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ORIGINAL ARTICLE

Prevention of premature birth: Impact of the Explicit Health Guarantee

Prevención del parto prematuro: Impacto de la Garantía Explícita en Salud

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What do we know about the subject matter of this study?

Prematurity is a growing global health problem with a high impact on morbidity and mortality. In 2005, Chile implemented the Explicit Health Guarantees (GES) policy for the Prevention of Premature Birth, with no impact assessment to date.

What does this study contribute to what is already known?

This study evaluates the impact of the GES on perinatal indicators, analyzing their trends using regression, time series, and predictive models. It concludes that its implementation did not impact the upward trend in prematurity in Chile, but it may have led to a decrease in the perinatal mortality rate. Further studies are needed to refine this policy.

Abstract

Prematurity is a challenge due to its high morbidity and mortality. The Explicit Health Guarantees (GES) for Premature Birth Prevention, implemented in 2005, have not been evaluated. **Objective:** To evaluate the impact of the GES on perinatal indicators. **Patients and Method:** Cross-sectional study of premature births between 2001 and 2023, including both stillbirths and live births (LB) ≥ 22 weeks' gestational age. Data were obtained from the Department of Health Statistics and Information of the Ministry of Health databases. Prematurity rate (PR), perinatal mortality rate (PMR), fetal mortality rate (FMR), and early neonatal mortality rate (ENMR) were analyzed using linear regression, time series, and 5-year forecasting using ARIMA models. **Results:** The PR increased linearly from 5.74% to 9.85% ($R^2 = 0.97$), with no changes after the implementation of the GES. The risk of prematurity increased by 49% between the pre-GES five-year period and the most recent one. The PR forecasting showed a continued upward trend, reaching 10.6 per 1,000 LB in 2027 (95% CI: 9.9-11.3). The PMR showed a linear upward trend reaching 10.4 per 1,000 LB in 2009 ($R^2 = 0.96$), followed by a linear decline to 8.3 per 1,000 LB in 2021 ($R^2 = 0.89$), explained by a decrease in FMR and stable ENMR. The PMR forecasting showed a sustained trend (2026: 5.8 per 1,000 LB; 95% CI: 5.8-9). **Conclusions:** GES did not reduce PR but was associated with lower PMR. This potential impact requires further analysis to establish causality and guide future improvements.

Keywords:
Prematurity;
Premature Newborn;
Stillbirth;
Infant Mortality;
Perinatal Mortality;
Health Policy;
Health Programs and Projects Evaluation;
Maternal and Child Health Services;
Public Health Intervention

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Introduction

Premature birth (< 37 weeks of gestation) is one of the main global health problems, both because of its high impact on infant mortality and because it presents a high burden of complex acute morbidity (often requiring intensive care) and a high risk of chronic health conditions in those who survive[1,2]. The latter includes growth, nutritional, respiratory, visual, and hearing problems; developmental disorders, early onset of chronic adult diseases, and finally a high impact on human capital through reduced education, lower income, poor social success, and shortened life expectancy[3,4].

Premature births are classified according to gestational age (GA) as: extremely premature (< 28 weeks), very premature (28 to < 32 weeks), and moderate to late preterm (32 to 36 weeks). The risks of mortality and morbidity increase with lower gestational age at birth[5-7].

Due to its significant impact, prematurity has been a particular concern for the World Health Organization (WHO), which has promoted a series of plans to help reduce it[8] by applying a multisystemic approach based on the multifactorial etiology of preterm birth, which involves preconception aspects and prenatal, delivery, and neonatal care. Despite significant progress in the implementation of these plans, the frequency of preterm birth has not shown significant changes. The estimated global prevalence of prematurity in 2020 was 9.9%, ranging from 4% to 16.2% among different countries[1]. In Latin America, country-level rates of preterm births ranged from 5.8% to 12.8%. Although most high rates of preterm births occur in low- and middle-income countries and areas, high-income countries also show rates of 10% or more[1].

In recent years, WHO has implemented the initiative "Every newborn: an action plan to end preventable deaths", adopted in May 2014 as part of the Global Strategy for Women's and Children's Health[8], which advises countries on implementing guidelines that seek to reduce the risk of adverse pregnancy outcomes, including premature births, and to ensure a positive pregnancy and postpartum experience for all women and their children. This includes both developing and updating tools to improve the skills, knowledge, and behaviors of healthcare providers, and assessing the quality of care received by both mothers at risk of preterm birth and children born prematurely. However, one of the main challenges in reducing premature births, given the complexity of the social, economic, and cultural factors associated with the biological factors involved in their etiology, is the need to address factors that may be context-specific.

