Acquisition and completion of pregnant woman's medical booklet in four populational-based surveys

Tatiane Nogueira Gonzalez [1]
https://orcid.org/0000-0002-9350-6152

Juraci Almeida Cesar [2]
https://orcid.org/0000-0003-0864-0486

[1] Programa de Pós-graduação em Ciências da Saúde. Faculdade de Medicina. Universidade Federal do Rio Grande. Campus da Saúde - Área Acadêmica Profº Newton Azavedo. Rua Visconde de Paranaguá, 102. CEP: 96.203-900. Rio Grande, RS, Brasil. E-mail: tnogueiragonzalez@gmail.com
[2] Programa de Pós-graduação em Saúde Pública. Universidade Federal do Rio Grande. Rio Grande, RS, Brasil.

Abstract

Objectives: to measure the prevalence of acquiring and evaluating the level of completion of the pregnant women's medical booklet on the occasion of childbirth in Rio Grande, Brazil.

Methods: this is a cross-sectional study including all puerperals residing in this municipality in 2007, 2010, 2013 and 2016. The mothers were interviewed at the only two local maternities up to 48 hours after childbirth. The data from the pregnant woman's medical booklet were copied on a standard form. The chi-square test was used to compare proportions.

Results: 10,242 pregnant women were included in this study. Of these, 54.8% (CI95%=53.8%-55.7%) had their pregnant woman's medical booklet with them at the time of admission. The completion pattern of the pregnant woman's medical booklet is divided into three groups, namely: with at least 95%: date of the last consultation visit, maternal height and blood pressure verification, uterine height, cardio-fetal heart rate and the Rh factor; 85% or more: date of the last menstruation, qualitative urine test, VDRL and HIV; and less than 30%: performance of clinical breast examination and cytopathology of the uterine cervix. In the private sector, the acquisition of the pregnant woman's medical booklet was 41% lower than at the public sector (62% vs. 44%).

Conclusions: the use of the pregnant woman's medical booklet and its completion were lower than expected on several items. Local managers need to work together with the health professionals and these health professionals should work with the mothers to promote the full use of this essential document for the maternal and child's health.

Key words *Prenatal care, Medical records, Health evaluation*

http://dx.doi.org/10.1590/1806-93042019000200007

Introduction

The pregnant women's medical booklet are the most complete and easily accessible document there is for pregnancy. It is a vital instrument for registering all the procedures and examinations performed, as well as to monitor the development of the pregnancy. This is important for the maternal and the child's well-being and for the health professionals in decision-making during the pregnancy.

In 1988, the *Cartão da Gestante* (Pregnant woman's medical card) was created and the pregnant woman's medical card underwent several modifications. The first version of the card had information about maternal demographic characteristics, reproductive history, some clinical and laboratory tests performed and pre-existing morbidities.[1] The most relevant changes occurred in 2015 when the pregnant woman's medical card was submitted to a significant reformulation, it was called the *Caderneta da Gestante* (Pregnant woman's booklet). At that time, information on healthy pregnancy, baby development, breastfeeding and women's rights during pregnancy were included in the booklet.[2] In 2016, the new version of the booklet included information on prevention and protection against dengue, as well as syphilis treatment and prevention.[3]

The Ministry of Health recommends that this important instrument for prenatal care should always remain with the pregnant woman, and it is the health professional's responsibility to register all the procedures that the pregnant woman performed, in order to ensure the continuity on care and the flow of information among the services.[4]

Since its inception, some studies have evaluated the acquisition of the pregnant woman's medical booklet at the parturient's admission at the maternity. This acquisition of the booklet ranged from 72% to 99%.[5-9] Studies on its completion are still very scarce. In Recife city (PE),[7] only 36% of the booklets contained the registration of anti-HIV serology, while in Vitória city (ES),[8] 97% of them registered the information in their booklet .

In general, studies addressing this issue are restricted to assess the demand in specific services and are, therefore, not representative for the population.[10-13] This hinders the establishment of measures and actions, especially at municipality level because the recommendations may not apply to all existing services.

This study evaluates the acquisition and completion of the pregnant woman's medical booklet among the parturients living at municipality level of Rio Grande (RS), Brazil, in a four population-based surveys.

