto: um estudo de base populacional

Hospitalización durante el embarazo según la financiación del parto: un estudio de base poblacional

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ABSTRACT

Objective: To analyze the occurrence, profile and main causes of hospitalization during pregnancy according to the type of childbirth financial coverage. **Method:** A cross-sectional population-based study carried out with puerperal women through a stratified sample, calculated according to the hospital and the type of childbirth financial coverage source: public sector (SUS) or private (not SUS). The sociodemographic profile, the rate of obstetric complications and the causes of hospitalization were analyzed, coded according to International Classification of Diseases. **Results:** A total of 928 postpartum women were interviewed, of whom 32.2% reported at least one hospitalization during pregnancy. Those with childbirth covered by SUS were less favored because they were the majority among hospitalized women (57.2%), with a higher percentage of adolescents (18.1%), lower education level (91.8%), low family income (39.3%) and fewer prenatal consultations (25.3%). The most frequent causes of hospitalization were "other maternal diseases that complicate pregnancy" (24.6%) (with emphasis on anemia and influenza), urinary tract infection (13.1%), preterm labor (8.7%) and hypertension (7.2%). **Conclusion:** Anemia, influenza, urinary tract infection, preterm labor and hypertension should especially be prevented and treated to avoid hospital admissions during pregnancy, especially among pregnant women covered by SUS.

DESCRIPTORS

Pregnancy; Hospitalization; Pregnancy Complications; Obstetric Nursing; Maternal-Child Nursing.

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INTRODUCTION

Hospital admission is an event that negatively affects the life of any individual. When it occurs during pregnancy, it exposes the pregnant woman and her family to a situation of vulnerability and concern, since what is expected is that everything occurs naturally and without intercurrences[1].

It is estimated that more than four million pregnant women between the ages of 15 and 49 were hospitalized in the United States in 2011[2]. In Brazil, a study carried out in the state of Paraná showed that 37.8 hospitalizations occurred during the gestation period for every 100 births due to obstetric complications in 2010[3], which can be caused by biological, socioeconomic or care factors.

Pregnant adolescents or older women from unfavorable social classes and with low education levels are more likely to develop more severe complications during pregnancy. Intercurrences such as hypertension, pre-eclampsia, urinary tract infection (UTI), premature labor and fetal growth restriction are described as the main causes of hospitalization for the treatment and prevention of undesirable consequences[4-7] such as maternal, fetal and infant morbidity and mortality.

A study with data from the Centers for Disease Control and Prevention (CDC), through continuous data collection of all pregnant women with live births from 32 participating health centers in 20 US states, evidenced that UTI occurred in 17.3% of pregnant women and 3.8% of these needed hospitalization[8]. In Brazil, a survey conducted in the city of Rio Grande (Rio Grande do Sul state) with all mothers of live births in 2010 found that 2.9% of them had to be hospitalized for UTI treatment[9].

Gestational hypertension is also characterized as one of the most common complications during pregnancy. When this condition is not adequately treated, it can lead to episodes of emergency care, hospitalization and maternal near-miss (MNM)[10] due to complications such as pre-eclampsia, eclampsia and HELLP syndrome, potential causes of maternal mortality[11-12].

When a pregnant woman needs hospital care and treatment, it is a sign of greater intercurrence severity[8]. Severe cases of hospitalization in pregnancy, whether or not for obstetric reasons such as hemorrhage, infection, preterm labor and hypertension, may contribute to maternal mortality. The World Health Organization (WHO) estimates that every day around 800 women die worldwide due to causes related to pregnancy and childbirth, although most of these situations are avoidable[12].

Studies that analyze all causes of hospitalizations during pregnancy and that stratify them according to the source of childbirth funding are scarce in the literature and should be performed to better understand the subject. It is not known whether there are differences in the sociodemographic profile of hospitalized pregnant women, in the frequency and reasons for admissions of pregnant women with childbirth financially covered by the public healthcare system compared to the private healthcare system.

Considering that hospital admission is necessary when more serious diseases or symptoms occur during pregnancy, and in turn that these may potentiate negative outcomes for the health of the mother and the fetus, understanding the main causes of hospitalization in this period can represent an important tool to evaluate and propose adequate strategies in prenatal care and improve the healthcare of pregnant women. Thus, the objective of this study was to analyze the occurrence, the profile of the women and the main reasons for hospitalization during pregnancy according to public or private financial coverage of the childbirth. It is presupposed that women whose childbirth was funded by the public sector have unfavorable characteristics, whether in their sociodemographic profile, a greater number of hospitalizations, or among the reasons for hospitalization.

