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Análisis de factores maternos que afectan la lactancia materna exclusiva en Ecuador

Analysis of maternal factors affecting exclusive breastfeeding in Ecuador

Análise dos factores maternos que afectam o aleitamento materno exclusivo no Equador

ARTÍCULO ORIGINAL

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RESUMEN

La lactancia materna exclusiva (LME) ha sido considerada por varios organismos internacionales como la solución para combatir la desnutrición infantil, la cual es considerada como un problema de salud pública. Bajo este contexto, la presente investigación busca encontrar cuáles son los determinantes de la LME en el Ecuador, y mostrar cómo influye el nivel educativo de la madre sobre la duración de la lactancia materna exclusiva. Para cumplir dicho objetivo se emplea un modelo probabilístico obteniendo como resultado que el nivel de instrucción de la madre, la etnia, el quintil de ingresos, el género del recién del bebé y la edad de la madre juegan un papel importante sobre la duración de la lactancia materna en el Ecuador. En el caso del nivel de instrucción se encuentra que las mujeres con una educación superior tienen menos probabilidad de dar LME, por seis meses o más, que las madres sin un nivel de educación.

Palabras clave: Lactancia materna exclusiva; Nivel socioeconómico; Nivel Educativo; Etnia; Género

ABSTRACT

Exclusive breastfeeding (EBF) has been considered by several international organizations as the solution to combat child malnutrition, which is considered a public health problem. In this context, the present research seeks to find the determinants of EBF in Ecuador, and to show how the mother's educational level influences the duration of exclusive breastfeeding. In order to fulfill this objective, a probabilistic model was used, obtaining as a result that the mother's level of education, ethnicity, income quintile, gender of the newborn and the mother's age play an important role in the duration of breastfeeding in Ecuador. In the case of educational level, it is found that women with higher education are less likely to breastfeed for six months or more than mothers with no education.

Key words: Exclusive breastfeeding; Socioeconomic status; Educational Level; Ethnicity; Gender

RESUMO

O aleitamento materno exclusivo (AME) tem sido considerado por várias organizações internacionais como a solução para combater a desnutrição infantil, que é considerada um problema de saúde pública. Neste contexto, esta investigação tem como objetivo encontrar os determinantes do AME no Equador, e mostrar como o nível educacional da mãe influencia a duração do aleitamento materno exclusivo. Para cumprir este objetivo, é utilizado um modelo probabilístico, com o resultado de que o nível de educação da mãe, a etnia, o quintil de rendimentos, o sexo do recém-nascido e a idade da mãe desempenham um papel importante na duração do aleitamento materno no Equador. No caso do nível de educação, verifica-se que as mulheres com educação superior têm menos probabilidades de amamentar durante seis meses ou mais do que as mães sem educação.

Palavras-chave: Aleitamento materno exclusivo; Nível socioeconómico; Nível de escolaridade; Etnia; Género

INTRODUCTION

The Food and Agriculture Organization of the United Nations FAO (1), estimates that by 2020, only 43.8% of children worldwide between birth and six months will be exclusively breastfed. For Latin American and Caribbean countries, the prevalence of exclusive breastfeeding is 37.8%, below the world average. Complementing the above, Walters et al. (2), note that, globally, lack of breastfeeding causes 595 379 infant deaths (in children aged 6-59 months) per year due to diseases such as diarrhea and pneumonia. In addition, it contributes to 98,243 maternal deaths due to diseases such as breast cancer, ovarian cancer and type 2 diabetes. Lack of breastfeeding also causes significant economic losses, estimated at US$341.3 billion per year. These losses are due to increased healthcare costs, premature mortality and lost productivity.

For these reasons, the objective of the present study is to investigate the influence of various maternal factors on exclusive breastfeeding in Ecuador. Some of the factors to be reviewed are the mother's level of education, ethnicity, income quintile, gender of the newborn and the mother's age. In this line, the hypothesis proposed is that women with higher educational levels tend to practice exclusive breastfeeding for shorter periods compared to mothers with lower educational levels; a logistic econometric model is used to test this hypothesis.

