



Prevalence of breastfeeding and associated factors in the municipality of Londrina (PR, Brazil)*

Prevalência de aleitamento materno e fatores associados no município de Londrina-PR

Prevalencia de lactancia materna y factores asociados en el municipio de Londrina-PR

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ABSTRACT

Objective: To describe breastfeeding prevalence and associated factors, in the municipality of Londrina, PR, Brazil. **Methods:** This quantitative, descriptive study included interviews of 770 companions of children younger than 12 months of age during an anti-polio vaccination campaign in August 2008. **Results:** A total of 72.5% of the children were breastfed in the first hour after birth; 33.8% were exclusively breastfed from zero to six months of age, 53.7% until the fourth month and 7.8% until the sixth month; 51.5% were in continued breastfeeding between 9 and 12 months of age. The women who breastfed the most were 35 years old or older, had a bachelor's degree, had more than one child and were on maternity leave. **Conclusion:** Breastfeeding rates increased in the city, however, analyzing health services actions is needed to improve these rates. **Keywords:** Breast feeding; Prevalence; Cross-sectional studies; Infant nutrition

RESUMO

Objetivo: Descrever a prevalência do aleitamento materno e fatores associados no município de Londrina-PR. **Métodos:** Estudo quantitativo, descritivo, entrevistando 770 acompanhantes de crianças menores de 12 meses, durante a campanha de vacinação antipoliomielite, em agosto de 2008. **Resultados:** Na primeira hora, foram amamentadas 72,5% das crianças; 33,8% estavam em aleitamento materno exclusivo de zero a seis meses, no quarto mês, 53,7% e no sexto mês 7,8%; 51,5% em aleitamento materno continuado entre 9 e 12 meses. As mulheres que mais amamentaram tinham idade igual ou superior a 35 anos, escolaridade de terceiro grau, mais de um filho e estavam em licença-maternidade. **Conclusão:** os índices de aleitamento materno do município apresentaram evolução, porém faz-se necessário analisar as ações nos serviços de saúde para melhora desses índices.

Descritores: Aleitamento materno; Prevalência; Estudos transversais; Nutrição do lactente

RESUMEN

Objetivo: Describir la prevalencia de la lactancia materna y factores asociados en el municipio de Londrina-PR. **Métodos:** Estudio cuantitativo, descriptivo, realizado con la entrevista a 770 acompañantes de niños menores de 12 meses, durante la campaña de vacunación antipoliomielítica, en agosto del 2008. **Resultados:** En la primera hora, fueron amamentadas el 72,5% de los niños; el 33,8% estaban con lactancia materna exclusiva de cero a seis meses, en el cuarto mes, el 53,7% y en el sexto mes el 7,8%; el 1,5% en lactancia materna continuada entre 9 y 12 meses. Las mujeres que más amamentaron tenían edad igual o superior a 35 años, escolaridad de tercer grado, más de un hijo y estaban con licencia-maternidad. **Conclusión:** los índices de lactancia materna del municipio presentaron evolución, sin embargo se hace necesario analizar las acciones en los servicios de salud para mejorar esos índices.

Descriptores: Lactancia materna; Prevalencia; Estudios transversales; Nutrición del lactante.

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INTRODUCTION

Among the Brazilian priorities in the fight to reduce child mortality and morbidity, one of the Millennium Development Goals is to provide an incentive to breastfeed, which is an efficient and low cost strategy to reduce childhood mortality⁽¹⁾. The choice of this strategy is based on scientific evidence showing the benefits of breastfeeding to children's health.

A study conducted by Jones et al.⁽²⁾ reported that breastfeeding ranks first as a preventive measure, reducing 13% of child deaths. A study conducted in cities in the state of São Paulo, Brazil, found that the average estimate of the impact of breastfeeding on the coefficient of child mortality is 9.3%, especially in reducing respiratory infections and diarrhea⁽³⁾.

The World Health Organization recommends exclusive breastfeeding in the first six months of life, and then complemented with other foods for up to two years of age or longer. Additionally, it recommends breastfeeding should be initiated in the first hour of life, and then continue on demand⁽⁴⁾.

One aspect to consider, given the importance of breastfeeding, is the breastfeeding indicators within populations. There was a global growth in the prevalence of breastfeeding between 1995 and 2008, though in a few regions of the world, more than half of children younger than six months of age are exclusively breastfed. Brazil is among those countries whose indexes range from 20% to 49% of exclusive breastfeeding at this age⁽⁵⁾.

