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Analysis of two interventions and exclusive breastfeeding in Chile

Abstract

Objectives: The Chilean Government implemented in 1996 a long-running Breastfeeding Promotion Program (BPP) aimed at improving public health personnel's knowledge and skills. In 2011, the government also passed a law that increased maternity leave postpartum (MLE) from 12 to 24 weeks for fully employed women. The possible impact on the exclusive breast feeding (EBF) duration of the BPP and the MLE was studied with an ecological design, analysing grouped data at three and six months of life with representative samples of the population of infants cared for by the country's Ministry of Health outpatient clinics.

Methods: This ecological study included direct standardizing EBF rates plus Rates Ratio (RR) and Etiological Fraction (EF) calculations. Linear regression models were also performed.

Results: Selected samples from 1993 until 2019 showed trends of increasing EBF age standardized rates at the third and the sixth months of life in relation to the two national interventions; p-values of the differences were < 0.01 applying the Chi-squared test and Bonferroni as sensitivity analysis. The estimated linear regression models for each intervention and the national annual average trends at six months showed that from 1993-2000 there was no statistically significant trend in the EBF rate or any effect from the BPP intervention. Between 2008-2019, there was a statistically significant increase in the EBF rate. The introduction of MLE showed a significant positive change in the adjusted model.

Conclusion: Results suggest that age standardized EBF rates improve in the first three and six months of life in relation with the two interventions. Further analyses with the regression models indicate that while early interventions such as the BPP may not have yielded measurable outcomes, later initiatives, particularly when coupled with enabling structural conditions like maternity leave policies, appear to have had a significant positive influence.

Keywords: exclusive breastfeeding, epidemiological study, national health policies

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Abbreviations: BPP, breastfeeding promotion program; MLE, maternity leave postpartum; EBF, exclusive breast feeding; RR, rates ratio; EF, etiological fraction; WHO, World Health Organization; SSE, sum of squares error; SST, total sum of squares

Introduction

The nutritional, anti-infectious and psychological advantages of breastfeeding are well known.[1–4] Accordingly, the World Health Organization (WHO) recommends exclusive breastfeeding (EBF) during the first six months of life for optimal growth, development, and health of infants.[5] However, in developing countries,[6] between 1995 and 2010, less than 40 percent of infants under six months of age receive the benefits of EBF.

EBF practice has decreased in Chile since the first decades of the last century.[7,8] Two factors have been considered as the main determinants of that historical trend[9,10]:

a) Healthcare teams' practices that discourage breastfeeding

b) A progressive increase of women working full-time outside their homes.

The first study on EBF duration in Chile was published in 1942, reporting that in urban infants, only 38 percent of mothers maintained EBF at three months postpartum and 10 percent at sixth months.[11] Other studies in different areas of Chile, including rural ones,[7] conducted during those years reported similar findings.

The Chilean Government implemented in 1996 a long-running Breastfeeding Promotion Program (BPP)[10] aimed at improving the knowledge and skills of the personnel working in public healthcare facilities on breastfeeding practices. The BPP included intensive technical and motivational training. In 2011, the Government passed a law increasing maternity leave postpartum for fully employed women from 12 to 24 weeks (Law Nr. 20,545).[12] Previously, between 1959 and 2011,[13,14] postpartum maternity leaves lasted up to 12 weeks. A 6 weeks legal prepartum maternity leave was left unchanged. Available information on the effects of BPP and postpartum maternity leave expansion (MLE) indicate that it might improve the chances of a longer EBF.[9–13]

Present article reports an ecological analysis of EBF duration in low-income Chilean mothers attending public healthcare facilities between 1993 and 2018, comparing the possible associations with the 1996 BPP and the 2011 MLE Act. The study also analysed the national evolution of birth rates, employment rates of women, and proportions of mothers receiving paid maternity leave and their possible associations with EBF duration.

