ORIGINAL RESEARCH

THE SINASC DESCENTRALIZATION AND THE COMPLETENESS OF VARIABLES ON BIRTH CERTIFICATES, IN MUNICIPALITIES OF MINAS GERAIS FROM 1998 TO 2005

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ABSTRACT

Live Birth Information System (SINASC) was decentralized to improve information quality and its use. This study evaluated completeness of variables on mother and pregnancy, newborn, and childbirth, available on System database between 1998 and 2005. The study was carried out in 38 municipalities in the state of Minas Gerais. The assessment took into consideration population size and condition of municipalities management. Percentage of fields not filled out was defined as an indicator, and the standard of quality adopted was based on Mello Jorge et al. (1996). Values between 90% and 100% were considered adequate; 70% - 89.9% were not adequate, and critical when they were smaller than 70%. In general, in all municipalities evaluated there was improvement in Birth Certificates (DNV) filling throughout the period examined. It was observed important reduction of incompleteness in the variables race/color, education degree, marital status, children live births and dead birth. The decentralisation of the Information on the SINASC has enabled an improvement on information completeness in studied municipalities, regardless of the size and condition of municipalities management.

Key words: information systems; birth certificates; live births;

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INTRODUCTION

The 1988 Brazilian constitution recognised health as a citizen's right and established the basis for the creation of the Unified Health System (SUS), which was based on the principles of universality, integrality, and social participation. The SUS aims to provide universal preventive and curative care through decentralised management[1].

The decentralization of health services involves not only changes in health care model, but also enables creation of a network of relations that promotes community participation at all administrative levels, which contributes to democratization of public policies of management health[1-2]. It is a gradual and complex process which runs through a field with numerous obstacles and contradictions[2].

The Laws of Health (8080/1990, 8142/1990, NOB-SUS 1991, 1993, 1996; NOAS-SUS 2001 and 2002) redefined institutional roles, co-responsibility between the government levels, system management, planning and control, and resources transfer to the collective and individual actions. In addition, these normative instruments have established rules and targets which are forcing brazilian municipalities front to need to organize information in health produced at the local level, enabling it to respond with greater agility and specificity of new logic managerial and redirection of sector. Health information systems have become instances of governability and negotiation between managers of three levels of government[3-4].

SINASC - Live Births Information System, which was introduced in 1990 by Brazilian Health Ministry, was decentralized to all municipalities. SINASC data source is the Birth Certificates (DNV), an individualized document that must be completed for all live births occurred in the country on hospitals or at home[3,5].

System comes in, mostly, to improve information relating to newborn, mother and conditions of birth[6] and enable also monitoring quality of produced data in terms of coverage[7], reliability[8-9] and completeness of information[10-12]. Variables, such as birth weight, length of gestation, type of birth, age maternal education degree and parity are used in the construction of health and demographic indicators of a population, and evaluated in agreements of primary care and in planning of surveillance actions in health[13]. Although it is a specific system, information of SINASC, when accessible to managers and the community, can contribute to the planning of health actions focused on this populacional segment[13].

In spite of normative and institutional advances and on health information policy, the decentralization of SINASC has presented barriers in its operationalization, mainly in relation to effectiveness of its informations[13].

For some municipalities in the state of Minas Gerais (MG), the implantation of SINASC began in 1994, but for the majority of them, decentralization has started in 1998[14]. In spite of improvement information quality in the State, there are still gaps in informational process, in particular in collection, processing and use of data[14-16]. Variations in coverage and quality of data are still verified, what can be related to the differentiated form with which decentralization of system in municipalities occurred.

In this context, evaluative studies are essential, allowing determine the value or meaning of an activity, program or policy, as well as to correct or improve actions to increase relevance, effectiveness and efficiency of health activities[17]. In this study the objective was to evaluate completeness of Birth Certificates in municipalities of MG from 1998 to 2005.

Methods

This work is a normative assessment of completeness of Birth Certificate in the municipalities of MG from 1998 to 2005. The assessment is considered normative when it is done according to the definitions of standards and criteria[17-18]. The criteria used to evaluate the DNV completeness, in this study, followed the parameters proposed by Melo Jorge et al[6].

According to the Master Plan for Regionalization of Minas Gerais (PDR), the state is divided into 13 Health Macroregions, considered the territorial basis of health care planning, on the basis of demographic and socioeconomic characteristics, geographical, sanitary and epidemiological, provision of services and relations between municipalities. These macro-regions are divided into 75 microregions that cover the universe of 853 municipalities in 28 Regional Health Managers, which differ in socio-sanitary, size and form of management[19].