The Second National Survey on Eating Practices in the First Year of Life was conducted in 2008 with the aim of supporting the evaluation and planning of breastfeeding practices in Brazil, since the prevalence of exclusive breastfeeding in 1999 was 35.6%^(6,7). A study using the same methodology was conducted in 2002 in Londrina, PR, Brazil, the same setting of the current study, and reported 29.3% of children were exclusively breastfed up to four months of age, and 21.0% up to six months⁽⁸⁾. Therefore, there is a need, both at national and local levels, to reevaluate these indicators so that professionals working with exclusive breastfeeding can reflect on how their practice can contribute to the improvement of these indexes, and can identify the difficulties hindering greater advancements.

Since the national survey was limited to the capitals and the Federal District, there is also a need to investigate the profiles of a range of cities, since Brazil has continental dimensions, each locale has to identify its indicators to devise strategies specific to its own situation. This study aimed to determine the prevalence of exclusive breastfeeding, and breastfeeding and associated factors, in the city of Londrina, PR, Brazil, to provide data to support professionals in the health services and enable

them to reflect upon the interventions required to address factors that interfere with and impede improvement in this practice.

METHODS

This was a descriptive, cross-sectional study with a quantitative approach. It was based on the Breastfeeding and Cities Project (AMAMUNIC*) from the Health Institute of São Paulo^(9,10).

The survey was conducted in August 2008 during the National Vaccination Campaign. A cluster and systematic sampling was used: first, 33 vaccination stations were drawn from a total of 107 stations, and then the children were also randomly drawn from among those waiting in the lines in the vaccination stations. The companions of children younger than one year old were systematically approached according to the sampling computation, so that about 30 companions were interviewed from each station.

The companions, or the mothers themselves, filled out a structured instrument with 55 closed-ended questions addressing the consumption of breast milk, other types of milk and other foods including water, tea, and other fluids in the last 24 hours; birth data, health service where the child's follow-up was performed, and information concerning the mother were also collected. The instrument was implemented by nursing students from two educational institutions in the city, nurses and Community Health Agents (CHA) who were all specifically trained to collect data. The campaign was extended until 85% of children younger than one year old were vaccinated. The companions of the children who attended the campaign during the extension period were interviewed at home by the CHAs after an active search. Of the 834 companions who were approached during the collection period, 47 refused and 17 were lost, totaling 770 valid interviews.

To differentiate the pattern of breastfeeding, we used the definitions of exclusive breastfeeding, predominant breastfeeding, and breastfeeding, as recommended by the World Health Organization⁽¹¹⁾.

Data were entered online, using the AMAMUNIC software. The results were analyzed using the SPSS software, version 15.0. The statistical associations were performed using the Chi-square test, Fisher's exact test, and Odds Ratio (OR) with a confidence interval of 95%.

The companions agreed to participate in the study and the project was approved by the Committee of Ethics in Research of the Institute of Health of São Paulo, according to Opinion No. 001/08.

* Acronym in Portuguese

RESULTS

Of the 770 interviews, 97.5% were conducted in urban areas and 2.6% in rural areas. The sample was composed of 325 (42.2%) children younger than six months of age and 445 (57.8%) children older than six months of age; 54.2% were male and 98.6% were born in Londrina, PR, Brazil. A total of 8.3% of children were low weight and more than half (55.5%) were delivered via C-section; 72.5% were breastfed in the first hour of life, 83.0% were exclusively breastfed the first day at home, and 51.5% were breastfed on a regular basis from nine to 12 months of age. A total of 84.9% of the companions were the mothers themselves; 72.4% of them were between the ages of 20 to 34 years old; 43.8% had completed high school and 46.4% were

primiparous. In relation to work, 67.5% did not have a paid job.

The prevalence of exclusive breastfeeding in children between zero and six months of age was 33.8%. The results revealed that there was a higher prevalence of breastfeeding in the first through fourth months (from 47.4% to 62.5%), but with a sharp decrease from the fourth to the fifth month, from 53.7% to 19.3%, respectively, and in the sixth month, when only 7.8% of the children were exclusively breastfed. Predominant breastfeeding prevalence between zero and six months was 16%.