METHOD

A cross-sectional, population-based study carried out with puerperal women admitted for childbirth in hospitals that are attended by the Unified Health System (SUS – *Sistema Único de Saúde*) and by the private system (not by SUS) in the municipality of Maringá-PR. Maringá is the third largest municipality of Paraná with 403,063 inhabitants in 2016, an HDI of 0.808 and an urbanization degree of 98.2%[13]. It is the headquarters for the 15th Health Regional of the State with coverage of 30 municipalities and the regional reference for health care, education, trade and services. The primary care network has 33 Basic Health Units and 71 Family Health Strategy teams, covering 66% of the population. Secondary and tertiary care consist of two Emergency Care Units and six hospitals that provide care in childbirth: one of which is a 100% public regional school hospital; another hospital that provides 70% of its beds for the SUS and 30% for private health insurance or private plans (not covered by SUS), and four hospitals that exclusively serve the private healthcare network[14].

The sample was calculated using the number of live births from women residing in the municipality of Maringá in the year 2012, stratified by the type of childbirth financial coverage: either by the SUS – childbirth financed by the public health sector – or not by the SUS – childbirth financially covered by health insurance plans, health agreements or privately. Of the 4,656 live births that occurred in 2012, 2,121 were covered by the SUS (45.5%), and 2,535 were not covered by the SUS (54.5%). After applying the stratified sampling technique and considering an alpha error of 5%, a relative frequency of 50%, a maximum error of 3% and 10% of possible losses, the representative sample of pregnant women in Maringá was composed of 928 women who had given birth.

Data collection was performed through interviews conducted by four interviewers from October 2013 to February 2014 in all the institutions that provide childbirth care in the municipality, and using an electronic instrument elaborated using the application Google Docs. All interviews were checked daily.

For puerperal women who reported at least one hospitalization during pregnancy, the reason for the hospitalization

was asked, and in cases where the woman was hospitalized more than once, all reasons were recorded and later coded according to the diagnoses groupings and categories according to the International Statistical Classification of Diseases and Related Health Problems – 10th Revision (ICD-10), especially in chapter XV on diseases of pregnancy, childbirth and puerperium (codes O00 to O99).

Data were analyzed according to sociodemographic and care characteristics (age, education level, race/skin color, monthly family income *per capita*, marital status, number of prenatal consultations), Rate of Obstetric Complications (ROC) and according to the type of childbirth funding whether by the SUS or not by the SUS. The ROC is one of the assistance parameters of the SUS defined in a Ministry of Health ordinance (Decree No. 1.631, from October 1, 2015)[15], and represents the percentage of hospitalizations due to obstetric complications in relation to the total number of deliveries. In this study, the ROC was calculated by diagnosis and the childbirth financial coverage source. To verify the relative risk (RR) for hospitalization during pregnancy according to the type of childbirth financial coverage, a risk for puerperal women with childbirth financed by the SUS was considered with a significance level of 5%. All puerperal women signed the Clear and Informed Consent Form. All the ethical precepts of Resolution 466/2012 of the National Health Council were met, and the project was approved by the Ethics Committee of the Universidade Estadual de Maringá-PR (nº 800.748/2013).

RESULTS

Of the 928 postpartum women interviewed, 52.7% (489) had their childbirth financially covered by the SUS, and 47.3% (439) were by private/particular healthcare plans (not by the SUS). The occurrence of at least one hospitalization during pregnancy was reported by 32.2% (299) of the puerperal women, with a higher proportion for those who delivered by SUS (57.2%). Women who delivered by SUS were also hospitalized more frequently during the last gestation; one hospitalization: 38.8% SUS and 33.4% non-SUS; two hospitalizations: 10.0% SUS and 5.4% non-SUS; and three or more hospitalizations: 8.4% SUS and 4.0% non-SUS (Table 1).

Table 1 – Distribution of hospitalizations according to childbirth financial coverage source – Maringá, PR, Brazil, 2013-2014.

Hospitalizations	SUS (n=489)		Not by SUS (n=439)		Total	
	N	%	N	%	N	%
	171	**34.9**	**128**	**29.2**	**299**	**32.2**
1	116	38.8	100	33.4	216	72.2
2	30	10.0	16	5.4	46	15.4
3 or more	25	8.4	12	4.0	37	12.4
Total	**171**	**57.2**	**128**	**42.8**	**299**	**100**

Note: (n.º e %).

Regarding the sociodemographic variables, Table 2 shows the differences in the profile of puerperal women who had at least one hospitalization during pregnancy according to the financial coverage source. Those with childbirths covered by the SUS had less favorable characteristics such as: higher proportion of adolescent pregnant women (18.1% by SUS and 5.5% not by SUS), pregnant women with low income (39.3% by SUS and 7.1% not by SUS), with lower education level (91.8% by SUS and 49.2% not by SUS), black and brown skin color (63.2% by SUS and 31.3% not by SUS) and with less than seven prenatal visits (25.3% by SUS and 7.8% not by SUS). Regarding the relative risk, it was also observed that puerperal women with childbirth covered by the SUS and income lower than three minimum wages had a higher risk of hospitalization compared to those with the same monthly family income not covered by the SUS (RR=1.8, CI=1.01-3.12). However, adolescent puerperal women who delivered through SUS birth had a lower risk of hospitalization during pregnancy compared to those who were not covered by the SUS (RR=0.5; CI=0.83-0.25) (Table 2).

