ABSTRACT
Objective: to raise reflections on infant death surveillance (IDS) as a strategy to reduce infant mortality. Method: descriptive study, based on literature review using LILACS, Scielo and PubMed/MEDLINE with descriptors: infant mortality, audit, death investigation and death surveillance. National and international journals published between 2000 and 2016 were included. Results: a total of 30 publications were analyzed, and it was possible to identify that IDS has been consolidated in the world and in Brazil as an important strategy for the reduction of infant mortality. There are similarities in the purposes and operationalization of the national and international experiences researched. The challenges identified were the lack of structure, activities conducted by isolated initiatives of individuals or small groups without support from higher levels of hierarchy. Conclusion: the studies verified the contribution of IDS for the reduction of avoidable deaths and the need to strengthen this strategy with political and managerial support. Descriptors: Infant Mortality; Epidemiological Surveillance; Vital Statistics.

RESUMO
Objetivo: suscitar reflexões sobre a vigilância do óbito infantil (VOI) como estratégia para redução da mortalidade infantil. Método: estudo descritivo, fundamentado em revisão de literatura utilizando LILACS, Scielo, PubMed/MEDLINE, com os descritores: mortalidade infantil, auditoria, investigação de óbitos e vigilância destes. Incluiu periódicos nacionais e internacionais publicados no período de 2000 a 2016. Resultados: foram analisadas 30 publicações, sendo possível identificar que a VOI vem se consolidando, no mundo e no Brasil, como uma estratégia importante para a redução da mortalidade infantil. Há semelhanças nas finalidades e operacionalização das experiências nacionais e internacionais pesquisadas. Os desafios detectados foram a falta de estrutura, atividades conduzidas por iniciativas isoladas de pessoas ou pequenos grupos, sem respaldo dos níveis superiores de hierarquia. Conclusão: os estudos constataram a contribuição da VOI para a redução de óbitos evitáveis e a necessidade do fortalecimento desta estratégia, com apoio político e gerencial. Descriptores: Mortalidade Infantil; Vigilância epidemiológica; Estatísticas Vitais.
INTRODUCTION

Infant deaths are early deaths of high magnitude and transcendence, largely preventable worldwide. It is a sentinel event of the quality of health care, being the target of several national and international pacts.1,2

In this sense, in 2000, the United Nations Organization established as the IV Millennium Development Goal (MDG) the commitment to reduce by 2/3 by 2015 the mortality rate of children under five years of age, whose highest fraction of deaths belongs to children under one year old.2 This goal has not been achieved by some countries, despite their efforts, and it has been restated in the Sustainable Development Goals (SDG) to be achieved by 2030.3

Worldwide, the Infant Mortality Coefficient (IMC) has been declining continuously since the 1990s, although this phenomenon occurs unequally, according to the level of development of each country.4 In 1990, the IMC was 91 deaths per 1000 live births (LB), declining to 43 in 2015 (reduction of 53%). The neonatal mortality rate (NMR) fell from 36/1000LB in 1990 to 19 by 2015, with a slower decline than the post-neonatal component. However, progress remains insufficient to achieve the MDG in many regions.5

The reduction of these deaths involves the development of social, care and health actions.1,6 In addition, interventions related to infant death surveillance (IDS) should be highlighted.7 This strategy allows the analysis of these deaths by assessing the quality of care, identifying the bottlenecks that require changes in the process and organization of the health network to improve care.8

The investigated deaths are discussed within the Committees by a group of experts from universities, health secretariats, class councils and non-governmental organizations. The discussion of these deaths allows correction of vital statistics information systems, evaluation of the quality of care and of conditions of access to health services.7,9,11

The IDS has been used as an important management tool, capable of providing relevant information to health teams, generating crucial awareness. The investigation and discussion of deaths makes it possible to propose measures of promotion, prevention, planning and organization of the maternal and child health care line, directed at the main health problems and the care barriers.4,11,2

METHOD

A descriptive study, based on literature review using LILACS (Latin American and Caribbean Literature in Health), Scielo (Scientific Electronic Library Online), PubMed/MEDLINE (International Literature on Health Sciences) was held.

