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Trends in Maternal Mortality in South America after the Covid-19 Pandemic: A Systematic Review

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Abstract

Introduction: Maternal mortality is a critical indicator of public health, reflecting access to and quality of healthcare. The COVID-19 pandemic exacerbated existing inequalities, negatively affecting maternal mortality in South America. **Objectives:** The overall objective of the study was to investigate maternal mortality trends in South America during and after the COVID-19 pandemic, with specific objectives to compare maternal mortality rates before, during, and after the pandemic, and to analyze socioeconomic and health factors that influence maternal mortality, with an emphasis on vulnerable populations. **Methodology:** A systematic review was conducted in academic databases such as PUBMED, SCOPUS, DIALNET, and SCIELO, using specific terms related to maternal mortality and COVID-19. Relevant studies and official data from WHO and PAHO were included. **Results:** The study revealed a significant increase in maternal mortality in the early years of the pandemic, followed by a gradual decline. The main causes included obstetric hemorrhage and hypertensive disorders. Indigenous and Afro-descendant women were disproportionately affected. **Discussion:** The pandemic redirected health resources, affecting primary care and reproductive health programs. Structural inequalities and lack of access to quality services were determining factors in the increase in maternal mortality. **Conclusions:** In conclusion, the COVID-19 pandemic had a devastating impact on maternal mortality in South America, revealing critical failures in health systems and exacerbating pre-existing inequalities. It is crucial to implement robust public policies and comprehensive approaches to reduce maternal mortality and ensure universal access to quality health care.

Keywords: Maternal mortality; COVID-19; Inequalities; South America; Public health

1. Introduction

Maternal mortality is an indicator that reflects women's right to life, health and motherhood. The pandemic had direct and indirect effects on maternal mortality at the global level, related to timely, equitable and effective access to prenatal, intranatal and postnatal care. In addition, the lack of creation of safe and positive environments in the context of the pandemic was evidenced, especially due to the increase of dictatorial or non-democratic systems in the region. This paper aims to identify and analyze trends in maternal mortality in different countries during and after the pandemic, as well as to establish a conceptual relationship and definition in the population, using both quantitative and qualitative data. The recently collected information, based on a macro-level analysis, provides informative elements that can help to warn and motivate, especially from the perspective of the decision-making process, planning and execution of public

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health actions. This is crucial to identify the causes of this deterioration and to ensure that each publication is scientifically researched and peer-reviewed by national experts. In addition, the measurement of maternal mortality is a multidimensional phenomenon that requires a thorough approach, given that data from various sources often reveal significant discrepancies, calculations that do not always align with the figures reported by the countries, which are compiled by the Pan American Health Organization (PAHO) and may reflect different realities. In the context of Latin America and the Caribbean, the MMR calculated by MMEIG revealed an alarming regional average of 87 deaths per 100,000 live births in 2020. This figure shows that the challenge remains unresolved. According to MMEIG estimates, more than 15 nations in the region still exceed the target set in Sustainable Development Goal (SDG) 3.1, which seeks to reduce the global MMR to less than 70 per 100,000 live births. This stagnation in the reduction of maternal mortality is particularly worrisome, as it reflects not only failures in health systems, but also structural inequalities that affect vulnerable populations [1].

The COVID-19 pandemic exacerbated this crisis, causing an estimated two-decade setback in maternal health indicators. During the critical period of virus restrictions, it was estimated that one woman died every hour in Latin America and the Caribbean due to complications related to pregnancy and childbirth. This scenario was further complicated by inherent inequities in access to health services; indigenous and Afro-descendant women were disproportionately the most affected ethnic groups, facing significantly higher rates of maternal mortality compared to their mestizo or white counterparts. In 2020, infected pregnant women had higher cesarean section and mortality rates, especially in the presence of comorbidities such as obesity. It was estimated that reduced access to health services during the pandemic could have caused between 1,210 and 8,000 additional maternal deaths annually. In addition, a decrease in the quality and coverage of sexual and reproductive health services was observed, affecting access to contraceptives and abortion services. In that year, 95% of deaths were concentrated in nations with lower or middle incomes, and some 800 women died every day due to preventable pregnancy complications, a situation that contrasted with the 34% decrease in maternal mortality that had been observed over a 20-year period since 2000 [2,3].

