

Maternal mortality in Panama from 1998 to 2022

Yovani Chavez¹ and Tania Herrera²

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ABSTRACT

Objective. To examine maternal mortality in Panama, analyzing its direct obstetric deaths, indirect obstetric deaths, and contributory conditions.

Methods. This cohort study used publicly available data from the National Institute of Statistics and Census to present a 25-year retrospective analysis of maternal deaths in the Republic of Panama from 1998 to 2022. Public data were sourced from the National Institute of Statistics and Census website of Panama. Relevant codes from the *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision* (ICD) were used. The maternal mortality ratio (MMR) was defined as the number of maternal deaths per 100 000 live births. Trendline reliability with R^2 was performed to analyze the data.

Results. A total of 1 026 maternal deaths occurred in Panama from 1998 through 2022, of which 61.2% were attributed to direct obstetric causes; 23.9%, indirect obstetric causes; 13.6%, contributory conditions; and 1.4% were unknown or undetermined. The average MMR was 60.1. The trendline reliability resulted in $R^2 = 0.1$ ($y = -0.5147x + 1094.7$), which is not statistically significant but meets the 2030 Sustainable Development Goals. The specific primary causes of direct obstetric deaths were: 12.9% due to postpartum hemorrhage (ICD O72); 9.2%, eclampsia (ICD O15); 6.7%, puerperal sepsis (ICD O85); and 6.3%, pre-eclampsia (ICD O14). For indirect obstetric deaths, the primary causes were: 14.9% due to other maternal diseases classifiable elsewhere but complicating pregnancy, childbirth, and the puerperium (ICD O99); and 7.3%, maternal infectious and parasitic diseases classifiable elsewhere but complicating pregnancy, childbirth, and the puerperium (ICD O98).

Conclusions. The findings of this study confirmed that there were substantially more direct obstetric causes (61.2%) than indirect obstetric causes (23.9%), contributory causes (13.6%), or unknown/undetermined causes (1.4%) of maternal mortality, despite being highly preventable. Although Panama is right on track to fulfill the target of 70 MMR by 2030, these results highlight the lack of health care access due to the absence of obstetrician-gynecologists per 100 000 population in indigenous comarcas, where 30.8% of the maternal mortalities occur. Furthermore, the health system in Panama is not immune to pandemics and crises. From 1998 to 2022, there were 5 years when the MMR in Panama exceeded 70: 2001, 2002, 2006, 2011, and 2020. These findings also underscore the dichotomy between statistics and health policy. While the trendline reliability was insignificant ($R^2 = 0.1$), the MMR satisfies requirements for the 2030 Sustainable Development Goals. Future studies should consider factors related to indirect obstetrics and contributory causes of deaths, health care access, COVID-19, cesarean section and natural birth, age, economic income, prenatal and postpartum care, as well as the quality of private and public health facilities in the Americas.

Keywords

Maternal mortality; reproductive health services; cause of death; sustainable development indicators; International Classification of Diseases; Panama.

¹ Sistema Nacional de Investigación, Secretaría Nacional de Ciencia, Tecnología e Innovación (SENACYT)/Universidad Metropolitana de Educación, Ciencia y Tecnología, Panama City, Panama.

² Sistema Nacional de Investigación, SENACYT/Hospital Pacífica Salud, Panama City, Panama. ✉ Tania Herrera, therrera@pacificasalud.com

Maternal mortality has been defined as a maternal death occurring during pregnancy, its management, or childbirth (excluding accidental or incidental causes), or within 42 days of pregnancy termination, irrespective of the gestational duration or site of the pregnancy (1). Despite substantial scientific advancements in comprehending and averting this tragic occurrence, maternal death continues to inflict considerable distress on societies and families.

Panama has taken an active role in implementing strategies aimed at diminishing maternal mortality. In 2000, Panama adopted the United Nations' (UN) Millennium Development Goals (MDGs) that set forth the objective of reducing maternal mortality by 75% from 1990 to 2015 (2). This entailed lowering the maternal mortality ratio (MMR) from 53 in 1990 to a target of fewer than 13 deaths per 100 000 live births by 2015 (3).

A subsequent UN resolution (4) introduced the 2030 Sustainable Development Goals (SDGs), which encourages countries around the world to implement and scrutinize measures to lower the MMR to fewer than 70 deaths per 100 000 live births by 2030. In 2015 the Government of Panama enacted Executive Decree No. 393 to align its national goals with the 2030 SDGs. This decree mandated the ongoing monitoring, policy formulation, planning, program development, and issuance of recommendations to fulfill these goals (5).

Like Panama, other countries have adopted the 2030 SDGs. However, between 2016 and 2020, seven countries in Latin America and the Caribbean registered statistically significant increases in their MMRs, which indicates that more intensified actions are urgently needed to improve maternal health (6). Despite the ongoing challenge that maternal mortality poses to scientists and health care professionals globally, a significant proportion of maternal deaths are preventable. Therefore, this report aims to examine maternal mortality in Panama by analyzing the country's direct and indirect obstetric deaths as well as contributory conditions.

METHODS

This was a 25-year observational retrospective cohort study examining maternal deaths in the Republic of Panama between 1998 and 2022. The public data were sourced from the website of the National Institute of Statistics and Census of Panama (8). SPSS, version 22 (IBM Corp.), was used for analyzing trendline reliability.