The structure of this research consists of six sections. First, the theoretical and empirical part is shown, where the causes and consequences of exclusive breastfeeding are discussed. In addition, an analysis of the situation of EML in Ecuador is made. The following section analyzes the data used in the model. This is followed by a specification of the methodology. In the last two sections, the results are analyzed and conclusions are presented.

Exclusive breastfeeding (EBF) is considered a way to protect the newborn from infectious diseases by providing necessary nutrients. Breastfed babies are less likely to suffer from dental malocclusion problems and are protected against mortality and morbidity. Similarly, there are numerous benefits for the mother, as it reduces the risk of ovarian and breast cancer, hypertension and cardiovascular disease (3).

According to the United Nations Children's Fund (UNICEF) and the World Health Organization (WHO), exclusive breastfeeding is a type of feeding in which the newborn receives only breast milk and no other food, whether solid or liquid, except rehydration solutions, minerals, vitamins or medications (4). This type of exclusive breastfeeding should be maintained for the first 6 months of life and continued until two years of age.

In 2000, the United Nations established the Millennium Development Goals (MDGs) to address major global challenges. These goals

include reducing extreme poverty, promoting gender equality, ensuring universal education and reducing child mortality. To achieve the Millennium Development Goal of reducing child mortality, exclusive breastfeeding has been identified as one of the main areas of intervention at both global and national levels (5,6). International research has provided strong evidence of the clear health benefits of breastfeeding for both infants and mothers. Optimally breastfed infants have been shown to have a lower risk of common childhood illnesses such as gastrointestinal and respiratory infections, otitis media, atopic eczema, and allergies during infancy (7,8).

According to Paramashanti et al. (9), the low practice of exclusive breastfeeding (EBF) in most developing countries is due to a variety of maternal and infant factors. These factors include geographic location, sex and age of the child, maternal employment status, maternal age and educational level, access to mass media, and economic status. The conceptual model of Rollins et al. (10) points out that breastfeeding decisions and practices are influenced by several factors operating both at the individual level and in the sociocultural environment. For example, in some cultures, exclusive breastfeeding is considered not only a way to feed the baby, but also a powerful way to establish and strengthen the bond between mother and child.

For Oblitas et al. (11), low milk production, congenital malformations and morbid nutritional status represent risk factors for mothers to stop breastfeeding their children. While for Rahman et al. (12), non-practice of EML is associated with mothers with secondary (OR 0.65) and higher (0R 0.52) education. One of the explanations supporting these results is related to the fact that some women with high educational levels sometimes cannot breastfeed their children due to lack of time (they work) or because of an aesthetic issue. This is consistent with the study conducted by Gayatri (8) in Indonesia in 2017, where working women with higher educational levels are more likely not to breastfeed.

Perspective of exclusive breastfeeding in the Ecuadorian context

In Ecuador, by 2023, 51% of children under 6 months will be exclusively breastfed, according to figures published by the National Institute of Statistics and Census (INEC) through the National Survey of Child Malnutrition (ENDI). In rural areas, a higher percentage (57%) of infants are exclusively breastfed compared to urban areas (47%).

From a territorial approach, the highest number of mothers who breastfeed for six months is found in the provinces of Pastaza (82%), Cotopaxi (77%) and Imbabura (77%). The provinces below the national average are Cañar (46%), Santa Elena (40%), El Oro (36%), Guayas (33%) and Los Ríos (21%) Figure 1.

Volumen 7 No. 20 mayo-agosto 2024, https://revistavive.org, ISSN: 2664-3243, ISSN-L: 2664-3243

