Journal of Posthumanism

2025
Volume: 5, No: 6, pp. 66–105
ISSN: 2634-3576 (Print) | ISSN 2634-3584 (Online)
posthumanism.co.uk

DOI: https://doi.org/10.63332/joph.v5i6.1951

Trends in Maternal Health Indicators in Colombia: A Systematic Review

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Abstract

The article examines the state of maternal health in Colombia. Maternal health is a critical public health challenge globally, and Colombia has committed to improving these indicators to reduce the maternal mortality ratio (MMR; MM in Spanish) to less than 70 deaths per 100,000 live births by 2030. The review highlights the increase in MMR in Latin America and the Caribbean by 46.9% by 2021. Prenatal care coverage in the Americas has been stable at 90.7%, but some countries have lower coverage. In Colombia, significant changes in maternal health indicators have been observed since the enactment of Law 100 of 1993. Despite progress, barriers at all levels of care negatively impact health outcomes. The General System of Social Security in Health (GSSSH; SGSSS in Spanish) reform aimed at universal health coverage has not fully translated into effective accessibility. Colombia has implemented various plans and resolutions to reduce maternal morbidity and mortality. The objective of this review is to document scientific evidence related to trends in maternal health indicators in Colombia after the SGSSS reform. The review includes studies from various databases and languages, focusing on prenatal care coverage, delivery care coverage, and maternal mortality ratio. Ethical considerations were adhered to throughout the review process.

Keywords: *Health in Colombia, Live Births, Maternal Mortality, Social Security.*

Introduction

Maternal health is one of the main challenges of public health in the world, being conceived as the state of biopsychosocial well-being that women experience during their gestation, childbirth and postpartum process (1). In order to achieve this objective, it is imperative to ensure that access to healthcare services is available, with the aim of providing adequate care for both the mother and the child, an aspect that motivated the inclusion of this indicator in the Sustainable Development Goal (SDGs) (2), as one of the most important goals to be achieved in the next five years. Colombia and the rest of the member countries have committed to the United Nations to improve these indicators with a view to reducing the maternal mortality ratio (MMR) to less

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than 70 deaths per 100,000 live births by 2030, after considering that these constitute an event related to the accessibility of prenatal control and institutional delivery care by health professionals (3).

In Latin America and the Caribbean, the MMR increased by 46.9% by 2021, from 47.3 to 69.5 deaths per 100,000 live births. Similarly, differences in this indicator persist among some countries (4), for example, in Chile during 2021 a lower trend was maintained (19.0) with respect to Nicaragua (32.2), and for 2022, Costa Rica (15.0) in contrast to Uruguay (3.1) presents high mortality ratios; while Honduras (125.0) and Paraguay (160.0) have maintained a variable but significantly high behavior compared to the other countries mentioned above (5).

Regarding prenatal care coverage (at least 4 consultations), in the region of the Americas it has been stable in the last decade, with coverage of 90.7%; however, there are countries with coverage below 80%, for the year 2021, such as Paraguay, Argentina and Grenada; and for the year 2022 (6), Antigua and Barbuda, Turks and Caicos Islands. At the same time, the proportion of births attended by qualified personnel has been maintained in the last decade, with a proportion for Latin America and the Caribbean of 96.1%, countries such as Mexico and Honduras presenting a proportion of 87.5% and 62.0% for the year 2022 Evidence indicates that 90% of maternal deaths can be avoided through a combination of measures including the implementation of quality maternal care, universal access to modern contraceptive methods, and efforts to address inequities in access to health services (7).

In the case of Colombia, the transformations of the health system, especially with the enactment of Law 100 of 1993, are reflected in the important changes in the performance of some basic indicators. These comprise a set of regional data that provide information from various sectors, the origin of which depends on a combination of different sources that allow a broad view of the health situation of a country or locality. In this regard, maternal mortality is one of these indicators linked to the quality of and access to health care, as well as to the biological and social conditions of the mother (8).

In this order of ideas, maternal health in Colombia is documented with a series of basic indicators such as the Maternal Mortality Ratio (MMR) at 42 days, delivery care, institutional births, percentage of births attended by qualified personnel, percentage of tetanus vaccination in pregnant women between 15 and 49 years of age, number of pregnancies in children under 18 years of age (9).