Materials and methods

This study was based on EBF's published information about infants attending the Chilean Ministry of Health's primary health clinics for health check-ups at the third and sixth months of age. That information was regularly registered in the health files of each infant and monthly gathered for each age cohort in a consolidated report that was sent at the end of each year of the study to the Ministry of Health. As explained below, the final data were available from two time periods obtained from the original health files, using the same collection methods and comparable across years. The study group from each year represents approximately 76% of the country's infant population.[15] Surveys representing the total infant population attending those primary health clinics were selected from the dates before and after the beginning of each intervention. No access to individual data was included with an ecological design[16] since the units studied are populations rather than individuals. The ecological fallacy may occur because an association between variables on an aggregate level does not necessarily represents the association that exists at the individual level. For example, maternal age differences that are not included in the comparisons between groups, which consider just BPP and MLE, may partly explain changes over time; older women may tend to EBF for a longer period than younger women.

Two types of sources were considered for the selected samples:

A) National surveys on the prevalence of EBF duration: These surveys were carried out by the Ministry of Health in 1993, 1996 and 2000[10]. The 1993 prevalence study was designed considering all children under 18 months controlled in public urban health care clinics of primary level. Sample size was estimated considering 25% of infants with EBF at six months, a confidence level of 95%, a sample error of 2.5% in each age group, no response or incomplete response of 10% and a design effect of 1.5. Finally, a sample size of 9,912 children was defined. EBF information registered in the year 2000 was obtained from 25% of randomly selected public primary health clinics among the 300 available. Surveys performed in 1996 and 2000 included the same sampling criteria, although expanding the sample to rural clinics, approximately 18% of the total population during those years. The health personnel applied a recall dietary survey to determine breast milk consumption, milk formulas, water, juices, other liquids, and solid or semisolid foods. In these surveys, EBF was defined as the exclusive consumption of breast milk without adding any other drink or solid food except for vitamins and mineral supplements or medicines.[10]

Surveys from 1993, 1996 and 2000 were selected to compare EBF duration before and after the 1996 BPP. Sample sizes of infants in the third month were 2,346 infants in 1993, 3,061 infants in 1996, and 3,013 infants in 2000. At the sixth month of age, the sample sizes were 1,942 subjects in 1993, 2,195 subjects in 1996 and 2,311 subjects in 2000. The first sample from 1993 was considered for information before the intervention, and the last two samples from 1996 and 2000 were viewed as information after the intervention.

B) Annual National Nutritional Surveillance: The Ministry of Health surveillance system includes all infants having health check-ups in December of each year at 3 and 6 months of age. Those yearly surveys were available from 2006 until present. To avoid bias related to the Covid-19 pandemic, 2019 was defined as the final information for this study.[17] Year 2008 provided information before the 2011 intervention, and 2011, 2013, 2016, 2018 and 2019 were selected to get information afterwards. Sample sizes for each month of the infant's life for years chosen were the following:

a) Third month: 82,256 for 2008; 108,676 for 2011; 97,177 for 2013; 99,178 for 2016; 104,377 for 2018 and 103,913 for 2019;

b) Sixth month: 105,238 for 2008; 138,285 for 2011; 124,152 for 2013; 121,350 for 2016; 120,431 for 2018 and 118,713 for 2019

Categories of age performed an ecological analysis by subgroup. The "year" variable was considered to make each survey unique in the pooled data set. EBF frequencies were analysed to determine whether the survey year was associated with a change in rates at the third and sixth months and whether there was a relationship with the years in which the Chilean government interventions were implemented.

The statistical analysis used direct standardization to compare EBF frequencies in the third and the sixth month of subsequent surveys.[18] All infants who underwent health checks in 2019, at the third and the sixth month of age, were considered the standard or reference population for standardizations; the proportions of infants in these age spans were compared with those of each one of the previous years.

The age standardized EBF rates for each year were used to calculate the rate ratios and the etiological fractions. The Rate Ratio (RR) was calculated as a measure of the relative risk of EBF frequency for each year in comparison to 1993 which was considered as presenting the unexposed population.[19] The Etiological Fraction (EF) at the population level was estimated as a measure of the impact of each year compared to 1993 and was calculated as (RR-1)/RR[19]**.** The EF assumes that a single variable causes an event of EBF frequency each time: the year.