The terms used to search the bibliography were: infant mortality, audit, death investigation and death surveillance. National and international journals in Portuguese and English, published between 2000 and 2016 were included in the study. A process of analysis and synthesis of the articles with exploratory reading for the recognition of publications that interested the research in general was carried out, followed by an analytical and interpretive reading in order to give a broader meaning to the results chosen, for a better textual elaboration.

Authors used 30 references that dealt with death surveillance, infant mortality status and vital statistics information systems, which also supported the elaboration of this work. After analysis, the results were presented in five thematic axes: Epidemiology of infant mortality in Brazil; Evaluation strategies for maternal and child care: auditing and death investigation; Experiences of IDS in Brazil; Characteristics and operation of IDS; Contributions and challenges of IDS.

RESULTS AND DISCUSSION

Epidemiology of infant mortality in Brazil

In Brazil, the IMC decreased from 51 in 1990 to 15 deaths per 1000 LB in 2015 (a reduction of 71%). This decrease was also achieved in the regional sphere, but in 32 municipalities the IMC exceeds 80 deaths per 1000 LB.3 There are still problems to overcome, such as persistent and notorious regional, state and municipal differences, given the social inequalities that exclude significant population contingents from access to basic goods and services,1 with higher risk of death in the populations of the North and Northeast Regions. The latter region achieved the greatest reduction in the IMC, 57%, from 36 deaths per 1000 LB in 2000 to 15 in 2013, but, it still has indices above the national average.13,5

In the State of Pernambuco, the IMC in the year 2000 was 34 per 1000 LB and reached 14
in 2013, a reduction of 58%. In Recife, the situation is better than the national, the Northeast and the State averages, as the IMC showed a decrease of 20 deaths per 1000 LB in 2000 to 12 in 2013, representing a decrease of 39%. However, with the reduction of the IMC due, mainly, to preventable deaths, infant mortality rates started to fall more slowly.1

Brazil’s success in reaching the MDG prematurely was the result of actions on the determinants of these deaths, such as improving women’s education and water and sanitation, and the unquestionable reduction of poverty observed in recent years as a result of compensatory public policies such as the Bolsa Familia Program, as well as contributions in the areas of science and technology.1,4

In the health sector, the expansion of the Family Health Strategy (FHS) has contributed to strengthening primary health actions, particularly those directed at women, family and prenatal planning, and children, through the promotion of breastfeeding, immunization and attention to diseases prevalent in childhood. In addition, there was a significant reduction in fertility, which favored the decline in infant mortality.5,13,14

However, there are still several barriers to IMC reduction due to preventable causes in the country. One of them is the decrease in the inequality of the distribution of deaths in all social classes and geographic regions.1 Thus, the public power’s challenge to reduce inequities, expanding access to quality goods and services, including health care through the implementation of policies guided by the doctrinal principles of the Unified Health System (SUS), especially universality and equity in a way that reaches the entire population, benefits those at greatest risk of death and increases the chance of survival.18

♦ Evaluation strategies for maternal and child care: audit and death investigation

Interventions for the reduction of infant mortality include interdisciplinary public policies, collective and individual activities directly related to the care and diagnosis of the health status.5-8 Several countries have implemented and/or improved strategies that allow a better understanding of the social and care determinants of these deaths, such as evaluations on the care provided to women and children in their care path before unfavorable outcomes.12,17

Audits and death investigations allow an assessment of the circumstances that led to its occurrence in order to alert managers and stakeholders to a better investment in the organization of access to services and the quality of health care during pregnancy, childbirth, birth and follow-up of women and children.17-19

Literature review studies have shown that the infant mortality audit has been established in several countries, especially in developing countries, on all continents. The form of organization, the activities developed, the routine and the objectives are similar; however, there are specific peculiarities related to the characteristics of the territories.17,20 International experiences about the processes of audit and investigation of infant deaths present varied configurations, resulting from the availability of information and levels of service provision.17,19