The COVID-19 pandemic led governments to redirect financial resources toward immediate health response, resulting in a notable neglect of primary care and programs crucial to the reduction of maternal mortality. This prioritization of funds has decimated the capacity of health systems to address chronic and emerging problems, severely affecting care for women and their reproductive needs [4].

The socioeconomic impact of these deaths is profound, as each fatality not only represents an individual loss, but also affects entire families and communities. Women play fundamental roles in family structure and in social and economic development; their death can result in a significant deterioration of community well-being. The convergence of inconsistent data, social inequalities, and health system limitations underscores the need to analyze data related to the evolution of post-pandemic maternal death in the Latin American region.

Objectives

General Objective: To investigate trends in maternal mortality in South America during and after the COVID-19 pandemic.

Specific Objectives:

- To compare maternal mortality rates before, during and after the pandemic in different South American countries.
- To analyze the socioeconomic and health factors that influence maternal mortality, focusing on vulnerable populations such as indigenous and Afro-descendant women.

2. Methodology

A systematic and exhaustive search was conducted in several academic databases, including PUBMED, SCOPUS, DIALNET and SCIELO. The search terms used were: maternal mortality, maternal death, COVID-19, South America and pandemic. Eleven articles were identified in PUBMED, 9 in SCOPUS, 21 in SCIELO and 12 in DIALNET. Similarly, official databases of the World Health Organization and the Pan American Health Organization were reviewed, specifically on maternal mortality indicators of South American countries. The results obtained were grouped according to inclusion criteria based on timeliness and thematic focus, excluding those that did not focus on maternal mortality information prior to the pandemic, or from other Latin American countries.

3. Results

A study on the evolution of maternal mortality in Peru between 2019 and 2023 revealed a significant increase in numbers in the first two years of the pandemic, then gradually decreasing reaching 264 deaths in 2023 and a maternal mortality ratio of 51.9 per 100,000 live births. Direct causes, such as hemorrhage, remained predominant, although they varied by region. The COVID-19 pandemic impacted negatively, increasing indirect maternal deaths in 2020 and 2021. However, vaccination and health interventions improved the situation. Despite progress, challenges persisted in the responsiveness and quality of health services. It was crucial to strengthen strategies to meet the sustainable development goal of reducing maternal mortality to 70 per 100,000 live births by 2030. The research underscored the need for robust public policies and a comprehensive approach that would address social inequities and ensure universal access to quality health care [5].

According to Serna, in 2022, the maternal mortality ratio in Colombia stood at 40.4 per 100,000 live births, a significant decrease compared to 2021. It was observed that the maternal mortality rate among women not affiliated to the social security system was 49.3 per 100,000 live births, while in rural areas it reached 61.9 per 100,000 live births. The most affected age groups were women between 35 and 39 years of age, with 74.1 cases per 100,000 live births, and those aged 40 years or older, with 88.4 cases per 100,000 live births. The indigenous population presented a rate of 94.4 per 100,000 live births. The main causes of maternal mortality were hypertensive disorders associated with pregnancy (24.2%), obstetric hemorrhage (16.8%), and gestational sepsis (8.1%). The SARS-CoV-2 pandemic influenced these data, with 6 cases associated with the infection. The migratory crisis between Colombia and Venezuela also had an impact, with 24 cases in foreign women, mainly Venezuelan [6].

According to Gonzalez et al, in Chile, the impact of SARS-CoV-2 on maternal mortality, perinatal mortality and prematurity was analyzed. Maternal mortality in 2020 was 28.1 per 100,000 live births, an increase of 56% over 2019. Prematurity under 37 weeks increased from 8.5% in 2019 to 9.5% in 2021 and 2022. Neonatal mortality remained stable at 9 per 1,000 live births, while fetal mortality increased slightly to 4.7 per 1,000 live births in 2020. In conclusion, maternal mortality increased by 56% in the first year of the pandemic, with a significant increase in late prematurity and a slight increase in fetal mortality in the second year. These findings were reported in the 2022 reviews and updates [7].

