DOI: 10.1590/1413-812320172210.17572017

A glance over the surveillance of fetal deaths of Jaboatão dos Guararapes in the Brazilian state of Pernambuco, Brazil, in 2014

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Abstract *This study aimed to achieve a complete evaluation of the records of investigation, and the principal indicators of fetal death surveillance of Jaboatão dos Guararapes, Pernambuco State, and their contributions Mortality Information System (Sistema de Informações sobre Mortalidade – SIM). The population of the study comprised all fetal deaths taking place in the year 2014, of people resident in the town. The data were obtained from death investigation records and the databank of the SIM. The completeness of the report forms of 68 fetal deaths, and 13 variables in the death certificates, before and after the investigation, was analyzed. In 2014 the rate of fetal mortality was 10.3‰. Of the 102 deaths, 86.3% (88) were investigated, and 67% (59) were investigated within a period of 120 days. Only nine (10.2% of the deaths investigated) were the subject of a final discussion to complete investigation. The Hospital Form was the most frequently filled in, and the Summary Form was the form most completely filled in. The Outpatient Form was the least well filled-in. In the death certificates, there were rectifications made in the 13 variables studied. The results showed deficiencies and operational difficulties in Fetal Death Surveillance in Jaboatão dos Guararapes. Conversely, the study revealed the contribution of the investigation process in qualifying of the SIM.*

Key words *Fetal deaths, Epidemiology Surveillance, Health evaluation, Health information systems*

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Introduction

In recent years fetal death has become an increasingly well-known subject through successive reports in publications about its scale, and its invisibility, creating pressures from many countries in the WHO for recognition and monitoring of these deaths[1].

For there to be an effective monitoring of fetal deaths it is necessary to recognize the importance of timely and continuous production of information[2] and, also, to incentivize capture of data in households, in a way that is similar to what is already carried out with infant deaths in some countries, taking as a basis the audit of stillbirths recorded in health establishments[1].

In Brazil, the investigation of fetal deaths was instituted by a basis in law put in place as from 2010[3], and has been used as a tool of monitoring and oversight, so as to recognize the risk situations and foster adequate care for mothers at the prenatal phase and during birth[4]. Death oversight consists of a strategy for prevention of further deaths, because it involves a sequence of phases. These include a discussion of deaths by the Technical Group (Technical Group). This makes it possible to: detect corrections in the vital records, analyze the chain of determinant factors, and assess the healthcare network involved in the occurrences, with a focus on avoidability and proposing preventive and corrective measures. To achieve this, it is important that there should be involvement of representatives of all the technical areas of healthcare in the discussion[5].

Thus, Mortality Oversight makes it possible to continuously improve the experience and knowledge of the professionals involved, through analysis of the deaths[6], and makes a complementary contribution in enhancing the quality of the vital statistics by bringing attention to the information and correcting it[7].

To ensure effectiveness of the oversight and appropriateness of the information, Health Ministry Order 72 of January 11, 2010 establishes periods to be complied with for each of the steps that comprise the oversight of fetal deaths, with an obligation for the investigative process to be completed in up to 120 days from the date of the death[3].

The information also needs to be of good quality, with significant data[8]. Thus, consistency and completeness of the variables are parameters that should be considered in the analysis of appropriateness and quality of the information, and in monitoring of it, which can contribute to enhancement of the records[9].

Surveys on oversight of fetal deaths are scarce in Brazil, especially those that propose to analyze dimensions of the investigative process and their contribution to the Death Information System (SIM). The objective of this study was to evaluate the completeness of the investigation records, which are the principal indicators of fetal death oversight in Jaboatão dos Guararapes, in the Brazilian state of Pernambuco, in the municipality of Greater Recife, in 2014, and their contributions to the SIM.

Methods

This is a cross-sectional, descriptive, population-based study. The population comprised all the fetal deaths (weight ≥ 500g and/or gestation ≥ 22 weeks) that occurred in 2014, in women resident in Jaboatão dos Guararapes.

The municipality is part of Greater Recife, on the coast of the state of Pernambuco, with area of 256 km² and population estimated at 680,943 in 2014 – the second largest population of the State[10].

The sources of the data were reports of investigation of fetal deaths in the municipality and the municipal databank of fetal deaths, by household, of the SIM. Investigation of fetal deaths in Jaboatão is carried out using a series of forms recommended by the Health Ministry[3-4]. These are: the Outpatient Form (F1); the Hospital Form (F2); the Household Form (F3); the Autopsy Report Data Collection Form (IF4); and the Infant and Fetal Death Investigation Summaries, Conclusions and Recommendations Form (IF5).