The chi-squared test determined whether the year's EBF rate was equal. A p-value lower than 0.05 rejected the null hypothesis, and it was concluded that the year's national EBF rate was different. The Bonferroni test was applied as a sensitivity analysis to adjust the p-value for yearly comparisons.[20]

The linear regression model method was performed to assess the immediate impact and change in the trend of EBF rates pre- and post each intervention. The year 1996 was considered the intervention start point for implementing the BPP and the year 2011 was the start point for the MLE. A linear relationship between time and the outcome within each segment was assumed, considering segmented regression models fit a least squares regression line for each segment of the independent variable (year), $p< 0.05$ was considered statistically significant. Thus, the next step in the analysis was to estimate the magnitude of the intervention and test the statistical significance of immediate impact and trend rates. The regression model used to fit these data is straightforward. Outcome EBF = $\beta0 + \beta1 *t + \beta2 *$post-intervention + $\beta3$ intervention + εt. Where $\beta0$ is the baseline outcome for the national population; $\beta1$ is the trend change in the EBF rate; $\beta2$ is the trend change after intervention and $\beta3$ is the difference in the EBF rate between groups with and without intervention (considering the time of each intervention). The intervention variable was set to be 0 before the intervention and 1 after. The regression analysis assumes that error terms associated with each observation are uncorrelated.

We assessed the fitted of the regression models using a two-pronged approach: measuring the goodness of fit and conducting diagnostic checks on the model's assumptions. To consider the goodness of fit we performed the Coefficient of Determination (R^2). The R^2 represents the proportion of the variance in the response variable explained by the predictors. This statistic is based on comparing the Sum of Squares Error (SSE) of the fitted model to the Total Sum of Squares (SST) of

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the minimal model. Assessment of the regression models included diagnostic checks on the core assumptions. The normality of residuals was examined using a Normal Q-Q Plot to ensure the model's errors were normally distributed. Diagnostics for the assumption of residual normality were assessed only for the MLE intervention model which exclusively includes data from the Annual National Nutritional Surveillance. The BPP intervention model was excluded from this analysis because the three available years of data were insufficient to reliably check this model´s assumption.

Other factors that may affect the duration of EBF are also reported in this article. The National Institute of Statistics and the International Labor Organization estimate[21,22] obtained data on births per year and women's work participation trends. In addition, nationwide information on the number of women requesting maternity leave (a proxy for potential changes in breastfeeding support and maternal employment conditions) was obtained from the Social Security website.[23] The latter information was used in the linear regression analysis as explained in the Results section.

Statistical analyses were performed using Stata/SE 15.0 (StataCorpLP, College Station, TX, USA) and RStudio version 4.3.1.

Results

Table 1 shows that standardized EBF frequencies at the third and six months of life improved from 1993 to 2000 with a decrease in 2008 and a recovery that began in 2011 and continued, with a short slight lowering in year 2013, clearly increasing until 2019. The RRs and the EFs followed a similar pattern. The following four paragraphs present all those detailed changes, including the non-standardized frequencies.

Table 1 Exclusive breastfeeding rate, unstandardised and standardised, with rate ratio and etiological fraction analyses for the year