Table 2 – Distribution of postpartum women according to the sociodemographic variables and type of childbirth financial coverage, relative risk (RR) and confidence interval (CI) – Maringá, PR, Brazil, 2013-2014.

Hospitalizations	SUS (n=489)				Not by SUS (n=439)				RR*	CI**
	Yes		No		Yes		No			
Variables	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**		
Age										
≤ 19 years	31	18.1	46	14.5	7	5.5	1	0.3	0.5	0.83-0.25
20 to 34 years	119	69.6	233	73.2	104	81.3	249	80.1	1.1	0.92-1.43
35 or more	21	12.3	39	12.3	17	13.3	61	19.6	1.6	0.94-2.75
Education level										
< 12 years	157	91.8	287	90.3	63	49.2	123	39.5	1.0	0.82-1.32
≥ 12 years	14	8.2	31	9.7	65	50.8	188	60.5	1.2	0.74-1.99
Race/skin color										
White	63	36.8	138	43.4	88	68.8	215	69.1	1.1	0.82-1.41
Not white	108	63.2	180	56.6	40	31.3	96	30.9	1.3	0.95-1.71
Monthly family income* **										
< 3 wages	66	39.3	120	38.6	9	7.1	36	12.0	1.8	1.01-3.12
3 or more wages	102	60.7	191	61.4	118	92.9	265	88.0	1.1	0.91-1.40
Partner										
Yes	146	85.4	275	86.5	121	94.5	306	98.4	1.2	1.00-1.49
No	25	14.6	43	13.5	7	5.5	5	1.6	0.6	1.20-0.33
Prenatal consultations&										
< 7 consultations	43	25.3	70	22.5	10	7.8	9	2.9	0.8	1.33-0.44
7 or more	127	74.7	241	77.5	118	92.2	302	97.1	1.2	1.00-1.51

*RR: Relative risk. **CI: 95% confidence interval. ***Monthly family income *per capita* – Minimum wage/salary in force in the period of data collection: R$678.00 (BRL). Four women did not report their income. &One woman did not report the number of prenatal consultations.

The hospitalizations distributed according to cause of hospitalization, the ICD-10 groupings and categories, and the type of childbirth coverage are shown in Table 3. There were 345 hospitalizations during pregnancy, 196 hospitalizations reported by puerperal women who gave birth through SUS, and 149 by puerperal women who did not gave birth through SUS. The Rate of Obstetric Complications (ROC) was 37.2 hospital admissions for every 100 births; 40.1 by the SUS and 33.9 not by the SUS. Regarding the causes, other obstetric conditions not elsewhere classified (27.8% and ROC of 10.3 per 100 births), other maternal disorders predominantly related to pregnancy (24.7% and ROC of 9.2 per 100 births) and care provided to the mother for reasons related to the fetus, the amniotic cavity and for possible problems related to childbirth (23.8% and ROC of 8.8 per 100 births) can be highlighted.

The main reasons for hospitalization for the total of admissions by SUS and not by SUS were: other maternal diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium (24.6%), urinary tract infection – UTI (13.1%), preterm labor (8.7%) and gestational hypertension (7.2%) (Table 3). Regarding the diagnosis categories, differences were observed between puerperal women from SUS and not from the SUS. Women who delivered through SUS were more frequently hospitalized for other maternal diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium (23.5%) (with emphasis on lower belly pain, influenza and anemia), UTI (15.8%), preterm labor (10.2%) and gestational hypertension (8.7%); while women who did not deliver through SUS reported more episodes of hospitalization for other maternal diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium (26.2%) (with emphasis on anemia, viral and influenza), abnormalities of uterine contraction (10.1%), excessive vomiting in pregnancy and UTI (9.4% each) (Table 3).

Table 3 – Distribution of hospitalizations according to the causes* and the type of childbirth funding – Maringá, PR, Brazil, 2013-2014.