The completeness of the variables in the forms of the 68 deaths that had at least one of the investigation forms available – F1, F2, F3 and IF5 – was analyzed. The completeness of the IF4 forms was not analyzed since not all deaths were sent for autopsy, and even those which were sent did not have those forms duly filled in.

The Outpatient Form comprises 38 variables and is divided into two blocks: Identification and Prenatal care. The Hospital Form has 52 variables in three blocks: Identification, Birth care, and Annotations on the stillborn child. The Household Form has 96 variables in five blocks: Identification, Characteristics of the mother and the family; Gestation and prenatal care; Care given at birth; and Information on the child. IF5 (the Summary Form) is not divided into blocks, although it comprises 50 variables applicable to fetal deaths that allow for its subdivision, from

Ciência & Saúde Coletiva, 22(10):3415-3428, 2017

identification information to recommendations to the health services. For each form a database in Microsoft Excel spreadsheet was created.

Frequency of rectification, and completeness, were analyzed, before and after the investigation of the following variables of the Death Certificate: gender, weight at birth, gestation period, mother's age, mother's level of schooling, district, location of the event, establishment where the birth took place, number of children born alive, number of children stillborn, type of birth, death in relation to birth, submission for autopsy.

The analysis for completeness was based on the score system proposed by Romero and Cunha[11], adapted, as already used in national publications. This considers the proportion of fields ignored and/or not filled in, analyzing the incompleteness of the variables. This present work used the opposite – completeness of the information – for classification of the filling in of forms, assessing it into the following categories: Excellent (> 95.0%); Good (90.0 to 95.0%); Regular (80.0 to 89.9%); Bad (50.0 to 79.9%) and Very bad (< 50.0%). Relative frequencies and mean central trends of the completeness were analyzed, by block of variables, and for the form as a whole.

Also analyzed were the following indicators for fetal deaths: proportion of deaths investigated; proportion of deaths investigated within the period; proportion of deaths investigated late; proportion of deaths discussed by the Technical Group; proportion of deaths discussed within the period specified; and distribution of frequency of the investigation by type of form.

The research project was submitted to the Ethics Research Committee of the Medical Sciences Center of the Federal University of Pernambuco (CEP/CCS/UFPE) and approved. The consent of the Executive Secretariat for Health Promotion of Jaboatão dos Guararapes was also obtained.

Results

In 2014, there were 9,921 births, 102 stillbirths and 9,819 live births in Jaboatão dos Guararapes. The rate of fetal mortality was 10.3 deaths per thousand births of resident mothers. Of the total of these stillbirths, 75.5% were born in Recife, compared to 20.6% born in Jaboatão and 3.9% in other municipalities.

Of the 102 fetal births, 86.3% (88) were investigated, and 14 were not investigated. Of the 88 investigated, none of the investigation forms of 9 of them (10.2%) had been located at the time of the study: 79 deaths were included in the analysis of the investigation. For 68 deaths, at least one of the investigation forms was available.

Of the deaths investigated, 67.0% (59) were within the period of 120 days. For 29 (33.0%) deaths investigated after expiry of the period, the mean number of days late was 63, with quartiles of 25% and 75% equivalent to 11 and 177 days, respectively. The minimum time of lateness was 2 days and the maximum was 393 days. Only 9 deaths (10.2% of the deaths investigated, and 8.8% of the total fetal deaths) were discussed by the Technical Group of the state; of these, 4 were considered within the maximum period of 120 days.

The main causes of delay reported by the death oversight team of the municipality were: rotation of the professionals in the technical team; difficulty in locating the address of the mother for household investigation; non-availability of information on medical records; and non-submission of the death certificate for deaths which took place in another municipality. The main reason relating to the low proportion of deaths concluded with a discussion was absence of a pediatric medical professional in the Technical Group of the municipality.

None of the 79 deaths studied presented more than one file per type of investigation (outpatient, in-hospital), even if the mother carried out her prenatal care in two different establishments or visited more than one hospital during the period of labor.

A higher frequency of filling in of the Hospital Form was observed, available for 65 (73.9%) of the 88 deaths investigated, corresponding to 82.3% of the deaths studied. In second place was the Household Form, with 26.1% (23) deaths investigated, or 29.1% of those studied. The outpatient form was filled in less frequently, for 11 (12.5%) of the deaths of the investigated or 13.9% of those studied.