Year	Exclusive breastfeeding rate (unstandardised)		Exclusive breastfeeding rate (standardised) (95% CI) a		Rate ratio		Etiological fraction	
	3 mo	6 mo	3 mo*	6 mo*	3 mo	6 mo	3 mo	6 mo
1993	54	16	49.52 (49.52-49.53)	19.27 (19.06-19.47)	1	1	0	0
1996	57.4	30.4	52.64 (52.64-52.65)	36.61 (36.60-36.61)	1.06	1.9	5.92	47.37
2000	67.4	39.5	61.81 (61.81-61.82)	47.57 (47.56-47.57)	1.25	2.47	19.88	59.49
2008	71.71	49.12	56.76 (56.76-56.77)	43.71 (43.71-43.72)	1.15	2.27	12.75	55.92
2011	64.39	41.06	66.78 (66.78-66.79)	47.82 (47.82-47.83)	1.35	2.48	25.84	59.71
2013	65.17	44.73	60.95 (60.94-60.96)	46.78 (46.77-46.78)	1.23	2.43	18.75	58.81
2016	67.3	56.57	64.23 (64.23-63.25)	57.83 (57.82-57.83)	1.3	3	22.9	66.68
2018	69.79	59.42	70.10 (70.10-70.11)	60.28 (60.27-60.29)	1.42	3.13	29.35	68.04
2019	70.48	61.84	70.48 (70.46-70.49)	61.84(61.84-601.85)	1.42	3.21	29.73	68.85

95% CI: 95% confidence interval; mo: months

*P-value <0.05

a. The EBF of each year were compared with a Chi-squared test and applied Bonferroni as a sensitivity analysis.

The non-standardized frequencies showed that the third month of life values slightly increased between 1993 and 1996. After that increase, it reached higher figures in 2000 and 2008. All the following values, from 2011 to 2019, were slightly lower than in 2008. In the case of the standardized frequencies in the third month, similar relative increments were observed between 1993 and 2000 but with lower values. A decline in the frequency was observed in 2008 followed by subsequent increases reaching the highest figure in 2019. The p-values of the differences between all selected years were < 0.01 according to the chi-squared test (Table 1).

The lowest rates of non-standardized and standardized EBF frequencies at the sixth month were evident in 1993. The first increase in both rates occurred in 1996, duplicating the initial levels. Subsequent increases were evident in 2000 for both frequencies. In 2008 the non-standardized figure improved again, but it slightly declined in the case of the standardized frequency. In 2011 and 2013, the non-standardized figures declined before improving in the next years. In the case of the standardized frequencies, all values from 2011 to 2019 were higher than in 2008, reaching the highest figure in 2019. The p-values of the differences between each year with the following one were < 0.01 in all cases. Comparison of the years with the Bonferroni test had significant differences when considered together ($p < 0.01$) (Table 1).

Favourable variations at the third month of life of the RR about the first year studied were as follows: the 1996 RR was slightly higher than in 1993, and in the following years, the RR had incremental values reaching the highest in 2018 and 2019. The favourable variations in the RR at the sixth month of life showed that in 1996 the RR was almost doubling that of 1993, and in all subsequent years, the RR was more than two times higher than the baseline in 1993 (Table 1).

The EF of exposure of the year for EBF at the third month of life was higher than 20% in the following years: 2011, 2016, 2018 and 2019. The EF for EBF at six months was always much greater than that observed at three months, with values doubling and tripling the comparison ones. The national EBF rate in 2019 also had the highest EF at six months (Table 1).

Table 2 presents the results of time series linear regression models used to assess the annual national trends in the EBF rate at six months. The analysis covers two time periods: 1993-2000 and 2008-2019. The models evaluate how the EBF rate is influenced by the passage of time and specific public health interventions (BPP and MLE). The Intercept ($\beta 0$) in the regression model is a theorically predicted value of the dependent variable (EBF rate at six months) when all predictor variables are set to zero. In our time series analysis, the predictors are coded based on the year of the study and it is not meaningful in a practical sense.