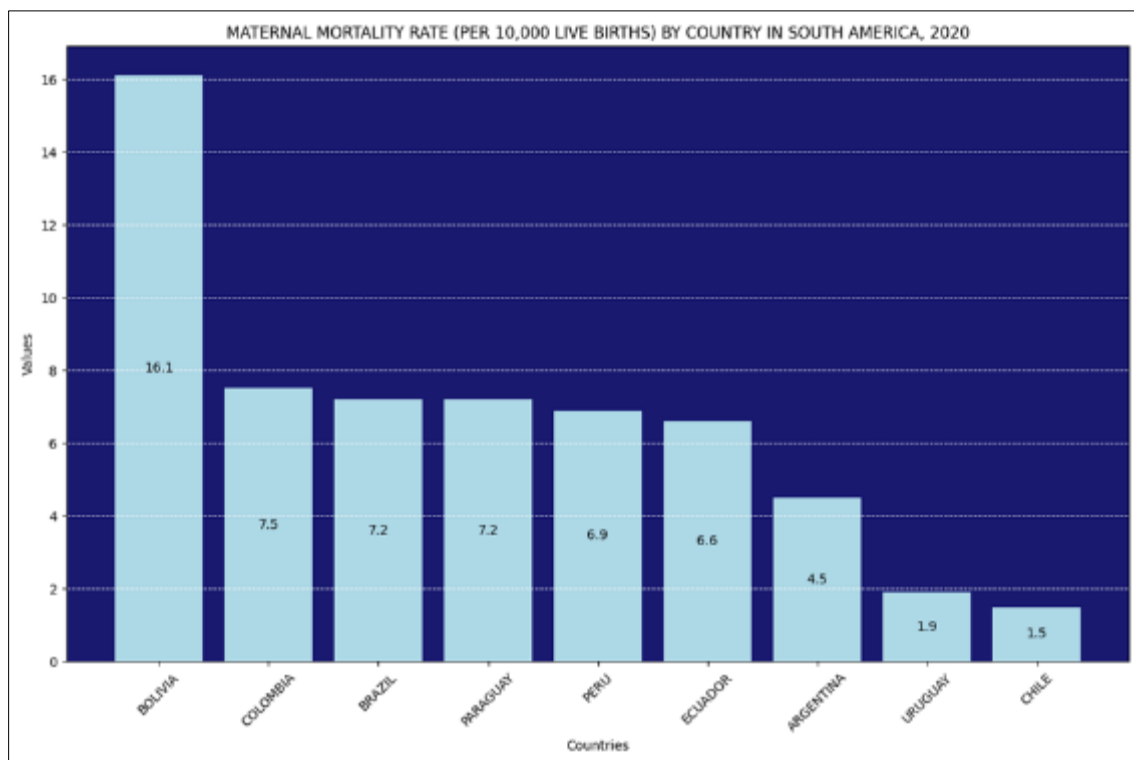
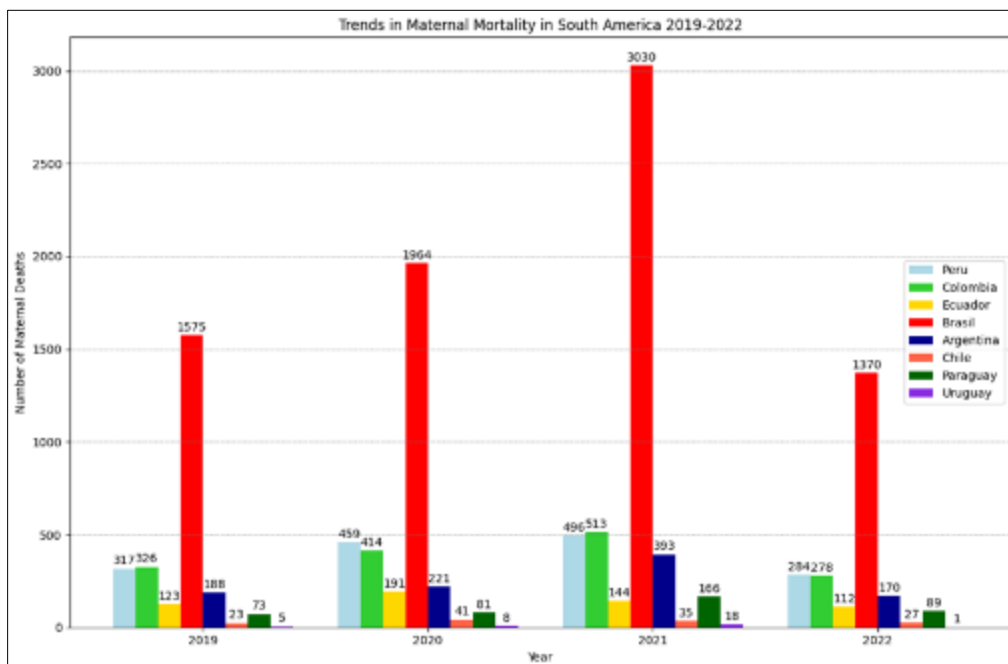


Figure 1 Maternal Mortality Rate- South America, 2020.

