

Can parity influence infant feeding in the first six months of life?

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Abstract *This article aims to evaluate the influence of parity on breastfeeding and introduction of complementary feeding in children up to six months after childbirth. Longitudinal study conducted through a convenience sample of mother-child pairs, selected at postpartum and accompanied until the sixth month of infant's life, between 2011 and 2016, in Porto Alegre, Brazil. There was an analysis of the time taken in the first feeding after birth, practice and time of breastfeeding, consumption of other types of milk and introduction of complementary feeding. The sample consisted of 161 dyads, with 74 primiparous and 87 multiparous. Multiparous women breastfed their babies sooner in the first 24 hours post-partum ($p = 0.019$). The offering of other kinds of milk showed no difference in relation to parity, as the moment of introduction to infant nutrition, although both primiparous and multiparous did it before the age of four months. Parity seemed to influence the timing of first breastfeeding offer, but not the introduction of complementary feeding, although this occurred in an early way. In this sense, it is necessary to disseminate more information about breastfeeding and infant feeding during prenatal and childcare, to improve maternal and child health.*

Key words *Parity, Postpartum period, Breast feeding, Infant nutrition*

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Introduction

Breastfeeding (BF) is the leading choice for infant feeding¹ as of birth and provides countless benefits for both the nursing mother and the infant².

Among the several BF factors, parity seems to exert influence, however, few studies have been published in the literature. One study found that primiparous mothers were more likely to initiate BF, but did so for a shorter period and introduced complementary foods prematurely. One hypothesis is that they have lower self-confidence in their ability to breastfeed³⁻⁵. On the other hand, multiparity was shown as a protective factor for exclusive breastfeeding (EBF), with mothers keeping this practice longer⁶. However, as per previously published studies, there is still controversy over the relationship between the number of births of the mother with BF, and the influence of parity on the introduction of complementary foods (CF) throughout the first semester of life has been poorly investigated.

Regarding the recommendations, breastmilk (BM) should be provided exclusively until the age of six months, without water, tea or any other food; and complemented up to two years or more⁷. For exclusively breastfed infants, complementary feeding (CF) from the sixth month onwards should be introduced slowly and gradually, when it is physiologically and neurologically mature to receive other foods, maintaining BM⁸. CF must be adequate to the nutritional needs of children, respecting their signs of appetite and satiety.

The period of introduction of CF evidences a rapid child growth and development concomitant with significant dietary changes, with exposure to novel foods, flavors, and eating experiences⁹. CF should include food groups of complete nutrition: grains, roots and tubers, legumes and oilseeds, dairy products, meats and eggs, fruits and vegetables¹⁰.

When comparing the introduction of CF between infants who received BM and milk formula, CF occurs earlier in those who received formula, between three and five months of age. Also, puerperae prefer to provide their children with homemade, and not processed foods, while those who already use infant formula tend to introduce other processed foods into infant feeding¹¹.

Considering the relevance of the topic, this study investigated the effect of parity on breastfeeding and the introduction of CF to infants during the first six months of life, verifying the difference in the prevalence of EBF, the moment

of introduction of infant formula, and comparing the moment and method of introduction of CF, among primiparous and multiparous puerperae.

Methods

A longitudinal study was conducted with a sample of mother-child pair samples from 2011 to 2016. The study used data from a larger prospective controlled project entitled IVAPSA (Impact of Perinatal Environment Variations on the Health of the Newborn in the First Six Months of Life), which aimed to investigate the effects of different intrauterine environments and perinatal conditions on child growth, neurodevelopment, nutrition, behavior and metabolism of the child, and to identify its deleterious effects¹².

Data were collected at the Hospital de Clínicas of Porto Alegre (HCPA), at the Fêmima Hospital and Nossa Senhora da Conceição Hospital, both belonging to Conceição Hospital Group (GHC).

Inclusion criteria were puerperae living in Porto Alegre (RS), Brazil. Exclusion criteria were women who tested positive for HIV/AIDS, smokers or who were unable to breastfeed their infants in the first day of life, and twin infants, preterm children (gestational age less than 37 weeks), small for gestational age (SGA), with congenital disabilities, or requiring hospitalization. Puerperae with chronic noncommunicable diseases were not included in this study.

The sample size calculation of this study was based on the DACHEW; BIFFTU¹³ study, which aimed to investigate access to breastfeeding and associated factors. This calculation considered a power of 80% and a level of significance of 5%, with the capacity to detect a difference of 1 month between the means of BF, considering the standard deviation of 1.7 common to the parity groups. We arrived at a minimum sample size of 94 subjects adding 20% for possible losses and refusals, totaling 116 mother-child dyads equally distributed concerning parity.