In Chile, 289,503 live births (LB) were registered in 1990, which declined linearly to 248,368 in 2000, a reduction of 16.6%. However, during the same period, the rate of prematurity increased from 5.6% to 6.0%[9]. Within this context, in 2004, it was the completion of a reform process of the Chilean healthcare system, in which various laws were enacted. One of these laws defined the Explicit Health Guarantees (GES)[10], which constitute a set of benefits for users of both public and private health insurance. They establish that four types of guarantees must be provided: Access (receiving the care defined for each disease), Timeliness (guaranteed benefits must be provided within the established time frames), Financial Protection, and Quality (guaranteed benefits must be provided by a healthcare provider registered and accredited with the Superintendency of Health). In addition, it defined a set of 85 priority pathologies, which, due to their high disease burden, would be progressively guaranteed over several years. The first group included the GES for Prevention of Premature Birth[11]. It establishes that all pregnant women with risk factors for premature birth will be guaranteed a consultation with a specialist within 14 days of referral and any necessary follow-up checks. In the case of pregnant women with symptoms of preterm birth, they will be guaranteed specialist care within 6 hours of referral. If the diagnosis is confirmed, they will have access to treatment, based on the established clinical guidelines and any necessary follow-up checks[12]. Its implementation involved defining the network of providers and the minimum quality standards they had to meet, developing evidence-based Clinical Practice Guidelines (CPGs) aimed at reducing variability in clinical practice, organizing the entire referral system according to complexity, both within and between healthcare networks, and training the responsible teams. The initial CPG for Preterm Birth Prevention was developed in 2005 by university specialist groups working together with the Ministry of Health (MINSAL) and was updated in 2010[13].

The evaluation of public policies is a key element of their management, as it allows for assessing whether the proposed objectives are being achieved and provides a basis for reviewing them or redefining the objectives to be achieved[14]. Despite this, there are few published evaluations on this matter[15-17]. In the specific case of the GES on Preterm Birth Prevention, although it was incorporated in mid-2005, no evaluations of its impact have been published to date. The objective of this study is to assess the impact of the Preterm Birth Prevention guarantee on perinatal indicators.

Patients and Method

Cross-sectional observational study of premature births occurring between January 1, 2001, and December 31, 2023. The study population consisted of

all stillbirths and live births ≥ 22 weeks of gestation during such period. The information was obtained from the website of the Department of Health Statistics and Information (DEIS) of the MINSAL (https://deis.minsal.cl/#datosabiertos), where open databases of anonymized data on births, fetal deaths, and infant mortality are published. For mortality analyses, data were obtained up to 2021, as these are the latest official data published. Data on GA and condition at birth were collected. Data that did not indicate GA were eliminated, which in the period varied between 0.03% and 0.54% of cases. Annual frequencies of births, fetal deaths, and deaths of premature infants < 7 days were obtained.

For the analysis of prematurity, GA data were grouped into < 24 weeks (below the viability limit), 24-27 weeks (extremely premature), 28-31 weeks (very premature), and 32-36 weeks (moderately and late premature). Fetal death data are reported in the categories < 22 weeks, 22 to 27 weeks, 28 to 36 weeks, and 37 weeks and older, and were considered for the analyses.

Annual prematurity rates were constructed as a direct indicator of the impact of the GES policy, and fetal mortality, early neonatal mortality, and perinatal mortality rates were constructed as proxy indicators of the policy's impact. Mortality analyses were performed only up to 2021, which is the last year for which official figures are published in the database. The perinatal mortality rate was constructed using data on intermediate (22 to 28 weeks of gestation) and late (more than 28 weeks) fetal deaths, plus neonatal deaths occurring before 7 days of life.

Trends in annual rates of prematurity, low birth weight, fetal mortality, early neonatal mortality, and perinatal mortality were analyzed. The statistical analysis was performed with a 95% confidence level and included linear regression, time series decomposition[18,19], and Autoregressive Integrated Moving Average (ARIMA) models for prediction with their respective 95% confidence intervals (95%CI). In addition, the prevalence ratio (PR) of prematurity was calculated for the five years before the GES (2001-2005) and the final five-year period (2019-2023), in order to compare the period before implementation with the final period in which the policy was fully in place, minimizing any annual fluctuations. The database management and statistical analysis were performed using the Python and Epidat 4.2 softwares[20].

Results

During the studied period, there was a progressive decline in births, from 246,116 in 2001 to 177,273 in 2023, representing a decrease of 27.98% ($p < 0.05$). However, there was an increase in premature births from 14,869 in 2001 to 17,217 in 2023 ($p < 0.05$) (Table 1).

The overall rate of prematurity showed a linear upward trend, with no significant changes since the implementation of the GES. It was observed that in 2001 the rate was 5.74% and increased progressively to 9.85% in 2023, implying an increase of 71.6% ($p < 0.05$). This trend was statistically significant [Pearson's correlation coefficient: 0.975 (95%CI 0.94-0.99); $p < 0.05$; R^2 0.97] (Figure 1A).

When analyzing by subgroups, the 32 to 36 weeks of GA category accounted for between 83.1% and 85.7%, respectively, of premature births during the period and increased from 12,597 in 2001 to 14,704 in 2023. The specific rate of prematurity in this group showed an increase from 4.86% in 2001 to 8.41% in 2023, representing an increase of 73% ($p < 0.05$), with a statistically significant linear trend (Coefficient R^2: 0.96).