For 31 of the stillbirths, the municipality had the cadaver transport record and the autopsy protocol. However, only for 9 of these (10.2% of the 88 deaths investigated) was the IF4 form (autopsy form) partially filled in, which hindered feasibility of study of completeness of that form. Further, for 11 deaths the investigation was terminated having only the information that comprises the IF4.

The IF5 form was only filled in in the discussions, and was present in eight cases. Although

nine deaths were discussed, one case was not found in the files of the municipality. In the year under study, the discussion of the deaths was centralized in the State and the case not located may have been filed away by the Health Department of Pernambuco State.

The analysis of the completeness of the forms considered: the variables; the blocks; and the files. The file least well filled in was the Outpatient File (61.5%) and the best filled in was the Summary File (94.0%). The category of filling-in was 'regular' for the Hospital Form (80.9%) and for the Household Form (85.2%).

The Outpatient Form had a level of completeness that was considered 'bad' and the proportion of its Identification and Prenatal Care blocks with 'bad' filling-in were 61.62% and 61.44%, respectively.

The variables with the highest level of filling-in were: Number of the death certificate; name of mother; location of prenatal care; and information on mother's reproductive history (number of pregnancies, abortions, type of birth). These had 100% completeness, that is to say, excellent filling-in. By contrast, the variables relating to the characterization of the prenatal care received were categorized, predominantly as 'bad' (Table 1).

Some variables of this file were not filled in (0% completeness) and classified as 'very bad': Number of the mother's SUS card; health/administrative district, Code in the National Health Establishments Register (CNES) of the prenatal care; general remarks; and remarks of the interviewer (Table 1).

The Hospital File comprises three blocks. The level of filling-in of the first block (Identification) was 'excellent' for all the variables except Number of mother's SUS card (10.8%, or 'very bad'). The Birth Care block had completeness of 82.9% ('regular'), since the filling-in of its components varied from 100% (excellent) to 33.9% (very bad). The variables with worst filling-in of the block were Establishment CNES Code, date of previous birth and Medication during pregnancy, with 33.9%. 38.5% and 40.0%, respectively. In this block, filling-in was at 'excellent' level for only 13 out of 36 of the variables, and further, there was 'bad' filling-in for variables relating to pregnancy risk and the quality of care provided at the birth: Time of membrane rupture, Aspect of the amniotic liquid, Maternal complications during labor, Risk factors, Largest interval without evaluation of the fetus, and Medication used (Table 2).

Completeness of the last block of the Hospital File (Annotations on the stillborn child) was 68.7% ('bad'). Of the 9 variables, 5 are semi-structured and their filling-in was 'bad' (70.8%) to 'very bad' (16.9%). The other presented 'excellent' to 'regular' filling-in, the most complete being Conditions of birth (95.4%) (Table 2).

In the Home File, filling-in of the blocks varied from good to bad. Those most completely filled in were: Birth care received (90.7%) and Characteristics of the mother and the family (90.4%); the worst filled in was Identification (74.4%). In the latter, although filling-in was 'excellent' in 5 of the 10 variables, it was 'very bad' in two: Mothers' SUS card number (17.4%) and Health/administrative District (8.7%). In the block 'Characteristics of the mother and the family' filling-in was 'excellent' for 13 of the 23 (56.5%) variables, one was 'bad' (Paid work) and one 'very bad (Date of last prior birth) – (Table 3).

The group named 'Pregnancy and prenatal' comprised 14 variables with 'excellent' filling-in. Of these 4 had 100% completeness (Whether mother had prenatal care, Reason for not having prenatal care, Month when prenatal care began, and Number of prenatal consultations). At the same time, important information on access to the Health Center, High risk prenatal care (HRPNC) examinations and Drugs had 'bad' filling-in. In the information on Care at birth, 12 of the 20 variables (60.0%) had 'excellent' filling-in and 4, 'bad'. And in the last block, only the variable Observation of the family was classified as 'excellent', with completeness at 100%. However, the variable Repercussions in the family had 'very bad' filling-in (34.8%) (Table 3).

Of the 50 variables of the Summary File that applied to fetal deaths, 41 (82.0%) had 'excellent' filling-in, with 100% completeness in all of them. Only two variables dealing with classification of avoidability of deaths had 'very bad' filling-in (SEADE Foundation and Expanded Wigglesworth), both with 0% completeness. Only the classification of avoidability through intervention by the SUS was filled in.

Mother's level of schooling, which was filled in with excellence on the Home File, had a 'bad' level of filling-in (75.0%) on the Summary File (Table 4).