Methods

This article was elaborated from the data on perinatal studies in Rio Grande (RS), Brazil. This municipality is located in the South coastal range, at about 300 km from Porto Alegre and 250 km from the border of Uruguay. In 2016, there were about 213,000 inhabitants, 95% of them resided in urban areas. The health service consisted of two hospitals, *Santa Casa de Misericórdia* and the *Hospital Universitário da Universidade Federal do Rio Grande* (FURG) (University Hospital), exclusive to the *Sistema Único de Saúde* (National Health Service), both with maternities, three medical specialized outpatient clinics and 32 primary health units.

These surveys aimed to evaluate the gestational and childbirth care received by all the parturients living in the urban and rural areas in this municipality from Jan. 01st to Dec.12th in 2007, 2010, 2013 and 2016. In being included in this study, the newborns should have reached a weight equal to or greater than 500 grams or were at least 20 weeks of gestational age.

The cross-sectional design was used, and the mothers were interviewed only once at the maternity up to 48 hours after the childbirth.[14] The sample size calculation was performed posteriori. Considering the 10,242 parturients included in these studies, the prevalence of the acquisition of the pregnant woman's medical booklet at the occasion of the childbirth, it was 50% and at a confidence level of 95%, it was possible to work with an error margin of 1 p.p. This calculation was performed on Epi Info software, version 7.2.10.[15]

The pregnant woman's medical booklet was considered as any other document at the public or private sectors, in which the pregnant woman had to have the medical booklet in other to be admitted at the hospital and provided the data on the procedures and examinations performed during prenatal care.

All the information shown here were obtained through a direct application of a single, standardized, pre-coded questionnaire with a predominance of closed-ended questions, which was divided into blocks containing information on demographic, socioeconomic, occupational, reproductive characteristics, gestational morbidity, life habits and maternal behavior, as well as care received during prenatal care and childbirth All the information from the pregnant woman's medical booklet were copied to a standard form.

Four interviewers were trained for each of the surveys. Each of them in the pilot study was performed in the same maternities in the month preceding the onset of the data collection. The search for the parturients was performed from the birth registration book at each maternity and through visits in the wards. All the mothers living in the municipality of Rio Grande were invited to participate in this study.

In 2007, 2010, and 2013 surveys, the interviews were conducted by using printed questionnaires. This step was performed by using EpiData Association software, Odense, Denmark (EpiData 3.1).[16] In the 2016 survey, tablets were used for the interviews; the information was downloaded at *Universidade Federal do Rio Grande* (FURG) server through the Research Electronic Data Capture (REDCap)[17] for immediate verification and correction of possible inconsistencies.

The analysis were performed by using the STATA version 12.1 program (StataCorp LP, College Station, USA).[18] The prevalence of the outcome and the frequency of completion of the information registered in the pregnant woman's medical booklet among the surveys were compared by using the chi-square test with Yates' correction.[19]

The survey research protocols were approved by the Ethics Committee in the Health Research Area at *Universidade Federal do Rio Grande* (FURG) as follows: 2007 (process file number: 05369/2006), 2010 (process file number: 06258/2009), 2013 (process file number: 02623/2012) and 2016 (process file number: 0030-2015).

Results

Data from the *Sistema de Informações sobre Nascidos Vivos* (Sinasc) (Information System on Live Births) revealed that 10,626 mothers residing in the municipality had a child in one of the two local maternities in 2007, 2010, 2013 and 2016. Of this total, 10,242 of them (or 96.4% of the total) were possible to be interviewed.

Table 1 shows that 18% of the puerperals were adolescents, 68% were white, 58% had at least concluded high school, 36% had a family income of at least three monthly minimum wages and 42% were employed during the gestational period. A little more than 40% were primiparous, 37% mentioned they had planned to get pregnant, 97% had some prenatal consultations, 78% of them started the prenatal in the first trimester and 82% completed at least six consultations during the gestational period. A little more than half (55%) performed prenatal care at the public service, 35% at the *Unidades Básicas de Saúde* (UBS) (Primary Health Units) and 20% at the outpatient clinics.

In Figure 1 it is possible to verify the acquisition of the pregnant woman's medical booklet in the studied period among all the mothers was 55% (CI95%=54%-56%), ranging from 51% in 2010 to 59% in 2013. In 2016, this acquisition was 41% higher among the puerperals assisted at the public service than at the private sector (62% *versus* 44%).