Causes for hospitalization[&]	SUS			Not by SUS			Total		
	n[¶]	%	ROC**	n[¶]	%	ROC**	n[¶]	%	ROC**
Other obstetric conditions, not elsewhere classified (O95-O99)	**50**	**25.5**	**10.2**	**46**	**30.9**	**10.5**	**96**	**27.8**	**10.3**
Other maternal diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium[#]	46	23.5	9.4	39	26.2	8.9	85	24.6	9.2
Maternal infectious and parasitic diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium	4	2.0	0.8	7	4.7	1.6	11	3.2	1.2
Other maternal disorders predominantly related to pregnancy (O20-029)	**52**	**26.5**	**10.6**	**33**	**22.1**	**7.5**	**85**	**24.7**	**9.2**
Infections of genitourinary tract in pregnancy	31	15.8	6.3	14	9.4	3.2	45	13.1	4.8
Excessive vomiting in pregnancy	9	4.6	1.8	14	9.4	3.2	23	6.7	2.5
Diabetes mellitus in pregnancy	8	4.1	1.6	1	0.7	0.2	9	2.6	1.0
Haemorrhage in early pregnancy	4	2.0	0.8	2	1.3	0.5	6	1.7	0.6
Venous complications in pregnancy	-	-	-	2	1.3	0.5	2	0.6	0.2
Maternal care related to the fetus and amniotic cavity and possible delivery problems (O30-O48)	**48**	**24.5**	**9.8**	**34**	**22.9**	**7.7**	**82**	**23.8**	**8.8**
Antepartum haemorrhage, not elsewhere classified	15	7.7	3.1	8	5.4	1.8	23	6.7	2.5
Premature separation of placenta [abruptio placentae]	10	5.1	2.0	9	6.0	2.1	19	5.5	2.0
Premature rupture of membranes	11	5.6	2.2	5	3.4	1.1	16	4.6	1.7
Maternal care for abnormality of maternal pelvic organs	3	1.5	0.6	6	4.0	1.4	9	2.6	1.0
Maternal care for other fetal problems	7	3.6	1.4	1	0.7	0.2	8	2.3	0.9
Other disorders of amniotic fluid and membranes	2	1.0	0.4	5	3.4	1.1	7	2.1	0.8
Complications of labour and delivery (O60-075)	**23**	**11.7**	**4.7**	**25**	**16.8**	**5.7**	**48**	**13.9**	**5.2**
Preterm labour and delivery	20	10.2	4.1	10	6.7	2.3	30	8.7	3.2
Abnormalities of forces of labour	3	1.5	0.6	15	10.1	3.4	18	5.2	1.9
Oedema, proteinuria and hypertensive disorders in pregnancy, childbirth and the puerperium (O10-O16)	**17**	**8.7**	**3.5**	**9**	**6.0**	**2.1**	**26**	**7.5**	**2.8**
Gestational hypertension	17	8.7	3.5	8	5.3	1.8	25	7.2	2.7
Eclampsia	-	-	-	1	0.7	0.2	1	0.3	0.1
Other categories[+]	**6**	**3.1**	**1.2**	**2**	**1.3**	**0.5**	**8**	**2.3**	**0.9**
Total	**196**	**100.0**	**40.1**	**149**	**100.0**	**33.9**	**345**	**100.0**	**37.2**

*According to the most frequent ICD-10 groupings and categories. **ROC - Rate of Obstetric Complications = ratio between number of hospitalizations and number of deliveries according to the type of childbirth financial coverage. [&]The reasons for hospitalization reported by the puerperal woman were coded according to the ICD-10 groupings and categories (*World Health Organization*, 1998). [¶]More than one answer were admitted, since the women may have been hospitalized more than once for different causes. [#]Other maternal diseases: anemia, stress, throat infection, food poisoning, pharyngitis, unspecified pain, weakness, gastric pain, influenza, pneumonia, pruritus, colic, asthma. [+] Other categories: W19 (falls), S42 (fracture), V89 (motor-vehicle accident).
Note: (nº, % and ROC**).

DISCUSSION

This study showed that 32.2 of every 100 pregnant women living in the municipality of Maringá, in 2013 and 2014 had at least one hospitalization during pregnancy, and that the occurrence of hospitalization was higher among pregnant women with childbirth financial coverage by the public healthcare sector (SUS). A similar result was found for the state of Paraná on hospitalization for maternal disorders, where 38.7 pregnant women were hospitalized[3] for every 100 births. No studies were found in the literature that use ROC to measure the risk of hospitalization, and in this sense this study brings unprecedented results to the municipality of Maringá and reinforces the importance of using this parameter established by the Ministry of Health (MS), with the purpose to serve as a reference to guide managers in diagnosis and planning priority actions for maternal and child healthcare[15].

The high frequency of hospitalizations (three times or more) among SUS patients (8.4% versus 4.0% not by SUS) is highlighted, evidencing that this population is more vulnerable in the sense of needing a greater number of hospital admissions. This should be taken into account during the prenatal offer in the public health network, with intensified follow-up care in order to avoid the development of more serious situations that lead to maternal morbidity and mortality.

This study evidenced that the sociodemographic profile of pregnant women who were hospitalized in the municipality of Maringá differed according to the type of childbirth financial coverage. The majority of pregnant adolescents were concentrated in the SUS group, as well as those with low income and education level, being of black and brown ethnicity, and those who performed less than 7 prenatal consultations. This result is an unprecedented finding in the municipality, since the differences in the profile of hospitalized pregnant women according to the type of childbirth coverage had not yet been elucidated, also indicating that childbirth financial coverage may be a variable used as proxy for the economic level of this population.

