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BASIC HEALTH INDICATOR: PRIMARY CARE AND DEATHS IN WOMEN OF CHILDBEARING AGE

INDICADOR BÁSICO DE SAÚDE: ATENÇÃO PRIMÁRIA E ÓBITOS MULHERES IDADE FÉRTIL

INDICADOR BÁSICO DE SALUD: ATENCIÓN PRIMARIA Y MUERTES EN MUJERES EN EDAD FÉRTIL

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RESUMO

***Objetivo*: avaliar a cobertura de atenção primária à saúde nos municípios de Santa Catarina e o alcance do indicador básico de saúde – proporção de óbitos em mulheres em idade fértil investigados no sistema único de saúde. *Método*: ecológico transversal, usando-se técnica de análise espacial, realizada no período de 2017 e 2018, tomando-se como unidades de análise os 295 municípios do Estado de Santa Catarina. Todos os testes levaram em consideração um α bidirecional de 0.05 e um intervalo de confiança (IC) de 95%. *Resultados*: o número de óbitos maternos está inversamente correlacionado à cobertura populacional de equipes de Atenção Básica, à cobertura populacional de Saúde da Família, sendo diretamente correlacionado a proporção de óbitos em mulheres em idade fértil investigados no ano de 2017 não havendo correlação significativa destas variáveis em 2018. *Conclusão*: a análise dos indicadores óbitos maternos e proporção de óbitos de mulheres em idade fértil investigados podem representar um indicador da determinação política nacional, considerando que refletem a qualidade da atenção à**

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saúde da mulher. Daí a importância da investigação oportuna desses óbito a fim de prevení-los, fortalecendo as redes de atenção à saúde, tendo o enfermeiro como peça fundamental no planejamento deste cuidado.

***Descritores*:** Atenção Primária a Saúde; Saúde Pública; Enfermagem; Mortalidade; Indicadores Básicos de Saúde; Sistema Único de Saúde.

ABSTRACT

Objective: To evaluate the coverage of primary health care in the municipalities of Santa Catarina and the reach of the basic health indicator - the proportion of deaths in women of childbearing age investigated in the Unified Health System. **Method**: cross-sectional ecological, using spatial analysis technique, carried out between 2017 and 2018, taking the 295 municipalities in the State of Santa Catarina as units of analysis. All tests considered a bidirectional α of 0.05 and a confidence interval (CI) of 95%. **Results**: the number of maternal deaths is inversely correlated to the population coverage of Primary Care teams, to the population coverage of Family Health, is directly correlated to the proportion of deaths in women of childbearing age investigated in 2017, with no significant correlation of these variables in 2018. **Conclusion**: the analysis of maternal death indicators and the proportion of deaths of women of childbearing age investigated may represent an indicator of national political determination, considering that it reflects the quality of health care for women, hence the importance of timely investigation of these deaths to prevent them, strengthening health care networks, with the nurse as a key player in planning this care.

Descriptors: Primary Health Care; Public Health; Nursing; Mortality; Health Status Indicators; Unified Health System.

RESUMEN

Objetivo: evaluar la cobertura de la atención primaria de salud en los municipios de Santa Catarina y el alcance del indicador básico de salud - proporción de muertes en mujeres en edad fértil investigadas en el Sistema Único de Salud. **Método**: estudio ecológico transversal, mediante técnica de análisis espacial, realizado entre 2017 y 2018, tomando como unidades de análisis los 295 municipios del Estado de Santa Catarina. Todas las pruebas consideraron un α bidireccional de 0,05 y un intervalo de confianza (IC) del 95%. **Resultados**: el número de defunciones maternas se correlaciona inversamente con la cobertura poblacional de los equipos de Atención Primaria, con la cobertura poblacional de Salud de la Familia, estando directamente correlacionado con la proporción de defunciones en mujeres en edad fértil investigadas en 2017, sin correlación significativa de estas variables en 2018. **Conclusión**: el análisis de los indicadores de muerte materna y la proporción de

muertes de mujeres en edad fértil investigadas puede representar un indicador de determinación política nacional, considerando que refleja la calidad de la atención de salud de la mujer, de ahí la importancia de una investigación oportuna de estas muertes con el fin de prevenirlas, fortaleciendo las redes de atención de la salud, con la enfermera como actor clave en la planificación de esta atención.