Table 2 shows the almost universal completion of the pregnant woman's medical booklet regarding the date and weight in the first and last prenatal care consultation, at least once the blood pressure was verified, uterine height, Rh factor, and the performance of pelvic ultrasound. The completion of the last menstruation occurred in 78% of the medical booklets, weight before getting pregnant in 65% while fasting of glucose, qualitative urine test, and Venereal Disease Research Laboratory (VDRL) and human immunodeficiency virus (HIV) testing were observed by about 90% of them. The lowest registration frequencies occurred for clinical breast examination and cytopathology uterine cervix at 17% and 26%, respectively. Finally, in the same table shows that there was a significant worsening in the completion of the date of the last menstruation, clinical breast examination, cytopathology uterine cervix, weight before getting pregnant, maternal height and Rh factor, and substantial improvement in the performance of glycemic tests, hemoglobin, anti-HIV, serology for syphilis, qualitative urine test, date of the first ultrasound and gestational age in this examination.

Discussion

In Rio Grande, the acquisition of pregnant woman's medical booklet at the occasion of childbirth, albeit significantly higher among puerperals who underwent prenatal care at the public sector, was low and has been declining. Its completion is variable, close to universalization of some items, while for others were far below than expected.

In Pelotas, a nearby city, the prevalence of acquisition was 83%,[6] while in a national hospital-based survey, it was 72%.[20] As there was no lack of the pregnant woman's medical booklet between 2007 and 2016 in Rio Grande, nor a substantial increase in the number of pregnant women who started prenatal care was from 97% to 99% in the same period, it is possible to suggest that the acquisition of this document has been undervalued, especially at the private sector. In this sector, the acquisition of the pregnant

Table 1

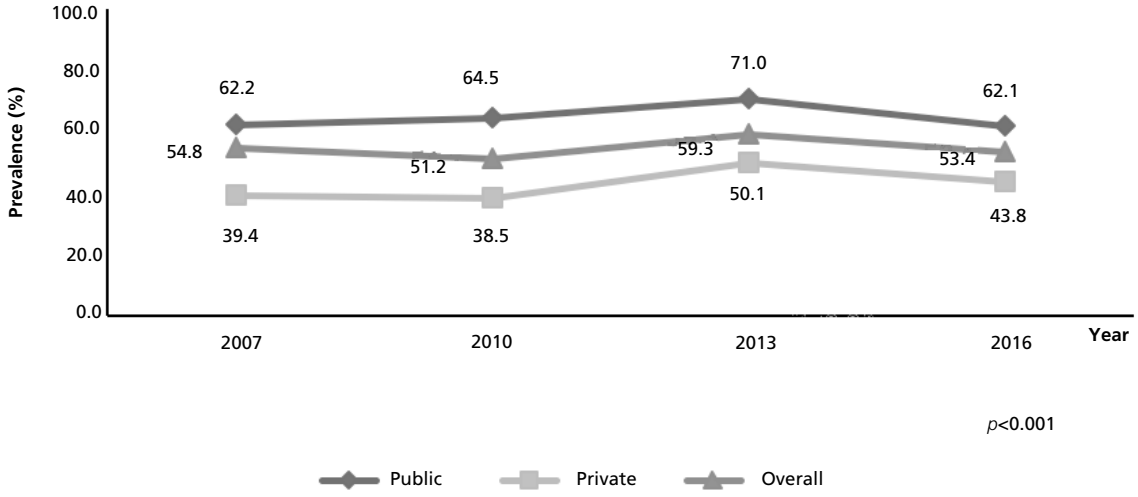
Characteristics of puerperals residents at the municipality level during the four years of the study. Rio Grande, RS, Brazil, 2007, 2010, 2013 and 2016.