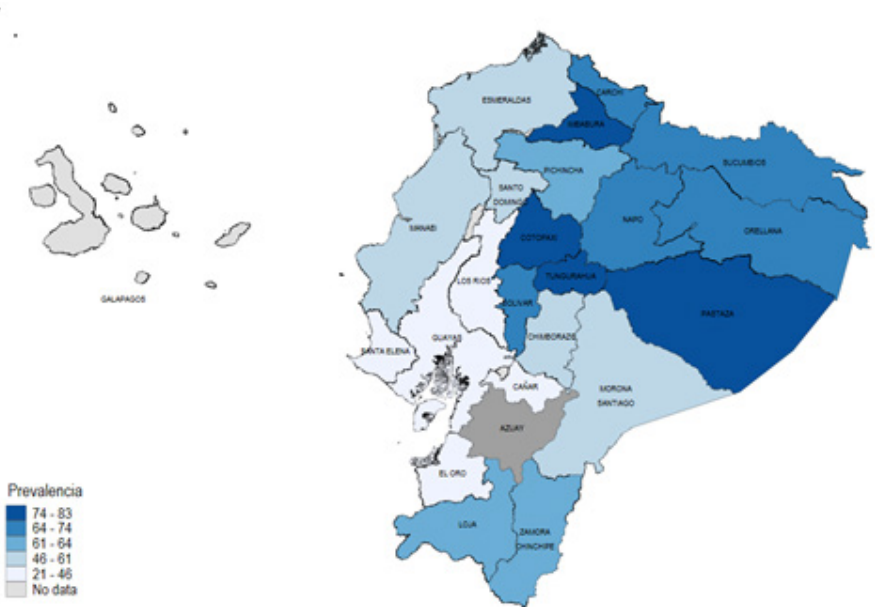

***Figura* 1.** Prevalence of exclusive breastfeeding by province. Source: ENDI (13).

The data reveal significant differences in the practice of exclusive breastfeeding among the different ethnic communities in Ecuador. Thus, the highest percentage is observed in white, Afro-Ecuadorian and mestizo infants, with 60%, 56% and 51%, respectively. In contrast, Montubio children show the lowest percentage (18%) of exclusive breastfeeding (EBF) compared to the other ethnic communities mentioned.

MATERIALS AND METHODS

The information used in this study was obtained from the National Health and Nutrition Survey (ENSANUT), conducted in 2018 by the National Institute of Statistics and Census (INEC). The ENSANUT is a probability sampling survey that provides data on the health and nutrition status of the Ecuadorian population INEC (14). Thus, the survey consists of five questionnaires, each of which addresses various significant aspects of societal behavior. These aspects cover the reproductive health of mothers, fertility, development and nutritional status of newborns, household characteristics, among other relevant topics.

The ENSANUT covers the 24 provinces of Ecuador and has as its target population all household members. The information collected is stored in nine databases, each of which has a unique identifier for individuals, households and dwellings. These identifiers allow the databases to be combined, which makes it possible to conduct the study of interest, (14).

Four different databases were used in this study, covering maternal, household, socioeconomic status, and exclusive breastfeeding characteristics. The integration of these databases

was achieved using the household and individual (mother) identifier. As a result, the database has a total of 11,293 observations.

To test the hypothesis that women with higher levels of education tend to breastfeed exclusively for shorter periods compared to mothers with lower levels of education, a dichotomous variable is generated that takes the value 1 if the mother exclusively breastfed her child for 6 months or more, and the value 0 if the breastfeeding period was less than 6 months (dependent variable). Likewise, the mother's educational level is considered as an independent variable, which is divided into three categories: mothers with no formal education, mothers with secondary or high school education, and mothers with higher education.

In addition, the model includes the following control variables: mother's ethnicity, marital status, mother's age, income quintile, sex of the newborn and unmet basic needs. A summary table of the variables used in the estimation is shown below Table 1.

Tabla 1. Descriptive analysis of variables.

Description	Variable	Obs	Mean	Desv. Est.
Exclusive breastfeeding	LME	11,293	0.925	0.264
Educational level	No education	11,293	0.367	0.482
	High school/secondary education	11,293	0.440	0.496
	Higher	11,293	0.194	0.395
Ethnic origin	Indigenous	11,293	0.148	0.355
	Afro-Ecuadorian	11,293	0.043	0.202
	Mestizo	11,293	0.767	0.423
	Montubio	11,293	0.043	0.203
Marital status	Married/Unmarried	11,293	0.787	0.410
Age	Age	11,293	27.635	6.887
Income quintile	Quintile 1	11,293	0.215	0.411
	Quintile 2	11,293	0.235	0.424
	Quintile 3	11,293	0.214	0.410
	Quintile 4	11,293	0.173	0.378
	Quintile 5	11,293	0.162	0.369
Sex of infant	Woman	11,293	0.484	0.500
Unmet basic needs	NBI	11,293	0.277	0.448