Regarding the sociodemographic profile, few differences related to the risk of hospitalization were observed. The only small difference is the difference for SUS adolescents with a lower risk of hospitalization during gestation compared to those who did not use SUS; however, this difference should be considered with caution due to the small number of adolescents among puerperal women who did not give birth under SUS coverage. Other studies have been able to identify that pregnant women in extreme age groups are more likely to develop complications leading to hospitalization, in addition to this factor also presenting negative outcomes for fetal health such as prematurity, fetal distress and intrauterine growth restriction[4-6].

Regarding the reasons for hospitalization, *other maternal diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium*, UTI, preterm labor (PTL) and hypertension were the most frequent. *Other maternal diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium* represent an important finding of this study, since it has shown that innumerous reasons have occurred in a smaller proportion, however together they signal complications that can put the pregnancy at risk to the point of needing hospitalization. The main reasons for this category were influenza, pneumonia, vaginal discharge with prescription treatment, abdominal pain, asthma and anemia.

Influenza is a common viral infection, and when specifically caused by the H1N1 virus it becomes a reason of great concern for the pregnant population, who are considered susceptible and will usually require hospitalization[16]. Studies show that the impact caused by the HIN1 influenza virus in pregnant women and newborns results in a large number of hospitalizations, maternal deaths and premature births[17-18]. Vaccination against influenza is an important measure for reducing the number of cases, it is guaranteed by the SUS and should be encouraged during prenatal care among all pregnant women[16].

Regarding vaginal discharge reported by pregnant women as a frequent reason for hospitalization, it is important to note that increased vaginal discharge in pregnant women is common; however, vaginal discharge can be a warning sign for the presence of infections that can complicate gestation and delivery such as candidiasis, chlamydia, trichomoniasis, and bacterial vaginosis. Thus, the early diagnosis of these infections in pregnant women is essential to avoid complications, especially for newborns[19].

Urinary tract infections (UTI) represented the second main reason for hospitalization in this study, a result similar to that found in the state of California where hospital admissions of pregnant women by UTI totaled 13.2%[2]. However, this result was higher than that found in a study in the city of Rio Grande (RS), with hospitalization prevalence for the treatment of self-reported UTI by the 2,288 pregnant women in the study being 2.9%[9]. In this study, the high proportion of UTI hospitalizations is in line with the findings of other authors who identified the infection as one of the main complications during the pregnancy-puerperal cycle in the city of Natal (Rio Grande do Norte state) as 10.7%[20].

It is important to emphasize that the UTI is associated with complications such as premature birth[21], and considering that the gestation itself can cause changes that favor developing infections, such as urinary stasis and increased production of urine[22], it is necessary to offer prenatal care that is focused on the diagnosis and treatment of this complication, including guidelines from professionals for pregnant women such as hygiene measures and early identification of signs and symptoms[23].

In order to avoid cases of UTI the Ministry of Health in Brazil recommends the performance of two urine 1 and two uroculture tests in prenatal routines, both in the first and third trimesters of gestation[22]. A study carried out in two maternity hospitals in the city of Rio Grande (RS) showed that 23.6% of the pregnant women who attended prenatal care had not performed at least two urine tests[9]. The state of Paraná offers the performance of urine 1 and uroculture examinations in all trimesters of gestation to medium and high risk pregnant women through the program *Mãe Paranaense*, something that differentiates and qualifies the state in relation to the other states of the country[24].

The high hospitalization prevalence due to UTI during pregnancy found in this study indicates ineffective prenatal care, since such infections are considered sensitive to the health actions provided in primary care. It is worth noting the greater number of pregnant women who delivered through SUS who were affected by this problem. A study in the municipality of Francisco Beltrão which evaluated the epidemiological profile of SUS pregnant women classified as high risk identified 14.8% prevalence of UTI[25]. The public healthcare service must be prepared to attend this population and guarantee the performance of urine exams established to all pregnant women.

Preterm labor (PTL) was the third main reason for hospitalization with 8.7% of hospitalizations, and which also occurred in a higher proportion among SUS pregnant women. This intercurrence may increase the risk of neonatal death[26], in addition to causing premature birth. Some risk factors for early birth have already been elucidated in the literature such as the extremes of maternal age, pregnancy by assisted reproduction techniques, precarious socioeconomic conditions, domestic violence and smoking; therefore, it is necessary to pay attention to what is already known to be the cause of this intercurrence[5]. It is mainly the nurse's role to recognize pregnant women at risk and to guide them in identifying possible signs of preterm labor in order to prevent early childbirth and its consequences.