When comparing the completeness of 13 variables of the Death Certificate, before and after investigation, the contribution of death oversight in redemption of the information from

Table 1. Proportions of filling-in and completeness of out-patient fetal death investigation forms (F1 forms). Jaboatão dos Guararapes, 2014.

Blocks / Variables	Forms (n=11)	
	%	Completeness level*
Identification		
Number of the death certificate	100.00	Excellent
Mother's name	100.00	Excellent
Date of death	90.91	Good
Number of mother's SUS card	0.00	Very bad
Gender	90.91	Good
Weight at birth	72.73	Bad
Length of pregnancy	63.64	Bad
Health/administrative district	0.00	Very bad
Coverage	36.36	Very bad
SUBTOTAL (09)	61.62	Bad
Prenatal care		
Location of prenatal care	100.00	Excellent
Establishment CNES code	0.00	Very bad
Type of provider in the prenatal care	81.82	Regular
Length of pregnancy at first consultation	90.91	Good
Number of prenatal consultations	90.91	Good
Number of pregnancies	100.00	Excellent
Number of abortions	100.00	Excellent
Number of normal births	100.00	Excellent
Number of caesarean births	100.00	Excellent
High risk pregnancy	90.91	Good
Whether did high risk prenatal care	72.73	Bad
Location of HRPNC	72.73	Bad
Fetus age at start of HRPNC	72.73	Bad
Did PNC in basic care unit with HRPNC	63.64	Bad
Hospitalized during pregnancy	54.55	Bad
Number of hospitalizations	54.55	Bad
Reason(s) for admission	54.55	Bad
Hospitalization IG	54.55	Bad
Hospitalization location	54.55	Bad
Risk factors	63.64	Bad
Medication	63.64	Bad
Tetanus vaccination	27.27	Very bad
Prenatal care description	81.82	Regular
Home visit by the Health Team	9.09	Very bad
Reason for visit	9.09	Very bad
Examinations situation	81.82	Regular
Causes in patient's medical record	36.36	Very bad
General remarks	0.00	Very bad
Remarks of interviewer	0.00	Very bad
SUBTOTAL (29)	61.44	Bad
TOTAL (38)	61.48	Bad

CNES = National Registry of Health Establishment; PNC = prenatal care; HRPNC = high risk prenatal care.

*Completeness scale: 95.00% = excellent; 95-90 = good; 9.99-80% = regular; 79.99-50% = bad; < 50 = very bad.

the SIM was observed. The completeness of the information on Mother's level of schooling and Delivery of the body to autopsy was classified as 'bad' before resumption of the investigative

Table 2. Degree of filling-in and completeness of hospital investigation form for fetal death (F2 Form). Jaboatão dos Guararapes, 2014.

Blocks / Variables	Forms (n=65)	
	%	Completeness level*
Identification		
Number of death certificate	100.00	Excellent
Mother's name	100.00	Excellent
Date of death	100.00	Excellent
Gender	98.46	Good
Weight at birth	100.00	Excellent
Period of pregnancy	98.46	Excellent
Mother's SUS card number	10.77	Very bad
SUBTOTAL (07)	86.81	Regular
Healthcare at birth		
Date of birth	100.00	Excellent
Time of birth	95.38	Excellent
Location of birth	100.00	Excellent
Type of birth	98.46	Excellent
Professional assisting birth	100.00	Excellent
Time of breaking of membrane	64.62	Bad
Aspect of amniotic liquid	53.85	Bad
Maternal complications during labor	73.85	Bad
Health establishment where birth took place	100.00	Excellent
Establishment CNES code	33.85	Very bad
Type of hospital/maternity institution	100.00	Excellent
Number of pregnancies	98.46	Excellent
Number of abortions	96.92	Excellent
Number of children born alive	89.23	Regular
Number of stillbirths	92.31	Good
Number of normal births	90.77	Good
Number of caesarean births	89.23	Regular
Date of last prior birth	38.46	Very bad
Risk factors	72.31	Bad
Medication during pregnancy	40.00	Very bad
Date of hospitalization	100.00	Excellent
Time of hospitalization	83.08	Regular
Condition on hospitalization	90.77	Good
Mother examined before going to delivery room	100.00	Excellent
Presentation of the birth	67.69	Bad
Blood tests on admission	96.92	Excellent
Birth chart	93.85	Good
Number of maternal evaluations	84.62	Regular
Number of fetal evaluations	83.08	Regular
Longest interval without maternal evaluation	80.00	Regular
Longest interval without fetal evaluation	78.46	Bad
Medication used	78.46	Bad
Indication for caesarean section	96.92	Excellent
Anesthesia	83.08	Regular
Type of anesthesia	81.54	Regular
Other methods for relief of pain	58.46	Bad
SUBTOTAL (36)	82.91	Regular