The review of these indicators in Colombia, although they show significant progress in some respects, is also evident the barriers or failures at all levels of care that have a negative impact on the health outcomes of this population (10). As an example, the MMR shows a decrease between 2007 and 2023, with an Annual Percentage Change (APC) of -3.09 (95% CI -3.8 – -2.4; p 0.001), which represents a statistically significant reduction (11). It should be noted that, during the years 2020 and 2021, there was a significant increase in these indicators that could have been influenced by the Covid-19 pandemic, where there was a significant dropout to prenatal control consultations, among others, increasing the risk to the health of the mother and child. On the other hand, maternal health indicators have maintained a variable behavior in the interior of the country, highlighting those departments that presented a ratio above the 75th percentile (62.1 per 100,000 NV) were Buenaventura, Vichada, Chocó, Guainía, Caquetá, Guaviare, La Guajira, Nariño, Atlántico and Magdalena, unlike the rest of the territorial entities (12).

The behavior of maternal health and its indicators are not consistent with the performance of the

General System of Social Security in Health (SGSSS), implemented in Colombia in 1993 through Law 100, since this reform represented a significant change in the health care model, by establishing a system of compulsory insurance through two regimes: contributory and subsidized (13). The main objective of this was universal health coverage, to improve the health outcomes of the population through a structural transformation of the health system (14).

The results obtained with the implementation of this reform, according to some researchers, have not been the best for the health of the groups; in the case of maternal health, it has had a downward trend, but it is still far from the estimated goal for 2030 (15). Although the General System of Social Security in Health (SGSSS) achieved universal coverage in insurance, this does not translate into effective accessibility to the care contemplated in the Health Benefits Plan (HBP; PBS in Spanish), which in some way has not allowed accessibility to the comprehensive assessments contemplated in the Comprehensive Care Route for the Maternal and Perinatal Population (CCRMPP; RIAMP in Spanish) of Resolution 3280 of 2018 of the Ministry of Health and Social Protection (MHSP; MSPS in Spanish), especially for the indigenous population, Afro-descendants, migrants with low incomes and low schooling who live in dispersed rural areas, putting the survival of pregnant women and the population in general at greater risk (16).

In order to achieve this goal, Colombia has made a series of internal adjustments and commitments through the Ten-Year Public Health Plan (TPHP; PSDSP in Spanish) 2022–2031 and the National Council for Economic and Social Policy (NCESP; CONPES in Spanish) 3418 of 2018, seeking to reduce this indicator to 32 per 100,000 live births by 2030. Similarly, the Comprehensive Care Route for the Maternal and Perinatal Population (CCRMPP; RIAMP in Spanish) was implemented with Resolution 3280 of 2018 and for 2022 the Ministry of Health and Social Protection (MHSP; MSPS in Spanish) formulated the Acceleration Plan for the reduction of Maternal Mortality (MM; Mortalidad Materna in Spanish), in which, through the implementation of six lines of action, it seeks to reduce maternal morbidity and mortality to improve women's health indicators (17).

Based on the above, the objective of this integrative systematic literature review is to document the scientific evidence related to trends in maternal health indicators in Colombia after the implementation of the SGSSS reform (18).

Materials and Methods

It is an integrative review of literature structured in two successive phases: heuristics or search and selection and hermeneutics based on the organization of the content, writing of the texts; from this, the discussion, conclusions and recommendations were derived.

For the development of the review, documents including books, databases, articles, journals, reports consulted and web records from official sites were taken as a reference population, using the descriptors articles that were used to describe the relationship between the trend of basic maternal health indicators in Colombia after the reforms to the general social security system. through a documentary review.

Methodological Steps

Study Inclusion Criteria

During the information search process, inclusion criteria for the initial search were considered

and applied, taking into account the following specific parameters

- Year of publication, between 2019-2024
- Databases: Scopus, Scielo, Sciencedirect and proquest
- Language: English, Portuguese and Spanish
- Type of documents: articles published in scientific journals

Search for Studies Using Equations with Keywords

Thesauri in Spanish (Decs) and English (MesH) and descriptors such as "basic health indicators", "Maternal and child health" and "Social security in health" were used to improve the effectiveness of the search. Likewise, the search connector and a search equation that included publications between 2018 and 2023 were used in English, Spanish and Portuguese.