The six interviews were performed between 24 and 48 hours after delivery, at 7 and 15 days, and in the first, third and sixth months of the child's life. Interviewers were periodically trained to standardize interviewing and collection techniques. The selection of puerperae randomly selected by analyzing the medical records in the joint hospitals, where the first interview was conducted. The others occurred at home or the

Clinical Research Center of the HCPA, according to the availability of the mothers. Questionnaires were applied on maternal and family socioeconomic information and obstetrical and feeding data of the child. The confidentiality of participants was preserved with data coding and identification number.

Forty-eight hours into delivery, puerperae were invited to participate in the research, whose objectives were explained. The Informed Consent Form was signed, and the first interview was conducted through a questionnaire applied by the researcher with general questions about socioeconomic and demographic data on child-birth and the NB, as well as information in the hospital medical records.

In the second interview, in the first week after delivery, information was collected on the feeding of the child at hospital discharge and the time elapsed between delivery and the first breastfeeding session. In this and subsequent interviews, mothers were asked whether their children were breastfeeding (and whether they stopped breastfeeding; if so, when), whether they had received other milk, water-based liquids (tea, juice and soft drink) or some foods commonly given in this age group, covering all food groups.

The other variables used were ethnicity, age and maternal schooling, monthly household income, living with a partner, number of prenatal care visits, pre-gestational Body Mass Index (BMI) and type of delivery. The BF-related variables were the time of the first breastfeeding after birth; BF and EBF; BF and EBF time and consumption of homemade, cow milk-based or processed infant formulas.

The elaboration of these variables observed the concepts of breastfeeding as recommended by the World Health Organization (WHO)¹⁰: BF after birth, which consisted of the time, in minutes, between the child's birth and the first breastfeeding session (six mothers who reported having breastfed their children after the first day of life were excluded from the study); BF, when the child was breastfeeding, regardless of other liquids or foods given; exclusive BF when the child received BM only, without any other liquid or solid, except for supplements and medications.

The CF-related variables were grouped according to the introduction of the following food groups, proposed by the Ministry of Health⁸: cereals (insertion of enriched cereals or not in milk provided or sweet wafer), vegetables, fruits, milk and dairy products (cow's milk, yoghurts or cheese), meat (meats, giblets or eggs), legumes,

sugary foods (processed juice, soft drink, extra sugar, chocolate drink, honey, stuffed cookie or wafer, chocolate, candy, lollipop, jelly, pudding, or popsicle) and others (coffee, processed soup, sausages, snacks or fried food). The categories of food introduction were divided into four or more months and between 5 and 6 months of the child's life. The children who did not consume the foods mentioned were excluded from the analysis.

Categorical variables were shown by absolute number and percentage and the continuous variables by mean and standard deviation (\pm SD) or median and interquartile range [25-75 percentile]. Pearson's chi-square test or Fisher's exact test was used to detect differences between proportions, and the Student's t-test or Mann-Whitney test to detect differences between means and medians. Logistic regression was performed to examine the association between parity and the introduction of CF, adjusted for maternal variables (household income, maternal age and pre-gestational BMI). For all analyses, a significance level of 5% ($p < 0.05$) and a 95% confidence interval were considered. Data were processed and analyzed by statistical software SPSS® (Statistical Package for the Social Sciences) version 18.0 (SPSS Inc., Chicago, IL, USA).

The study was approved by the Research Ethics Committee (CEP) of the GHC and HCPA hospitals.

Results

In total, 209 dyads were recruited, of which 48 were refusals, achieving a final sample of 161 dyads, with 74 primiparous (45.96%) and 87 multiparous (54.03%) women. The mean (SD) number of children was 2.53 (\pm 1.21).

Most women were white, with a higher occurrence of vaginal delivery. The primiparous were significantly younger ($p < 0.001$), with higher household income ($p = 0.045$) and a higher number of prenatal consultations ($p = 0.048$), compared to multiparous women. The income converted to the national minimum wage (MW) for the 2011-2016 period showed that primiparous women had a higher income of 0.3 MW. Also, they started gestation with a lower BMI ($p = 0.017$) when compared to multiparous women (Table 1).

Breastfeeding among primiparous and multiparous mothers was similar for both BF and total BF. Multiparous women started earlier

Table 1. Demographic and socioeconomic characteristics of the sample (IVAPSA, Porto Alegre).

