



Maternal and child health records in the Fourth Health Region: analysis of the completion for at-risk users

Cadernetas de saúde materno-infantil da 4ª Região de Saúde: Análise do preenchimento para usuários de risco

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ABSTRACT

The health record is an important source of information on maternal and child health. This study aimed to describe the completion of health records of mothers and children in the Fourth Health Region of the Paraná state (Brazil). This documentary, exploratory, and quantitative study was developed in an outpatient clinic. Health records from 60 pregnant women and 60 children at risk were investigated, and variables were analyzed using descriptive statistics. Most (88.4%) maternal health records were incomplete, and none of the child health records were complete. The lack of information in these records highlighted the need for involvement of health professionals in recording all health data. Thus, the correct completion of the health records is an essential topic in continued education of health professionals for effective monitoring of maternal and child healthcare.

Keywords: Child. Pregnant women at risk. Personal health records. Maternal and child health.

RESUMO

A caderneta de saúde é uma fonte importante de informações sobre a saúde materno-infantil. O objetivo foi descrever o preenchimento das cadernetas de saúde da Linha de Cuidados Materno-Infantil na 4ª Região de Saúde do Estado do Paraná (Brasil). Trata-se de pesquisa documental, exploratória e quantitativa, realizada em um Ambulatório de Especialidades. Foram analisadas 60 cadernetas de saúde das gestantes e 60 cadernetas das crianças de risco. As variáveis foram analisadas através da estatística descritiva. A média do preenchimento das cadernetas das gestantes foi de 88,4% incompletas. Nenhuma das cadernetas das crianças estava com registros completos. Os resultados possibilitaram perceber a escassez de informações nesse instrumento de comunicação entre os níveis de atenção a saúde e é necessário que os profissionais se impliquem com o registro desses dados. O preenchimento correto e completo das cadernetas é um tema imprescindível na educação permanente para efetivo acompanhamento da saúde materno-infantil.

Palavras-chave: Criança. Gestante de Risco. Registros de Saúde Pessoal. Saúde Materno-Infantil.

INTRODUCTION

The *Rede Cegonha* was implemented by the Brazilian Unified Health System (SUS) in 2011 to ensure the right to reproductive planning and humanized care during pregnancy, delivery, and postpartum period for women and safe birth and healthy growth and development for children¹. Also, the National Policy for Comprehensive Child Health Care (PNAISC) was established in 2015 (ordinance no. 1,130) to promote and protect the child health and breastfeeding². The PNAISC provides integrative care mainly in early childhood and for vulnerable populations to reduce morbidity and mortality throughout development².

Decreasing the indicators of maternal and infant mortality remains a challenge, and improvements are associated with access to healthcare and education³. The average number of live births is 140,824 per year in the Paraná state and 2,168 in the Fourth Health Region of the state in 2022, with one maternal death per year and 16 fetal and infant deaths⁴.

In this sense, Paraná developed the Maternal and Child Care guideline based on the framework of the Healthcare Networks proposed by Mendes. Thus, healthcare teams should maintain the maternal health record complete with the main information about the pregnancy, noting any risks, personal and obstetric history, vaccination status, and results of routine tests according to the gestational trimester. The information should be updated at each appointment, serving as a communication link between appointments, and the pregnant women and caregivers must always be advised to carry the health record to ensure detailed completion³.

Care should be continued after the hospital discharge of the child by providing the child health record with all the information about the birth and any neonatal complications to the caregivers. After discharge, the primary healthcare team conducts integrative childcare by monitoring growth and development. Thus, the child health record should contain development curves for weight, length, head circumference, and body mass index (BMI) and information on neurodevelopment, any complications, vaccinations, care guidelines (e.g., nutrition,

hygiene, and accident prevention), and identification of violence³.