Variable	Total	
	N	%
Age (years)		
11-19	1,874	18.3
20-24	2,755	26.9
25-29	2,509	24.5
30 and older	3,103	30.3
$\bar{X}$ (±SD)	26.1 (±6.5)	
Skin color		
White	6,965	68.0
Mixed	2,151	21.0
Black	1,127	11.0
Residing with husband/partner	8,593	83.9
Schooling (years)		
0-4	758	7.4
5-8	3,585	35.0
9-11	4,373	42.7
12 or more	1,526	14.9
$\bar{X}$ (±SD)	9.3 (±3.4)	
Monthly family income (minimum wages)		
Less than 1	1,147	11.2
1-1.9	3,144	30.7
2-2.9	2,294	22.4
3-5.9	2,561	25.0
6 or more	1,096	10.7
Median	2.32	
Employed during pregnancy	4,353	42.5
Primiparous	4,455	43.5
Wanted pregnancy	3,841	37.5
Prenatal care performed	9,914	96.8
Prenatal care location [9,917]*		
Primary healthcare unit	3,461	34.9
Outpatient clinic	2,013	20.3
Health plan/Private practice	4,443	44.8
Number of prenatal care consultations [9,917]*		
1-3	595	6.0
4-5	1,180	11.9
6 or more	8,142	82.1
$\bar{X}$ (±SD)	7.9 (±3.5)	
Trimester on prenatal care onset [9,917]*		
First	7,706	77.7
Second	2,013	20.3
Third	198	2.0
Total	10,242	100.0

* Only among those who performed at least one prenatal consultation.

Figure 1

Time evolution of the acquisition of the pregnant woman's medical booklet during the four years of the study. Rio Grande, RS, Brazil. 2007, 2010, 2013 and 2016. (N=9,917).



woman's medical booklet was always lower than at the public sector, ranging from 41% to 68% (Figure 1).

Regarding to the pregnant woman's medical booklet completion, different patterns were observed. This mosaic of findings reinforces that this instrument has been working poorly. This may be due to the non-portability of the pregnant woman's medical booklet by mothers and the non-registration of the procedures performed by the health professionals. A similar finding was found concerning the *Caderneta de Saúde da Criança* (Child's Health booklet).[21]

The comparison of the results of this study was impaired by the fact that other studies addressing the topic had mentioned only the variables that had higher or lower completion rates were in Juiz de Fora (MG),[7] Recife (PE),[8] Vitória (ES)[10] and Ponta Grossa (PR).[22] In all of them, the referred rates were similar to those observed in Rio Grande, suggesting that the lack of standardized completion also occurred in other locations.

Other authors who have evaluated the pregnant woman's medical booklet completion suggest that there is a greater appreciation by both the mothers and the health professionals regarding laboratory tests, in detriment of prenatal clinical exams.[10,23,24] This was not confirmed systematically in this study. What seems to occur is that all the examination that took a little more time, especially the physician's, which it was, in fact, lower than expected, both for the laboratory and for the clinical,[11,21,24-27] as for the qualitative urine test, VDRL and clinical breast examination and cytopathology uterine cervix.[7,13] It should be noted that the latter is not always necessary, since women may have performed it in less than three years, with a negative result, which would discharge its performance in a current gestation. Besides this, it is necessary to take into account the resistance of some mothers in the performance of exams such as the cytopathology test itself and the breast examination during the prenatal period.[28]

By interpreting the results of this time series, it is necessary to take in consideration some limitations, such as the changes in the information collected in different booklets facilitated by the Ministry of Health over these years that prevent the comparison of the evolution of some indicators over the period; the lack of standardization of different booklets available, especially those provided by the private sector that are restricted to a smaller number of items. It should also be pointed out that in the first surveys a few registrations were transcribed to a standard form. In 2016, it was decided to copy all the contents of the pregnant woman's medical booklet to the standard form.

This study showed that the acquisition of the pregnant woman's medical booketl is low, and there is a necessity to encourage the portability of this document at every medical consultation during the

Table 2

Acquisition of the pregnant woman's medical booklet according to the survey year and the type of prenatal care. Rio Grande, RS, Brazil, 2007, 2010, 2013 and 2016.