Selection of Studies and Extraction of Data Consistent With the Research Intention

In each of the phases of the previous section, mechanisms or methods for knowledge management were used. In the heuristic phase, the information of interest was searched in the bibliographic networks, selecting those topics of interest. For this study, the reference population is constituted by the documentation related to the topic and selected from an exhaustive search of scientific articles published in journals indexed in different systems in Spanish, Portuguese and English (19).

The heuristic phase was focused and consistent in the exhaustive and selective search for scientific articles with relevant information. The use of keywords (basic health indicators, "maternal health", "social security") described in MeSH united through Boolean descriptors (and, or) allowed search equations in specialized databases such as ProQuest, Scopus, ScienceDirect, SciELO and PubMed (20).

The criteria for the selection of articles were rigorous, privileging studies with solid academic records such as ORCID, ISSN and DOI. This phase ended with the bibliometric analysis classifying the number of publications according to the level of evidence. On the other hand, the hermeneutical phase consisted of the organization of the material selected for the writing of the texts based on the knowledge and experience of the authors, in such a way that the ideas and concepts that are textual will have the format of a brief quotation or an extensive quotation as the case may be. Once the hermeneutical phase has been completed with the development of the discussion from the perspective of the accumulated scientific evidence, as a preliminary step to obtain the conclusion (21).

Assessment of Risk of Bias in Study Selection

In the process of selecting the studies, planning according to the search protocol, preparation of abstract logs and the objective review of a second expert evaluator of the rigorous applicability of the established steps were considered. Next, the external evaluators assessed the quality and applicability of the selected documents and their relationship with the research question, issuing a qualitative evaluation on the rigor and quality of the manuscript (22).

Systematization of Data Based on Documentary Techniques

During this phase, the data was organized according to the findings in order to identify the main objective of the study. The systematization of the selected information was organized in a conceptual matrix with identification of the author, year of publication, results and references

Ethical Considerations

The ethical aspects are based on the principles of beneficence since socialization is useful for the scientific community as the main group of beneficiaries, of veracity since the information will come from reliable sources, according to Resolution 8430 of 1993 with classification as a risk-free study since there was no direct contact with human beings (23).

Results

In the information obtained in the initial search in the databases were: Scopus (19), ScienceDirect (121), Scielo (2937), Pubmed (797) and Proquest (416), in terms of the relationship of the keywords it was found: Maternal health indicators AND SGSSS (1447), Maternal health indicators in Colombia (1336), the query in the English language yielded for the combination Health status indicators AND maternal health (199), maternal health and social security (1308), for a total of 4290 documents (24).