Qualitative research on maternal mortality in Brazil during the COVID-19 pandemic revealed an alarming lack of woman-centered care. Through interviews with relatives of 25 deceased pregnant or postpartum women, three critical barriers were identified: delays in identifying and testing for symptoms, delays in hospitalization, and in the provision of intensive care. These shortcomings, exacerbated by racial discrimination and harmful gender norms, underscored the urgent need for models of care that prioritize sexual and reproductive health during health emergencies. Research highlighted that 59% of the women who died had no comorbidities or previous risk factors, and that lack of access to intensive care was a determining factor in fatal outcomes [8].

The report on the epidemiological situation of COVID-19 in pregnant or puerperal women in Buenos Aires Argentina revealed a complicated picture. Since the beginning of the pandemic, a comprehensive active surveillance strategy has been implemented and more than 17,000 tests have been recorded with a positivity of 45%. In 2021, case fatality in this group tripled that of non-pregnant women, reaching 0.82%, an increase of 148% over the previous year. Maternal deaths due to COVID-19 became the leading cause of maternal mortality, affecting mainly young women, with 49% of those who died being 31 years old or younger. In addition, 67% of the deceased were in the third trimester of pregnancy. Severe morbidity also showed a significant impact, with 39% of severe pneumonia and 30% requiring intensive care. These data underscore the vulnerability of pregnant women to COVID-19 and the need for specific protective measures [9].

As noted by Sanchez et al. maternal mortality in the Ecuadorian Amazon between 2017 and 2022 revealed profound socioeconomic and demographic inequalities affecting women's health. The quantitative, cross-sectional research analyzed data from 90 women who experienced obstetric events. The findings showed that most of the women were indigenous (77%) and resided in rural areas (86%), with a low educational level (86% with primary education). Maternal mortality was concentrated in provinces such as Morona Santiago and Pastaza, reflecting the lack of access to adequate health services and the prevalence of risk factors such as multiparity (90%) and few prenatal checkups (86% with less than five checkups). Thaddeus and Maine's "Three Delays" were crucial to understanding the barriers to obstetric care: the delay in deciding to seek care, in getting to a health facility, and in receiving appropriate treatment. This approach highlighted the need for improved health infrastructure and health education to reduce preventable deaths. The research underscored the importance of public policies that address inequities and promote an intercultural and human rights approach to maternal care, emphasizing the urgency of strengthening the articulation between the community and health services to ensure equitable and continuous access to prenatal and obstetric care [10].



Source: Pan American Health Organization (2024)

Figure 2 Trends in Maternal Mortality in South America 2019-2022

4. Discussion

The effects of the COVID-19 pandemic on maternal mortality in the Andean and Southern Cone countries forced the reorientation of human and financial resources of the health system to combat the outbreak, together with delays in the implementation of policies and an insufficient public budget, leading to fragmentation and disarticulation in health care, affecting the capacity of health professionals. A trend of increase in maternal mortality statistics was observed between 2020 and 2021 with respect to previous years, representing a setback equivalent to 12 to 20 years in previously achieved gains. COVID-19 became one of the leading causes of indirect maternal death during this period [11-14].

However, the evident negative impact of the increase in maternal death due to the pandemic not only had a socioeconomic aspect or a weakened health system in developing countries, investigations revealed severe cases of Covid-19 in pregnant women who required invasive mechanical ventilation and admission to the ICU due to the same infection, presenting coagulopathies, acute kidney injury, multiple organ failure, premature rupture of membranes, preeclampsia and other hypertensive disorders. The most common gestational complications included fetal distress, premature rupture of membranes and gestational diabetes, while the most frequent pre-existing conditions were obesity, asthma and hypothyroidism. Cesarean sections were mainly indicated for Covid-19 and obstetric reasons. Pregnancy complications, such as gestational diabetes and preeclampsia, increased the risk to mother and fetus. Pregnant women with Covid-19 showed an elevated risk of complications compared to those without the infection. Comorbidities such as hypertension and type 2 diabetes were frequent, but obesity remained the main comorbidity present in most cases of maternal death [15-18].