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Table 2 Results of the time series analysis of the estimation of linear regression on the national annual average trends of Exclusive breastfeeding rate at six months

	1993- 2000		2008-2019			
	Unadjusted model		Unadjusted model		Adjusted model (1)	
	Coefficient	p value	Coefficient	p value	Coefficient	p value
Intercept	-6313.94	0.669				
Annual national trend	3.18	0.667				
Change in trend postintervention BPP	-2.48	0.959				
Intercept			-5539.95	0.012	-3953	0.025
Annual national trend			2.77	0.022	2.04	0.024
Change in trend postintervention MLE			-1.92	0.651	14.75	0.048
R2	0.6672		0.872		0.739	

BPP: Breastfeeding Promotion Program; MLE: Maternity Leave Expansion

(1) Adjusted by the number of women who took maternity leave

During the 1993-2000 period, the EBF rate saw an annual increase of 3.18 points in each annual measure from 1993 to 2000 (without statistical significance, p>0.05). The introduction of the BPP intervention was associated with a not statistically significant (p = 0.959) decrease in the annual trend of 2.48 points. In the analysis of the national annual average trends between 2008 and 2019 we found a positive relationship with statistical significance (p=0.022). This result means that before accounting for the MLE intervention, the EBF rate was significantly increasing by 2.77 points per year. The MLE intervention shows a negative change of -1.924 points, but this is not statistically significant (p = 0.651). After adjusting for the number of women requesting maternity leave, the annual national trend continues to show a statistically significant increase of 2.04 points per year (p = 0.024). The MLE intervention has a statistically significant positive effect, with a 14.75-point increase in the EBF rate (p = 0.048).

In brief, Table 2 shows that in the 1993–2000 model the annual EBF rate increased, but neither the underlying annual trend nor the effect of the BPP intervention was statistically significant. In the 2008–2019 period, the EBF rate showed overtime a statistically significant upward trend. After adjusting this last model, the post-intervention change in trend was statistically significant, indicating a substantial acceleration in the annual national increase of the EBF rate at six months attributable to the MLE intervention.

The R^2 values were 0.6672 for the unadjusted model from 1993-2000, 0.872 for the unadjusted model from 2008-2019, and 0.739 for the adjusted model for 2008-2019. The R^2 for the 1993-2000 model suggests that the model explains approximately 66.7% of the variance in the EBF rate. The larger value for the 2008-2019 unadjusted model indicates that the model explains a large proportion (87.2%) of the variance in the EBF rate. Adjusting the model in the later period resulted in a slight reduction in explained variance (0.739), which still represents a strong fit. Figure 1 and Figure 2 presents the Normal Q-Q Plot performed for the regression model of the MLE intervention. The normality assumption is broadly fulfilled, as most of the residuals in both plots closely follow the straight dashed line. However, the adjusted model show that the first few points deviate from the reference line (Figure 2). This indicates a potential deviation from perfect normality, suggesting the presence of outliers in the data.

The birth rate per 1,000 inhabitants has decreased in the last decade, ranging from 14.4 in 2011 to 11 in 2019[21]. There has been an increase in the female labour force participation rate from 37% in 2011 to 60% in 2019[22]. The proportion of mothers receiving 24 weeks paid postnatal has also increased from 8.1% in 2011 to 46.66% in 2019[23].

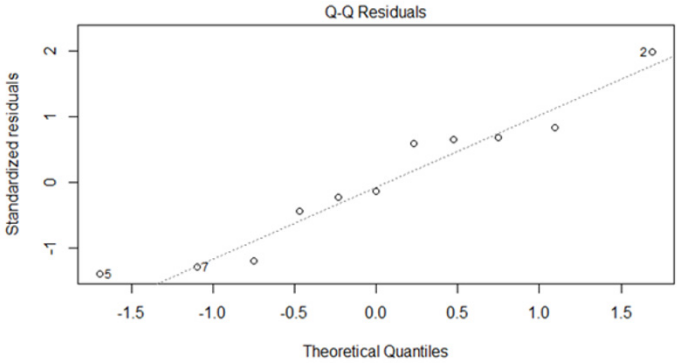

Figure 1 Normal Q-Q plot. Linear regression unadjusted model of annual average trends of exclusive breastfeeding rate at six months.