In this study were selected from the National Register of Health Establishment (CNES), 394 municipalities from Minas Gerais with health establishments where occur births. These were classified according to the following parameters: regional location in PDR[19] and population size.

On the basis of inhabitant number, three categories of population size were considered by the authors: municipalities with less than 10.000 inhabitants considered small; municipalities with 10.000 to 49.999 inhabitants, medium-sized and municipalities with over than 50.000 inhabitants, considered large.

Evaluated municipalities

For the evaluation 38 municipalities were randomly selected, among the 394, three municipalities in each macro-region of health, with a municipality for each size in each of the macro-regional;

except Jequitinhonha Macro-region, which were selected two municipalities (medium and small size), since in this region there is no large. These were classified according to the condition of municipalities management in Unified Health System (SUS), being 24 municipalities authorized in Full Primary Care Management (GPAB) and 14 qualified to Full Municipal System Management (GPSM).

Data Collection

The data were obtained by means of a CD-Rom with the consolidated information on live births for the period 1998 to 2005, available by Health Surveillance Secretariat of Health Ministry[20-21].

The population studied was composed by the total number of live births of resident mothers in the municipalities studied, between 1998 and 2005. The beginning of the SINASC decentralization for the municipalities of Minas Gerais was in 1998 and 1999. For this reason, in this study, we consider that the years 2000 and 2005 correspond to the period post-descentralization[14].

Analysis of the data

The information of live birth were analyzed based on variables related to the child (gender, birth weight, race/color, Apgar 1º minute and Apgar 5º minute), to motherly attributes (age, level of instruction, marital status, number of children born alive and number of children born dead) and to pregnancy and childbirth (duration of pregnancy, number of prenatal visits, type of pregnancy and type of parturition). Used concepts and definitions in each variable were those recommended by Health Ministry, according to the Manual of Instructions for DNV completing[5].

To analyze incompleteness of variables, percentage of fields not filled were defined as indicator , these being blank

fields and fields with the code 9 (ignored) [5]. Despite the lack of methodological clear in SINASC's manual filling, that was the option for analysis of completeness of variables in face of operational difficulties, since data tabulation provided by the Ministry of Health does not allow to differentiate the variables that do not were filled (blank) of those who were actually ignored by the informant[11].

The quality criterion adopted was defined by Mello Jorge et al.[6], which is based on percentage of incompleteness of filling in fields of DNV (filling as ignored/blank). The filling is considered excellent when these percentages do not exceed 10.0%, is considered good when the percentage range between 10.0% to 29.9 % and is considered bad when this percentage is higher than 30.0%.

It was calculated the average of percentage of incompleteness of each variable to the set of municipalities, according to population size and condition of municipalities management at SUS.

On the basis of observed percentage of completeness , scores were attributed for each variable. Thus, the variables with excellent quality of filling received 10 points, the good quality received five points, and the poor quality received two points. Calculation of DNV filling degree was obtained by percentage represented by sum of values found for each variable, in relation to maximum score achievable in the variable. Values between 90% and 100% were considered adequate; 70% - 89.9% were not adequate, and critical when they were smaller than 70% (Table 1).

Table 1: Matrix analysis and trial: point of cut and criterion adopted in defining the degree of the variables filling in Birth Certificates.

Evaluative question[1]	The incompleteness of the decreased variables if consider the population size and condition of the municipality management?
Indicator	Percentage of blank fields or ignored
Standard (Melo Jorge et al.,1996)	Excelent < 10% Good e" 10 % d" 29%Bad e" 30%
Point of cut[2]	< 10 % = 10 points
	$\geq$ 10 %, $\leq$ 29% = 5 points
	$\geq$ 30% = 2 points
Observed value	Refers to the criterion/indicator collected by the study
Value assigned	Refers to the value to be assigned to observed according to the point of cut established
Classification of filling [3]	It refers to the categorization study in which the item will be placed

1 Fourteen variables were evaluated
2 Point of cut: refers to the acceptable range for each variable.
3 The calculation of filling degree DNV was obtained by the sum of the percentage values for each variable represents the maximum score in relation to the criterion established.

For the analysis of the data was used the Microsoft Office Excel 2007.

This study was approved by Ethics Committee of René Rachou Research Center /FIOCRUZ (0001.0245.000-09).

RESULTS

With SINASC decentralization, it has been found, for studied municipalities, regardless of size and condition of municipalities management, adequate filling (90% - 100%) for most of the variables present in DNV (Tables 2, 3).