Studies conducted in the Belo Horizonte city (Minas Gerais state) identified deficits in the completion of health records, with lack of important information and a low rate of entries in health services. The maternal and child health records only become effective as tools for communication, surveillance, and health promotion when the information is correct and complete^{5,6}. In the state of Maranhão, a study investigated the quality of prenatal registers in the maternal health records in 2020, identifying legible but incomplete entries, with none of the records classified as good ($5\% \leq$ incompleteness $< 10\%$) or excellent (incompleteness $< 5\%$)⁷. This devaluation of health records and non-compliance with the recommendations may prejudice the function and quality of care⁷.

In this sense, deficits in care are observed in health services. The health record allows the identification of factors for effective health management and communication between different levels of healthcare. However, changes in editions may lead to incomplete entries, impairing health promotion, prevention, and planning of actions in maternal and child care. Therefore, this study aimed to describe the completion of health records from the Maternal and Child Care in the Fourth Health Region of Paraná.

METHODS

This documentary, exploratory, and quantitative study was conducted in an outpatient clinic from the Fourth Health Region of Paraná during the second semester of 2020. The outpatient clinic has a multidisciplinary team working with interdisciplinarity. The maternal care team included a nurse, social worker, nutritionist, psychologist, pharmacist, and obstetrician, while the child care team included a nurse, social worker, nutritionist, psychologist, and pediatrician.

The study included independent pregnant women and children at risk (i.e., children were not related to pregnant women from the Maternal and Child Care) scheduled at the outpatient clinic, resulting in a sample size of

120 health records (60 per group). Participants were included according to the following criteria: pregnant women aged ≥ 18 years at any gestational age and children up to 12 months old, both classified as intermediate or high risk and followed up at the outpatient clinic. Those classified as low risk (i.e., not fitting the intermediate- or high-risk stratification) or who did not present the health record for the appointment were excluded.

Data were collected in two phases. In the first phase, data related to pregnant women from the outpatient clinic were collected using photographs of their maternal health records. These data included age, skin color, marital status, use of legal and illegal substances (i.e., addictions), family income, education level, dental health, gestational risk stratification, pregnancy planning, obstetric history (type of delivery, number of pregnancies, number of risk factors), and completion of gestational weight and uterine height curves.

In the second phase, data related to children from the outpatient clinic were collected through photographs of their child health records, including age, sex, risk stratification, number of risk factors, discharge feeding, neonatal screening (eye, hearing, and heel prick tests), frequency of childcare visits, vaccinations, dental health, and completion of growth and development curves. Data on their mothers were also collected, including the number of prenatal appointments, gestational age at birth, and type of delivery.

A total of 17 and 18 variables were collected from the maternal and child health records (respectively), resulting in 35 variables from the seventh edition of the health records (2018) of Paraná. The quantitative variables were plotted in Excel spreadsheets, double-checked, and exported for analysis using the SPSS software version 25.0. Variables were analyzed using descriptive statistics and expressed as measures of central tendency and dispersion (mean and standard deviation or median, frequency, and percentile).

Items were considered "fully completed/satisfactory" when the entry was present and complete, "partially completed" when the entry was present but incomplete or had few records of the number of appointments, and

"no entry" when the entry was absent. Records with $\leq 60\%$ completed items (≤ 11 items) were considered unsatisfactory completion, and those with $> 60\%$ (≥ 12 items) were considered satisfactory. This cutoff point represents the minimum acceptable value used in a previous Brazilian study⁸.

One pregnant woman dropped out, two caregivers of children refused to participate, and one child was excluded due to attending without the child health record. Information was then collected from the next scheduled children and pregnant women until 60 records for each group. The study was approved by the research ethics committee (no. 4.055.505) and followed the Declaration of Helsinki.

RESULTS

CHARACTERIZATION OF PARTICIPANTS BASED ON THE MATERNAL HEALTH RECORD

Most pregnant women were characterized as high risk (88%; $n = 53$), with a steady partner (56.6%; $n = 34$), white (68.3%; $n = 41$), homemakers (38.3%; $n = 23$), and aged between 33 and 38 years (30%; $n = 18$), with a mean age of 31.1 ± 7.25 years and a 95% confidence interval (95% CI) of 29.2 to 32.9 years. Only 11% ($n = 7$) had complete higher education; most women had incomplete elementary education, low family income, and did not have paid work.