Volumen 7 No. 20 mayo-agosto 2024, https://revistavive.org, ISSN: 2664-3243, ISSN-L: 2664-3243

This section describes the empirical strategy used to examine the hypothesis that more educated women tend to practice exclusive breastfeeding for shorter periods compared to less educated mothers. Since the dependent variable (EBF) is dichotomous, a binary response model is chosen, specifically a probit model, which fits this case adequately. This model uses as estimation method the Maximum Likelihood Method, whose objective is to find the joint density function (or likelihood) that best fits the distribution of the data (15).

The probit regression model is a binary response model that estimates the probability that our dependent variable "y" takes a value equal to 1 using a standard cumulative normal distribution function (1), evaluated at z=β_0+β_1 X (a critical value that depends d the set of control variables).

$$F(\beta_0 + \beta_1 X) = \int_{-\infty}^{\infty} \frac{1}{\sqrt{2\pi}} e^{\frac{-x^2}{2}} dx \quad (1)$$

The probit model is widely used for its ability to ensure that the probability is in the interval from 0 to 1 and that the conditional probability of Y=1 given a set of explanatory variables "X" is increasing for β_1>0. This requires a nonlinear functional form for the probability, such as an "S-shaped curve". It is important to note that in probit models, the resulting coefficients are not directly interpretable and only provide information on sign and statistical significance. Therefore, if one wishes to know the real effect, it is necessary to obtain the marginal effects, which indicate the change in probability due to changes in an explanatory variable. In other words, it is a matter of obtaining the partial derivative. The equation to be estimated is shown below:

$$Pr(\text{EBF} = 1|X) = \alpha + \beta_1 educ'_i + \beta_2 etnia\_mother'_i + \beta_3 unida_i + \beta_4 age\_mother_i + \beta_5 quintil'_i + \beta_6 female_i + \beta_7 NBI_i + \varepsilon_i \quad (2)$$

Where:

EBF: Dichotomous dependent variable that takes the value of 1 if the mother breastfed exclusively for 6 months or more, and 0 if the breastfeeding period was less than 6 months.

$educ'_i$: The categorical variable assigning the value of 1 to mothers with no education, 2 to mothers with a medium level of education and 3 to mothers with higher education.

$etnia\_mother'_i$: Categorical variable for mother's ethnicity. 1 indigenous, 2 Afro-Ecuadorian, 3 mestizo and 4 monotubo.

$unida_i$: The dichotomous variable takes the value of 1 when the mother is married or single and 0 otherwise.

age_mother_i: The variable that captures the mother's age.

$quintil'_i$: Categorical variable for income quintile.

$female_i$: Dichotomous variable that corresponds to the sex of the baby (1 female 0 male).

NBI_i: The variable that reflects the unsatisfied basic needs of the household.

ε_i: Error term.

RESULTS

The results obtained confirm the hypothesis, that is, women with higher educational levels tend to practice exclusive breastfeeding for shorter periods compared to mothers with lower educational levels. Thus, Ecuadorian mothers with a higher educational level are 2.2% less likely to give EML (for six months or more) than mothers with no education Table 2. Similar results are found in the study by Rahman et al. (12) in Bangladesh, where it is concluded that mothers with secondary and higher education tend not to give EML to their children. One of the reasons supporting these results is related to the fact that sometimes women with higher levels of education may find it difficult to breastfeed their infants due to lack of time because of their work or because of aesthetic considerations.

Tabla 2. Results from the application of the probabilistic model.