Data were collected and organized according to the codes in the *International Statistical Classification of Diseases, Tenth Revision, Maternal Mortality* (ICD), which was used to determine direct obstetric causes, indirect obstetric causes, causes that are unknown/undetermined, or contributory conditions (9). For this research, maternal mortality ratio was defined as the number of maternal deaths per 100 000 live births. As stated before, maternal mortality is defined as the number of maternal deaths that occur during pregnancy, childbirth, or within 42 days postpartum, without distinguishing between gestational duration or site of pregnancy.

Direct obstetric deaths, also known as direct maternal deaths, stem from complications at any stage of pregnancy or from issues related to medical interventions, including actions or treatment taken, omitted, or incorrectly applied. In contrast, indirect obstetric or maternal deaths originate from pre-existing

diseases or conditions present, at any stage of pregnancy, that are exacerbated by the physiological effects of pregnancy (10).

In addition to these categories, contributory conditions were the risk factors or pre-existing conditions that, in conjunction with underlying causes, lead to death during pregnancy or the postpartum period. It is also important to recognize that some causes remain unknown or undetermined, especially when distinguishing between direct and indirect obstetric deaths.

Ethical approval

In accordance with the Declaration of Helsinki, no identifiable human material or data were used (7). According to laws established by the Panama National Assembly, written informed consent was waived because the study used only publicly available data, and the data obtained from the National Institute of Statistics and Census were used only to find solutions for the nation. This study followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guideline.

RESULTS

A total of 1 026 maternal deaths were reported in Panama between 1998 and 2022. Individuals from 5 to 14 years of age composed 1.0% of total maternal deaths. Most cases were observed in the younger adult categories, with 34.9% in the 15- to 24-year age group and 37.1% aged 25 to 34 years. Older age groups represented a smaller portion of the analyzed data: 25.6% were between 45 and 54 years old; with the smallest percentage (0.1%) in the 55- to 64-year age group. The ages of 0.5% of the cases could not be determined.

The geographic distribution of maternal deaths recorded across Panama's provinces were: Panama/Panama Oeste, 31.6%; the indigenous regions of Kuna Yala, Embera, and Ngobe-Bugle, 30.8%; Bocas del Toro and Colon, 7.8%; Chiriqui, 7.1%; Veraguas, 4.8%; Coclé, 4.5%; Darien, 2.9%; and Herrera and Los Santos, 1.4%. Despite having high literacy rates, Panama's provinces have high employment rates as well as low numbers of hospitals and obstetrician-gynecologist specialists per 100 000 population, which help understand the results. In this regard, the unemployment rate ranged from 0.4 to 12.6. Hospitals per 100 000 population ranged from 0 to 6.2. Similarly, obstetrician-gynecologists per 100 000 population registered values from 0 to 5.7 (Table 1).

The MMR in Panama displayed a fluctuating trend from 1998 to 2022, starting at 62.6 in 1998 and concluding at 59.5 in 2022. The average MMR in Panama during this period was 60.1. The highest MMR was in 2006 at 83.6 and the lowest in 2017 at 35.5. After a gradual decrease following a slight peak in 2011, there was a stark increase in MMR in 2020 at 81.5 due to the COVID-19 pandemic, which altered the downward trend. The trendline reliability resulted in $R^2 = 0.1$ ($y = -0.5147x + 1094.7$), which is not statistically significant but acceptable to comply with the 2030 SDGs (Figure 1).