it continues

Table 2. continuation

Blocks / Variables	Forms (n=65)	
	%	Completeness level*
Annotations on the stillborn child		
Professional assisted child in delivery room	84.62	Regular
Reanimation attempt	93.85	Good
Conditions of birth	95.38	Excellent
Problems of fetus	55.38	Bad
Maternal problems affecting the fetus	70.77	Bad
Body sent to autopsy	92.31	Good
Causes in patient's medical record	67.69	Bad
General observations	16.92	Very bad
Interviewer's remarks	41.54	Very bad
SUBTOTAL (09)	68.72	Bad
TOTAL (52)	80.98	Regular

CNES: National Health Establishment Register.

*Completeness scale: 95.00% = excellent; 95-90 = good; 89.99-80% = regular; 79.99-50% = bad; < 50 = very bad.

process (79.4% and 62.8%, respectively) and its level of completeness became 'regular' after the process of investigation of the files began (85.3% and 86.3%, respectively). The degree of filling-in of the group of 13 variables before and after their being considered in the investigation was 88.9% and 94.9%, respectively, with the level of completeness going from 'regular' to 'good'. There were rectifications in 13 variables studied in the death certificate (Table 5).

Errors of record were found in 11 variables analyzed in the death certificate. The variable Number of stillborn children showed a considerable change in distribution of frequency after the investigation. Before the investigation 64.7% of the mothers had experienced a loss of fetus previously, and after the investigation, 60.8% of the mothers had not. The completeness of this variable changed from 'regular' to 'good'. There was alteration in 49 of the 88 deaths investigated (55.7%) in the information on the number of children who had previously died.

Some inconsistencies were also found in the filling-in of the variables of the death certificate, such as: Gestation age equal to zero, two or seven weeks; Number of live births equal to 16 for a mother aged 16; and Caesarean birth for a death that took place in public, in the streets.

Discussion

The proportion of fetal deaths investigated in Jaboatão dos Guararapes was high (86.3%), higher than the percentage observed in Brazil in 2013 – 72% for infant and fetal deaths[5]. However, when analyzing the total completed with discussion or even the proportion of deaths investigated within the period of 120 days, one can infer that there were difficulties in the investigative process.

Lack of financial and human resources, lack of knowledge of their duties by the investigating team, and incomplete filling-in of the hospital data have been shown as factors that hinder the investigative process[12]. Similarly, there are evidences that barriers to access to the patient medical records and to the death certificate contributed to the delay in the conclusion of the case within the established period[12]. Also, it is possible that obstacles arise for carrying out of the home interview, due to refusal by the family, change of address or non-existence of the address, as stated in studies on child deaths carried out in the Northeast[13,14]. The time of investigation higher than that specified works against appropriateness of the information for decision on actions for intervention and improvement of care, as well as contributing to abandonment of the investigative process, since at every moment new cases arise that need to be given priority.

The Hospital Form had a higher frequency of filling-in, different from the reality found in another municipality of the Northeast with child deaths in 2009 and 2010[15]. This can be explained by the fact that the majority of stillbirths of residents in Jaboatão in 2014 were born in Recife and in establishments that had Hospital Epidemiology Group which, given the mandatory character

Tabela 3. Grau de preenchimento e completitude das fichas de investigação domiciliar do óbito fetal (F3). Jaboatão dos Guararapes, 2014.