A comprehensive analysis of basic indicators from the World Health Organization (WHO) and the Pan American Health Organization (PAHO) revealed worrying patterns in maternal mortality in various regions of South America, including the Andean zone, Brazil and the Southern Cone. In particular, the case of Venezuela was highlighted, reflecting data on maternal deaths up to 2018, which does not allow an accurate assessment of the situation. On the other hand, Bolivia presented a notable lack of records on this crucial indicator, which raises questions about the quality and accessibility of the country's health data.

In addition, it was observed that countries such as Ecuador, Argentina and Chile did not have data on maternal deaths in PAHO records for the year 2023. This lack of information not only hinders the formulation of effective policies to address this public health problem, but also underscores the urgent need to improve data collection and analysis systems in these contexts. The absence of updated figures limits our understanding of the phenomenon and hinders efforts to reduce maternal mortality in the region, a fundamental objective for ensuring maternal and child well-being and moving towards equitable health care [19-20].

After reviewing systematized information, it was determined that maternal mortality in South America experienced a notable increase during the years 2020 and 2021, followed by a decrease in 2023. However, it is crucial to highlight the lack of scientific articles and the scarcity of information from official agencies in several countries, such as Venezuela and Bolivia, which complicates an accurate analysis of the situation. This lack of reliable and up-to-date data prevents a complete and detailed understanding of the underlying trends and factors affecting maternal mortality in the region. Three critical delays were identified: the decision to seek care, access to health services, and obtaining timely and quality care. The pandemic exacerbated existing inequities, disproportionately affecting pregnant women and maternal health services. Confinement policies, lack of resources and misinformation contributed to the reduction in coverage and quality of services. In addition, work overload and fear of contagion negatively influenced women's willingness to seek care. Pregnant women delayed seeking care until they had severe symptoms, and transportation and mobility restrictions further complicated access to services. Fragmentation of care and prioritization of COVID-19 cases in hospitals resulted in a decrease in prenatal and postnatal checkups, as well as in the provision of family planning services. The lack of clear and timely information on the reorganization of health services generated confusion and increased out-of-pocket expenses for families. The countries' efforts to mitigate hospital overload led to the redirection of economic and human resources to the second and third levels of care, totally neglecting prevention and promotion programs related to maternal health in primary health care.

Despite the clinical relevance, and considering the very characteristics of vulnerability of pregnant women, there are still significant gaps in the scientific literature regarding the long-term effects of COVID-19 and its vaccines during pregnancy. The scarcity of prospective and controlled studies limits our understanding of the possible risks and benefits for the mother and fetus, generating uncertainty in the medical community. Against this backdrop, it is necessary to seek strategies to strengthen health systems to ensure continuity of essential services during health emergencies, improve communication and intersectoral coordination, and address gender inequalities and socioeconomic barriers that affect maternal and reproductive health.

5. Conclusion

The COVID-19 pandemic had a devastating impact on maternal mortality, exacerbating pre-existing inequalities and revealing critical flaws in South American health systems. During the years 2020 and 2021, a significant increase in maternal deaths was observed, with an alarming regional average of 87 deaths per 100,000 live births in 2020. This increase, equivalent to a two-decade setback in maternal health indicators, was largely due to the redirection of resources to the immediate response to the pandemic, neglecting primary care and reproductive health programs. Indigenous and Afro-descendant women were disproportionately affected, facing significantly higher maternal mortality rates than their mestizo or white counterparts. The main causes of death included hypertensive disorders, obstetric hemorrhage and gestational sepsis. Lack of access to quality health services, especially in rural areas and among vulnerable populations, was a determining factor in these fatal outcomes.

The lack of women-centered care during the pandemic underscored the urgent need for models of care that prioritize sexual and reproductive health. In conclusion, the pandemic not only revealed the structural weaknesses of health systems, but also highlighted the need for robust public policies and a comprehensive approach to address social inequities and ensure universal access to quality health care.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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