Hypertension was the fourth major reason for hospitalization in this study with 7.2% of the total, and was more frequent among SUS pregnant women. Because it represents a high risk of maternal morbidity and mortality[10,27], hypertensive disorders deserve attention from health professionals during the prenatal follow-up consultation. Monitoring blood pressure levels at each consultation and whenever necessary is essential for early identification of hypertensive disorders, which may have more serious consequences[3,10].

In order to reduce intercurrences, the Ministry of Health establishes that in the public health service pregnant women should have at least 6 prenatal consultations, and in addition, the basic network must perform all the routine exams, diagnose and treat any pregnancy complications, classify and stratify pregnant women according to risk at the first and subsequent consultations, and offer pregnant women classified as high risk a reference and access to the referral unit for outpatient and/or specialized hospital care[22]. Despite these recommendations, in most of the gestational intercurrences identified in this study that led to hospitalization, the pregnant women of the public network were more affected when compared to those of the private network in the municipality of Maringá.

It is important to highlight that the prevalence of 32% of hospitalizations during pregnancy identified in this study represents only part of the morbidity profile during pregnancy, since it only describes those diseases with more severe symptoms that have led to hospitalization. Therefore, the care provided during gestation must be of quality in order to monitor these diseases and avoid complications and the need for hospital treatment, regardless of the type of childbirth coverage.

Some limitations should be considered when interpreting the results of this study such as the fact that the sociodemographic information, the number of hospitalizations and their reasons are self-reported by the women. However, because the interview was carried out in the postpartum period, it is believed that this bias may have been circumvented, taking into account that puerperal women would still remember the events that happened in their gestation. Since they were self-reported, it was not possible to ascertain whether there was emergency hospitalization, or whether the women were admitted to the nursing ward or just remained under observation for less than 12 hours.

In addition, the severity of the hospitalization and the average length of stay were not analyzed, which could be another data to differentiate the two groups of women. It is suggested that other studies on gestational hospitalizations according to the type of childbirth financial coverage be conducted in different regions of Brazil due to the scarcity of data in the literature that shows the differences in the profile of these populations. Thus, it will be possible to increase the knowledge about this theme and then contribute to improving the care provided to women during the gestational period. We also recommend that future studies consider the length of hospital stay to find out which complications make hospitalization longer, and whether the duration of hospital stay affects the health of pregnant woman and the fetus.

CONCLUSION

This study identified high hospitalization prevalence during pregnancy, especially in pregnant women with childbirths financially covered by the public health care sector, thus showing a greater vulnerability in these and reinforced by the diagnoses with higher rates of obstetric complications. Higher prevalence of pregnant adolescents with low education levels, non-white race/skin color, low income and with fewer prenatal consultations was also observed among this same population. The hospitalization frequency was also higher among SUS pregnant women.

Overall, the results showed that the main reasons for hospitalization among all pregnant women were *other maternal diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium*, UTI, preterm labor, hypertension, hemorrhage, vomiting and premature placental abruption.

The rate of obstetric complications used in this study showed that 40.1 pregnant women had to be hospitalized for every 100 SUS births, and 33.9 pregnant women required hospital care for every 100 births not covered under the SUS. The use of ROC as an assistance parameter established by the Ministry of Health should be encouraged to help health managers in identifying patterns of maternal morbidity and to develop preventive actions.

Regarding the evidence found in this study, puerperal women with childbirth financially covered by the public health sector (SUS) presented unfavorable socioeconomic conditions, a greater number of hospitalizations, and also a greater number of reasons for hospitalization. Therefore, the health care of this population in the basic health units in the municipality of Maringá must be intensified. We hope that other studies of the same character will be carried out in other regions of the country in order to increase knowledge about the health of pregnant woman according to the type of childbirth financial coverage, and to collaborate to promote safer maternity for women.

RESUMO

Objetivo: Analisar a ocorrência, o perfil e as principais causas de internação na gravidez por financiamento do parto. **Método:** Estudo transversal de base populacional, realizado com puérperas, por meio de amostra estratificada, calculada segundo o hospital e a fonte de financiamento do parto: setor público (SUS) e privado (não SUS). Foram analisados o perfil sociodemográfico, as taxas de intercorrência obstétrica e as causas de internação, codificadas de acordo com normas da Classificação Internacional de Doenças. **Resultados:** Foram entrevistadas 928 puérperas, das quais 32,2% relataram pelo menos uma internação na gestação. Aquelas com parto SUS mostraram-se menos favorecidas por ser maioria entre as internadas (57,2%), com maior percentual de adolescentes (18,1%), menor escolaridade (91,8%), baixa renda familiar (39,3%) e menor número de consultas pré-natal (25,3%). As causas mais frequentes de internação foram as "outras doenças da mãe que complicam a gravidez" (24,6%) (com destaque para anemia e influenza), infecção do trato urinário (13,1%), trabalho de parto prematuro (8,7%) e hipertensão (7,2%). **Conclusão:** Deve-se prevenir e tratar especialmente anemia, influenza, infecção urinária, trabalho de parto prematuro e hipertensão para evitar internações hospitalares na gravidez, principalmente para gestantes do SUS.