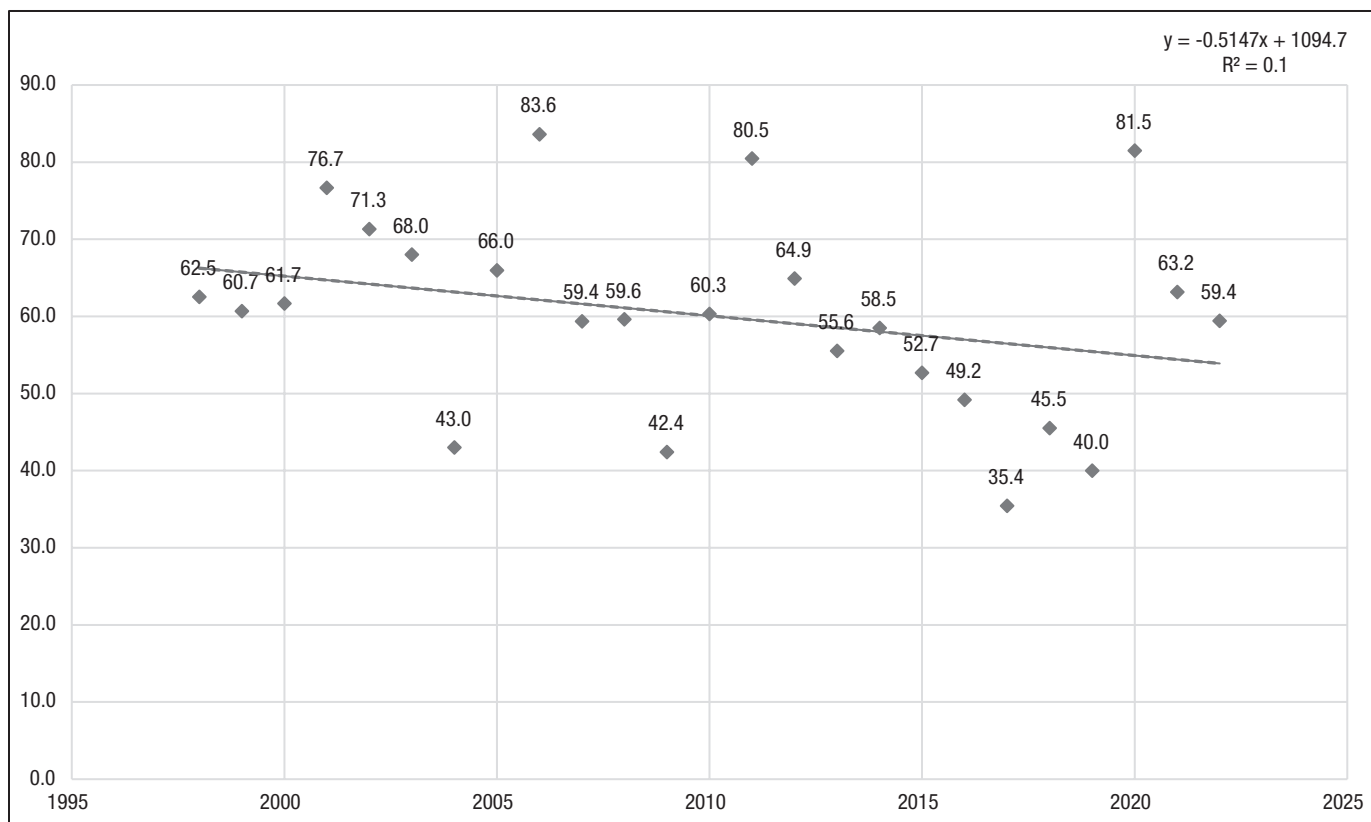
Maternal mortality in Panama demonstrated a percentage distribution as follows: 61.2% were attributed to direct obstetric causes, 23.9% to indirect obstetric causes, 13.6% to contributory conditions, and 1.4% to causes that were unknown or undetermined (Figure 2). In this regard, the most important contributory conditions were other complications of labor and

TABLE 1. Maternal mortality distribution by age and geographic location in Panama, 1998-2022

Age range, y	Married	Unmarried	Widowed/divorced	Undetermined marital status	N=1026	95% CI		Percentage, %
						LB	UB	
5-14	0	10	0	0	10	0.2	0.6	1.0
15-24	16	293	2	47	358	12.7	16.0	34.9
25-34	54	292	2	35	381	13.4	17.0	37.1
35-44	39	190	5	29	263	9.2	11.8	25.6
45-54	2	6	0	0	8	0.1	0.5	0.8
55-64	0	0	0	1	1	0	0.1	0.1
Unspecified age	0	0	0	3	5	0	0.4	0.5
Province	Unemployment rate	Literacy rate	Hospitals/100 000 population	OB-GYNs/100 000 population				
Panama/Panama Oeste	12.6	98.5	1.1	4.8	324	11.6	14.3	31.6
Ngobe Bugle (IR)	1.4	80.6	0	0	242	7.4	12.0	23.6
Bocas del Toro	8.8	91.8	2.5	0	80	2.4	4.0	7.8
Colon	12	98.1	1.4	2.8	80	2.5	3.9	7.8
Chiriqui	7	96	1.7	5.7	73	2.2	3.7	7.1
Kuna Yala (IR)	0.4	80.2	6.2	0	68	1.9	3.6	6.6
Veraguas	5	93.1	1.9	1.9	49	1.3	2.6	4.8
Cocle	5.5	97.5	1.5	2.6	46	1.2	2.4	4.5
Darien	3.4	90.2	5.5	0	30	0.7	1.7	2.9
Herrera	4.9	95.8	4.1	4.1	14	0.2	0.9	1.4
Los Santos	1.9	95.8	4.1	1	14	0.3	0.8	1.4
Embera (IR)	0.4	86.2	0	0	6	0.1	0.4	0.6

Abbreviations: IR, indigenous region; LB, lower bound; OB-GYN, obstetrician-gynecology specialist; UB, upper bound.
 Source: Prepared by the authors from the study results.

FIGURE 1. Maternal Mortality Ratio in Panama from 1998 to 2022



delivery, not elsewhere classified (ICD O75, 6.0%), abnormalities of forces of labor (ICD O62, 3.1%), maternal care for other conditions predominantly related to pregnancy (ICD O26, 1.8%), and other obstructed labor (ICD O66, 0.8%). Also, the unknown or undetermined causes were classified as obstetric death of unspecified cause, i.e., maternal death from unspecified cause occurring during pregnancy, labor and delivery, or during the puerperium period (ICD O95, 1.4%).

It should be noted that in terms of direct obstetric causes, obstetric hemorrhage (Group 3) followed by hypertensive disorder during pregnancy, childbirth, and the puerperium (Group 2) make up the highest percentage of direct obstetric causes of death at 18.5% and 16.6%, respectively. There were no recorded instances of unanticipated complications of management (Group 6) in this cohort (Table 2).

For indirect obstetric deaths, the primary causes were other maternal diseases classifiable elsewhere but complicating pregnancy, childbirth, and the puerperium (ICD O99, 14.9%) as well as maternal infectious and parasitic diseases classifiable elsewhere but complicating pregnancy, childbirth, and the puerperium (ICD O98, 7.3%) (Table 3).