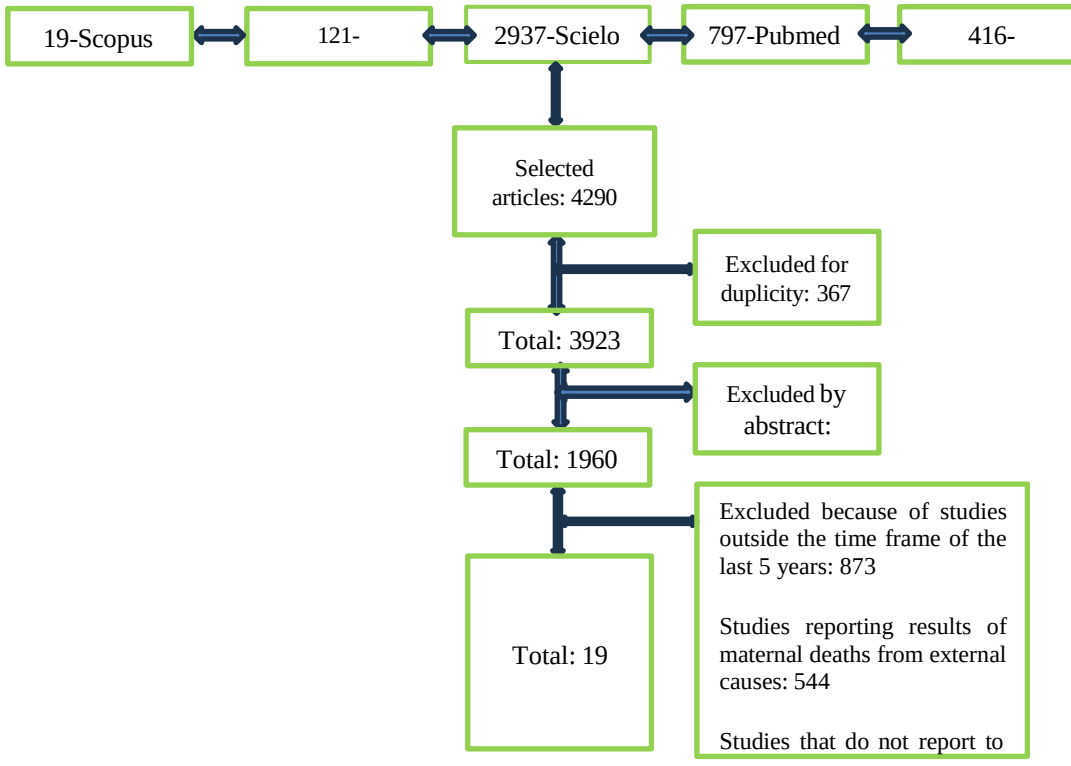

Figure 1. Selection Phases According to the PRISMA Presentation Statement

In bibliographic research, original scientific articles were considered as an inclusion criterion, published in indexed journals during the study period. The summary of the relevant articles is described for the analysis and subsequent discussion of the results (25).

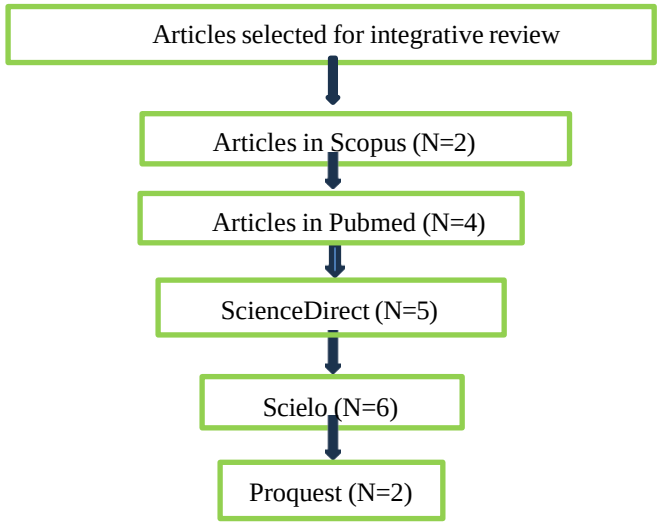

Figure 2. Flowchart By Databases

Source: Databases of the library of the University of Córdoba – Colombia

Based on the above, the results are consistent with three analytical categories: 1) prenatal care coverage, 2) delivery care coverage, and 3) maternal mortality ratio.

With regard to prenatal care coverage, this is assumed to be an indicator of access to and use of health care during pregnancy. In this regard, the prenatal period presents opportunities to reach pregnant women with interventions that can be vital to their health and well-being of the mother-child dyad. Thus, receiving antenatal care at least four times during pregnancy increases the likelihood of obtaining effective maternal health interventions during the prenatal period. This is one of the indicators of the Global Strategy for Women's, Children's and Adolescents' Health monitoring framework (2016-2030) and the monitoring framework for health services for universal health coverage (SDG indicator 3.8.1) (26).