DESCRITORES

Gravidez; Hospitalização; Complicações na Gravidez; Enfermagem Obstétrica; Enfermagem Materno-Infantil.

RESUMEN

Objetivo: Analizar la ocurrencia, el perfil y las principales causas de ingreso hospitalario en el embarazo por financiación del parto. **Método:** Estudio transversal de base poblacional, realizado con puérperas, mediante muestra estratificada, calculada según el hospital y la fuente de financiación del parto: sector público (SUS) y privado (no SUS). Fueron analizados el perfil sociodemográfico, las tasas de alteraciones obstétricas y las causas de hospitalización, codificadas de acuerdo con las normas de la Clasificación Internacional de Enfermedades. **Resultados:** Fueron entrevistadas 928 puérperas, de las que el 32,2% relataron por lo menos una hospitalización en la gestación. Las con parto SUS se mostraron menos favorecidas al ser mayoría entre las hospitalizadas (57,2%), con mayor porcentual de adolescentes (18,1%), menor escolaridad (91,8%), bajos ingresos familiares (39,3%) y menor número de consultas pre natal (25,3%). Las causas más frecuentes de hospitalización fueron las "otras enfermedades de la madre que complican el embarazo" (24,6%) (con énfasis para anemia e influenza), infección del tracto urinario (13,1%), trabajo de parto prematuro (8,7%) e hipertensión (7,2%). **Conclusión:** Se debe prevenir y tratar especialmente anemia, influenza, infección urinaria, trabajo de parto prematuro e hipertensión para evitar ingresos hospitalarios en el embarazo, destacándose las gestantes del SUS.

DESCRIPTORES

Embarazo; Hospitalización; Complicaciones del Embarazo; Enfermería Obstétrica; Enfermería Maternoinfantil.

REFERENCES

1. Piveta V, Bernardy CCF, Sodré TM. Perception of pregnancy risk by a group of pregnant women hypertensive hospitalized. Cienc Cuid Saúde. 2016;15(1):61-8.
2. Ewing AC, Datwani HM, Flowers LM, Ellington SR, Jamieson DJ, Kourtis AP. Trends in hospitalizations of pregnant HIV-infected woman in the United States: 2004 through 2011. Am J Obstet Gynecol. 2016;215(4):499.e1-8. DOI: 10.1016/j.ajog.2016.05.048
3. Veras TCS, Mathias TAF. Hospitalizations leading causes for maternal disorders. Rev Esc Enferm USP. 2014;48(3):401-8. DOI: http://dx.doi.org/10.1590/ S0080-623420140000300003
4. Cavazos-Rehg PA, Krauss MJ, Spitznagel EL, Bommarito K, Madden T, Olsen MA, et al. Maternal age and risk of labor and delivery complications. Matern Child Health J. 2015;19(6):1202-11. DOI: 10.1007/s10995-014-1624-7.
5. Oliveira RR, Melo EC, Falavina LP, Mathias TAF. The growing trend of moderate preterm births: an ecological study in one region of Brazil. PLoS One. 2015;10(11):e0141852.
6. Socolov DG, Iorga M, Carauleanu A, Ilea C, Blidaru I, Boiculese L, et al. Pregnancy during adolescence and associated risks: an 8-year hospital-based cohort study (2007–2014) in Romania, the country with the highest rate of teenage pregnancy in Europe. Bio Med Res Int. 2017;2017:9205016. DOI:10.1155/2017/9205016
7. Novaes ES, Oliveira RR, Melo EC, Varela PLR, Mathias TAF. Perfil obstétrico de usuárias do Sistema Único de Saúde após implantação da Rede Mãe Paranaense. Cienc Cuid Saúde. 2015;14(4):1436-44.
8. Whitehead NS, Callaghan W, Johnson C, Williams L. Racial, ethnic, and economic disparities in the prevalence of pregnancy complications. Matern Child Health J. 2009;13(2):198-205. DOI: 10.1007/s10995-008-0344-2
9. Hackenhaar A, Albernaz EP. Prevalência e fatores associados a internação hospitalar para tratamento da infecção do trato urinário durante a gestação. Rev Bras Ginecol Obstet. 2013; 35(5):199-204.
10. Liyew EF, Yalew AW, Afework MF, Essén B. Incidence and causes of maternal near-miss in selected hospitals of Addis Ababa, Ethiopia. PloS One. 2017;12(6):e0179013. DOI: 10.1371/journal.pone.0179013
11. Nakimuli A, Nakubulwa S, Kakaire O, Osinde MO, Mbalinda SC, Kakande N, et al. The burden of maternal morbidity and mortality attributable hypertensive disorders in pregnancy: a prospective cohort study from Uganda. BMC Pregnancy Childb. 2016;16:205. DOI: 10.1186/s12884-016-1001-1
12. World Health Organization. Maternal mortality [Internet]. Geneva: WHO; 2016 [cited 2016 Dec 22]. Available from: http://www.who.int/mediacentre/factsheets/fs348/en/
13. Instituto Paranaense de Desenvolvimento Econômico e Social. Municípios e Regiões. Perfil Avançado do Município de Maringá [Internet]. Curitiba; 2016 [citado 2016 maio 23]. Disponível em: http://www.ipardes.gov.br/perfil_municipal/MontaPerfil.php?codlocal=309&btOk=ok
14. Brasil. Ministério da Saúde. DATASUS. Cadastro Nacional de Estabelecimentos de Saúde [Internet]. Brasília; 2017 [citado 2017 jul. 31]. Disponível em: http://cnes.datasus.gov.br