In assessing the size of the municipalities, all variables related to child showed an increase in the degree of filling DNV. The completeness of birth weight and gender was considered adequate before and after the decentralization of SINASC. In the variables, Apgar index

in the first minute, and Apgar index in the fifth minute, the filling ranged from not adequate (70% to < 89.9 %) till appropriate (90 % -100 %). The biggest increase in the filling degree of DNV among the variables related to the child was found in the variable race/color, considering that this field presented critical filling in the first two years of implementation of SINASC (Table 2).

Table 2: Filling Degree (GP) Birth Certificates of municipalities according to the size of the municipalities in the decentralization SINASC (GP1: 1998 to 1999) and after (GP2: 2000 to 2005)

Variables	Small (< 10000)		Size of the municipalities Medium (10.000 a 49.999)		Big (> 50.000)	
	GP1	GP2	GP1	GP2	GP1	GP2
Newborn						
Birth weight	100,0	100,0	100,0	100,0	100,0	100,0
Gender	100,0	100,0	100,0	100,0	100,0	100,0
Apgar 1st minute	96,2	96,2	80,0	86,2	89,2	93,3
Apgar 5th minute	100,0	92,3	82,3	86,2	89,2	89,2
Race/color	20,0	96,2	20,0	92,3	20,0	85,0
Mother						
Age	100,0	100,0	96,2	100,0	100,0	100,0
Level of education	20,0	100,0	20,0	100,0	22,5	95,8
Marital status	20,0	96,2	20,0	100,0	20,0	95,8
Children live births	60,0	76,2	43,1	72,3	57,5	91,7
Children dead births	45,4	73,8	47,7	83,8	45,0	91,7
Pregnancy/Childbirth						
Type of pregnancy	100,0	100,0	100,0	100,0	100,0	100,0
Duration of pregnancy	100,0	100,0	96,2	100,0	93,3	100,0
Prenatal visit	90,0	100,0	93,8	100,0	91,7	100,0
Type of parturition	100,0	100,0	100,0	100,0	100,0	100,0

Tabela 3: Grau de preenchimento (GP) da Declaração de Nascido Vivo dos municípios segundo a condição de gestão dos municípios, no início da descentralização do SINASC (GP1: 1998 a 1999) e após (GP2: 2000 a 2005)

Variables	Municipal Enabling Condition GPAB1		GPSM2	
	GP1	GP2	GP1	GP2
Newborn				
Birth weight	100,0	100,0	100,0	100,0
Gender	100,0	100,0	100,0	100,0
Apgar 1st minute	83,8	89,2	96,4	96,5
Apgar 5th minute	89,2	87,1	92,9	92,9
Race/color	20,0	93,8	20,0	87,1
Mother				
Age	97,9	100,0	100,0	100,0
Level of education20,0	100,0		22,1	96,4
Marital status	20,0	100,0	20,0	92,9
Children live births	57,9	82,9	50,0	85,0
Children dead births	47,5	77,5	39,3	81,4
Pregnancy and Childbirth				
Type of pregnancy	100,0	100,0	100,0	100,0
Duration of pregnancy	96,7	100,0	96,4	100,0
Prenatal visit	91,3	100,0	92,9	100,0
Type of parturition	100,0	100,0	100,0	100,0

1 GPAB = Full Basic Care Management.
2 GPSM= Full System Municipal Management.

In relation to the filling of maternal characteristics, except for maternal age, which was appropriate for all sizes from its implementation, all the other variables showed improvement for completeness after the year 2000. The education level, marital status, children live births and dead births were the worst filling - for the first two years, from critical (< 70 %) till not appropriate (70% to < 89.9%). However, it was noted that an important increase in the filling degree of these variables, especially to large size municipalities, that had adequate filling to all of them. In small and medium-sized municipalities were observed inadequate filling on the variables children live births and dead births.

All of the variables related to pregnancy and parturition had adequate filling for all the municipalities, in both evaluated periods.

The analysis results of the variables according to the condition for the management of the municipalities listed in Table 3, showed that the fields relating to birth weight, newborn gender, mother's age, duration of pregnancy, type of pregnancy, type of parturition and prenatal consultation showed adequate completeness and little changed during the periods. It was found important increase in the degree of filling in the variables race/color, degree of education, marital status, children born dead and live births (Table 2). Considering the variables live births and children born dead, the filling is still not adequate among the municipalities evaluated, regardless of the condition for the management of the municipalities in SUS. And the completeness of the variable race/color is still inadequate among the municipalities in GPSM. The variables, Apgar Index in first minute and Apgar Index in fifth minute were stable in both periods, with better fill in all the municipalities qualified as GPSM.