Among the six items (i.e., age, skin color, marital status, education, occupation, and family income), five were often not registered (except for age). Approximately 35% ($n = 21$) had no family income information, which was the least registered in the sample. The most frequent marital status was having a steady partner (56.67%; $n = 34$), followed by married (40%; $n = 24$).

The study presented a high rate of no entry for dental health (60%; $n = 36$) and use of legal substances (26.67%; $n = 16$). Conversely, only two (3.3%) maternal health records had no entry for the number of pregnancies and five (8.4%) for pregnancy planning, with a mean of 2.36% of outdated information on the obstetric history of participants.

Although the completion of obstetric history was satisfactory, the gestational monitoring was concerning since most maternal health records had no entry on this topic. The uterine height (66.67% $n = 40$) was one of the missing information, which may lead to the non-diagnosis of intrauterine growth restriction, for example.

All maternal health records had complete information on the frequency of appointments and number of risk factors. The mean number of risk factors for pregnant women was 1.78 ± 0.90 (95% CI = 1.55 to 2.01). Information on the type of delivery and previous pregnancies were also satisfactory, and only 3.34% ($n = 2$) of the maternal health records had no entry for the number of pregnancies. The mean number of pregnancies was 2.72 ± 1.4 (95% CI = 2.3 to 3.1).

In this sense, according to the general completion, the mean rate of incomplete maternal health records was 88.4%. Also, only 11.6% were fully completed/satisfactory, while 86.7% were partially completed, and 1.7% had less than half of the data completed.

CHARACTERIZATION OF PARTICIPANTS BASED ON THE CHILD HEALTH RECORD

The median age of the children was six months, with a mean of 5.18 ± 3.3 months (95% CI = 4.3 to 6 months), being 66.7% ($n = 40$) of males. According to the child health record, 95% ($n = 57$) of children were classified as high risk. Only 6.6% ($n = 4$) of the child health records had no entry for gestational age at birth.

Child health records were fully completed regarding the type of delivery and number of risk factors, with a mean number of 1.36 ± 0.66 (95% CI = 1.19 to 1.53). Also, child health records were fully completed for the frequency of childcare visits, with a mean frequency of 7.17 ± 4.33 (95% CI = 6.05 to 8.29). However, 40% ($n = 24$) had no entry for discharge feeding and 6.10% for neonatal screening tests.

Information on postpartum care showed the worst completion rates from all analyzed items, and only 15% ($n = 9$) of the child health records had data on the number of appointments. Also, dental health had a high number of no

entries (91.7%; $n = 55$). Only 15% ($n = 9$) of the children did not have updated vaccinations, and most child health records had no entries from the health team.

The growth curves were incomplete or with few entries regarding the number of appointments. For height, 53% ($n = 32$) of the child health records were partially completed, and 16% ($n = 10$) had no entries. Similarly, 34% ($n = 32$) of weight and 32% ($n = 34$) of head circumference curves were partially completed. Also, 52% ($n = 52$) of the child health records had no entries for BMI. Thus, although the general number of missing information was small (3.6 ± 1.35), none of the child health records were fully completed.

DISCUSSION

Maternal and child health records enhance healthcare and allow the establishment of effective communication among healthcare professionals by documenting information during appointments to support professionals in compliance with legislation, ensuring patient safety. Thus, these actions allow continuous, organized, safe, and comprehensive care to children and pregnant women⁹.

Adequate completion of the health records regarding the number and frequency of risk factors favors the quality of prenatal care in the healthcare network. Care services reduce possible risks and adverse consequences for pregnant women and the fetus and hospitalizations during pregnancy¹⁰. Also, documentations allow evidence-based decision-making and structuring of public policies for care gaps, serving as a surveillance base for identifying risk factors, planning actions, providing integrative care with quality, and preventing infant mortality¹¹.