Among those of < 32 weeks of GA, there was an increase in the specific rate from 0.88 to 1.44 (+ 63.6%);

Table 1. Number of premature live births in Chile 2001-2023

Year	< 24	24 - 27	28 - 31	32 - 36	Total
2001	128	655	1489	12597	14869
2002	136	671	1577	12689	15073
2003	189	685	1580	12820	15274
2004	245	694	1499	13502	15940
2005	257	690	1553	13352	15852
2006	270	798	1740	13780	16588
2007	278	799	1719	14267	17063
2008	314	799	1786	15527	18426
2009	287	855	1821	15235	18198
2010	297	797	1861	15216	18171
2011	294	865	1875	15159	18193
2012	288	832	1867	15838	18825
2013	285	797	1992	15683	18757
2014	310	855	2021	16713	19899
2015	289	835	1954	16741	19819
2016	252	751	1952	16220	19175
2017	297	835	1881	15881	18894
2018	284	807	2017	16078	19186
2019	271	755	1812	15411	18249
2020	198	670	1699	14146	16713
2021	230	606	1725	14269	16830
2022	231	645	1728	15589	18193
2023	246	591	1676	14704	17217

Source: DEIS

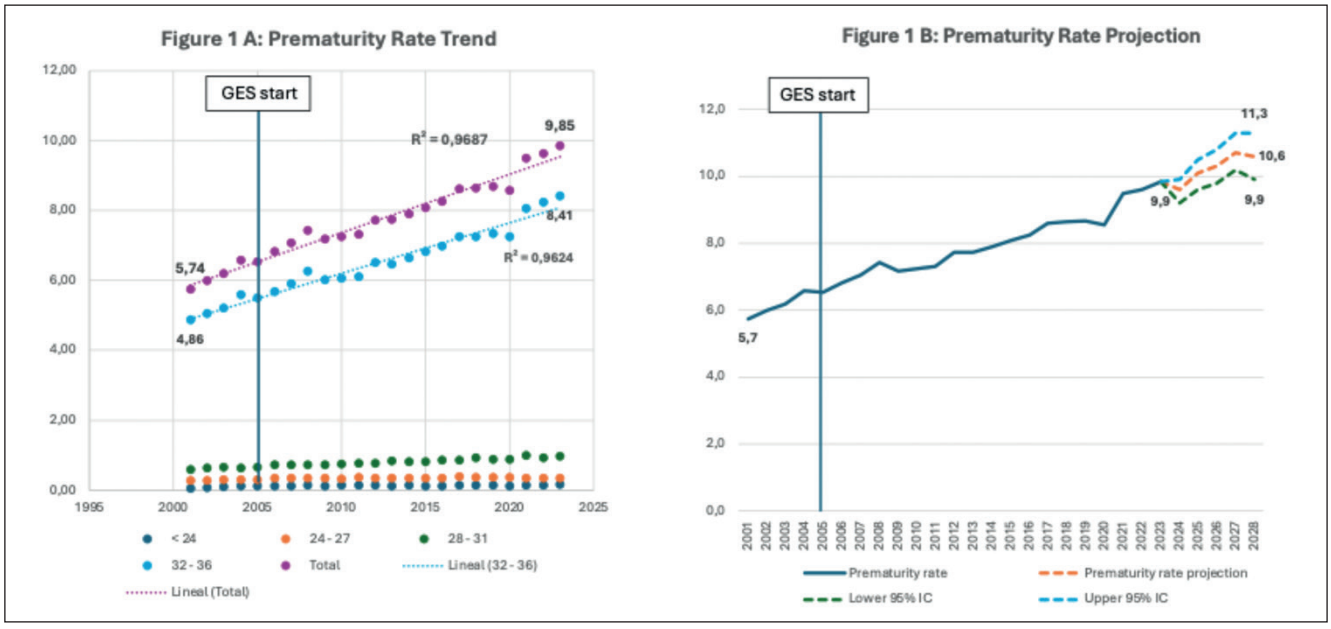

Figure 1. Prematurity Rate Trend and Projection. **A:** Prematurity rate per 100 live births in Chile, 2001–2023. R2: Coefficient of Determination. **B:** Prematurity rate projection per 100 live births, 2023–2027, with upper and lower 95% CI

among those between 28 and 31 weeks of GA, the specific rate of prematurity increased from 0.57% to 0.96% (+ 68.4%); among preterm infants between 24 and 27 weeks of GA, the specific rate of prematurity increased from 0.25% to 0.34% (+36%); and in the group of infants < 24 weeks, it varied from 0.05% to 0.14% (+ 180%).

When comparing the five years before the implementation of the GES (2001-2005) with the last five-year period analyzed (2019-2023), the risk of prematurity increased by 49% (PR: 1.49; 95%CI 1.47-1.50). The < 24-week group showed the largest increase (PR: 1.62; 95%CI 1.48-1.78), and the 24-27-week group showed the smallest increase (PR: 1.26; 95%CI 1.20-1.32) (Figure 2). The ARIMA model projected a trend suggesting continued growth in prematurity over the next 5 years, reaching an estimated value of 10.6% (95%CI: 9.9 to 11.3) in 2027 (Figure 1B).