DISCUSSION

During the study period (1998-2022), the average MMR in Panama was 60.1. After adopting the 2000 MDGs through 2015, the average MMR was 62.8; therefore, Panama did not meet the MDG target of 13.0 MMR by 2015. However, the steady downward trend after adopting the 2015 SDGs indicates that Panama is right on track to fulfill the target of 70.0 MMR by 2030. The high peaks of 81.5 MMR in 2020 and 63.2 MMR in 2021 indicate that global health issues can dramatically affect national health programs, which should encourage health policymakers to design resilient and redundant health systems for the future.

From this perspective, Panama has taken serious steps to reduce the maternal mortality ratio. In 2013, Panama, along

with 30 countries in Latin America and the Caribbean, signed the Panama Declaration as an international compromise to reduce inequities in reproductive and maternal health (11). In 2021, Panama implemented the Strategic Plan for the Reduction of Maternal and Perinatal Morbidity and Mortality 2021 to 2025, which is a combined effort by the Ministry of Health, the Social Security Fund, and the United Nations Population Fund to develop strategic actions to reduce maternal mortality (12). Notably in 2022, Panama issued Law 346 to establish free medical care in public health facilities for women during pregnancy, childbirth, and the postpartum period (13).

Economic conditions may substantially influence maternal mortality. Specifically, poverty can be associated with delayed access to necessary medical care. Remarkably, 30.8% of maternal deaths occurred in the indigenous comarcas, areas characterized by poor economic conditions and a lack of high-quality health facilities. Earlier studies have identified that a combination of sociocultural dynamics, economic constraints, and the absence of adequate health care infrastructure play a critical role in elevating maternal mortality (14).

Furthermore, various factors associated with maternal mortality are deemed highly preventable. Prior studies in the United States have shown that postpartum hemorrhage is largely preventable with prompt diagnosis and effective treatment addressing underlying causes (15). In Panama, maternal mortality in the postpartum stage is particularly concerning. For instance, while hypertensive disorders (Group 2) were responsible for 16.6% of maternal deaths, obstetric hemorrhage (Group 3) constituted 18.5%. Also, evidence suggests that with appropriate interventions, maternal mortality caused by puerperal sepsis and ectopic pregnancy is largely avoidable (16). In Panama, pregnancy-related infections (Group 4) accounted for 8.6% of the total deaths, and ectopic pregnancy, 4.7% (ICD O00).

In general, the analysis of maternal mortality in Panama corroborates findings from similar studies. Specifically, the primary causes of direct obstetric deaths in Panama were postpartum