In England, this strategy was implemented in the 1950s, with the investigation of all deaths of children aged 0-59 months. Specific record forms have been developed for neonates (0-28 days) and children (29 days-59 months). Death notification should occur within 24 hours after the occurrence of death, and the investigation within 30 days. Cases are discussed in Child Death Review Committees to identify barriers to maternal and child health services that contributed to these deaths, in order to draw inferences from the locally generated data. Subsequently, reports of the discussed cases are made with the proposed recommendations to prevent further deaths.21

In the European region, in Moldova, a similar strategy was implemented in 2006, recognizing the need to address the issue of perinatal mortality. The confidential investigation of deaths is carried out by a multidisciplinary team. Cases are also discussed in Committees with an evidence-based approach, not to identify culprits. The objectives of these audits are to determine the actual causes of death and the factors that contributed to this event, and to propose solutions to prevent future deaths.22

In Brazil, the investigation of infant deaths has been developed since the 1990s in several municipalities and states with different conformations.4,7,8,10-11,23-26

♦ Experiences of infant death surveillance in Brazil

The Ministry of Health (MoH) has been recommending the implantation of IDS in a growing number of legal documents within the SUS since 2004 as a method that may contribute to the adoption of measures to prevent preventable deaths in health services.12 In 2010, the Ordinance No. 72 of
the MoH was approved, which establishes the obligation to monitor infant and fetal death throughout Brazil.²⁷

This Ordinance was created as one of the strategies used in an attempt to reduce under-reporting and under-informing of deaths, since they conceal the real extent of infant mortality, which is still a problem to be solved in the country, especially in the Northern and Northeast Regions.⁵,²⁸

Recognized as an important management tool, IDS is able to provide information for the health teams about the care provided, as well as to improve the information systems.²⁴⁻⁵

Additionally, it allows the planning of interventions directed to the main problems and to the health care barriers of the health system, thus contributing to the reduction of avoidable deaths and iniquities.¹²

However, prior to this legal normative basis, IDS was already carried out in some areas of the country, such as in the states of Paraná, São Paulo and Bahia and in the municipalities of Pelotas (RS) and Recife (PE).⁴,⁷,¹¹,²⁴,²⁹

In the state of Paraná, the investigation of deaths began in the 1990s and was carried out by the Infant Mortality Prevention Committees. Data collection has been done through hospital and outpatient medical records, home visits, death certificates (DC) and live births (LB), information from community health workers (CHW) and clandestine cemeteries. Specific record forms were prepared for the investigation of neonatal and post-neonatal deaths, and a fact sheet was elaborated for the final analysis of the case.⁷,⁹⁻¹¹

In 2002, the State of São Paulo published a practical manual of the Infant Mortality Committees and death investigation files to support the implementation and operation of State investigation groups. The main function of these committees, based on the investigation of deaths, is to identify the precariousness of access and quality of care provided to pregnant women and children, to mobilize partnerships and to propose measures to reduce mortality.²⁴

In the city of Pelotas (RS), in 2004, a Municipal Committee for the Investigation of Infant and Fetal Mortality was also set up with the responsibility for investigating and discussing all the child deaths that occurred, and with objectives similar to that of Paraná and São Paulo.⁴,⁷,⁹⁻¹¹,²⁴

In the following year, in Bahia, such activities were initiated with a model that emphasizes the educational nature of the process, promoting reflection on professional practices.⁸

Recife (PE) is one of the pioneer municipalities of IDS in Brazil. It has been developing this strategy since 2003, with systematic investigation of all infant deaths of residents in that city, excluding those resulting from congenital malformation. It was implemented as a critical-reflective tool of the health network organization. In this perspective, the objectives of this strategy are to evaluate the role of health care in the occurrence of deaths, to identify avoidability, to improve the quality of information systems and to use information for the planning of maternal and child health actions.²⁹

♦ Characteristics and operation of infant death surveillance

In the operation of IDS, deaths are identified, investigated and discussed in specific forums, generating proposals for health promotion and health care.²⁴⁻⁵ The investigation of death allows, retrospectively, to evaluate it through medical records and interviews with the family and professionals involved in maternal and child care.²⁵ To unravel the circumstances in which the event occurred, the investigation explores the diversity of determinants involved in infant death,³ thus identifying failures in the chain of care actions.⁵