Descritptores: Salud Primaria; Salud Pública; Enfermería; Mortalidad; Indicadores de Salud Sistema Único de Salud.

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INTRODUCTION

The investigation of deaths of women of childbearing age (WCA) is an important strategy to qualify data on maternal mortality, being mandatory in Brazil.[1] The national guideline for this important indicator seeks to improve care networks and promote comprehensive care for women in the various life cycles (child, adolescent, youth, adult, and elderly), considering issues of social vulnerability, in primary care, in thematic networks, and health care networks. It aims to detect cases of undeclared maternal deaths or to discard, after investigation, the possibility that these women's deaths were maternal, regardless of the cause declared in the original record, in addition to identifying determining factors that led to maternal death.[2]

The investigation of WCA deaths, carried out to unveil a reality little known due to the low accuracy of the health system, aims to correct the reason for maternal deaths, making these data more convergent with reality. [3]

By promoting the investigation of the deaths of women of childbearing age, the investigation of maternal deaths is also achieved. The number of maternal deaths is also an important health indicator and its objective is to assess the access and quality of prenatal care and at childbirth, assuming that good care in delivery and childbirth reduces preventable maternal deaths and reduces the mortality of women of childbearing age.[2] Maternal deaths are directly related to the conditions of health services, reflecting the quality of health care policies inserted in the various levels of care, low, medium, and high complexity. Thus, maternal mortality is used as a parameter to assess the quality of health services offered to the population. Therefore, the

lower the maternal mortality ratio in a region or country, the better the quality of health care.[4] Maternal morbidity and mortality represent a significant impact on national public health.[5]

Due to its impact on the national economy and the growth of society, maternal health is an area of health care of utmost interest to any country. The incidence and prevalence of complications and deaths in women of childbearing age, especially those related to maternal death, make this health situation a global alert.[5]

Maternal mortality affects a large part of the world, with 303,000 cases registered in 2015. This number represents a global rate of 216 MM/100,000 RNV, with great variation for different regions and social groups. WHO proposes a target of reducing to 70 MM/100,000 live births by 2030.[6]

Despite the increased attention from the World Health Organization, Ministry of Health, State and Municipal Health Secretariats to maternal mortality in recent decades, the assessment of the reduction in this indicator is still a concern, even though the maternal mortality indicator has shown a reduction between 1990 and 2015, still approximately 10.7 million women died from maternal causes worldwide,[7] even though it is considered highly preventable.[4]

Health indicators are synthetic measures that contain relevant information and reflect the real picture of the health conditions and dimensions of the population, as well as the performance of the health system.[2] CIT Resolution 8 of 2016 provides for the process of interfederative agreement of indicators for 2017-2021[8] with a list of 23 indicators. Of these indicators, 20 are universally agreed, that is, common and mandatory agreements for municipalities and states, and three specific indicators.[8]

This study has the following hypothesis: Municipalities with greater coverage of primary care have better results in the indicators of interfederative agreement 2017-2021: Number of maternal deaths in a given period and place of residence and Proportion of deaths of women of childbearing age (10 to 49 years) investigated.

Thus, this study will assess the reach of three indicators of the interfederative agreement 2017-2021, primary health coverage, the proportion of deaths in women of childbearing age investigated in the unified health system, and the number of maternal deaths considering that the number of maternal deaths is also analyzed in the indicator proportion of deaths of women of childbearing age investigated.

OBJECTIVE

To evaluate the coverage of primary health care in the municipalities of Santa Catarina and the reach of the basic health indicator - the proportion of deaths in women of childbearing age investigated in the Unified Health System.

METHOD

This is a cross-sectional ecological study, using a spatial analysis technique, carried out between 2017 and 2018, taking the 295 municipalities in the State of Santa Catarina as units of analysis. The ecological study allows us to examine how the composition, characteristics, and resources of an area shape social interactions and health outcomes. The official databases of the State of Santa Catarina available and publicly accessible were used using the method of probabilistic relationship records to analyze the health coverage of primary care and the indicators of the interfederative agreement in 2017 and 2018. The analysis variables were two indicators of the 2017-2021 interfederative agreement: Proportion of deaths of women of childbearing age (10 to 49 years) investigated; Population coverage estimated by Primary Care teams.