	Model 1	Model 2	Model 3	Model 4	Model 5
	dy/dx	dy/dx	dy/dx	dy/dx	dy/dx
Level of education					
Secondary	-0.008	-0.010	-0.009	-0.009	-0.009
	(0.008)	(0.008)	(0.008)	(0.008)	(0.009)
Higher	-0.029**	-0.025**	-0.021*	-0.021*	-0.022*
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Ethnicity					
Afro-Ecuadorian		-0.033*	-0.032	-0.032	-0.032*
		(0.019)	(0.020)	(0.020)	(0.020)
Mestizo		-0.027***	-0.025**	-0.025**	-0.025**
		(0.010)	(0.011)	(0.011)	(0.011)
Montubio		-0.048***	-0.046**	-0.047***	-0.046**
		(0.018)	(0.018)	(0.018)	(0.018)
Marital status					
Single		-0.005	-0.004	-0.004	-0.004
		(0.010)	(0.010)	(0.010)	(0.010)
Mother's age		-0.001*	-0.001*	-0.001*	-0.001*
		(0.001)	(0.001)	(0.001)	(0.001)
Income quintile					
Quintile 2			-0.018*	-0.018*	-0.018*
			(0.011)	(0.011)	(0.011)
Quintile 3			-0.013	-0.013	-0.014
			(0.011)	(0.011)	(0.011)

Volumen 7 No. 20 mayo-agosto 2024, https://revistavive.org, ISSN: 2664-3243, ISSN-L: 2664-3243

	Model 1	Model 2	Model 3	Model 4	Model 5
Quintile 4			-0.020*	-0.020*	-0.020*
			(0.012)	(0.012)	(0.012)
Quintile 5			-0.025*	-0.025*	-0.025*
			(0.013)	(0.013)	(0.013)
Woman				0.014*	0.014*
				(0.008)	(0.008)
NBI					-0.003
					(0.009)
Obs.	11,293	11,293	11,293	11,292	11,292

Note: Variables significant at 99% (***) 95% (**) 90% (*)

As for the mother's age, a negative marginal effect of 0.001 was found. This means that, for each additional year of mother's age, the probability of giving SCI, for six months or more, is reduced by 0.1%. Regarding the variable that captures the mother's ethnicity, we find that mothers self-identified as Afro-Ecuadorian are 3.2% less likely to give SBI, for six months or more, than mothers self-identified as indigenous. For the group of Montubio mothers, the probability of giving SBI, for six months or more, compared to indigenous mothers is 4.6%. Finally, mestizo mothers are 2.5% less likely to exclusively breastfeed for 6 months or more than indigenous mothers Table 2. On the other hand, the variable that records the sex of the infant reveals that the probability of a mother providing EML to her child for 6 months or more increases by 1.4% when the newborn is a girl, compared to boys.

According to the results obtained, it can be observed that mothers located in quintiles 2, 4 and 5 have a lower probability of giving SCI than quintile 1, with 1.8%, 2% and 2.5%, respectively. For example, if the mother is in quintile 5 of the population, she has a 2.5% lower probability of giving SCI, for six months or more, compared to quintile 1, where the probability is positive. Similar results are found in studies conducted in underdeveloped countries such as Peru and Costa Rica (16,17). Both studies conclude that the lower the socioeconomic level, the higher the probability of giving SCI compared to the higher quintiles. The argument of these studies suggests that a better economic level allows mothers to forgo breastfeeding and seek breast milk substitutes.

DISCUSSION

To ensure the robustness of the results , a series of post-estimation tests are performed, such as the confusion matrix and the Receiver Operating Characteristic (ROC) curve. The calculation of the confusion matrix is intended to identify the number of hits that the model had when classifying true positives and negatives.

Thus, the confusion matrix is structured as follows: on the main diagonal is the number of classifications made correctly by the estimation, and at the extremes are the type 1 and 2 errors. Thus, it can be seen that the model was able to classify 91.54% of the total as positive (sensitivity), and 13.19% of the total as true negative (specificity). Finally, the confusion matrix shows that the model was able to predict 85.65% between true positives and negatives Table 3.

Tabla 3. Confusion matrix.

Classified	D	~D
	91.54%	86.81%
	8.46%	13.19%
Total	**100%**	**100%**

On the other hand, the ROC curve can be used to analyze the predictive power of the model. The further the ROC curve deviates from the slope, the greater the predictive power of the model. In this case, the area under the curve is 0.58, i.e., the model has a predictive power of approximately 58% Figure 2.