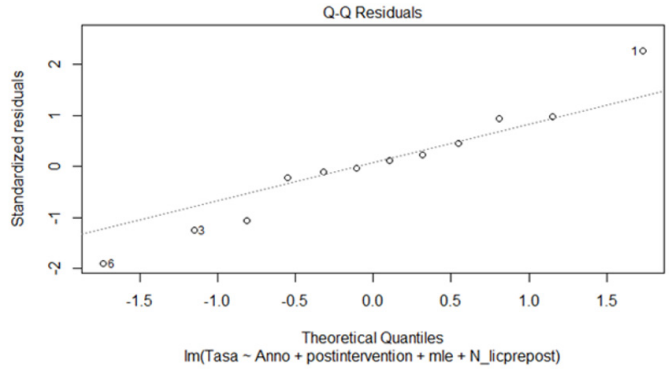

Figure 2 Normal Q-Q plot. Linear regression adjusted model of annual average trends of exclusive breastfeeding rate at six months.

Discussion

In this ecological study, carried out in a Chilean population, we found trends of increasing non-standardized and standardized EBF rates from 1993 until 2018 in the third and sixth months of the infant's life. Direct standardizations allow to asses EBF frequencies at those ages in different years using the same age structure of 2019.

After the BPP initiation, in 1996, the EBF standardized figures showed increments at the third and six months of the infant's life in 1996 and 2000, but values declined in 2008, possibly associated with

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the decline in BPP intensity. A new increase took place in 2011 in relation with the MLE initiation, reaching its highest value in 2018.

Relative changes over time of the RR values make possible to estimate which of the national interventions appears to be more effective in improving the EBF frequency. Between 1993 and 2000, changes in RR at the third and sixth months of the infant's life were 25% and 147%, respectively. By contrast, between years 2008 and 2019 changes in RR at the third and sixth months of the infant's life were 27% (1.42 minus 1.15) and 94% (3.21 minus 2.27), respectively. RR increments at the sixth month of life were higher for the BPP. On the other hand, the highest EF values at the third and the sixth months of life were observed in the MLE period beginning in 2011. As EF is the proportion of cases in which the EBF can be attributed to the intervention[19], the latter observation supports the idea that the MLE could have a more prominent association with EBF than the BPP. The previous results were also tested with time series analysis using linear regression models.

The estimated linear regression models for the national annual average trends at six months reveals distinct patterns across the two study periods (1993–2000 and 2008–2019). During the earlier period, the estimated annual increase suggests a general upward trend in EBF rates; however, this change was not statistically significant, indicating that improvements during the 1990s may have been related to unmeasured contextual factors. The negative but non-significant effect of the BPP intervention further suggests that the policy or programmatic actions during this period did not produce measurable short-term changes in national EBF rates.

In contrast, the analysis of the 2008–2019 period demonstrates a more consistent and statistically significant positive trend. The annual increase over this period indicates a progressive increase in EBF rates. Although the MLE intervention appeared to have had an initial negative effect, the difference was not statistically significant, suggesting that the impact of the intervention on the trend´s slope was limited. However, after adjusting for the number of women requesting maternity leave (23), the model "retained" a significant annual increase and, additionally, revealed a statistically significant positive effect of the MLE intervention. This suggests that, when accounting for broader social and structural factors, the MLE intervention may have contributed to improving national breastfeeding outcomes.

Present results suggest beneficial effects on EBF duration of both the BPP and the MLE interventions, with an apparently better performance of MLE. In fact, the proportion of employed mothers receiving 24 weeks of paid postnatal leave increased from 8.1% in 2011 to around 43-44% in 2015-2019.[23] A recent literature review shows a positive effect on the EBF of paid postpartum in high-income countries.[24] Specifically, in the State of California (USA), a paid postpartum maternity leave for eligible employees led to an average increase of EBF ranging from 10 to 20 percent at three months of age.[25] Consistent with present findings, data from low and middle-income countries indicate that an extension of paid postpartum leave is associated with a gain of 5.9 percentage points in EBF for each additional month of leave granted.[26]

UNICEF data indicate that, currently, 96 % of the countries have paid postpartum maternity leave laws.[27] In 42% of these nations, leaves run up to 14 weeks postpartum; in 27% between 14 and 25.9 weeks (or six months); in 10% up to 26-51.9 weeks (or 12 months) and in 17% up to 52 weeks or more. In 52% of the surveyed countries, fathers are also eligible for paid leaves to care for a newly born baby.[27]

The available data supports the positive role of educational promotion on EBF. A systematic review of the literature indicate that this type of interventions increases EBF duration, particularly in developing countries,[28] including Latin American ones, such as Brazil, Colombia, Haiti, and Peru.[29] However, in the Americas average frequency of EBF up to six months of age has been reported to be only 32.3%,[30] thus lower than the figures for Chile reported here.