Data were extracted from official databases of the State of Santa Catarina, available and publicly accessible by DIVE/SC, on November 23, 2019[9]. To constitute the database, an Excel 2016 ® spreadsheet (Microsoft Office) was created in which the data collected from all indicators of all Santa Catarina municipalities were double-entered in isolation and checked at the end to confirm the quality of the data.

The coverage by the Primary Care teams was used as an independent variable. This indicator measures the resolution capacity of Primary Health Care (PHC) by identifying areas that are subject to improvement, emphasizing health problems that need better follow-up and better organization between care levels. The calculation of these indicators takes into account the number of Family Health teams and the number of PHC teams, respectively. They are expressed as a percentage and the higher this indicator the better.[2-8]

The dependent variable was the proportion of deaths in women of childbearing age investigated. This indicator allows detecting cases of undeclared maternal deaths or discarding, after investigation, the possibility that these women's deaths were maternal, regardless of the cause declared in the original record. It also identified determining factors that led to maternal death, to support local managers in adopting measures aimed at solving the problem, which can prevent the occurrence of similar events. The calculation method takes into account the total

number of maternal deaths. It is expressed as a percentage and the higher this indicator the better.[2-8]

The data analysis process of this research began with a descriptive exploration including mean, standard deviation, median, 25th and 75th percentile, minimum and maximum for all study indicators. A correlation matrix was proposed based on the calculation of Spearman's rank correlation coefficient. All tests took into account a bidirectional α of 0.05 and a confidence interval (CI) of 95% and were performed with computational support from the following software: R Project for Statistical Computing; IBM Software Group and the Software Statistical Package for the Social Sciences.

Choropletic maps were also plotted with selected indicators to assess the distribution of indicators in the study area for 2017 and 2018. Choroplectic maps were prepared with quantitative data and specific rules for the use of the color visual variable, varying its intensity according to the sequence of values presented in the established classes. The maps were developed in QGIS3.10.2 software.

The ethical aspects of research with human beings occurred during the investigation, following resolution 466/12 and complementary. Resolution 510, of 07/04/2016, of the National Health Council (CNS), in its sole paragraph, items II, III, and IV, determines that "researches will not need to be registered and evaluated by the Research Ethics Committee that uses information in the public domain". The investigation took place from secondary data sources, not implying any risk for the research subjects, and followed the ethical principles, guidelines, and regulatory standards.

RESULTS

The results showed that, in the state of Santa Catarina, the percentage indicator of death records in women of childbearing age investigated had lower means in 2018 (Average: 70.5%; Standard Deviation: 43.9) than in 2017 (Average: 76%; Standard Deviation 41.5). Also, in 2017, the state presented as a result achieved for this indicator 97.81%, surpassing the agreed target, which was 95%. In 2018, the state achieved an achieved result of 95.06%, which was not enough to reach the agreed goal of 97%. The number of maternal deaths in 2018 (Average: 0%; Standard Deviation: 2; Maximum 27) than 2017 (Average: 0%; Standard Deviation: 2; Maximum: 29) decreased. Regarding maternal deaths, the state presented 29 deaths in 2017 and 27 in 2018 as a result. These values were higher than what was agreed for the respective years (24 deaths). Population coverage

by Primary Care teams also had lower averages in 2018 (Average: 82.4%; Standard Deviation: 25.5) than in 2017 (Average: 82.8%; Standard Deviation 25.3). The population coverage of family health remained stable (95.8%; Standard Deviation: 12.4 in 2017 and 95.7%; Standard Deviation: 12.8 in 2018). These results are shown in Table 1.

Table 1. Descriptive table of the different indicators for the years 2017 and 2018

	2017							2018						
	Mean	SD	Median	P25	P75	Minimum	Maximum	Mean	SD	Median	P25	P75	Minimum	Maximum
% of deaths in women of childbearing age investigated	76.0%	41.5%	100.0%	71.4%	100.0%	0.0%	100.0%	70.5%	43.9%	100.0%	0.0%	100.0%	0.0%	100.0%
Number of maternal deaths	0	2	0	0	0	0	29	0	2	0	0	0	0	27
Family Health population coverage	95.8	12.4	100.0	100.0	100.0	.0	100.0	95.7	12.8	100.0	100.0	100.0	.0	100.0
Population coverage of Primary Care teams	82.8	25.3	100.0	65.4	100.0	.0	100.0	82.4	25.5	100.0	66.7	100.0	.0	100.0