The notification of infant deaths should be made from the sending of DCs by professionals and health services to the municipal health secretariats within 48 hours from the date of the occurrence, as recommended by the Ministry of Health. Information agility and timely initiation of investigation are key factors for the success of IDS.²⁷

The instrument for collecting data on child deaths is not unified in every country, although the MoH provides a standard model for home, outpatient, hospital and necropsy services, which allows the understanding of the case investigated, by reproducing the care path from gestation to death.²⁰,²⁸ For municipalities that have chosen for their own instruments, there is a mandatory collection of a set of variables that are monitored by the ministry.²⁷

According to Ordinance No. 72, the investigated deaths should be discussed within a Committee with a focus on the search for determinants and avoidability factors, assessing health care and proposing intervention measures.²⁴,²⁷,³⁰ At the end of the discussion, the death summary form must be completed, intended to record the analysis and the closure of the case. Subsequently,
Lack of material and administrative structure, activities conducted by isolated initiatives of individuals or small groups, without support from the higher levels of hierarchy, actions non-contemplated in the instances of planning, demotivation and low responsibility of the protagonists are the main factors that characterize a non-institutionalization of this surveillance. In spite of the scarcity of evaluations about IDS in the country, studies have reiterated that this strategy is an important management tool, capable of providing relevant information to the health teams, generating critical awareness. It also allows the planning of interventions directed to the main health problems and the care barriers.

The experiences of IDS point to a real contribution thereof in reducing child mortality. In addition, they describe that the investigation and discussion of the cases ends up sensitizing the health teams towards infant mortality, thus encouraging a more committed action with public health. This strategy has given visibility to situations that require changes in order to reduce these deaths. In view of this, some interventions have been carried out.

CONCLUSION

IDS has been consolidated in the world and in Brazil as an important strategy for the reduction of infant mortality, since it enables the identification of the failures in the health care for the woman and the child that contribute to the occurrence of the deaths, allowing the adoption of measures aimed at preventing new deaths. The operationalization is carried out basically by following the same components with small differences from the characteristics of the territories. However, it is necessary to further strengthen this strategy, with political and managerial support, to improve the quantity, quality and organization of research and discussion of deaths.

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this form must be entered in the module of “Investigation of infant and fetal death” of SIM-Web. The deadline for completing the collection of the data that make up the investigation, discussion, analysis and conclusion of the case is a maximum of 120 days from the date of death. The opportunity for investigation and discussion of deaths is critical for triggering relevant interventions and avoiding the occurrence of new deaths.

Contributions and challenges of infant death surveillance

The use of the IDS provides valuable information for local health teams and favors the construction of critical awareness, which contributes to the reduction of infant mortality. This type of strategy can contribute to the qualification of health professionals and teams, while enhancing local health systems.

In addition to the task of keeping the infant mortality issue constantly visible, the results of the investigations of these deaths add information and identify factors that are not possible with the analysis of official statistics, and contribute to the adoption of actions to promote the reduction of preventable deaths. The analyzes and studies of each death also help in the improvement of the health information systems, since, after the investigations, the team that had discussed the death attributes, in most cases, new basic causes to the infant death.

Although the first initiatives for implementing the IDS had occurred since the 1990s, the number of infant deaths investigated in the country has still been low, according to data presented in studies conducted in the states of Paraná, Rio Grande do Sul, São Paulo, Alagoas, Bahia and Minas Gerais. In addition, there is a fragility of this process, since there is a need for greater technical and operational support from municipal, state and MoH managers to qualify the work of research teams.

So that the IDS can achieve concrete results, a broad deployment with a clear conceptual role and adequate infrastructure is needed, in addition to being effectively a technical/managerial pole whose actions or recommendations flow with full support from the authorities. This would provide the detailing of each death’s care process, thus obtaining elements to evaluate the quality in its components of structure, process and result, besides proposing the necessary changes.


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