Blocks / Variables	Forms (n=23)	
	%	Completeness level*
Identification		
Number of death certificate	100.00	Excellent
Mother's name	100.00	Excellent
Date of death	100.00	Excellent
Gender	100.00	Excellent
Weight at birth	95.65	Excellent
Period of pregnancy	86.96	Regular
Mother's SUS card number	17.39	Very bad
Coverage	52.17	Bad
Health/administrative district	8.70	Very bad
District	82.61	Regular
SUBTOTAL (10)	74.35	Bad
Characteristics of the mother and the family		
Name of interviewee	73.91	Bad
Relationship to the child	95.65	Excellent
Number of persons in the home	100.00	Excellent
Number of bedrooms in the home	100.00	Excellent
Number of water points	100.00	Excellent
Smokers in the home	91.30	Good
Number of smokers	82.61	Regular
Mother's age	100.00	Excellent
Remunerated work	78.26	Bad
Mother's level of schooling	100.00	Excellent
Conjugal situation	100.00	Excellent
Mother's race/color	100.00	Excellent
Number of prior pregnancies	100.00	Excellent
Number of abortions	100.00	Excellent
Number of children born alive	95.65	Excellent
Number of children still born	95.65	Excellent
Number of normal births	95.65	Excellent
Number of caesarean births	91.30	Good
Date of last prior birth	30.43	Very bad
Did anyone of children born alive die	86.96	Regular
Age of sibling who died	86.96	Regular
Cause of death of sibling who died	86.96	Regular
Person who cared for sibling who died	86.96	Regular
SUBTOTAL (23)	90.36	Good

it continues

imposed by the Brazilian legislation[3, 16], carried out the investigation and filling-in of the form soon after the occurrence of the death.

The Household Form showed a higher degree of filling-in than the Hospital Form. Questions related to inappropriate filling-in or even to incomplete and illegible records on the medical record sheet could have contributed to the worse filling-in of the Hospital Form, compared to the Household Form[13,17,18]. Further, the better completeness of the Home Form is in line with what is found by other authors[15] who refer to the contribution of the family health team in the investigation[13,14], facilitating the location of addresses and making families sensitive to the importance of the interview. Appropriate filling-in of this

Table 3. continuation

Blocks / Variables	Forms (n=23)	
	%	Completeness level*
Pregnancy and prenatal care		
Planned pregnancy	95.65	Excellent
Information on contraceptive methods	86.96	Regular
Mother did PNC	100.00	Excellent
Reason why did not do PNC	100.00	Excellent
Month when PNC started	100.00	Excellent
Reason for not starting PNC in first three months	95.65	Excellent
Number of PN consultations	100.00	Excellent
Took anti-tetanus vaccine	95.65	Excellent
Number of doses	91.30	Good
Location of PNC	95.65	Excellent
Type of provider of PNC	91.30	Good
Difficulties consultation Health Center	60.87	Bad
Health center. Which?	60.87	Bad
Difficulties in HRPNC	65.22	Bad
HRPNC. Which?	65.22	Bad
Difficulties in examinations	65.22	Bad
Examinations. Which?	60.87	Bad
Difficulties ultrasound	65.22	Bad
Ultrasound. Which?	56.52	Bad
Difficulties drugs	56.52	Bad
Drugs. Which?	56.52	Bad
Was there referral of maternity unit	95.65	Excellent
Maternity unit referred	95.65	Excellent
How evaluates PNC care	95.65	Excellent
PNC card complete	95.65	Excellent
PNC situation	78.26	Bad
Risk factors	91.30	Good
Was there treatment	95.65	Excellent
In which month of pregnancy	95.65	Excellent
Use of cigarettes	91.30	Good
Use of drugs	91.30	Good
Use of alcoholic beverages	91.30	Good
SUBTOTAL (32)	83.83	Regular

it continues

form contributed to collection of important information from the Outpatient and Hospital Forms, since their blocks deal with data on the care given in those establishments.

The information on the outpatient data had a lower number of forms filled in (1:8) and also the worst degree of filling-in (61.5%) of the forms analyzed. Caetano, Vanderlei and Frias (2013) also found lower completeness in the Outpatient Form for infant deaths in Arapiraca, in the State of Alagoas[15]. Surveys on quality of medical records in Basic Healthcare Units indicated that information of implications in continuity of care were precarious[19].

Additionally, the low number of forms for collection of autopsy data filled in indicates that although there is access to the autopsy services the information is not being used to its full potential. However, the data provided through this procedure could contribute to a better understanding of the causes of death.

The summary form was the one that had greatest completeness, but it was found to have been filled in only for eight of the deaths, which