SD – Standard Deviation, P25 – Percentile 25, P75 – Percentile 75

Source: The Authors, 2020

Figure 1 shows the correlation matrix of the indicators agreed upon interfederatively in 2017 and 2018. Each of the 23 indicators of the interfederative agreement was treated as an analysis variable and, therefore, identified by the letter V followed by a number that ranged from 1 to 23. Thus, in Spearman's correlation matrix, the variable percentage of deaths of women of childbearing age was investigated (V6), and the population coverage by Primary Care teams in V23.

As for the correlation between the studied indicators, the population coverage of Primary Care teams (V23) showed a significant relationship with the indicator of the percentage of deaths of women of childbearing age investigated (V6). We observed that the maternal death indicator (V20) maintained the same average in 2017 and 2018, with zero maternal deaths. In the state of Santa Catarina in 2017, 29 maternal deaths were registered and 27 in 2018.

In 2018, the indicators of the proportion of deaths of women of childbearing age investigated, population coverage of family health, population coverage of primary care team, had lower averages than in 2017.

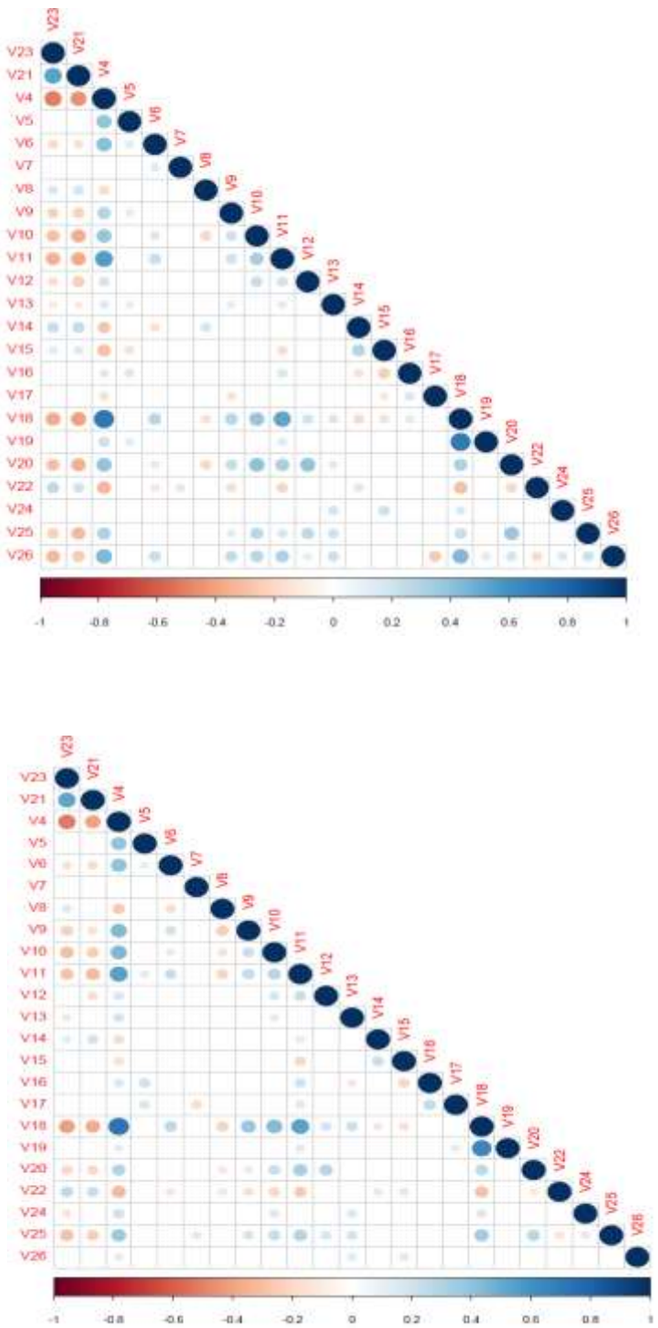

Figure 1. Correlation matrix of inter-federatively agreed indicators, presented in 2017 and 2018, respectively. Santa Catarina-SC, Brazil.