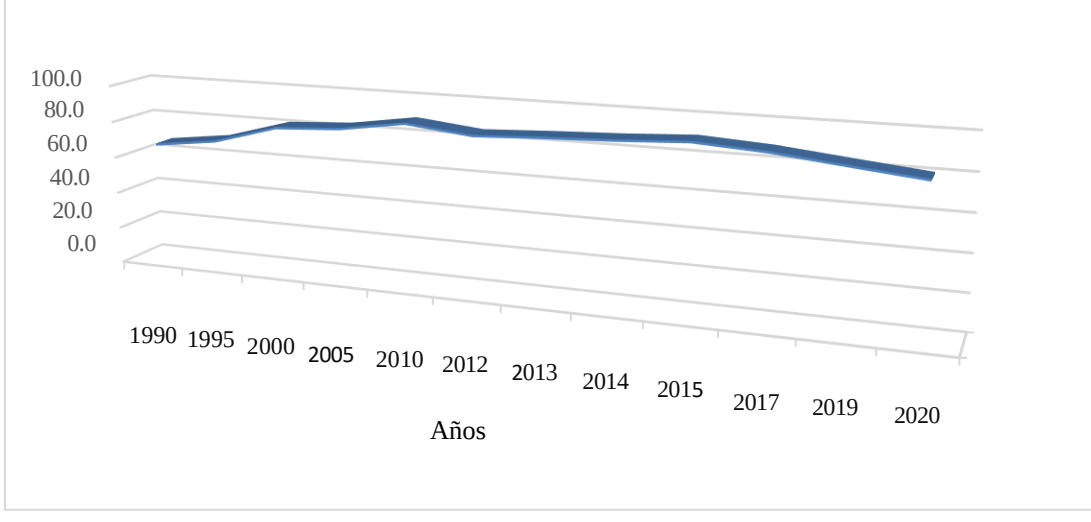

Figure 3. Prenatal Care Coverage (1990 To 2020)

The trend of the last 30 years on prenatal care coverage allows to identify that the access of pregnant women to health care in some periods has remained below universal coverage (27), with 87.7% being the maximum percentage reached in 2017, for the year 2020 this behavior continues, observing a considerable decrease, since the country reports 80.2% coverage as of that date. In other words, between 2000 and 2021 (28), the trend has been negative, considering that there has been a reduction in the percentage of pregnant women who attended at least four prenatal care consultations during pregnancy, a figure that went from 81.0% to 80.2%. The WHO recommends that prenatal check-ups should be a minimum of 8 consultations with health professionals and in 2018 the Ministry of Health and Social Protection, under the guidelines of Resolution 3280, stipulated that a pregnant woman should attend at least 7 to 10 prenatal care consultations, in order to reduce maternal and perinatal deaths in the country (29).

Prenatal control or care for prenatal care, is defined by the "clinical practice guide", (Ministry of Health and Social Protection 2024) and by Resolution 3280 of 2018, as the set of care provided by health professionals that contribute to: 1) improving maternal health 2) promoting the development of the fetus, 3) identify and intervene early in the risks related to pregnancy, and 4) generate optimal conditions that allow a safe delivery and, as far as possible, without complications that may endanger the health of the mother and the newborn (30-34). This indicator is relevant in maternal health because it allows measuring the behavior in terms of the timely access of the pregnant woman to the health system, which should be early before 10 weeks, in order tobe able to identify and treat risk factors that may endanger the health of the mother earlier, during and after childbirth, significantly reducing the risk of maternal mortality. This indicator is interpreted as the proportion of pregnant women seen at least once during their pregnancy by health professionals, doctors, nurses or specialists in gynecology and obstetrics, to monitor the progress of their pregnancy (35-38).