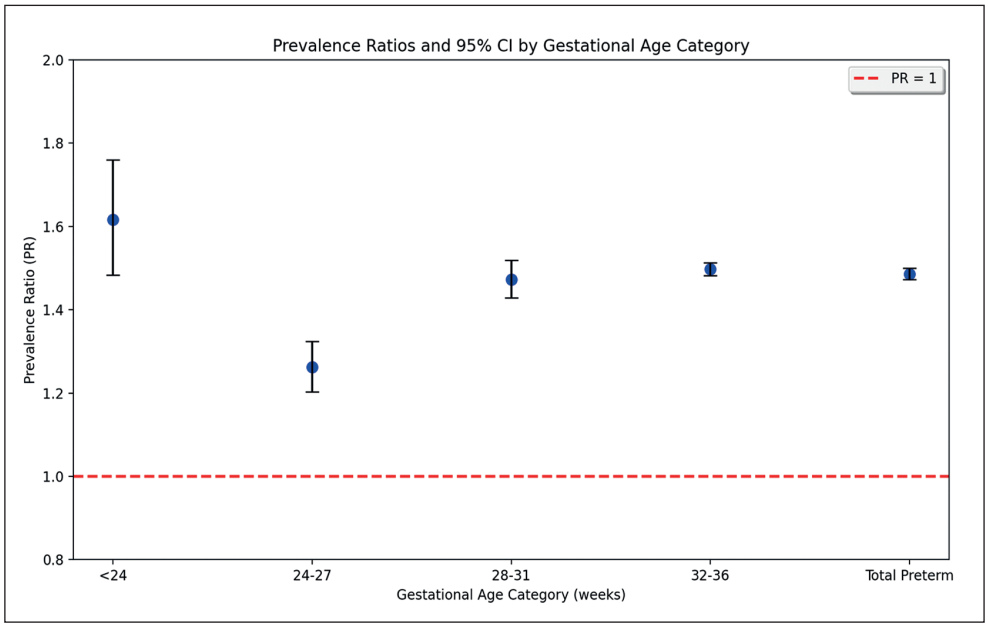

Figure 2. Prevalence ratio (PR) of prematurity with its respective 95% confidence intervals (95% CI) comparing the initial five-year period pre-GES (2001-2005) and the end of the period (2019-2023) for each gestational age group category and total prematurity (Total Prem). The red line shows the value of no difference.

During the period analyzed, the perinatal mortality rate showed an upward trend from 8.5 per 1,000 live births in 2001 to a peak of 10.4 in 2009. From that year on, a gradual decline was observed, with some minor fluctuations until 2020, when the lowest value (8.0) was recorded, followed by a small rebound to 8.3 in 2021. When breaking down its components, the fetal mortality rate showed a linear upward trend from 4.8 per 1,000 live births in 2001 to 6.2 in 2009, when there was a favorable break, with a progressive decline to 4.7 per 1,000 live births in 2021. This decrease occurred in full-term pregnancies and between 28 and 36 weeks. In pregnancies between 22 and 27 weeks, an increase was observed from 0.8 per 1,000 live births to 2.1 in 2009, followed by stabilization. This evolution meant that fetal deaths between 22 and 27 weeks increased their relative weight from 16.2% to 42.3%. In addition, early neonatal mortality remained stable during the period, with a slight decrease (3.74 to 3.53 per 1,000 live births) (Figure 3).

The evolution of the perinatal mortality rate showed two clear trends. In the first one (2001-2009), there was a linear upward trend with a very significant coefficient of determination (R^2 0.96), and in the second one, a clear downward trend was observed, with a highly significant coefficient of determination (R^2 0.89) (Figure 4).

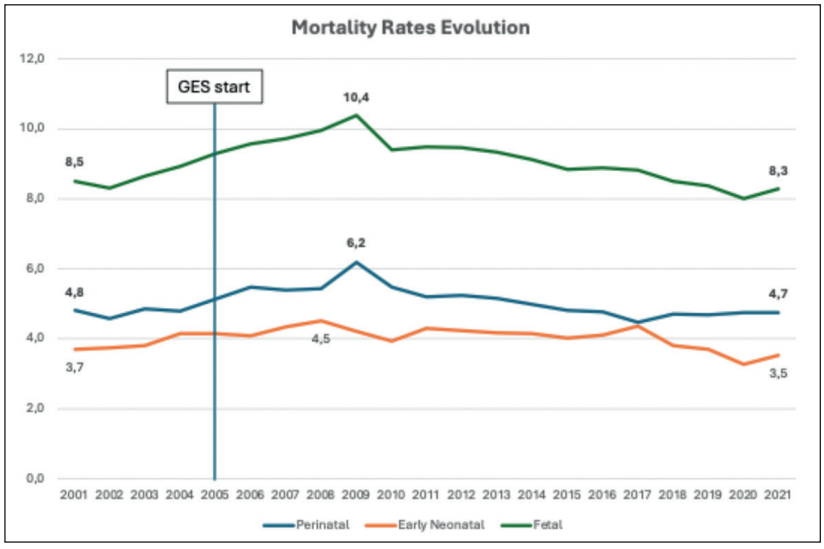

Figure 3. Evolution of the Perinatal, Fetal, and Early Neonatal Mortality Rate per 1,000 live births. Chile 2001-2021