Variable	2007 (n=1,394)(%)		*p*	2010 (n=1,216)(%)		*p*	2013 (n=1,573)(%)		*p*	2016 (n=1,426)(%)		*p*	Total (%)
	Publ.	Priv.		Publ.	Priv.		Publ.	Priv.		Publ.	Priv.		
Date of last menstruation	84.4	87.6	0.238	86.3	82.6	0.094	84.7	65.8	<0.001	84.4	38.7	<0.001	78.6
Date of the first prenatal care consultation	98.6	99.5	0.259	99.9	99.9	0.510	99.8	99.2	0.084	99.7	99.8	0.681	99.5
Date of the last prenatal care consultation	97.5	99.9	0.022	99.4	99.2	0.655	98.8	99.2	0.495	99.6	99.4	0.653	98.9
Maternal weight	-	-	-	99.6	99.2	0.291	99.9	99.5	0.146	99.6	100	0.144	99.7
Blood pressure	-	-	-	97.3	99.2	0.036	97.8	97.3	0.507	99.6	99.4	0.653	98.3
Uterine height	-	-	-	99.3	97.8	0.028	98.8	95.3	<0.001	99.1	94.3	<0.001	97.9
Fetal heart rate	-	-	-	99.4	98.1	0.033	98.5	97.4	0.119	98.1	99.0	0.185	98.5
Clinical breast examination	-	-	-	32.4	34.0	0.600	9.7	12.9	0.048	6.4	15.9	<0.001	16.9
Cytopathology uterine cervix	-	-	-	34.2	32.9	0.655	43.3	32.5	<0.001	6.6	5.0	0.251	26.4
Weight before getting pregnant	-	-	-	68.3	53.8	<0.001	73.8	72.8	0.665	68.6	35.5	<0.001	65.1
Weight at the first prenatal care consultation	94.3	87.6	<0.001	99.2	98.4	0.210	99.9	99.5	0.146	99.8	98.2	0.001	97.8
Weight at the last prenatal care consultation	91.1	85.2	0.007	98.0	95.9	0.038	98.5	99.0	0.380	98.6	97.8	0.252	96.2
Fasting of glycemia	-	-	-	88.3	83.7	0.028	87.9	90.8	0.069	89.2	95.6	<0.001	89.2
Qualitative urine test	-	-	-	86.0	85.3	0.769	85.4	94.4	<0.001	88.5	92.3	0.022	88.3
VDRL or rapid test	-	-	-	83.7	86.7	0.189	93.6	94.5	0.440	94.0	86.9	<0.001	90.4
Anti-HIV	-	-	-	88.3	89.7	0.494	91.1	93.6	0.072	95.4	89.9	<0.001	91.6
First hemoglobin	-	-	-	74.3	70.6	0.188	83.8	89.2	0.002	85.4	95.4	<0.001	83.2
Second hemoglobin	-	-	-	36.2	52.2	<0.001	47.9	64.3	<0.001	50.2	78.6	<0.001	52.5
First fasting of glycemia	-	-	-	87.7	81.5	0.004	86.9	89.2	0.160	89.5	95.2	<0.001	88.5
Second fasting of glycemia	-	-	-	36.3	53.8	<0.001	49.4	60.6	<0.001	51.5	78.2	<0.001	52.7
Rh factor	-	-	-	96.7	98.6	0.055	100	100	0.786	88.9	90.3	0.414	95.6
Maternal height	85.2	96.2	<0.001	83.7	87.0	0.151	92.1	90.7	0.316	66.3	22.2	<0.001	78.6
Pelvic ultrasound	94.5	98.6	0.012	92.6	97.5	0.001	95.1	98.2	0.001	92.8	97.4	<0.001	95.0
Date of the first pelvic ultrasound	88.9	97.1	<0.001	89.1	94.6	0.003	93.6	95.8	0.058	91.9	96.2	0.002	92.3
Gestational age at the first pelvic ultrasound	88.3	95.7	0.001	87.4	94.0	<0.001	93.4	95.5	0.078	91.7	95.8	0.004	91.7
Total	78.2	21.8	<0.001	57.9	42.1	<0.001	51.9	48.1	<0.001	57.0	43.0	<0.001	

VDRL= Venereal Disease Research Laboratory; HIV= Human Immunodeficiency Virus.

gestational period, and especially at the occasion of the childbirth. It also revealed that it is necessary to reinforce with the health professionals the obligation to complete all the information contained in the pregnant woman's medical booklet. This can optimize the provision of a more appropriate care for both the pregnant woman and the newborn, which contributes to reduce mother and child's morbimortality.

Authors' Contribution

Gonzalez TN performed the data analysis and interpretation, drafting and reviewed the final version of the article. Cesar JA outlined the study, participated in the data interpretation, drafting and reviewed the final version of the manuscript. Both authors approved the final version of the manuscript.

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Received on August 22, 2018

Final version presented on 26, 2019

Approved on April 30, 2019