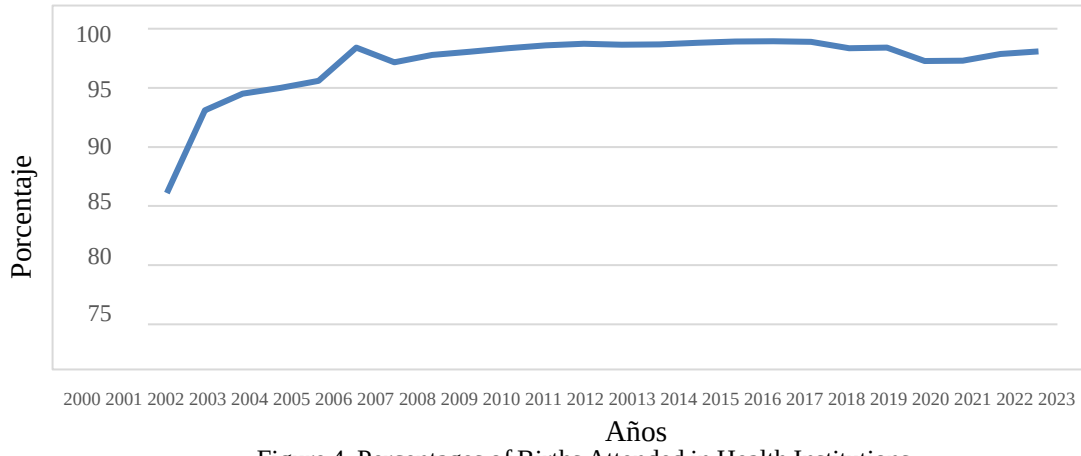

Figure 4. Percentages of Births Attended in Health Institutions

Source: ECLAC Consolidated Information

The trend of the indicator of births attended institutionally by health professionals, it is observed that in the period 2000 to 2023, Colombia after the passage of 21 years remains at 97.5%, denoting a coefficient of variation of 11.4%, equivalent to a weighted annual growth of 0.57 (ECLAC 2024); according to data reported by the portal "Así vamos en salud" in Colombia for 2023, the coverage of childbirth care in health institutions by 2023 it reached a coverage of 98.08% (ECLAC 2024) . Although these data show an improvement in the frequency of prenatal consultations and institutional delivery care, both indicators are below expectations, a situation that reflects the persistence of factors that may be influencing the maternal mortality event in Colombia. This behavior is associated with the access barriers they face in the health system during pregnancy and childbirth, putting the lives of the mother and her child at risk¨

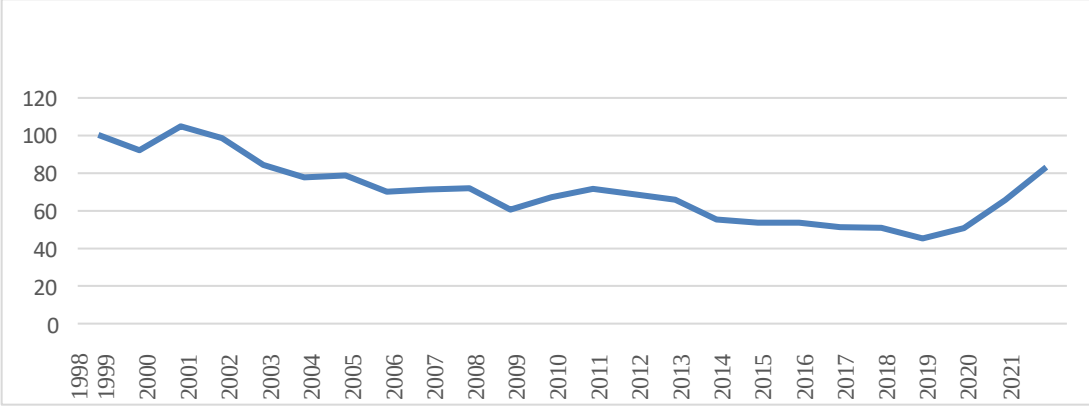

Figure 5. Maternal Mortality Ratio in Colombia 1998- 2021

Source: ECLAC Consolidated Information

With respect to the third analytical category, maternal mortality is considered an intolerable event, because it is preventable. Every day around 830 women die worldwide from complications associated with pregnancy or childbirth. In 2015, an estimated 303,000 deaths of women during or after pregnancy and childbirth (3-40). This event is common in low-income countries. The Maternal Mortality Ratio (MMR)is defined as the number of women who die from complications related to pregnancy or childbirth during a one-year period, estimated at a ratio of 100,000 live births.

Discussion

The common point of the selected studies shows relevant information that allows explaining the trend of maternal health indicators in terms of Prenatal Control Coverage (CCP), institutional delivery care coverage by health professionals and the MMR since the reform of the SGSS (41-42).

Prenatal care coverage, the 30-year trend allows to identify that the access of pregnant women to Prenatal care in some periods has remained below universal coverage, with 87.7% being the maximum percentage reached in 2017, for the year 2020 this behavior continues, observing a considerable decrease, as the country reports 80.2% coverage to that date. In other words, between 2000 and 2021, the trend has been negative, considering that there has been a reduction in the percentage of pregnant women who attended at least four prenatal care consultations

during pregnancy, a figure that went from 81.0% to 80.2%. The WHO recommends that prenatal check-ups should be at least 8 consultations with health professionals, this in order to reduce maternal and perinatal deaths in the country (43-47).