Literature has suggested factors influencing unsatisfactory data completion, such as the workload of health professionals (often overloaded with numerous care and bureaucratic activities), poor communication among the health team, and lack of knowledge of the health records by caregivers¹². Thus, professionals perceive the maternal and child health records only as another form to be completed, giving low importance to

their use for prevention, early identification, and promotion of maternal and child health. Also, 80% of professionals reported the lack of time as one of the factors impairing child monitoring, and 75% of mothers reported forgetting the child health record for the appointment, highlighting a deficit in the monitoring of child growth and development¹³.

In a study conducted in Cuiabá, 80% of items on pregnancy, childbirth, postpartum, and newborn data were missing information, and only 14.7% and 11.9% of information on the start of prenatal care and number of appointments were completed, respectively¹⁴. In another study, 23.75% of maternal health records presented incomplete information on the number of prenatal care appointments, with a cutoff point of $\leq 60\%$ ¹¹. Also, a study with 72 maternal health records showed low adherence to completing perinatal information¹⁵. Although 75% ($n = 54$) of weight and 70.83% ($n = 51$) of height variables were registered, only 52.77% ($n = 38$) of BMI was registered, indicating non-adherence to completion of this variable and the uterine height curve¹⁵.

The uterine height curve had approximately 66.67% of no entries in the present study. This information aims to diagnose deviations from normality based on the relationship between uterine height and gestational age³. Also, this curve assesses fetal growth and identifies possible problems in pregnancy (e.g., intrauterine growth restriction), and the diagnosis can be performed during prenatal care. For fetal growth monitoring, the uterine height is calculated using a measuring tape from the distance (cm) of the pubic symphysis to the uterine fundus¹⁶. Thus, clinical evaluation of uterine height should not be ignored; it needs to be performed and recorded in the maternal health record.

The low completion of prenatal care data in this study might be due to the entry of this information only in the maternal health record or because the mother forgot to bring it to the maternity hospital during the first appointment of the child. Thus, healthcare teams must reinforce maternal and child records as tools to be used during prenatal care and childbirth in the maternity hospital to access important data for the follow-up of children by health professionals.

In this study, 40% of information on the discharge feeding were incomplete. Considering that adequate nutrition during infancy allows full potential in health, growth, and development, this information in the health record helps adequate management of care for the mother and child by family health teams, who should encourage and support exclusive breastfeeding until the sixth month of life. In contrast, a study had a completion rate on discharge feeding of only 14.5%¹⁴. In the present study, more than 90% of the child health records had no data on neonatal discharge; only 6% had partially completed information on date, weight, and type of feeding. Knowing the weight and type of feeding at discharge is essential for the health professional during maternal and child monitoring, highlighting the importance of registration for continuity of actions and care for the child in other healthcare settings.

Neonatal screening tests allow early diagnosis of children likely to have metabolic, hematologic, infectious, and genetic pathologies (e.g., phenylketonuria, congenital hypothyroidism, sickle cell anemia, and cystic fibrosis), minimizing or eliminating sequelae¹⁷. The neonatal hearing screening (ear test) is a mandatory test for all newborns in Brazil, guaranteed by federal law no. 12,303/2010¹⁸. Also, the Brazilian Ministry of Health published the guidelines for eye health care in childhood in 2016, defining that all newborns should undergo the red reflex test before discharge from maternity hospitals. This screening tool detects changes that may affect the transparency of ocular media (e.g., cataracts, glaucoma, toxoplasmosis, retinoblastoma, and late retinal detachments)¹⁹.

In the present study, neonatal screening tests showed a small deficit in entries, with only 6.10% being unsatisfactory. In contrast, a study in a municipality from São Paulo state evidenced less than 10% of completion of information on exams and neonatal screening¹⁴. Mothers must receive information about the tests performed in maternity hospitals and request appropriate completion from healthcare professionals since public maternity hospitals have the availability to perform screening tests at birth²⁰.

This study may subsidize the improvement of healthcare to promote health and prevent diseases, highlighting the education and

training of professionals involved in maternal and child care. Also, this study may contribute to managers in determining action planning and public policies for maternal and child care. Therefore, healthcare professionals should receive continued health education on the importance of using maternal and child records at all levels of care to improve its completion and for comprehensive monitoring of child health¹⁴. Health records become accessible medical records when used effectively, with detailed information and growth and development monitoring, especially in early childhood²¹.