FIGURE 2. Distribution of maternal mortality by cause of death in Panama

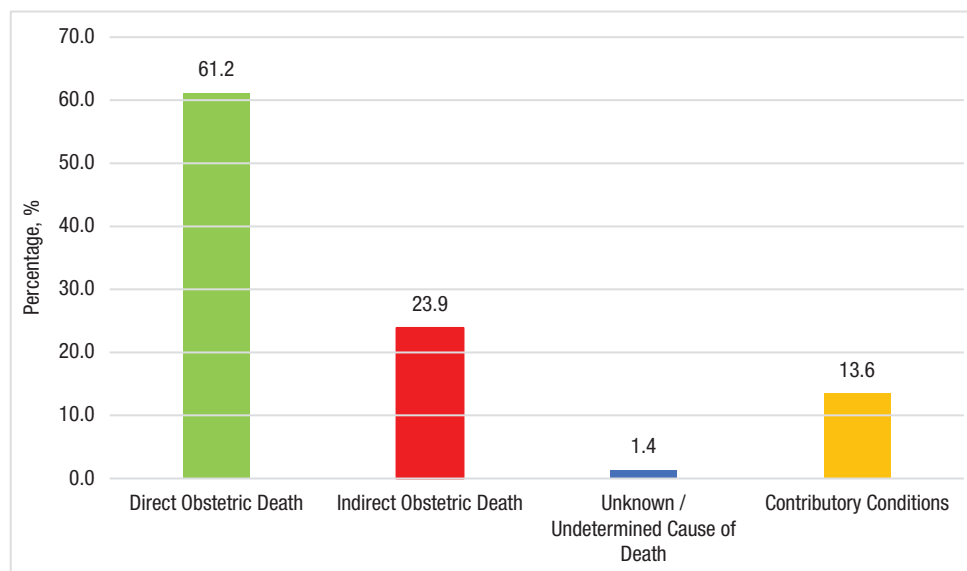


TABLE 2. Distribution of direct obstetric deaths, Panama, by category

Group	ICD-10 code	Direct cause of death	Cases	95 % CI		Percentage, %	Percentage by group, %
				LB	UB		
1. Pregnancies with abortive outcome (n=125)	000	Ectopic pregnancy	48	1.4	2.4	4.7	12.2
	001	Hydatidiform mole	6	0	0.5	0.6	
	002	Other abnormal products of conception	7	0	0.5	0.7	
	003	Spontaneous abortion	11	0	0.9	1.1	
	005	Other abortion	3	-0.1	0.3	0.3	
	006	Unspecified abortion	49	1.3	2.6	4.8	
	007	Failed Attempted Abortion	1	0	0.1	0.1	
2. Hypertensive disorders in pregnancy, childbirth, and the puerperium (n=170)	012	Gestational [pregnancy-induced] oedema and proteinuria without hypertension	1	0	0.1	0.1	16.6
	013	Gestational [pregnancy-induced] hypertension without significant proteinuria	4	0	0.3	0.4	
	014	Pre-eclampsia	65	2	3.2	6.3	
	015	Eclampsia	94	2.9	4.6	9.2	
	016	Unspecified maternal hypertension	6	0	0.5	0.6	
3. Obstetric hemorrhage (n=190)	020	Hemorrhage in early pregnancy	1	0	0.1	0.1	18.5
	043	Placental disorders	3	0	0.3	0.3	
	044	Placenta previa	7	0.1	0.5	0.7	
	045	Premature separation of placenta [abruptio placentae]	17	0.3	1.0	1.7	
	046	Antepartum hemorrhage, not elsewhere classified	7	0.1	0.5	0.7	
	067	Labor and delivery complicated by intrapartum hemorrhage, not elsewhere classified	3	0	0.3	0.3	
	071	Other obstetric trauma	20	0.4	1.2	2.0	
4. Pregnancy-related infection (n=88)	072	Postpartum hemorrhage	132	4.4	6.2	12.9	
	023	Infections of genitourinary tract in pregnancy	1	0	0.1	0.1	8.6
	085	Puerperal sepsis	69	2	3.5	6.7	
5. Other obstetric complications (n=55)	086	Other puerperal infections	18	0.3	1.1	1.8	
	073	Retained placenta and membranes, without hemorrhage	15	0.1	1.1	1.5	5.4
	087	Venous complications in the puerperium	4	0	0.3	0.4	
	088	Obstetric embolism	22	0.5	1.3	2.1	
6. Unanticipated complications of management (n=0)	090	Complications of the puerperium, not elsewhere classified	14	0.2	0.9	1.4	
	029	Complications of anaesthesia during pregnancy	0	0	0	0	0
	074	Complications of anaesthesia during labor and delivery	0	0	0	0	
	089	Complications of anaesthesia during the puerperium	0	0	0	0	

Abbreviations: LB, lower bound; UB, upper bound.
Source: Prepared by the authors from the study results.

hemorrhage (ICD O72 = 12.9%), eclampsia (ICD O15 = 9.2%), puerperal sepsis (ICD O85 = 6.7%), and pre-eclampsia (ICD O14 = 6.3%).

Similar trends have been observed in other geographic areas. In Latin America, the Caribbean, and Sub-Saharan Africa, hemorrhage and hypertension are significant mortality factors (17). In the United States, the leading causes of maternal death include cardiovascular disease, non-cardiovascular medical conditions, infections or sepsis, hemorrhages, and cardiomyopathy (18). Furthermore, research conducted in the Netherlands identified pre-eclampsia, thromboembolism, genital tract sepsis, genital tract trauma, and both cardiovascular and cerebrovascular disorders as the primary causes of death (19).

An odd finding was the lack of reported cases of unanticipated management complications (Group 6) throughout the

25-year period from 1998 to 2022. These complications, classified under Group 6, are primarily associated with cardiac, nervous, and respiratory issues arising from the administration of anesthesia to patients who are pregnant. Contrary to Panama, the United Kingdom reported around 25 maternal deaths by anesthesia from 2000 to 2017 despite its improvement in health care and massive reductions in anesthetic-related maternal deaths (20).

The observed situation and context highlight the need for thorough evaluation and control in maternal health practices, especially concerning anesthesia-related complications (21). Contemporary research indicates that maternal mortality in Group 6 could stem from a shortage of anesthetists and challenges in managing respiratory issues (22). Consequently, the formation of a review board is advocated to scrutinize this aspect.

TABLE 3. Indirect obstetric deaths, unknown or undetermined causes, and contributory conditions in Panama

Group	ICD-10 code	Causes and conditions	Cases	95% CI		Percentage, %	Percentage by group, %
				LB	UB		
Indirect cause of death							
7. Non-obstetric complications (n=245)	099	Other maternal diseases classifiable elsewhere but complicating pregnancy, childbirth, and the puerperium	153	0.3	0.9	14.9	23.9
	098	Maternal infectious and parasitic diseases classifiable elsewhere but complicating pregnancy, childbirth, and the puerperium	75	0	0.2	7.3	
	010	Pre-existing hypertension complicating pregnancy, childbirth, and the puerperium	15	1.9	4.1	1.5	
	024	Diabetes mellitus in pregnancy	2	4.8	7.5	0.2	
Unknown or undetermined causes							
8. Unknown/undetermined (n=14)	095	Obstetric death of unspecified cause (maternal death from unspecified cause occurring during pregnancy, labor and delivery, or the puerperium)	14	0.1	1.1	1.4	1.4
Contributory conditions							
Contributory conditions (n=139)	075	Other complications of labor and delivery, not elsewhere classified	62	0	0.5	6.0	13.6
	062	Abnormalities of forces of labor	32	0.3	1.1	3.1	
	026	Maternal care for other conditions predominantly related to pregnancy	18	0	0.3	1.8	
	066	Other obstructed labor	8	0	0.2	0.8	
	021	Mild hyperemesis gravidarum	6	0	0.2	0.6	
	041	Other disorders of amniotic fluid and membranes	3	0.8	1.8	0.3	
	064	Obstructed labor due to malposition and malpresentation of fetus	3	0	0.1	0.3	
	042	Premature rupture of membranes	2	-0.1	0.3	0.2	
	060	Preterm labor and delivery	2	0	0.1	0.2	
	063	Long labor	1	0	0.6	0.1	
	065	Obstructed labor due to maternal pelvic abnormality	1	0	0.1	0.1	
	070	Perineal laceration during delivery	1	1.7	3.2	0.1	

Abbreviations: LB, lower bound; UB, upper bound.
Source: Prepared by the authors from the study results.