The trend of prenatal care and coverage in Colombia, the consensus of maternal health experts in most of the country's departments does not have encouraging data on early access to prenatal control; in this regard, the Ministry of Health and Social Protection (MSPS) in its 2020 report reports that only 44% of pregnant women attended prenatal care before or at week 10 of gestation, denoting the late entry into this important program, information that coincides with the results found in some regions such as Antioquia and Cauca the data reported by ECLAC in Colombia between 2000 and 2021 the trend has been negative, evidenced by the progressive reduction in the percentage of pregnant women who attended at least four prenatal care consultations during pregnancy (48-50), a figure that went from 72.6% to 81.6% in the term of 21 years, after which universal coverage in prenatal care has not been achieved. This situation should not occur if it is taken into account that Colombia has universal insurance through the SGSSS, it seems that inequalities persist between regimes, where insurance plays an important role, since in the access indicator, differences were found in the average of prenatal control per regime, the figures are indicative that pregnant women affiliated to the subsidized regime (or public in other countries) are less likely to have early access to the prenatal control, as well as 2.2 times more likely to access 5 prenatal care consultations compared with the contributory regime (51-53).

This visible problem in Colombia coincides with the national findings of Peru, which show that, although the coverage of the number of prenatal visits increased from 77.22% in 2009 to 87.52% in 2019, the ideal goal has not been reached (54). Likewise, there are similarities in opportunities and barriers to access according to the origin of women from rural and urban areas, although opportunities have allowed the figures to decrease as the relative gap by area of residence decreased from 15% (2009) to 3% (2019), accessibility barriers still remain in considerable percentages as the percentage of pregnant women without access to quality visits decreased from 45.16% (2009) to 29.35% (2019) (55). On the other hand, in Brazil, coverage is satisfactory since 86% of pregnant women attended prenatal consultations with an average of 7.3 consultations. Regarding childbirth, Colombia has not reached universal coverage of the indicator "institutionally attended births", which corresponded to 86.10% in 2000 and reached 98.08% coverage in 2023; denoting a percentage growth of 11.98% in 23 years, which is equivalent to an annual growth rate of 0.52%; if it continues at this same rate, Colombia could reach the goal of 100% by 2030 (56-58).

This gradual improvement of the indicator had already been reported in the National Demographic and Health Survey (2015), in which it is reported that since 1990 it has been possible to achieve "significant changes in relation to the place of occurrence of births" since that year the percentage growth of births in both public and private health facilities was evidenced; The figures went from 76% in 1990 to 88% in 2000, to 92% in 2005, in 2010 it was 95% and in 2015 it was 97% (59-62). The synchronization of data shows that as the percentage of institutional births grew, the proportion of births occurring at home decreased, falling from 22% in 1995 to 12% in 2000, continuing with 8% in 2005, to 4% in 2010 and in 2015 to 3%. It is of interest to note that institutional childbirth care as of 2020, in which the data goes from 98.7% to 99.2% in 2021, this being the figure closest to the universal coverage achieved after 27 years of full validity of Law 100 of 1993.

However, in the report presented by "Así vamos en salud" responsible for the calculation in 2023, it exposes the evidence that goes continuously from 2015 to 2020 in terms of there being marked differences according to the territorial entities; In this regard, it is stated that in the period enunciated, 13 territorial entities of the departmental order have remained below the national average (63-65). These territorial entities are Amazonas, Arauca, Caquetá, Cauca, Choco, Guainía, Guaviare, La Guajira, Putumayo, Risaralda, Tolima, Vaupés and Vichada. In general, similarities are found between these entities, which are characterized by having most of the population in dispersed rural areas, presence of indigenous and Afro-Colombian populations, conditions that from the ethno-cultural point of view can affect the persistence of home births or attended by traditional midwives (66-69).