In Figure 1, the correlation coefficient is defined by color, that is, the stronger the color, the better correlated the indicators, being -1 for inversely correlated and 1 for directly correlated. Thus, the balls that did not appear in the matrix were those that were not statistically significant ($p \geq 0.05$), the other correlations were all significant ($p < 0.05$).

From the correlation matrix shown in Figure 1, it was evident that the percentage of deaths of women of childbearing age investigated (V6) is inversely correlated to the population coverage of Primary Care teams, both for 2017 and 2018. Thus, the greater the presence of one, the smaller the presence of the other. This is because the balls appear in a flat light color at the intersection

between V6 and V23, indicating that the correlation between these indicators was statistically significant.

The number of maternal deaths indicator V20 is inversely correlated to the population coverage of Primary Care teams, both for 2017 and 2018. This means that the greater the presence of one, the lower the presence of the other.

The number of maternal deaths V20 is inversely correlated to the population coverage of Primary Care teams V23, the population coverage of Family Health, the % of vaccine with adequate coverage, maintaining the same correlation in both years (2017 and 2018). The number of maternal deaths is directly correlated to the number of deaths from chronic non-communicable disease, the proportion of cases of diseases with closed notifications, the % of cure for leprosy, new cases of Congenital Syphilis, cases of AIDS in children under 5 years old, to the number of deaths, either for 2017 or 2018. This is directly correlated to the proportion of deaths in women of childbearing age investigated in 2017. Thus, the indicators of the proportion of deaths of women of childbearing age investigated and the number of deaths maternal data are not statistically significant ($p \geq 0.05$) in 2018.

The number of maternal deaths was not significantly correlated with the premature mortality rate from chronic non-communicable disease, the proportion of deaths from an underlying cause defined by the proportion of adolescent pregnancy, the infant mortality rate, the proportion of normal births, at the ratio of mammograms, due to the examination of the cervix, either in 2017 or in 2018.

Also, concerning the percentage of deaths of women of childbearing age investigated (V6), Figure 2 shows its distribution in the different municipalities of Santa Catarina through a thematic map.

The map shown in Figure 2 shows the cities of Santa Catarina with the respective proportions of deaths of women of childbearing age investigated in 2017 and 2018. The darker the color on the city map, the greater the proportions of deaths of women of childbearing age investigated. When compared to the Proportion of deaths of women of childbearing age investigated in the years studied, we observe that in 2017, 64 municipalities had the Proportion of deaths of women of childbearing age investigated equal to zero; two municipalities between zero and 33%; two municipalities between 33 and 50%; seven municipalities between 50 and 75%; another seven municipalities between 75 and 99% and 213 municipalities equal to 100%. In the year 2018, we observed that 77 municipalities had a Proportion of deaths of women of childbearing

age investigated equal to zero; three municipalities between zero and 33%; no municipality between 33 and 50%; 12 municipalities between 50 and 75%; 15 municipalities between 75 and 99% and 188 municipalities equal to 100%.

As for the number of maternal deaths, in 2017, of the 295 municipalities, the vast majority (272, corresponding to 92.20%) had no record of deaths; 18 (6.10%) registered one maternal death; four (1.36%) registered two deaths (Itajaí, Joinville, Laguna, and São Bento do Sul) and one (0.34%) municipality registered three deaths (Palhoça). In 2018, 276 (93.56%) municipalities did not record the occurrence of maternal deaths; 13 (4.41%) municipalities registered one death; four (1.36%) registered two deaths (Araranguá, Camboriú, Joinville, and Lages) and two (0.68%) municipalities registered three deaths (Itajaí and Blumenau).