Table 3. continuation

Blocks / Variables	Forms (n=23)	
	%	Completeness level*
Care at the birth		
Reason for seeking care	95.65	Excellent
If baby stopped moving, how long before the birth?	91.30	Good
Time between start of signs and seeking of care	69.57	Bad
Time membrane broke	73.91	Bad
Aspect of liquid	52.17	Bad
Length of pregnancy at birth	91.30	Good
Location of birth	100.00	Excellent
Reason not having happened in hospital	100.00	Excellent
Birth took place at maternity unit indicated in PNC	100.00	Excellent
Reason it did not happen in the maternity unit indicated	78.26	Bad
Birth took place at first maternity unit sought	100.00	Excellent
Number of establishments sought	100.00	Excellent
Means of transport used at time of birth	100.00	Excellent
Waiting time for care	95.65	Excellent
Accompanying person in delivery room	95.65	Excellent
Mother examined before going to delivery room	91.30	Good
Presence of fetal heartbeats	95.65	Excellent
Who carried out the birth	86.96	Regular
How assesses care in the maternity unit	100.00	Excellent
Reason for assessment	95.65	Excellent
SUBTOTAL (20)	90.65	Good
Information on the stillborn child		
Sign of life at birth	91.30	Good
Period of time of signs of life	91.30	Good
Reanimation attempted	86.96	Regular
Professional who attempted reanimation	78.26	Bad
Death in relation to the birth	78.26	Bad
Weight at birth	86.96	Regular
Premature	60.87	Bad
Family's remarks	100.00	Excellent
Family's prior events	86.96	Regular
Interviewer's remarks	65.22	Bad
Repercussions in the family	34.78	Very bad
SUBTOTAL (11)	78.26	Bad
TOTAL (96)	85.19	Regular

PNC = Prenatal care; HRPNC = High risk prenatal care.

*Completeness scale: 95.00% = excellent; 95-90 = good; 89.99-80% = regular; 79.99-50% = bad; < 50 = very bad.

were discussed and, thus, concluded. The low percentage of filling-in of this form points to the difficulties in the consolidation of cases[12,15]. The lack of training of the team and the lack of support from the medical professional for the due corrections in this stage of the investigation are some of the reasons already reported by other investigators[12].

At present, the municipality has a pediatric professional within the Technical Group for discussion of the deaths, which facilitates the conclusion of the investigations and increases the proportion of deaths discussed. The closing of the cases with discussion is essential for consolidating the analysis of the case[15], and also for disclosure of the results and submission of the

Table 4. Degree of filling-in and completeness of Investigation form – Summary, Recommendations and Conclusions – of fetal death (IF5 Form). Jaboatão dos Guararapes, 2014.

Variables	Forms (n=08)	
	%	Completeness level*
Moment of fetal death	87.50	Regular
Mother's name	100.00	Excellent
Number of death certificate	100.00	Excellent
Date of death	100.00	Excellent
Gender	100.00	Excellent
Weight at birth	100.00	Excellent
Length of pregnancy	87.50	Regular
Age range at death	100.00	Excellent
Mother's age	100.00	Excellent
Mother's level of schooling	75.00	Bad
Municipality of residence	100.00	Excellent
Municipality of occurrence	100.00	Excellent
Summary of the case	87.50	Regular
Sources of information	100.00	Excellent
Health establishment where did PNC	100.00	Excellent
Type of establishment of PNC	100.00	Excellent
Length of pregnancy at first consultation	100.00	Excellent
Location of birth	100.00	Excellent
Establishment where birth occurred	100.00	Excellent
Type of establishment of birth	100.00	Excellent
Use of birth charts	87.50	Regular
VDRL carried out	100.00	Excellent
Investigation altered/corrected cause of death	100.00	Excellent
Causes of death after the investigation	87.50	Regular
Basic cause after investigation	87.50	Regular
Alteration/correction of other field of the death certificate	100.00	Excellent
Problems identified after the investigation	100.00	Excellent
Family planning – failing in access/care	100.00	Excellent
Prenatal care – failing in access/care	100.00	Excellent
Care at birth – failing in access/care	100.00	Excellent
Family's difficulties	100.00	Excellent
External causes	100.00	Excellent
Problems in primary healthcare coverage	100.00	Excellent
Problems in referral and counter-referral	100.00	Excellent
Problems in HRPNC	100.00	Excellent
ICU bed availability – high risk mother	100.00	Excellent
ICU bed availability – neonatal	100.00	Excellent
Problems at regulation center	100.00	Excellent
Transport problems pre- and inter-hospital	100.00	Excellent
Blood bank problems	100.00	Excellent
Avoidable death	100.00	Excellent
Expanded Wigglesworth classification	0.00	Very bad
SEADE Foundation classification	0.00	Very bad
Brazilian List classification	100.00	Excellent
Family planning recommendations	100.00	Excellent
PNC recommendations	100.00	Excellent
Birth care recommendations	100.00	Excellent
Recommendations of care for newborn in maternity unit	100.00	Excellent
Recommendations on organization of health system/service	100.00	Excellent
Date of conclusion	100.00	Excellent
TOTAL (50)	94.00	Good

PNC = Prenatal care; VDRL = Venereal Diseases Research Laboratory; HRPNC = high risk prenatal care; ICU = Intensive Care Unit.
*Completeness scale: 95.00% = excellent; 95-90 = good; 89.99-80% = regular; 79.99-50% = bad; < 50 = very bad.