15. Brasil. Ministério da Saúde. Portaria n. 1.631, de 1º de outubro de 2015. Aprova critérios e parâmetros para o planejamento e programação de ações e serviços de saúde no âmbito do SUS [Internet]. Brasília; 2015 [citado 2017 jul. 31]. Disponível em: http://bvsms.saude.gov.br/bvs/saudelegis/gm/2015/prt1631_01_10_2015.html

16. Rasmussen SA, Jamieson DJ. 2009 H1 N1 influenza and pregnancy: 5 years later. N Engl J Med. 2014;371(15):1373-75. DOI: 10.1056/NEJMp1403496

17. Louie JK, Salibay CJ, Kang M, Glenn-Finer RE, Murray EL, Jamieson DJ. Pregnancy and Severe Influenza Infection in the 2013-2014 Influenza Season. Obstet Ginecol. 2015;125(1): 184-92.

18. Silva AA, Ranieri TMS, Torres FD, Vianna FSL, Paniz GR, Sanseverino PB, et al. Impact on pregnancies in south Brazil from Influenza A (H1N1) pandemic: cohort study. PLoS One. 2014;9(2):e88624. DOI:10.1371/journal.pone.0088624

19. Casillas-Vega N, Morfín-Otero R, Garcia S, Llaca-Díaz J, Rodríguez-Noriega E, Camacho-Ortiz A, et al. Frequency and genotypes of Chlamydia trachomatis in patients attending the obstetrics and gynecology clinics in Jalisco, Mexico and correlation with sociodemographic, behavioral and biological factors. BMC Women's Health. 2017;17:83. DOI: 10.1186/s12905-017-0428-5.

20. Rosendo TMSS, Roncalli AG. Prevalência e fatores associados ao Near Miss Materno: inquérito populacional em uma capital do Nordeste Brasileiro. Cien Saúde Colet. 2015;20(4):1295-304.

21. Agger WA, Siddiqui D, Lovrich SD, Callister SM, Borgert AJ, Merkitch KW, et al. Epidemiologic factors and urogenital infections associated with preterm birth in a midwestern U.S. population. Obstet Gynecol. 2014;124(5):969-77.

22. Brasil. Ministério da Saúde; Secretaria de Atenção à Saúde, Departamento de Atenção Básica. Atenção ao pré-natal de baixo risco [Internet]. Brasília; 2013 [citado 2017 jun. 28]. Sisponível em: http://bvsms.saude.gov.br/bvs/publicacoes/cadernos_atencao_basica_32_prenatal.pdf

23. Abdel-Aziz Elzayat M, Barnett-Vanes A, Dabour MF, Cheng F. Prevalence of undiagnosed asymptomatic bacteriuria and associated risk factors during pregnancy: a cross-sectional study at two tertiary centres in Cairo, Egypt. BMJ Open. 2017;7(3):e01319. DOI: 10.1136/bmjopen-2016-013198.

24. Paraná. Secretaria de Estado da Saúde. Linha Guia: Rede Mãe Paranaense [Internet]. Curitiba; 2012 [citado 2017 jun. 28]. Disponível em: http://www.saude.pr.gov.br/arquivos/File/ACS/linha_guia_versao_final.pdf

25. Costa LD, Cura CC, Perondi AR, França VF, Bertoloti DS. Perfil epidemiológico de gestantes de alto risco. Cogitare Enferm. 2016;21(2):1-8.

26. Demitto MO, Gravena AAF, Dell'Agnolo CM, Antunes MB, Pelloso SM. High risk pregnancies and associated with neonatal death. Rev Esc Enferm USP. 2017;51:e03208. DOI: http://dx.doi.org/10.1590/S1980-220X2016127103208

27. Madeiro AP, Rufino AC, Lacerda EZG, Brasil LG. Incidence and determinants of severe maternal morbidity: a transversal study in a referral hospital in Teresina, Piaui, Brazil. BMC Pregnancy Childb. 2015;15:210. DOI: 10.1186/s12884-015-0648-3

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