Limitations

In terms of limitations, assessing the influence of health care facility quality on maternal mortality is essential; however, the available data complicated the task of distinguishing maternal mortalities occurring in public compared with private hospital environments. This distinction is important in Panama where health care facilities are operated by various institutions, including the MoH, the Social Security Fund, and numerous private organizations.

Additionally, this study faced limitations due to missing data on certain demographic and clinical variables, such as educational level, the utilization of cesarean sections, and the type of antenatal care received. Finally, the absence of information on maternal deaths occurring up to 1 year post-delivery indicates a gap in the Panamanian health system's ability to effectively track and manage the care of patients during pregnancy across the comprehensive spectrum of care from antepartum to postpartum stages. Previous studies have highlighted that inadequate data collection in developing countries can hinder the effective planning, management, and assessment of interventions aimed at reducing maternal mortality (23).

Conclusions

Panama is right on track to meet the target of 70 MMR set by the 2030 SDGs; however, these study findings highlight the lack of health care access in indigenous comarcas, where 30.8% of maternal mortality occurred during the study period. This research underscores the dichotomy between statistics and health policy. While the trendline reliability was insignificant, the results meet the goals set by health policy. More needs to be done to reduce maternal mortality in Panama. Changes are urgently needed in education, training, evaluation, treatment, and social awareness, as well as the development of a medical review board to analyze past cases of maternal mortality in detail.

Future studies should consider factors associated with indirect obstetrics and contributory causes of deaths, health care access, COVID-19, cesarean section and natural birth, age, economic income, and prenatal and postpartum care, as well as the quality of private and public health facilities in the Americas. Maternal mortality is a social tragedy, and further studies should focus on game changing solutions to maternal mortality, not only in the Americas but in the world.

Author contributions. Both authors conceived the original idea, collected the data, analyzed the data, /interpreted the results/wrote the paper, and reviewed the paper. Both authors reviewed and approved the final version.

Conflicts of interest. None declared.

Disclaimer. Authors hold sole responsibility for the views expressed in the manuscript, which may not necessarily reflect the opinion or policy of the *RPSP/PAJPH* and/or the Pan American Health Organization (PAHO).