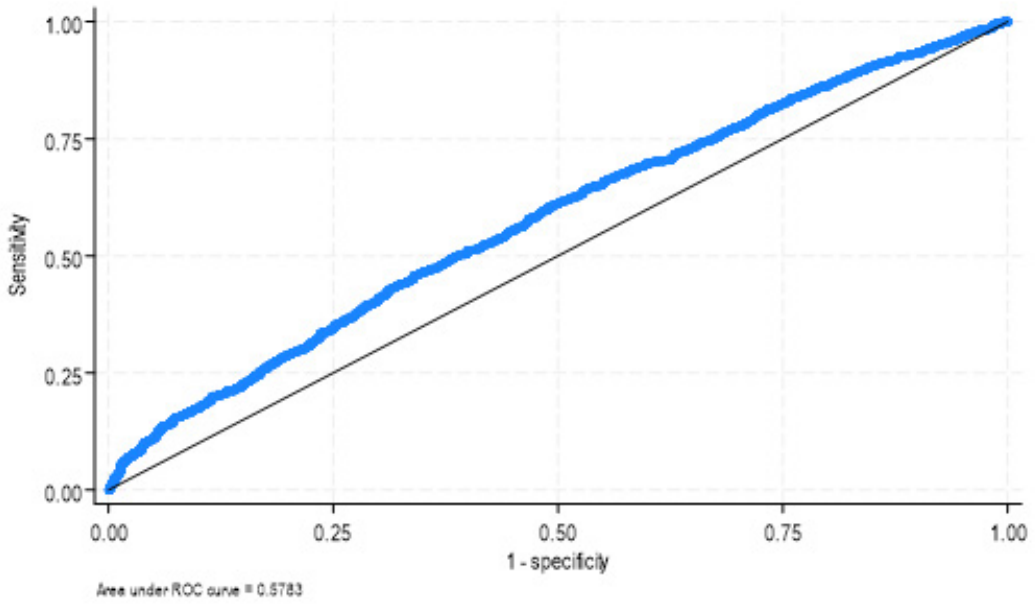

***Figura* 2.** ROC curve of the probabilistic model.

Volumen 7 No. 20 mayo-agosto 2024, https://revistavive.org, ISSN: 2664-3243, ISSN-L: 2664-3243

Based on what was previously reviewed, women with higher levels of education tend to practice exclusive breastfeeding (EBF) for shorter periods compared to mothers with lower levels of education. Specifically, Ecuadorian mothers with higher levels of education are 2.2% less likely to practice EBF for six months or more compared to mothers with no education. The trend observed in Ecuador may not be an isolated phenomenon, but part of a broader pattern that manifests itself in different socioeconomic and cultural contexts.

One possible explanation for these results lies in the additional difficulties faced by women with higher levels of education. These difficulties are often related to work demands and the pressures of the professional environment, which may limit the time and flexibility needed for breastfeeding. Mothers with higher levels of education tend to hold job positions that demand more time and commitment, making it difficult to practice EML for extended periods. In addition, some women may choose not to practice EML because of aesthetic considerations or the perception that breastfeeding may interfere with their professional image.

These findings have important implications for public health policies and breastfeeding support strategies. It is crucial that breastfeeding promotion programs consider the specific barriers faced by more educated women. For example, implementing workplace policies that allow for more flexible hours, creating breastfeeding-friendly spaces in workplaces, and educational campaigns that address and demystify aesthetic concerns could be effective in increasing SBI rates in this demographic.

Although more educated women have more access to information and resources about the benefits of breastfeeding, they face significant barriers that may limit their ability to practice EBF for extended periods. Addressing these barriers through targeted policies and programs can help improve SBI rates and, ultimately, the health and well-being of children in Ecuador.

CONCLUSIONS

We found significant evidence that mothers with higher educational attainment tend to practice exclusive breastfeeding for shorter periods compared to mothers with lower educational attainment. That is, mothers with a higher educational level are 2.2% less likely to practice exclusive breastfeeding for six months or more compared to mothers with no education. This result may be related to the fact that mothers with a higher level of education are unable to breastfeed for longer due to their work. In this line, it is recommended to implement labor policies that help to increase the mother's breastfeeding time, i.e., to extend the maternity period.