A study conducted in São Paulo demonstrated a low completion of growth and development data, except for the head circumference curve (95% completion) and vaccinations, which were recorded in basic health units²². Also, only 4% of the analyzed child health records completed the length curve, and around 95% had no entry for neurodevelopment, suggesting that healthcare professionals have been neglecting the record of these data²². However, other study considered unsatisfactory completion of curves for head circumference (15% completion) and weight, with only 59.4% on the weight/age curve⁸. In addition, 77.3% and 27.3% of the child health records had no entry for BMI/age and head circumference/age curves, respectively²³.

In the present study, 34% and 32% of the child health records had partially completed curves for weight and head circumference (respectively), while 52% had no entry for BMI. Similarly, a study conducted in a pediatric hospital in Rondônia state observed that only 21.9% and 18.1% had information on head circumference and neurodevelopment (respectively), raising concerns on the level of completion of growth and development information²¹.

A decrease in surveillance of child health may occur as the child grows. Childcare visits occur monthly in the first months of life due to a greater vulnerability in this period, and the child receives most of the childhood vaccines until the sixth month, which may explain the greater use of the child health record during this period¹⁴. However, the completion of the child health record still has frailties after years of its implementation, deviating from the

recommendations of the Brazilian Ministry of Health. In the present study, the lack of fully completed items in the child health record was a negative factor for monitoring the growth and development of the child, hampering the planning of actions for adequate childcare.

The completion of health records is simple, quick, and a low-cost measure to evaluate and detect risk factors²⁴. Recording the birth weight is essential for effective monitoring of the child, especially of those with low birth weight, which are considered a nutritional risk by the Brazilian Ministry of Health and should be monitored more frequently by health services in the first year of life²⁵. Also, birth weight is one of the most requested information about the newborn by their family and health professionals.

Health professionals used the health records partially in this study, contributing to the fragmentation of care since the low completion of the curves hinders care for the growth and development of children. Also, the use of all items of health records is fundamental for comprehensive care. A study conducted in a small municipality of São Paulo corroborated this finding, revealing that only 9% and 8% of the child health records had satisfactory completion of growth and development curves, respectively²⁶.

The vaccination had 85% completion in the present study, corroborating a study demonstrating that this item had the highest completion rate (98.75%) in child health records¹¹. However, most child health records had no information on neurodevelopment and dental health¹¹. Although this completion rate of vaccination indicated the frequent contact of children with health services and professionals with the child health record, it reflected the historical conception of the child health record as a "vaccination record", highlighting its inadequate use. The child health record has been reformulated over the years. Also, the low completion of child health records may be attributed to the need for caregivers to bring them to appointments, workload of nurses, need for education on its relevance, and wrong perception of some health professionals that it is a vaccination record⁶.

All record items were incomplete, indicating frailty and the need for training and management of healthcare teams on the

completion of child health records to ensure the continuity of care. Thus, the adequate use of child health records allows for monitoring growth and development, improving intervention measures for quality care.

The limitations of the study included the difficulty in obtaining the health records for data collection due to the pandemic caused by the SARS-CoV-2. Protective measures limited appointments and user attendance, reducing the contact between health professionals and pregnant women and families with the health record, being an obstacle for the final sample.

CONCLUSION

Results revealed a scarcity of information in maternal and child health records, which serve as communication tools between different levels of healthcare. Considering that data were collected from a regional and small sample of pregnant women and children, further studies should be conducted in other regions of the state for comprehensive information on the adequate completion of health records. Also, considering that all health professionals working directly within the maternal and child health care network are responsible for completing the health records, the findings raised concerns about how they are using these tools since the scarcity of information may indicate a lack of technical preparation.

In this sense, continuous education for health professionals is essential to improve communication and integration between different levels of care since it is an inherent element of healthcare practice. Also, health professionals should be educated on the importance of completing health records adequately to ensure effective monitoring of maternal and child health.

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