REFERENCES

- World Health Organization. Maternal Deaths. 2023. Accessed 18 August 2024. Available from: <https://www.who.int/data/gho/indicator-metadata-registry/imr-details/4622>
- United Nations. United Nations Resolution 55/2. United Nations General Assembly. 2000. Accessed 18 August 2024. Available from: https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_RES_55_2.pdf
- Panama Ministry of Health, Social Security Fund, United Nations Population Fund, Pan American Health Organization. National Strategic Plan for the Reduction of Maternal and Perinatal Morbidity and Mortality 2015-2020. Panama; 2015. Accessed 18 August 2024. Available from: https://www.minsa.gob.pa/sites/default/files/programas/prmmm_panama_diagramado.pdf
- United Nations. Transforming our world: the 2030 Agenda for Sustainable Development. 2015. Resolution adopted by the General Assembly on 25 September 2015: 70/1. Accessed 18 August 2024. Available from: <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N15/291/89/PDF/N1529189.pdf?OpenElement>
- Ministry of Foreign Affairs. Executive Decree 393 from 2015 to adopt 2030 SDG. Gaceta Oficial. 2015. Accessed 18 August 2024. Available from: https://www.gacetaoficial.gob.pa/pdfTemp/27870_B/GacetaNo_27870b_20150917.pdf
- World Health Organization. Trends in maternal mortality 2000 to 2020: estimates by WHO, UNICEF, UNFPA, World Bank, UNDESA/Population Division. Accessed 18 August 2024. Available from: <https://www.who.int/publications/i/item/9789240068759>
- World Medical Association. Declaration of Helsinki – Ethical Principles For Medical Research Involving Human Subjects. 2013. Accessed 18 August 2024. Available from: <https://www.wma.net/policies-post/wma-declaration-of-helsinki-ethical-principles-for-medical-research-involving-human-subjects/>
- National Institute of Statistics and Census. Vital Statistics (Volume III): Deaths. National Institute of Statistics and Census. 2022. Accessed 18 August 2024. Available from: https://www.inec.gob.pa/publicaciones/Default2.aspx?ID_CATEGORIA=3&ID_SUBCATEGORIA=7
- World Health Organization. The WHO application of ICD-10 to deaths during pregnancy, childbirth and puerperium: ICD MM. WHO. 2012;67. Accessed 18 August 2024. Available from: <https://www.who.int/publications/i/item/9789241548458>
- World Health Organization. Maternal deaths. 2024. Accessed 18 August 2024. Available from: <https://www.who.int/data/gho/indicator-metadata-registry/imr-details/4622>
- Every Woman Every Child. The Panama Declaration. Every Woman Every Child Latin America and the Caribbean. 2013. Accessed 18 August 2024. Available from: <https://www.everywomaneverychild-lac.org/declaracion-de-panama/>
- United Nations Population Fund. Strategic Plan for the Reduction of Maternal and Perinatal Morbidity and Mortality 2021-2025. UNPF. 2021. Accessed 18 August 2024. Available from: <https://panama.unfpa.org/es/publicaciones/plan-estrategico-para-la-reduccion-de-la-morbilidad-y-mortalidad-materna-y-perinatal>
- Panama National Assembly. Law 346 (2022). Gaceta Oficial. 2022. Accessed 18 August 2024. Available from: https://www.gacetaoficial.gob.pa/pdfTemp/29669_B/95118.pdf
- Olonade O, Olawande T, Alabi O, Imhonopi D. Maternal mortality and maternal health care in Nigeria: implications for socio-economic development. Open Access Maced J Med Sci. 2019;7(5):849855. doi: 10.3889/oamjms.2019.041. PMID: 30962850; PMCID: PMC6447322
- Haeri S, Dildy G. Maternal mortality from hemorrhage. Semin Perinatol. 2012;36(1):48–55. doi: 10.1053/j.semperi.2011.09.010. PMID: 22280866
- Hawkins J. Anesthesia-related maternal mortality. Clin Obstet Gynecol. 2003;46(3):679–87. doi: 10.1097/00003081-200309000-00020. PMID: 12972749
- Filippi V, Chou D, Ronsmans C, Graham W, Say L. Levels and Causes of Maternal Mortality and Morbidity. In: Black R, Laxminarayan R, Temmerman M, Walker N, eds. Disease Control Priorities, Third Edition (Volume 2): Reproductive, Maternal, Newborn, and Child Health. World Bank Publications; 2016:51-70. doi: 10.1596/978-1-4648-0348-2
- Ozimek J, Kilpatrick S. Maternal mortality in the twenty-first century. Obstet Gynecol Clin. 2018;45(2):175–86. doi: 10.1016/j.ogc.2018.01.004
- Schutte J, Steegers E, Schuitemaker N, Santema J, Boer K De, Pel M, et al. Rise in maternal mortality in the Netherlands. BJOG An Int J Obstet Gynaecol. 2010;117(4):399–406. doi: 10.1111/j.1471-0528.2009.02382.x
- Walls A, Plaat F, Delgado A. Maternal death: lessons for anaesthesia and critical care. BJA Educ. 2022;22(4):146–153. PMC9073293/
- Cruikshanks A, Bryden D. What to do when complications occur. Anaesthesia. 2018;73(S1):95–101. doi: 10.1111/anae.14145
- Enohumah K, Imarengiaye C. Factors associated with anaesthesia-related maternal mortality in a tertiary hospital in Nigeria. Acta Anaesthesiol Scand. 2006;50(2):206–10. doi: 10.1111/j.1399-6576.2006.00945.x
- Graham W, Brass W, Snow R. Estimating maternal mortality: the sisterhood method. Stud Fam Plann. 1989;20(3):125–35. doi: 10.2307/1966567

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Mortalidad materna en Panamá entre 1998 y el 2022

RESUMEN

Objetivo. Examinar la mortalidad materna en Panamá mediante el análisis de las muertes obstétricas directas e indirectas y las debidas a afecciones que contribuyen a producirlas.

Métodos. Para este estudio de cohorte se utilizaron datos de acceso público del Instituto Nacional de Estadística y Censo, con el fin de presentar un análisis retrospectivo de 25 años de la mortalidad materna en República de Panamá entre 1998 y el 2022. Los datos públicos se obtuvieron del sitio web del Instituto Nacional de Estadística y Censo de Panamá. Se utilizaron los códigos pertinentes de la *Clasificación Estadística Internacional de Enfermedades y Problemas Relacionados con la Salud, décima revisión* (CIE-10). Se definió la razón de mortalidad materna (RMM) como el número de muertes maternas por cada 100 000 nacidos vivos. Los datos se analizaron mediante la fiabilidad de la línea de tendencia con el cálculo de R^2 .

Resultados. Entre 1998 y el 2022 se registraron en Panamá 1026 muertes maternas, de las cuales el 61,2% se atribuyó a causas obstétricas directas; el 23,9% a causas obstétricas indirectas; el 13,6% a afecciones que contribuyen a producirlas; y el 1,4% a causas desconocidas o indeterminadas. La RMM media fue de 60,1. La fiabilidad de la línea de tendencia mostró un valor de $R^2 = 0,1$ ($y = -0,5147x + 1094,7$), que no alcanza significación estadística, pero cumple con los Objetivos de Desarrollo Sostenible para el 2030. Las principales causas específicas de las muertes obstétricas directas fueron: un 12,9% por hemorragia posparto (CIE O72); un 9,2%, por eclampsia (CIE O15); un 6,7%, por sepsis puerperal (CIE O85); y un 6,3%, por preeclampsia (CIE O14). En el caso de las muertes obstétricas indirectas, las causas principales fueron: un 14,9% por enfermedades maternas clasificadas bajo otro concepto pero que complican el embarazo, parto y puerperio (CIE O99); y un 7,3%, por enfermedades infecciosas y parasitarias maternas clasificadas bajo otro concepto pero que complican el embarazo, parto y puerperio (CIE O98).