On the other hand, the type of ethnicity of the mother was found to play an important role in the duration of exclusive breastfeeding in Ecuadorian mothers. For example, mothers self-identified as Montubias are 4.6% less likely to breastfeed for six months or more than indigenous mothers. By income quintile, mothers located in the highest socioeconomic quintiles are less likely to breastfeed exclusively for the first 6 months or more than those located in the lowest economic levels. Finally, the age of the mother and the sex of the infant are also important determinants of the duration of exclusive breastfeeding in Ecuador.

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BIBLIOGRAPHIC REFERENCES

1. FOA. Prevalencia de lactancia materna exclusiva durante los primeros seis meses de vida. FOA. 2020. https://acortar.link/nOzQOC

2. Walters D, Phan L, Mathisen R. The cost of not breastfeeding: global results from a new tool. Health Policy and Planning. 2019; 34(6), 407–417. https://acortar.link/bFKW0g

3. OPS. Semana Mundial de la Lactancia Materna 2020. 2020. https://acortar.link/qV3ORq

4. UNICEF. Lactancia materna. 2019. https://acortar.link/0RLdkK

5. Alemayehu H, Habte. Determinants of exclusive breastfeeding practices in Ethiopia. Ethiopian Journal of Health Development. 2009; 23(1). https://acortar.link/muXmtp

6. Jones G, Steketee R, Black R, Bhutta Z, Morris S, Child B. How many child deaths can we prevent this year? National Library of Medicine. 2003; 5, 65–71. https://acortar.link/zgK9wW

7. Ejie U, Taiwo U, Nduka B, Onyebuchi I. A systematic review of qualitative research on barriers and facilitators to exclusive breastfeeding practice in sub-Saharan African countries. Int Breastfeed J. 2021; 16(44). https://acortar.link/V4ypsb

8. Gayatri M. Exclusive Breastfeeding Practice in Indonesia: A Population-Based Study. Korean J Fam Med. 2021; 42(5), 395–402. https://acortar.link/5lE7Do

9. Paramashanti B, Dibley M, Huda T, Alam A. Breastfeeding perceptions and exclusive breastfeeding practices: A qualitative comparative study in rural and urban Central Java, Indonesia. ELSEVIER, 2022; 170. https://acortar.link/JS5RUX

10. Rollins N, Bhandari N, Hajeebhoy N, Horton S, Lutter C, Martines J, Piwoz E, Richter L, Victora C. Why invest, and what it will take to improve breastfeeding practices? National Library of Medicine. 2016; 491–504. https://acortar.link/VAAQuP

11. Oblitas A, Herrera J, Flores Y. Lactancia materna exclusiva en Latinoamérica: una revisión sistemática. Vive Rev. Salud. 2022; 5(15):874-88. https://doi.org/10.33996/revistavive.v5i15.195

12. Rahman A, Khan N, Akter S, Rahman A, Alam M, Khan A, Rahman M. Determinants of exclusive breastfeeding practice in Bangladesh: Evidence from nationally representative survey data. PLoS ONE. 2020; 15(7). https://acortar.link/S7Qs8f

13. ENDI. Encuesta Nacional sobre Desnutrición Infantil. Principales resultados. 2023. https://n9.cl/hn41d

14. INEC. Encuesta Nacional de Salud y Nutrición ENSANUT. 2018. https://n9.cl/dq1d

15. Cameron A. Microeconometrics: methods and applications. Cambridge University Press. 2005. https://acortar.link/0YPpX3

16. Chia-Gil A, Pariona R, Soto V, Cuipal J, Romaní D, Díaz W, Tapullima M, Conde J, Zúñiga P, Gutiérrez C. Lactancia materna exclusiva y enfermedades prevalentes de la infancia en menores de seis meses. Revista Peruana de Epidemiología. 2013; 17(2), 1–8. https://acortar.link/6P0opI

17. UNICEF. Análisis del Modelo de Lactancia Materna. Fonde de Las Naciones Para La Infancia. 2011; 25–34. https://acortar.link/BSPZ4h

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