The data in Table 1 demonstrate the associations between exclusive breastfeeding and maternal and infant variables for children zero to four months. In this age range, exclusive breastfeeding was associated with the mother's age, with children of adolescent mothers having

Table 1. Factors associated with exclusive breastfeeding in children younger than four months of age. Londrina, PR, Brazil, 2008

Variables	Category	Younger than 4 months			OR (CI 95%)		
		n	%	p			
Mothers	Age	< 20 years old	6/15	40.0	0.024*	Ref	1.00
		20 to 34 years	59/94	62.8		2.53	(0.74 – 8.87)
		> 35 years old	13/15	86.7		9.75	(1.27 - 94.17)
	Parity	Primiparous	24/60	40.0	0.000*	Ref	1.00
Multiparous		54/74	73.0	4.05		(1.84 – 8.99)	
Infants	Use of bottle	Yes	5/61	8.2	0.000*	Ref	1.00
		No	76/86	88.4		85.12	(24.85 – 316.81)
	Use of pacifier	Yes	25/55	45.5	0.050*	Ref	1.00
		No	56/92	60.9		1.87	(0.90 – 3.89)

*Statistically significant with $p < 0.05$.

Table 2. Factors associated with exclusive breastfeeding in children younger than six months. Londrina, PR, Brazil, 2008

Variables	Categories	Younger than 6 months			OR (CI 95%)		
		n	%	p			
Mothers	Age	< 20 years old	7/41	17.1	0.001*	Ref	1.00
		20 to 34 years old	78/199	39.2		3.13	(1.25 – 8.18)
		≥ 35 years old	15/37	40.5		3.31	(1.05 – 10.79)
	Education	Primary	31/100	31.0	0.025*	Ref	1.00
		Secondary	43/128	33.6		1.13	(0.62 – 2.05)
		Higher	25/48	52.1		2.42	(1.12 – 5.22)
	Work	Yes	8/41	19.5	0.001*	Ref	1.00
No		62/178	34.8	2.20		(0.91 – 5.54)	
Maternity leave		30/56	53.6	4.76		(1.72 – 13.56)	
Parity	Primiparous	31/129	24.0	0.000*	Ref	1.00	
	Multiparous	69/148	46.6		2.76	(1.60 – 4.79)	
Infants	Low weight	Yes	2/18	11.1	0.041*	Ref	1.00
		No	98/225	43.1		6.17	(1.32 – 39.84)
	Use of bottle	Yes	5/162	3.1	0.000*	Ref	1.00
		No	100/151	66.2		61.57	(22.54 – 182.07)
	Pacifier use	Yes	33/131	25.2	0.005*	Ref	1.00
		No	72/182	39.6		1.94	(1.15 – 3.28)

*Statistically significant with $p < 0.05$.

Table 3. Factors associated with breastfeeding in children older than six months of age. Londrina, PR, Brazil, 2008.

Variables	Category	Older than 6 months			OR (CI 95%)		
		n	%	p			
Mothers	Work	Yes	42/105	40.0	0.000*	Ref	1.00
		No	170/256	66.4		2.97	(1.81 – 4.87)
Infants	Use of bottle	Yes	134/320	41.9	0.000*	Ref	1.00
		No	115/118	97.5		53.21	(15.93 – 214.16)
	Use of pacifier	Yes	68/208	32.7	0.000*	Ref	1.00
		No	179/227	78.9		7.68	(4.88 – 12.10)

*Statistically significant with $p < 0.05$.

less chance of being exclusively breastfed compared to children of mothers between the ages of 20 to 25 years, and those 35 years old or older. The babies of multiparous mothers were four times more likely to be exclusively breastfed compared to children of primiparous mothers. The use of bottles and pacifiers was associated with weaning; children to whom artificial nipples were offered had a lower chance of being exclusively breastfed.

The data in Table 2 demonstrate the association of exclusive breastfeeding with maternal and infant factors in children under six months of age. At this age, children had a greater chance of being exclusively breastfed if their mothers were: 20 years of age or older, had a bachelor's degree, did not have a paid job, were on maternity leave or were multiparous. The babies of women with a paid job and who were on maternity leave were five times more likely to be exclusively breastfed. Artificial nipples were associated with a lower chance of children being exclusively breastfed.

The mother's occupation and the use of bottles and pacifiers were significant in interrupting breastfeeding in children older than six months of age, as seen in Table 3. There was a higher chance of continuing breastfeeding in children whose mothers did not have a paid job.

For variables such as type of birth, breastfeeding in the first hour of life, place of birth, and access to health services, no statistical significance was found in any age group studied.

DISCUSSION

There was a great expectation that the indicators concerning breastfeeding would be improved. This was confirmed in Londrina and practically in the entire country. Brazilian data revealed that 35.6% of children younger than four months were exclusively breastfed in 1999⁽⁶⁾, while the 2008 survey revealed that 41% of children younger than six months were exclusively breastfed⁽⁷⁾. In Londrina, the exclusive breastfeeding indexes in children younger than six months old increased from 21% in 2002⁽⁸⁾, to 33.8% in 2008, which also generated satisfaction among health professionals. When

observing the exclusive breastfeeding in children under four months, the increase was even more significant, increasing from 29.3%⁽⁸⁾ to 54.8%. When predominant breastfeeding (16%) was associated, we observed that, in 2008, almost half of children (49.8%) zero to six months of age received breast milk as their only dairy source.