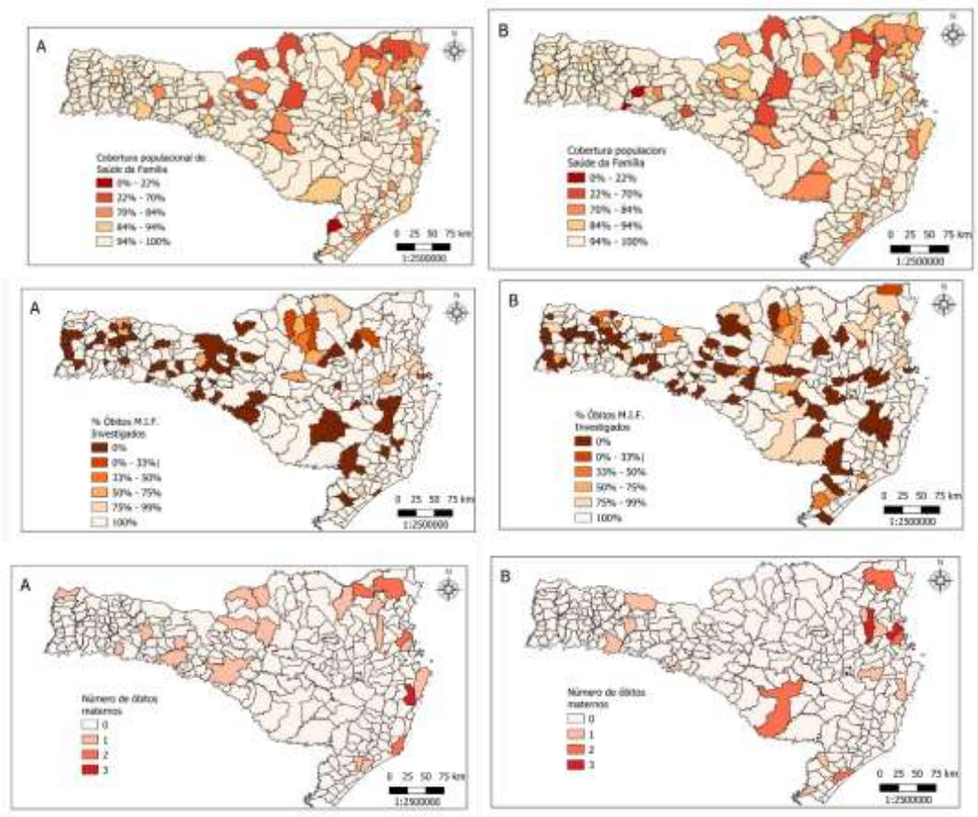

Figure 2: Thematic map of the indicator Percentage of deaths of women of childbearing age investigated in the State of Santa Catarina in 2017 (A) and 2018 (B), Brazil, 2020.

Note: The choropleth maps represent the proportionality of the studied statistical variable (each indicator individually). Each unit (city) is highlighted to represent the magnitude of the studied variable, that is, proportionally to the level of measurement of the statistical variable that is being portrayed on the map. The choropleth maps were elaborated with quantitative data and specific rules for the use of the color visual variable, varying its intensity according to the sequence of values presented in the established classes.

Source: The Researchers, 2020.

DISCUSSION

The importance of investigating WCA deaths is reflected in the improvement of information systems, facilitating the recognition of determining factors and possible causes, as well as the understanding of changes in mortality patterns in different population groups,

facilitating decision-making and preventing a higher number of deaths due to issues related to pregnancy.[10]

Knowing about the causes of death of women of childbearing age allows obtaining a mortality profile that better reflects the reality of this population[11] and its important strategy for specifying the causes of these deaths, can directly influence the formulation, implementation, and evaluation of health policies.[11]

Despite the existence of legal instruments that regulate the investigation of deaths in women of childbearing age, the diversity of organization and composition of the epidemiological surveillance services that work at the municipal level and the different levels of implementation of the Maternal Mortality Committees contribute to an unsystematic implementation or even the non-performance of these procedures.[12]

Completing the Death Certificate for women of childbearing age contains detailed information about the underlying cause of death to provide the identification of direct or indirect causes of maternal deaths, promoting the collection of more reliable data on death.[13 -14]

Serving as a positive example of an effective strategy for death surveillance, there has been the creation of prevention committees for maternal and child deaths, in the state of São Paulo, which in 1995 was part of the State System for Epidemiological Surveillance of Maternal Death, including the various health actors in this process, including the FHS.[15] The role of death surveillance, assumed by responsible managements and teams that routinely work in the investigation of maternal, infant, fetal and ill-defined cause deaths, and in the proposition of prevention and control measures.[16 -12]

We observed that there was a reduction from 29 (2018) to 27 (2017) maternal deaths. High maternal mortality rates demonstrate the serious failures of the State, the reason for which is a sensitive indicator of human, social and economic development.[17] Developing countries are the places that suffer most from this serious public health problem, as it is still where rates remain higher than expected.[18-19]

We observed that 157 municipalities maintained 100% of the Proportion of deaths of women of childbearing age investigated in the two years, which represented 53.22% of the total municipalities, 39 had an increase in this indicator from 2017 to 2018, which corresponds to 13.22% and 99 (33.56%) reduced or maintained the same rate.