Conclusiones. Los resultados de este estudio confirmaron que, a pesar de ser en gran parte prevenible, la mortalidad materna se debió en mayor medida a las causas obstétricas directas (61,2%) que a las indirectas (23,9%), las afecciones que contribuyen a producirla (13,6%) o a las causas desconocidas o indeterminadas (1,4%). Aunque Panamá está en camino de cumplir con el objetivo de una RMM de 70 para el 2030, estos resultados ponen de manifiesto la falta de acceso a la atención de salud en las comarcas indígenas, donde se produce el 30,8% de la mortalidad materna, debido al reducido número de obstetras y ginecólogos por cada 100 000 habitantes. Además, el sistema de salud de Panamá no es inmune a las pandemias y las crisis. Entre 1998 y el 2022, hubo cinco años en los que la RMM fue superior a 70: 2001, 2002, 2006, 2011 y 2020. Estos resultados también subrayan la dicotomía existente entre las estadísticas y las políticas de salud. Si bien la fiabilidad de la línea de tendencia no fue significativa ($R^2 = 0,1$), su valor cumple con los requisitos de los Objetivos de Desarrollo Sostenible para el 2030. En estudios futuros se deberán tener en cuenta los factores relacionados con la mortalidad debida a causas obstétricas indirectas y afecciones que contribuyen a producirla, el acceso a la atención de salud, la COVID-19, las cesáreas y los partos naturales, la edad, los ingresos económicos, la atención prenatal y puerperal, así como la calidad de los establecimientos de salud privados y públicos de la Región de las Américas.

Palabras clave

Mortalidad materna; servicios de salud reproductiva; causas de muerte; indicadores de desarrollo sostenible; Clasificación Internacional de Enfermedades; Panamá

Mortalidade materna no Panamá de 1998 a 2022

RESUMO

Objetivo. Examinar a mortalidade materna no Panamá por meio de uma análise das mortes obstétricas diretas, mortes obstétricas indiretas e fatores contribuintes.

Métodos. Este estudo de coorte usa dados publicamente disponíveis do Instituto Nacional de Estatística e Censo do Panamá para apresentar uma análise retrospectiva de um período de 25 anos de mortes maternas na República do Panamá, de 1998 a 2022. Os dados públicos foram obtidos no site do Instituto Nacional de Estatística e Censo. Foram usados códigos relevantes da *Classificação Estatística Internacional de Doenças e Problemas Relacionados à Saúde, Décima Revisão* (CID). A razão de mortalidade materna (RMM) foi definida como o número de mortes maternas por 100 mil nascidos vivos. Para analisar os dados, determinou-se a confiabilidade da linha de tendência usando R^2 .

Resultados. Houve 1 026 mortes maternas no Panamá de 1998 a 2022. Dessas, 61,2% foram atribuídas a causas obstétricas diretas; 23,9%, a causas obstétricas indiretas; 13,6%, a fatores contribuintes; e 1,4% tinham causa desconhecida ou indeterminada. A RMM média foi de 60,1. Na análise da confiabilidade da linha de tendência, obteve-se $R^2 = 0,1$ ($y = -0,5147x + 1094,7$), o que não é estatisticamente significativo, mas atende aos Objetivos de Desenvolvimento Sustentável para 2030. As causas primárias específicas de mortes obstétricas diretas foram: 12,9% devido a hemorragia pós-parto (CID O72); 9,2%, eclâmpsia (CID O15); 6,7%, infecção puerperal (CID O85); e 6,3%, pré-eclâmpsia (CID O14). No caso das mortes obstétricas indiretas, as principais causas foram: 14,9% devido a outras doenças da mãe, classificadas em outra parte mas que complicam a gravidez, o parto e o puerpério (CID O99); e 7,3%, doenças infecciosas e parasitárias maternas classificáveis em outra parte, mas que compliquem a gravidez, o parto e o puerpério (CID O98).

Conclusões. Os achados deste estudo confirmaram que houve um número substancialmente maior de causas obstétricas diretas (61,2%) que de causas obstétricas indiretas (23,9%), fatores contribuintes (13,6%) ou causas desconhecidas ou indeterminadas (1,4%) de mortalidade materna, apesar de essas causas serem altamente preveníveis. Embora o Panamá esteja no rumo certo para cumprir a meta de RMM de 70 até 2030, esses resultados destacam a falta de acesso à atenção à saúde devido ao déficit de ginecologistas-obstetras por 100 mil habitantes nas comarcas indígenas, onde se concentram 30,8% das mortes maternas. Além disso, o sistema de saúde do Panamá não é imune a pandemias e crises. Entre 1998 e 2022, houve cinco anos em que a RMM no Panamá passou de 70: 2001, 2002, 2006, 2011 e 2020. Estes achados também realçam a dicotomia entre as estatísticas e as políticas de saúde. Embora a confiabilidade da linha de tendência não tenha sido significativa ($R^2 = 0,1$), a RMM cumpre os requisitos dos Objetivos de Desenvolvimento Sustentável para 2030. Futuros estudos devem considerar fatores relacionados às causas obstétricas indiretas e contribuintes das mortes, acesso à atenção à saúde, COVID-19, cesariana e parto natural, idade, renda econômica e assistência pré-natal e pós-parto, bem como a qualidade dos estabelecimentos de saúde públicos e privados na Região das Américas.

Palavras-chave

Mortalidade materna; serviços de saúde reprodutiva; causas de morte; Classificação Internacional de Doenças; Panamá.