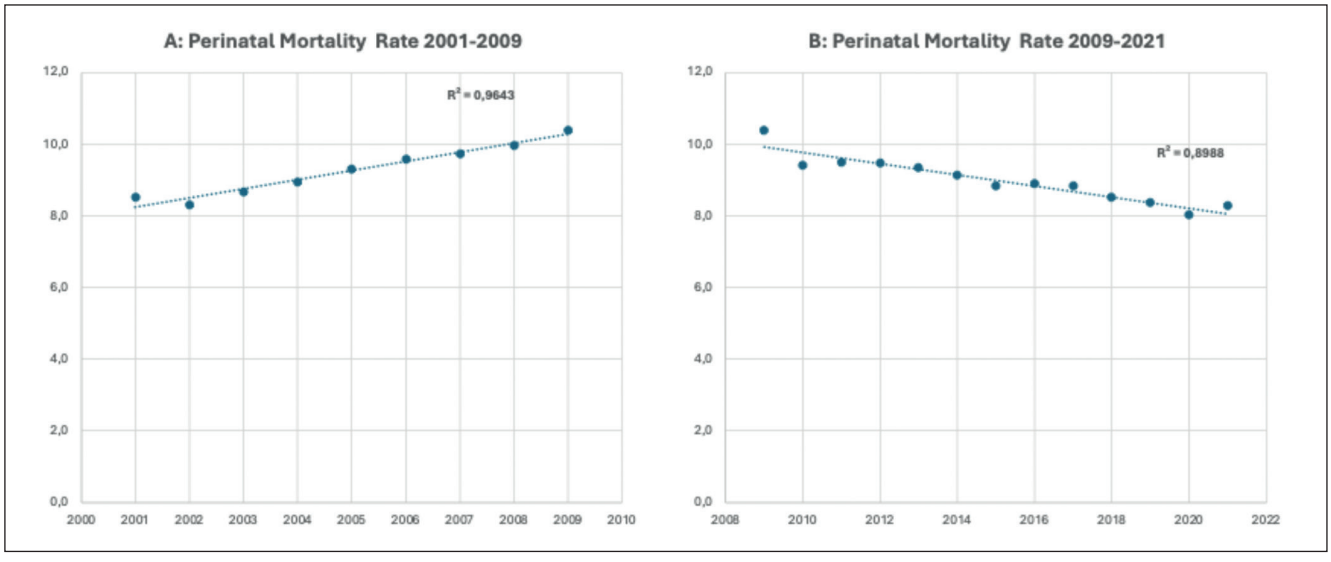

Figure 4. Perinatal Mortality Trend Segmentation 2001-2021. **A:** Perinatal Mortality Trend 2001-2009 showing an ascending linear trend with a significant Coefficient of Determination (R^2) (0.96). **B:** Perinatal Mortality Trend 2009-2021 showing a descending linear trend with a significant Coefficient of Determination (R^2) (0.899).

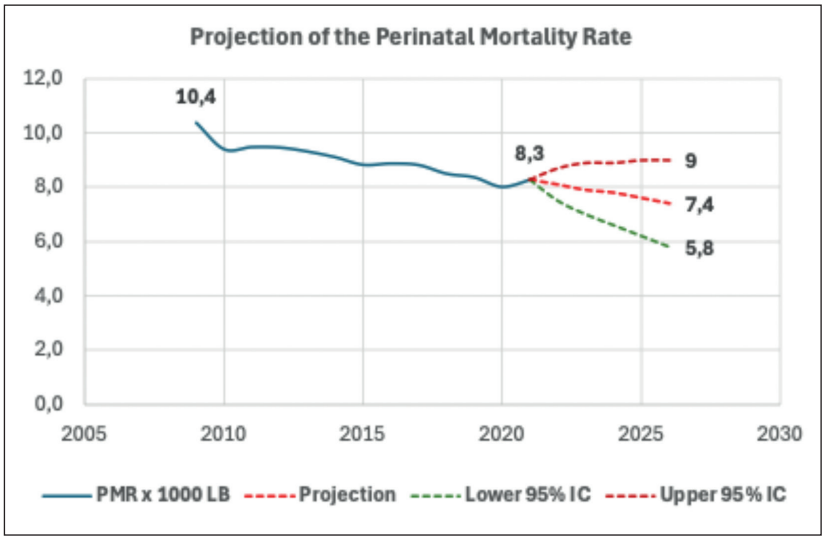

Figure 5. Projection of the Perinatal Mortality Rate per 1000 Live Births (LB) with its respective 95% Confidence Intervals (95% CI). Chile 2022-2026

An ARIMA model was fitted to predict perinatal mortality over the next 5 years (2022-2026), which showed a continuation of the downward trend, but with a possible stabilization or even increase, with an estimated rate for 2026 of 7.4 per 1,000 live births (95%CI: 5.8-9) (Figure 5).