The health professionals in Londrina, since the 1970s, have made an effort to develop actions to improve breastfeeding indexes, such as the inclusion of breastfeeding in health educational programs, creation of the Human Milk Bank, in 1988, the Lactation Center in 1995 and, in the same year, the Breastfeeding Committee that gathers representatives of diverse health institutions, both public and private, and those in the community that have the objective of planning and coordinating breastfeeding actions in the city. Beginning in the 1990s, three hospitals became Baby-Friendly Hospitals. In 2007, a group of professionals initiated the creation and implementation of the Breastfeeding Network in various Brazilian states, at the invitation of the Ministry of Health. This whole history demonstrates the involvement of Londrina professionals with breastfeeding. This effort was reflected in various satisfactory results presented in this study, such as exclusive breastfeeding on the first day at home (83.0%), and that more than half of children were still breastfed at the end of their first year of life.

The sharp decrease in the breastfeeding indexes after the fourth month of life requires attention. The perception of professionals is that going back to work leads mothers to abandon the breastfeeding practice, given the need to leave their children with caregivers at home or in daycare services. In this study, the work of mothers was associated with a lower rate of breastfeeding in comparison with mothers who did not have a paid job or were on maternity leave. One study shows that breastfeeding among women who have a part time or full time job, but did not take maternity leave, was significantly lower⁽¹²⁾.

Important gains for working mothers occurred in recent years, with the *Programa Empresa Cidadã* [Corporate Citizen Program], for the extension of maternity leave, in 2008⁽¹³⁾. Londrina was the second city in the state to grant this right to city employees, followed by the State

University of Londrina and the government of Paraná. Specific studies are needed to evaluate whether the fact of staying with a child at home until the sixth month in fact favors a longer duration of exclusive breastfeeding.

This concern with going back to work is relevant, however the results from Londrina show that 67.5% of the mothers do not have a paid job. Therefore, it is necessary to consider other factors that may lead mothers to introduce other foods to children before the age of six months. In a study conducted with mothers in rural areas, 89.8% of mothers reported having breastfed their babies, however, 97.2% introduced other foods before six months of age, while 57.6% introduced tea and water in the child's first month of life. This practice was justified by their beliefs that the baby was thirsty, it would soothe and calm the baby's colic, or because breast milk by itself did not meet the infant's needs. Therefore, in addition to the limitation imposed by work, old issues still interfere in the breastfeeding practice⁽¹⁴⁾.

Regarding maternal characteristics, the maternal age was found to be significant. Women younger than 20 years of age breastfed for a shorter time, possibly because mothers who are older have more knowledge and experience concerning breastfeeding⁽¹⁵⁾. This indicates the need to offer individualized care to adolescent mothers to support them regarding factors that may discourage breastfeeding.

In general, mothers with higher levels of education have higher frequencies of exclusively breastfeeding⁽¹⁶⁾. Data from this present study confirmed that education was a protective factor. Silva affirmed that, "new knowledge on this topic generally emerges in the dominant classes who, endowed with greater prestige, tend to be more easily imitated by the remaining social classes, although knowledge from lower classes can also be disseminated to the remainder⁽¹⁷⁾." A higher level of education is generally associated with a more privileged socioeconomic situation.

Offering exclusive breastfeeding, and the number of children, showed statistically significant differences among children aged four to six months in this study. Possibly, multiparous women exclusively offered breast milk more frequently, probably due to their previous experiences. One study confirmed this finding, hence it is important to develop educational programs for a group of primiparous women who, probably, suffer a greater impact of cultural factors⁽¹⁸⁾.

Regarding the place of birth, there were three baby-friendly hospitals in Londrina, however there was no statistical association found in relation to greater breastfeeding indexes. Some difficulties were identified by the professionals working in these hospitals, including: high employee turnover, which hampered training; supplements prescribed by physicians; and, a lack of

educational programs to prepare mothers during prenatal care, among others. However, a study conducted in one of the hospitals showed that, with the implementation of baby-friendly hospitals, there was an increase in the average time of exclusive breastfeeding from 12 days, in 1994, to 45 days in 1998⁽¹⁹⁾. Another study indicated that the number of mothers who adopted the practice of exclusively breastfeeding their children increased, and the average duration of exclusive breastfeeding nearly tripled from 27 days in 1996, to 3.5 months in 2004⁽²⁰⁾. Some factors that were related to early weaning after discharge from a baby-friendly hospital were the lack of skin-to-skin contact and early suckling, maternal smoking, the introduction of pacifiers, and the use of dairy supplementation during hospitalization⁽²¹⁾.