DISCUSSION

Although the study do not portray the information quality of SINASC from the perspective of its process, it was observed that the decentralization of the Information System, in all of the municipalities evaluated, regardless of population size and the condition for the management favored the improvement of the filling of the information in the DNV, corroborating other studies in different places of the country[10-12,22-24].

It is understood that the municipal management imbued with the power to assess, plan, and decide actions aimed to monitor the information about live births depending on the context and interests, valuing the use of health information. The process of decentralization of government policies for health has produced advances with the permanent constitution of negotiations, pacts and legal framework. Whereas the indicators pacts maternal-infant and of coverage in primary health care and health surveillance, it requires of the managers greater proximity to the SINASC and with the source of capitation events, involving the monitoring of the data[13] collection. In addition, a possible explanation is that in the process, there was a breakthrough in information policy and technology in health systems[3].

Among the variables assessed, highlight the relating to birth weight, newborn gender, ,age of the mother and all the fields relating to pregnancy and childbirth (duration of pregnancy, the number of prenatal visits, type of pregnancy and type of parturition) that presented the best completeness, maintaining adequate during the periods. This information is available in the medical records of newborn and the puerperal or the pregnancy card, which facilitates recording of data[9].

In relation to variables Apgar 1st. minute and Apgar 5th minute, it was ob-

served that the degree of filling ranged from not adequate till adequate over the years. The best results were observed in all the municipalities authorized in GPSM. Costa and Frias[12] have questioned the reliability of the information, since that the data filled by non-qualified professionals - those who do not have technical knowledge to assign the value on the conditions of the child vitality in 1st and 5th minute - tend do not be filled in, or can be filled with addiction, repeating the same value.

The fields of DNV related to race/color of the child, the degree of maternal education, marital status, children live births and dead births presented the greatest variation of completeness. Even in the municipalities evaluated for small and medium-size are still the filling not adequate for the variables children live births and dead births. Mello Jorge et al.[6] already demonstrated the same in the first studies to evaluate the SINASC, and problems with these variables are still observed in more recent studies[10-12,24]. It is possible that the incompleteness records of these variables be done in some questions such as: deficiencies related to the lack of qualified human resources; lack of constant involvement of the different professionals who deal with health information, including managers; lack of knowledge of responsible professional for filling in DNV; lack of information in the medical records of puerperal and newborn, up to the ignorance of certain information by accompanying and subjectivity involved in the definition of the variables categories, especially of race/color of the newborn[12,24-25].

The results of this study were similar to the research performed in a state of northeast[12], even using different methodologies, express evidence in relation to the quality of information from SINASC. Costa & Frias[12] to evaluate historical evolution of completeness in DNV in Pernambuco, between 1996 and 2005, saw important increase in the percentage of municipalities with excellent completeness, highlighting the variable race/color, maternal schooling, maternal marital status and number of prenatal visits. They reported that unfortunately, in some localities, incompleteness are still checked in variable number of live births, the number of children born dead, Apgar 1st minute and Apgar 5th minute.

In another study, Mello Jorge et al.[10] to analyze the quality of brazilian vital statistics from design and deployment of SINASC verified that the information of the DNV is improving dramatically, both coverage and completeness of their data. They reported that the biggest incompleteness fields are due to the variables color/race of the child, Apgar 1st minute and Apgar 5th minute, maternal education, children live births and dead births.

Romero Anol Cunha[11] recognized in federal units in 2002, differences in the percentage of incompleteness of DNV. By using the variables in white along with the ignored variables as the unit of analysis, the authors observed that the variables of maternal age, gender of the newborn, marital status, level of education and birth weight had good to excellent completeness, while the fields relating to reproductive history mother, children live births and dead births were filling of bad to regulate.

In Minas Gerais, in the year 2000, Souza[16] showed larger incompleteness 10% in the variables, number of living children, number of dead children, race/color, Apgar 1st minute and Apgar 5th minute.

Recent study conducted in Teresina[24] pointed trend of quality improvement of filling in the DNV, with good filling the

form, except for the variable number of dead children that presented incompleteness between 10% and 29.9%.

This study showed improvement in the information quality of SINASC after its decentralization; however, further studies are required for the evaluation related to the structure, process and the impact of the information generated by the System. Only in this way it will be possible to check if this information of quality is used in the monitoring process, evaluation and decision of health care to the child and the woman.

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