Maternal mortality in Colombia is taxed with alarming values in the period studied after the implementation of the reform to the SGSSS, so between 2009 and 2020, it has ranged between 386 and 625 cases, figures that indicate that the MMR in Colombia has been multiplied from 5.51 to 8.9 compared to the SDG 3 target (70-73). The MMR in 2020 was estimated at 74.8 per 100,000 live births, representing a reduction of 19.3% compared to the figures for the year 2000. (DANE 2018). Figure 3, reported by the National Institute of Health (NIH; INS in Spanish) during the years 2009 to 2019, showed a downward trend, being considered statistically significant (P=0.000359) with a confidence level of 95%. In 2022, there was a 44.0% decrease in the number of cases of early maternal mortality compared to 2021, and in 2023 the maternal mortality ratio was 38.6 per 100,000 live births, expressing a coefficient of variation of 5.4 in the last year. INS data for 2022 report that there are particular conditions of social vulnerability that predispose to this event, related to factors related to geographical accessibility, specifically those of rural areas, which have the highest maternal mortality ratio compared to urban areas with 71.7 cases per 100,000 live births; ethnic belonging to the indigenous population, which is the most affected, obtaining figures of 100.7 cases per 100,000 live births (74).

With respect to the affiliation regime to the General Social Security Health System (SGSSS), non-affiliated people (poor uninsured population) is the population group that contributes the most in the number of maternal deaths in the first half of the year, with 54% cases per 100,000 live births. These findings coincide with those of Gaitán Duarte and Estrada Orozco, in which it is stated that inequalities and difficulties in accessing the use of institutional health services are very marked in the rural population and indigenous peoples with high maternal mortality rates, due to the scarcity of emergency services and care in rural and/or hard-to-reach areas (75).

When contrasting with the figures of other countries in the Latin American and Caribbean Region, the MMRs are similar, expressed in the increase of 46.9% for 2021, going from 47.3 to 69.5 deaths per 100,000 live births in this same year (27) This condition seems to indicate that the scheme of the health model promoted by the World Bank in the region has not been consistent with the socioeconomic or sociodemographic conditions of Latin America (6). Of the countries that make up Latin America, Cuba and Chile stand out with the lowest figures, but it is still far from achieving the results of developed countries. The average MMR obtained is 48.6 per 100,000 live births, and the average maternal mortality rate was 41.6. Obstetric deaths directly contributed 463, indirect deaths 247; and for other deaths, they were119, on the contrary, Paraguay, Brazil, Panama, have had an increasing trend in the MMR, keeping them far from reaching the goal proposed by the SDGs by 2030 (76-81).

Conclusions

Maternal health includes all aspects related to women's health from pregnancy, childbirth and

postpartum, considered as one of the central axes of public health not only in Colombia but internationally. In the country, the health of pregnant women has become a priority for the health system and with a commitment from all the actors responsible for health care. In Colombia, management tools have been implemented that aim to reduce the event of maternal morbidity and mortality, gaining more strength in recent years.

The trend in maternal health indicators has not been studied at the global level, studies that address the issue show results from some departments, which in some ways does not allow us to affirm what the trend has been at the country level. Indicators related to maternal health, specifically those that frame access to prenatal care consultations, institutional delivery care by health professionals and the event of maternal mortality, were also found to be marked differences in the statistical data on the same indicator that have been published by official sources. These differences in information show that measuring maternal mortality is a complex process and data from the different sources available do not necessarily coincide with each other. In the studies reviewed, it was possible to analyze the indicator of Prenatal Control in Colombia, which has focused on analyses or studies carried out in some departments of Colombia; for this reason, the grouped information available on the portal "Así vamos en salud" and on the website of the Statistical Commission for Latin America (ECLAC), among others, was used.

The trend in health indicators, specifically those of the maternal population, 30 years after the enactment and implementation of the reform of the General System of Social Security in Health (SGSSS), in Colombia through Law 100 of 1993, supported by an ambitious public policy that sought to solve health difficulties in the country's population. The results of this review show that despite the fact that Colombia has been making great efforts to improve these maternal health indicators, there are still gaps that require decision-making by those responsible for guaranteeing care for this priority group, and from what has been found in the data analyzed, it can be stated that maternal death is an avoidable event and a human right. which configures inequities of gender, ethnicity, race, place of residence, educational and socioeconomic level.

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