Breastfeeding in the first hour of life occurred in 72.5% of the population of this study. This practice is the fourth step of baby-friendly hospitals, favoring interaction between mother and child, and also reduces mortality because it acts as a protective factor against neonatal death⁽²²⁾. One study demonstrated that mortality could be reduced by 16.3% if all children initiated breastfeeding in the first day of life, and, by 22.3% if it was initiated in the first hour⁽²³⁾. It may be that there is a greater chance of success in breastfeeding, if started early; pre-dairy foods may damage the immature intestine, while the colostrum accelerates maturation of the epithelium, and protects against pathogens, among other benefits⁽²⁴⁾.

This important step for the infant's health, and how to reconcile this practice with the wellbeing of mother and child, should be reflected upon. The author of a qualitative study addressing the first breastfeeding in the delivery room concluded that this practice was limited by the compliance to norms and routines of the baby-friendly hospital, and that it was necessary for the health team to develop an empathetic attitude for understanding the significance of this early contact between mother and baby. Hence, the focus of attention should not be the institution, but rather, the woman who experiences this event⁽²⁵⁾.

C-sections were also not associated with a lower index of breastfeeding. One study reported that when only the first hour of life was considered, 22.4% of the mothers who had a normal delivery initiated breastfeeding, while 5.8% of the mothers who had a C-section initiated it. A C-section delays breastfeeding while normal delivery enables it⁽²⁶⁾. A C-section may interfere in the initiation of breastfeeding because the mother experiences pain and discomfort caused by the surgery, which hinders the positioning of the baby due to mandatory bed rest for the mother. In the surgical center, adherence of the remaining members of the team to the concretization of this practice is also a challenge to be faced.

Other reflections are necessary about the use of artificial nipples, because they have been described in the literature as a factor that contributes to weaning and that, in the current study, presented a statistically significant association with weaning in all ages; a result that was also observed in other studies^(15,27,28).

Those who do not favor the use of pacifiers allege that pacifiers may be related to less frequent breastfeeding and, consequently, to reduced production of breast milk^(12,29). A study reported that children who used pacifiers during a great part of the day were four times more likely to stop breastfeeding compared to those who did not use them. The same study also showed that the pacifier was a mechanism used by mothers who faced difficulties breastfeeding. It concluded that campaigns to reduce the use of pacifiers will fail if not accompanied by support for mothers, to help them cope with the challenges posed by breastfeeding, and to deal with their anxieties⁽²⁹⁾.

Authors⁽³⁰⁾ launched a debate about the influence of pacifiers during breastfeeding and demonstrated that the introduction of pacifiers did not affect the success and duration of exclusive breastfeeding or breastfeeding among those mothers with a firm intention of breastfeeding, and who successfully established breastfeeding in the first 15 days of the child's life. The study's motivation was the indication that the use of a pacifier reduces the risk of Sudden Infant Death Syndrome, and the authors reinforced the practice based on the evidence presented.

Concerning the health service where the child's follow-up was provided, in this study, children up to 12 months who were monitored in public services presented lower breastfeeding prevalence compared to those monitored in private services, though no statistically significance was observed. Nonetheless, adolescent mothers

and those with lower levels of education more frequently utilize public services, which may present a greater difficulty for those practitioners. A study controlling these and other variables that may influence the practice of breastfeeding through multivariate analyses is needed. Analyses of factors associated with breastfeeding should consider the multidimensional nature of this biologically determined, but socio-culturally conditioned, practice⁽¹⁷⁾.

CONCLUSION

The present study permitted us to conclude that the breastfeeding prevalence indexes in Londrina improved from 21.0% to 33.8% in 2002 and 2008, respectively. Greater breastfeeding prevalence was associated with older mothers and those with higher levels of education, with those on maternity leave and those who had more than one child. Introducing artificial nipples was associated with early weaning.

The conclusions drawn from this study concern a local reality and its scope is limited, however it can contribute by encouraging professionals to reflect upon other similar situations, since the methodology used is common to other city and national studies. Such reflection can indicate ways to overcome the difficulties encountered by professionals to support women who breastfeed, and their families.

However, for every variable associated with greater or lesser duration of breastfeeding, it is important to consider that epidemiological studies can indicate directions, however, the experience of each breastfeeding woman is unique. Understanding the process of breastfeeding women is directly related to their life histories, their context and projects, and not to statistical data.

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