Discussion

The evolution of the overall prematurity rate showed a strong linear upward trend during the study period, with no evidence of favorable changes following the implementation of the GES for the Preterm Birth Prevention. In addition, there is a high probability that this rate will continue to increase over the next 5 years, which is consistent with another study that analyzed this trend[21].

The 49% increase in the risk of prematurity between the five years before the implementation of the GES and the last five years analyzed is categorical. However, the smaller increase observed in the 24-27 weeks GA group could suggest a possible delaying effect on preterm birth, which may have great clinical significance, since delaying delivery even by a few days or weeks within this critical range can significantly improve survival and reduce severe neonatal morbidity. Given the high mortality and morbidity associated with births in this range of GA, even small advances in prolonging gestation can have a significant population impact[4]. Confirming this potential effect requires prospective studies that allow the specific mechanisms that could be favoring this delaying effect to be evaluated with individual clinical histories.

However, it is important to note the break in the upward trend in the perinatal mortality rate since 2009, four years after the policy was implemented. This change, which has been sustained over time, is mainly explained by a progressive decline in fetal mortality, especially in full-term pregnancies and between 28 and 36 weeks, suggesting a positive indirect effect of the GES strategy. Although it is not possible to establish a causal relationship between the implementation of the GES and the favorable break in the trend of perinatal mortality rate, a possible temporal association between them can be suggested, given that it was the only relevant public health measure implemented during that period. This is even more significant considering that the projection made by the MINSAL for the definition of the 2011-2020 Health Goals estimated that the Perinatal Mortality Rate would continue to rise, reaching 12.6 x 1000 live births in 2020[22,23], which is clearly well above the observed value for that year (8 x 1000 live births), representing a 57.5% decrease.

This favorable break could be explained by improvements in prenatal surveillance, timely access to specialized care, and standardization of clinical practices, as established by the GES clinical guidelines. Although there are still no national studies evaluating these aspects, this result is consistent with international literature, which highlights that improvement in the quality of care is the main driver for advancing perinatal outcomes[24-26]. The lack of impact on early neonatal mortality, on the other hand, raises questions about the integration and effectiveness of coordinated management between obstetric and neonatal teams, which could be an area for improvement in future interventions.

The lack of effect on the incidence of preterm births can be explained by the multifactorial complexity of their etiology, which involves biological, social, and structural determinants[1-3]. Policies focused exclusively on clinical care during pregnancy may be insufficient if they are not coordinated with preconception, educational, social, and territorial interventions[8]. In this regard, it is pertinent to review the GES strategy from a more comprehensive and intersectoral perspective, incorporating social determinants and community prevention mechanisms.

At the international level, countries with documented reductions in prematurity, particularly in Northern Europe, have implemented universal social protection policies, early perinatal care, and intensive monitoring of at-risk groups[24]. To achieve Sustainable Development Goal 3.2 set by the United Nations for 2030 in relation to reducing preventable deaths of newborns and children under five, the WHO proposes that countries should prioritize the implementation or redesign of public policies to reduce preterm birth[25]. In the Latin American context, Chile has been recognized for implementing reforms aimed at universal health coverage, such as the GES Law[27]. However, despite international recognition for its progress, there is little evidence on the real impact this policy has had[28,29].

To advance a deeper understanding of the impact of the GES and optimize its implementation, complementary studies are needed to evaluate dimensions such as equity in access (both geographically and in terms of type of health insurance)[30], quality of care, and consistency between the theoretical design of the policy and its actual implementation. It would also be advisable to develop qualitative research that integrates the perspectives of users and clinical teams, as well as cost-effectiveness analyses[31]. A structured approach to public policy evaluation that considers internal consistency, efficiency, equity, and actual implementation would also be helpful, as would participatory evaluations focused on actors that would allow for the identification of barriers and facilitators, reinforcing the continuous improvement of the strategy[30,31].

From a methodological perspective, this study has limitations inherent to its cross-sectional design and the use of open databases, which do not allow for in-depth analysis of individual determinants or control for confounding factors[32]. For this reason, in general, this type of study only allows hypotheses of an indirect effect to be established, which need to be confirmed by prospective studies that incorporate the analysis of key social determinants and clinical aspects involved[33]. Despite this, the robustness of the time series, the consistency of the trends observed, and the use of predictive models strengthen the validity of this study's findings, making it particularly useful as a first approximation to the evaluation of this health policy.

Finally, considering that preterm birth is the leading cause of neonatal mortality and has long-term consequences on child development and human capital, Chile must move toward a comprehensive perinatal policy that combines clinical and preventive actions and ensures continuity of care from pregnancy to early childhood. In this context, the GES experience can provide a valuable basis for other middle-income countries with similar perinatal health challenges, adapting it to their specific social and health contexts.