Ecological designs are characterized by studying large groups, sometimes an entire country's population. However, it is also suitable for assessing the impact of health intervention programs in specific populations, especially when studying the effect of easy-to-measure exposures at the population level[16]. Ecologic studies have contributed to political decisions in the health field. For example, Walter Willett pointed out that the most influential descriptive study on diet and coronary heart disease was the work of Keys (1980) relating the mean intake of dietary factors of 16 defined populations; the intake of saturated fat was strongly correlated with coronary death rates.[31]

To our knowledge, this is the first ecological design investigating the impact on the duration of EBF of two national public interventions in the Chilean population. Nevertheless, considering the methodological limitations of the ecological design, including potential confounders factors, such as socioeconomic changes, health system reforms and gender policy shifts, could have influenced EBF trends during the study period. Thus, further investigations are required to evidence causality criteria and to strengthen the association between EBF and national public interventions.

One limitation of the study reported here may be the non-inclusion of rural areas in the first data source in the type A surveys. However, this fact may not influence observed frequencies since in Chile the rural population represents only 12.2% of the country's total.[32] Moreover, previous studies have shown no differences between rural and urban areas in the proportions of infants receiving EBF.[7] Another limitation of this study was the type A surveys, because they were applied in comparatively small samples. However, considering that their sampling error was a relatively low 2.5% and the confidence limits were 95%, the observed proportions should approximate the proportions of EBF in the universe of infants comprising the type B surveys of the following years. This consideration may support the presented comparisons between proportions, i.e. between 1993 and 2019.

Ecological studies based on one independent variable, such as the present one, might overlook the role of other factors in the associations observed.[16] However, other studies performed in Chile have shown results compatible with the present ones. A historical study on the efficacy of the BPP conducted in samples non-representatives of the general population has reported similar findings.[33–35] In addition, two recent studies on the effects of the 2011 MLE Act on EBF at six months of life agrees with the present findings.[36,37]

In summary, we have presented ecological results that suggest EBF rates improve in the first three and six months of the infant's life and determined incremental trends higher at the sixth month of life. The evidence would indicate that while early interventions such as the BPP may not have yielded measurable favourable outcomes, later initiatives, particularly when coupled with enabling structural conditions like maternity leave policies, appear to have had a significant positive influence. However, more studies are required to investigate which factors determine the incremental trends because the results of ecological studies might overlook the role of other factors

in the associations observed. Concurrent child-health initiatives, maternal age and maternal education should be considered among those factors.

Between 1993-2019 Chile has shown outstanding health indicators for a Latin American nation[15, 38]. Health professional--attended deliveries reached universal coverage in 1990. Infant mortality rate was 6.5 in 2019. Fertility has declined considerably: the total fertility rate was 2.1 children per woman in 2019, 1.43 in 2011 and 1.03 in 2024, representing one of the lowest rates in the world.[38] EBF at six months of age has reached 61.84% in 2019, a figure higher than the 60% in the first 6 months for year 2030 proposed by WHO/UNICEF.[39]

The information presented on women´s access to formal work indicates that the MLE act did not affect its increase. In 1993, Chile's female labour force participation rate was approximately 37% and and it increased to 60% in 2019.[22] The country also experienced institutional progress in gender equality through the creation of the National Women's Service (1991) and the Ministry of Women and Gender Equity in 2015.

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Conflicts of interest

The authors declare that there is no conflict of interest.

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