Table 5. Degree of filling-in, completeness and rectification of variables of the death certificate before and after investigation of fetal deaths. Jaboatão dos Guararapes, 2014.

Variables – death certificate (n=102)	Before investigation		After investigation		Changes made after fetal death oversight n (%)
	%	Completeness level*	%	Completeness level*	
Gender	99.02	Excellent	100.00	Excellent	1 (1.0)
Weight at birth	92.16	Good	99.02	Excellent	7 (6.9)
Length of pregnancy	80.39	Regular	92.16	Good	15 (14.7)
Mother's age	86.27	Regular	91.18	Good	7 (6.9)
Mother's level of schooling	79.41	Bad	85.29	Regular	14 (13.7)
District of residence	98.04	Excellent	99.02	Excellent	3 (2.9)
Location of occurrence	100.00	Excellent	100.00	Excellent	5 (4.9)
Establishment where birth took place	98.04	Excellent	99.02	Excellent	5 (4.9)
Number of children born alive	86.27	Regular	93.14	Good	10 (9.8)
Number of children born dead	85.29	Regular	93.14	Good	49 (48.0)
Type of birth	94.12	Good	98.04	Excellent	4 (3.9)
Death in relation to the birth	94.12	Good	97.06	Excellent	10 (9.8)
Sent to autopsy	62.75	Bad	86.27	Regular	25 (24.5)
TOTAL (13)	88.91	Regular	94.87	Good	

*Completeness scale: 95.00% = excellent; 95-90 = good; 89.99-80% = regular; 79.99-50% = bad; < 50 = very bad.

recommendations to the managers of the various sectors involved[4,12]. Further, it is necessary to incentivate the correction of the information even in the cases in which the deaths were not concluded with investigation.

When analyzing the completeness of the variables of the death certificate before and after the investigation of the deaths, it was observed that the oversight of fetal deaths made a contribution to enhancing the quality of the SIM, both in redemption of information that had been ignored and also in correction of information recorded in the death certificate, or indeed typing mistakes.

The high percentage of alteration in the number of prior stillborn births may be attributed to mistaken inclusion, in the number of losses of fetus reported, of the death that is the subject of the report, itself. According to the instruction manual for filling in of the death certificate, this variable should not include the death to which the document refers[20].

The variable 'Body sent for autopsy' in the death certificate also showed a high percentage of alteration, and this is similar to what has been found by other authors[7], and may reflect the small importance given by the medical profession to the filling-in of this field. The other inconsistencies reported may be the result of errors in the typing of the death certificate into the system or, of doubts on the correct filling in of the death certificate.

These findings are in line with the statement by investigators on the importance of validation of the information of the death certificate by the health oversight[7] and show that analysis of the database before the investigation can result in erroneous interpretation in the distribution of some variables.

Quality of data in the death certificate depends not only on access to health technologies but also on the doctor's comprehension of the dynamic of events that surround the chain of causes of the death and of his commitment to the production of reliable statistics[7].

The results showed that there were deficiencies and operational difficulties to be overcome in oversight of fetal deaths in Jaboatão dos Guararapes, in 2014. The small number of deaths that were completed with a discussion indicates that the oversight on fetal deaths does not comply with the purpose for which it was proposed – since it is only in the discussion that the problems are identified, and the recommendations for improvements of the care network are made, and avoidability of the deaths analyzed. At the same time, it revealed the contribution of the investigative process in improving the quality of the SIM.

Improvement in quality of the information on fetal deaths will require permanent training of doctors in filling in of the death certificate, and of the teams involved in the operationalization of the SIM and in all the dimensions of the investigative process[7,12,18].

For this, it is essential that critical thinking should be developed on the role of oversight of death and the importance of complete, reliable and correct and appropriate information for the planning of actions to improve the quality of integrated healthcare for pregnant mothers and births, so as to prevent further deaths and reduce the percentage of stillborn children.

Collaborations

LFB Santa Maria and TVB Araújo state that they contributed to the conception of the project, analysis and interpretation of the data, drafting of the article and final approval of the version to be published.

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Article submitted 30/05/2017
Approved 26/06/2017
Final version submitted 13/07/2017