Conclusions

The implementation of the GES for the Preterm Birth Prevention did not impact the upward trend in the rate of prematurity in Chile. However, there is evidence consistent with a positive effect on perinatal mortality, which allowed for its sustained decline. Further studies are needed to obtain more evidence that will contribute to refining the GES policy in order to reduce the frequency of preterm births and influence early neonatal mortality.

Ethical Responsibilities

Human Beings and animals protection: Disclosure the authors state that the procedures were followed according to the Declaration of Helsinki and the World Medical Association regarding human experimentation developed for the medical community.

Data confidentiality: The authors state that they have followed the protocols of their Center and Local regulations on the publication of patient data.

Rights to privacy and informed consent: This study was approved by the respective Research Ethics Committee. The authors state that the information has been obtained anonymously from previous data.

Conflicts of Interest

Authors declare no conflict of interest regarding the present study.

Financial Disclosure

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References

1. Ohuma EO, Moller AB, Bradley E, et al. National, regional, and global estimates of preterm birth in 2020, with trends from 2010: a systematic analysis [published correction appears in Lancet. 2024 Feb 17;403(10427):618]. Lancet. 2023;402(10409):1261-71. doi: 10.1016/S0140-6736(23)00878-4.
2. Perin J, Mulick A, Yeung D, et al. Global, regional, and national causes of under-5 mortality in 2000-19: an updated systematic analysis with implications for the Sustainable Development Goals. Lancet Child Adolesc Health. 2022 Feb;6(2):106-15. doi: 10.1016/S2352-4642(21)00311-4. Epub 2021 Nov 17. Erratum in: Lancet Child Adolesc Health. 2022 Jan;6(1):e4. doi: 10.1016/S2352-4642(21)00382-5. PMID: 34800370; PMCID: PMC8786667.
3. Ramaswamy VV, Abiramalatha T, Bandyopadhyay T, et al. ELBW and ELGAN outcomes in developing nations: systematic review and meta-analysis. PLoS One. 2021 Aug 5;16(8):e0255352. doi: 10.1371/journal.pone.0255352.
4. Sarda SP, Sarri G, Siffel C. Global prevalence of long-term neurodevelopmental impairment following extremely preterm birth: a systematic literature review. J Int Med Res. 2021 Jul;49(7):3000605211028026. doi: 10.1177/03000605211028026.
5. Organización Mundial de la Salud (OMS). Nacimientos prematuros. 11 mayo 2023. Disponible en: https://www.who.int/es/news-room/fact-sheets/detail/preterm-birth. Consultado el 5 de marzo de 2025.
6. Saigal S, Doyle LW. An overview of mortality and sequelae of preterm birth from infancy to adulthood. Lancet. 2008 Jan 19;371(9608):261-9. doi: 10.1016/S0140-6736(08)60136-1.
7. Teune MJ, Bakhuizen S, Gyamfi-Bannerman C, et al. A systematic review of severe morbidity in infants born late preterm. Am J Obstet Gynecol. 2011 Oct;205(4):374.e1-9. doi: 10.1016/j.ajog.2011.07.015.
8. World Health Organization (WHO). Every newborn: an action plan to end preventable deaths. Disponible en: https://www.who.int/initiatives/every-newborn-action-plan. Consultado el 5 de marzo de 2025.
9. Gonzalez R, Merialdi M, Lincetto O, et al. Reduction in neonatal mortality in Chile between 1990 and 2000. Pediatrics. 2006 May;117(5):e949-54. doi: 10.1542/peds.2005-2354. Epub 2006 Apr 10. PMID: 16606682.
10. Ministerio de Salud. Ley N.º 19966: Establece un Régimen de Garantías en Salud. 2004. Disponible en: https://www.bcn.cl/leychile/navegar?idNorma=229834
11. Valdivieso V, Montero J. El plan AUGE: 2005 al 2009 [Health care reform in Chile: 2005 to 2009]. Rev Med Chil. 2010 Aug;138(8):1040-6. Spanish. Epub 2010 Nov 26. PMID: 21140064.
12. Fondo Nacional de Salud. Enfermedades GES. Prevención del parto prematuro. Disponible en: https://www.fonasa.cl/sites/fonasa/prevención-parto-prematuro. Consultado el 5 de marzo de 2025.
13. Ministerio de Salud. Guía Clínica de Prevención de Parto Prematuro. 2010. Disponible en: http://www.repositoriodigital.minsal.cl/bitstream/handle/2015/478/Prevención-Parto-Prematuro-2010.pdf?sequence=1&isAllowed=y
14. Dirección de Presupuesto. Evaluación de Programas Gubernamentales. Disponible en: https://www.dipres.gob.cl/598/w3-article-111762.html