The differences reflect large inequalities in political, economic, and social conditions between regions, making maternal mortality one of the key indicators in assessing the health risks of specific population groups.[11]

The research points out that despite the favorable correlation of interfederative indicators with the population coverage of primary care in the State of Santa Catarina as a whole if the thematic maps are observed, the municipalities with the best population coverage of primary care do not always have the best indicators, hence the importance of solidifying the Health Care networks, in particular, the Maternal and Child Health Care Network - *Rede Cegonha*, which aims to ensure the proper flow of care for sexual and reproductive planning, prenatal care, delivery and birth, puerperium and which is organized in a tripartite manner to ensure comprehensive care for women.[20]

Despite the number of maternal deaths being lower than in Brazil, this situation persists in some cities in Santa Catarina and may not be an absolute truth, given that the proportion of deaths by WCA investigated is a reality that draws attention in Santa Catarina, having been registered both in 2018 and in 2019, cities that did not investigate deaths by WCA.

Errors made in the Statistical Report of Disfunctionality (Death Certificate) and omission of the relationship between pregnancy and death produce underreporting of MM, not only in developing countries but also in developed ones.[21]

This statement is based on considering that it is indisputable that only through the investigation of WCA deaths can maternal deaths, quality of care provided, the convergence or not of information from information systems be known, as well as reinforcing the importance of committees, so they continue to act and manage to eliminate incompleteness of the records to ensure the reliability of the data so that they can be used to qualify the public health programs implemented to reduce and prevent maternal mortality.[11-19]

This finding reinforces the need for involvement of the primary care team and greater relevance in the household and outpatient investigation of deaths to ensure timely access to health service records.[1]

In addition to compromising the reality of the data needed for the implementation, monitoring, and evaluation of effective public policies and directly harming the administration of public resources, which could be better directed as long as the true dimension of these deaths is known.

When the death of a woman occurs and is related to the pregnancy-puerperal cycle, the quality of the services offered must be evaluated to be able to confirm whether the policies are being implemented efficiently and whether the implemented actions promote health following the need of the population.[18-19]

Therefore, the results found in this study strengthen the importance of the care processes performed by health teams in PHC.[22-23] As population coverage by Primary Care teams is the centrality of the PHC and the ordering of care.[24-25] In this sense, it ensures proximity and welcomes women of childbearing age. Our results converge with another study that also exposed, on the one hand, the serious deficiencies of the death registration system in our country and, on the other, the urgent need to adopt or reinforce effective prevention and comprehensive care measures to reduce maternal mortality .[5 -26]

The study had limitations because it is a secondary data collection, susceptible to errors. However, the data found provide subsidies to direct actions to prevent these deaths from continuing to happen.

CONCLUSION

The analysis of maternal death indicators and the proportion of deaths of women of childbearing age investigated may represent an indicator of the national political determination to ensure the health of this segment of its population, considering that it reflects the quality of health care for women, from reproductive planning and prenatal care, up to delivery and postpartum care.

This study points out that the number of maternal deaths is inversely correlated to the population coverage of Primary Care teams, and directly correlated to the proportion of deaths in women of childbearing age investigated in 2017, even though 2018 does not present such a significant correlation of these variables.

Recognizing the important role of these two health indicators and the findings presented here, it is imperative to assess how care has been provided to women in their life cycle, highlighting the need to monitor public policies on women's health with a timely investigation of women of age fertile for the prevention of maternal death, strengthening the Health Care Networks, in particular the Maternal and Child network, ensuring the adequate flow and comprehensive care for women, with the nurse as a key part in planning this care during prenatal care, childbirth and birth and puerperium.

CONTRIBUTIONS

We inform that all authors contributed equally in the design of the research project, data collection, analysis, and discussion, as well as the writing and critical review of the content with intellectual contribution and in the approval of the final version of the study.

CONFLICT OF INTERESTS

Nothing to declare.

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