15. Monsalves MJ, Durán D, Antini C, Bangdiwala S, Muñoz S. Estudio de evaluación de impacto de las "Garantías Explícitas en Salud" en la mortalidad por cáncer de mamas, cervicouterino, vesícula, estómago y colorrectal en Chile entre los años 2002-2016. Disponible en: https://ipsuss.cl/ipsuss/site/docs/20190723/20190723174255/resultados_estudio_ges_2019_u__san_sebasti__n.pdf
16. Gómez Barbieri GG, Moore C. Evaluation in the impact of the implementation of public policies GES on the mortality of surgeries in children with cardiac malformations between the years 2001 and 2016. Medwave. 2019;19(S1):eS1. doi: 10.5867/medwave.2019.S1
17. Superintendencia de Salud. Evaluación del acceso, equidad en el acceso e impacto de la implementación del RGGES (cualitativo). 2008. Disponible en: https://www.superdesalud.gob.cl/biblioteca-digital/evaluacion-del-acceso-equidad-en-el-acceso-e-impacto-de-la-implementacion-del-rgges-cualitativo/
18. Ocaña-Riola R. Eficacia del análisis de series temporales para la planificación sanitaria del cáncer en España. Aten Primaria [Internet]. 2004;34(1):15-9. Disponible en: https://www.elsevier.es/es
19. Bello LD, Martínez S. Una metodología de series de tiempo para el área de la salud - caso práctico. Rev Fac Nac Salud Pública. 2007;25(2):117-22. Disponible en: http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S0120-386X2007000200014
20. Consellería de Sanidade, Xunta de Galicia; Organización Panamericana de la Salud (OPS-OMS); Universidad CES. Epidat: programa para análisis epidemiológico de datos. Versión 4.2, julio 2016. Disponible en: https://www.sergas.es/saude-publica/epidat-4-2?idioma=es
21. Toro-Huerta C, Vidal C, Araya-Castillo L. Tendencia temporal y factores asociados al parto prematuro en Chile, 1992-2018. Salud Colectiva. 2023;19:e4203. doi: 10.18294/sc.2023.4203
22. Ministerio de Salud. Estrategia Nacional de Salud para el cumplimiento de los Objetivos Sanitarios de la Década 2011-2020. pp. 158-162. Disponible en: https://www.ispch.cl/sites/default/files/documento/2011/12/Metas2011-2020.pdf
23. Donoso E. ¿Está aumentando la mortalidad perinatal en Chile? Rev Chil Obstet Ginecol. 2011;76:377-9. doi: 10.4067/S0717-75262011000600000
24. Zeitlin J, Szamotulska K, Drewniak N, et al. Euro-Peristat Preterm Study Group. Preterm birth time trends in Europe: a study of 19 countries. BJOG. 2013 Oct;120(11):1356-65. doi: 10.1111/1471-0528.12281. Epub 2013 May 24. PMID: 23700966; PMCID: PMC4285908.
25. United Nations Department of Economic and Social Affairs. Sustainable Development Goal 3: ensure healthy lives and promote well-being for all at all ages. 2022. Disponible en: https://sdgs.un.org/goals/goal3
26. Tunçalp Ö, Were WM, MacLennan C, et al. Quality of care for pregnant women and newborns—the WHO vision. BJOG. 2015 Jul;122(8):1045-9. doi: 10.1111/1471-0528.13451
27. Atun R, de Andrade LO, Almeida G, et al. Health-system reform and universal health coverage in Latin America. Lancet. 2015 Mar 28;385(9974):1230-47. doi: 10.1016/S0140-6736(14)61646-9. Epub 2014 Oct 15. PMID: 25458725.
28. Ministerio de Salud. Evaluación de final de la década: Estrategia Nacional de Salud para los Objetivos Sanitarios 2011-2020. Disponible en: https://estrategia.minsal.cl/wp-content/uploads/2022/03/Evaluación-de-Final-de-la-Decada-2011-2020.pdf
29. Espinoza MA. La urgente necesidad de un sistema de evaluación de intervenciones en salud. Rev Méd Chile. 2016 Jul;144(7):900-2. doi: 10.4067/S0034-98872016000700011
30. Frenz P, Delgado I, Kaufman JS, Harper S. Achieving effective universal health coverage with equity: evidence from Chile. Health Policy Plan. 2014 Sep;29(6):717-31. doi: 10.1093/heapol/czt054. Epub 2013 Aug 5. PMID: 23921988.
31. Villalbí JR, Tresserras R. Evaluación de políticas y planes de salud [Evaluation of health policies and plans]. Gac Sanit. 2011 Jun;25 Suppl 1:17-24. doi: 10.1016/S0213-9111(11)70004-8. Spanish.
32. Ochoa C, Ortega E, Molina M, Carvajal F, Cuestas E. Medidas de frecuencia, riesgo e impacto en epidemiología. An Pediatr (Barc). 2025 May;503877. doi: 10.1016/j.

anpedi.2025.503877
33. Rivero MJ, Molina M, Ochoa C. Estudios observacionales I. Medidas de frecuencia. Estudios transversales. Técnicas de muestreo. In: Comité de Pediatría Basada en la Evidencia de la AEP; Grupo de Trabajo de Pediatría Basada en la Evidencia de la AEPap, eds. Medicina Basada en la Evidencia. Lo que siempre quiso saber sobre la evidencia aplicada a la práctica clínica sin morir en el intento. Madrid: Lúa Ediciones; 2024. p.103-9. Disponible en: https://evidenciasenpediatria.es/book/. Consultado el 10 de mayo de 2025.