Household and maternal characteristics	Primiparous (n=74)	Multiparous (n=87)	Total (n=161)	p
Skin color/ethnicity, n (%)				
White	49 (66.2)	49 (56.3)	98 (60.9)	0.263 ¹
Non-White	25 (33.8)	38 (43.7)	63 (39.1)	
Maternal age (years), mean ± SD	23.67±6.80	27.48±6.54	25.73±6.91	<0.001 ²
Maternal schooling (years), median [P25-P75]	11.0 [8.0-11.0]	10.0 [8.0-11.0]	11.0 [8.0-11.0]	0.122 ³
Monthly household income (reals), median [P25-P75]*	2,000 [1,500-3,000]	1,800 [1,000-2,650]	2,000 [1,210-3,000]	0.045 ³
Living with partner, n (%)				
Yes	63 (85.1)	73 (83.9)	136 (84.5)	1.000 ¹
No	11 (14.9)	14 (16.1)	25 (15.5)	
Prenatal care (visits), median [P25-P75]	9 [7-10]	8 [6-10]	8 [6-10]	0.048 ³
Pre-gestational BMI (Kg/m ²), median [P25-P75]*	22.06 [19.98-26.13]	24.46 [21.92-27.41]	23.63 [20.81-26.99]	0.017 ³
Type of delivery, n (%)				
Vaginal	51 (68.9)	63 (72.4)	114 (70.8)	0.755 ¹
Cesarean	23 (31.1)	24 (27.6)	47 (29.2)	

IVAPSA: Impact of Perinatal Environment Variations on the Health of the Newborn in the First Six Months of Life; BMI: Body Mass Index; SD: Standard Deviation; P: percentile. Statistical tests: ¹ Chi-square; ² Student t; ³ Mann-Whitney. * The total n was lower for these variables due to lack of information (monthly total household income n = 136, pre-gestational BMI n = 131).

breastfeeding in the immediate postpartum ($p = 0.019$). The mean BF time in their categories and the frequency of supply of milk other than maternal milk, such as processed infant formula or cow's milk, did not show a statistically significant difference ($p = 0.169$) (Table 2).

Regarding CF, there was no significant difference between the primiparous and multiparous mothers. Both provided food early to their children, even before the age of four months (Table 3). Logistic regression analysis did not show a significant association between parity and the introduction of complementary foods (data not shown) when adjusted for maternal covariates (household income, maternal age and pre-gestational BMI).

Discussion

This study aimed to evaluate the influence of parity on feeding in the first semester of the infant's life and its associated factors, a subject rarely studied in the literature. The results showed that multiparous puerperae more readily breast-

fed the newborn soon after delivery. Regardless of parity, other types of milk were provided, CF was introduced early and exclusive and total BF prevalence figures were similar.

Previous studies have observed that, in children under one year of age, primiparity is a risk factor for the abandonment of BF shortly after delivery and for total BF weaning^{5,14}. In infants six months of age or less, the risks of breastfeeding not being exclusive are low maternal schooling, primiparity and pacifier use. Conversely, multiparity is a protective factor for early weaning⁶. Even so, a minority of mothers exclusively breastfeed until the sixth month of the infant's life⁹.

Parity also showed a relationship with gestational age, type of delivery, desire to breastfeed and with the immediate onset of breastfeeding after childbirth. A previous research² showed that women who underwent elective cesarean delivery had greater planning for breastfeeding and started BF more readily when compared to the non-elective cesarean section. Thus, 40% of these puerperae were unable to breastfeed at the

Table 2. Time of breastfeeding and consumption of infant formula between primiparous and multiparous women (IVAPSA, Porto Alegre).

Breastfeeding	Primiparous n (%) [*]	Multiparous n (%) [*]	P
BF after birth (min), median [P25-P75], n=141	60 [30-120]	30 [15-120]	0.019 ¹
Total BF			
7 days (n=114)			
Yes	52 (100.0)	62 (98.4)	1.000 ³
No	0 (0)	1 (1.6)	
15 days (n=102)			
Yes	48 (98.0)	52 (98.1)	1.000 ³
No	1 (2.0)	1 (1.9)	
1 month (n=110)			
Yes	46 (97.9)	60 (95.2)	0.634 ³
No	1 (2.1)	3 (4.8)	
3 months (n=107)			
Yes	43 (87.8)	50 (86.2)	1.000 ²
No	6 (12.2)	8 (13.8)	
6 months (n=94)			
Yes	30 (65.2)	35 (72.9)	0.559 ²
No	16 (34.8)	13 (27.1)	
Exclusive BF			
7 days (n=114)			
Yes	41 (78.8)	47 (75.8)	0.872 ²
No	11 (21.2)	15 (24.2)	
15 days (n=102)			
Yes	33 (67.3)	29 (54.7)	0.270 ²
No	16 (32.7)	24 (45.3)	
1 month (n=110)			
Yes	19 (40.4)	19 (30.2)	0.359 ²
No	28 (59.6)	44 (69.8)	
3 months (n=107)			
Yes	15 (30.6)	10 (17.2)	0.162 ²
No	34 (69.4)	48 (82.8)	
6 months (n=94)			
Yes	0 (0.0)	0 (0.0)	-
No	46 (100.0)	48 (100.0)	
Total BF time (days), median [P25-P75], n=136	150 [60-180]	150 [90-180]	0.637 ¹
Total exclusive BF time (days), median [P25-P75], n=121	15 [7-90]	11 [7-30]	0.422 ¹

IVAPSA: Impact of Perinatal Environment Variations on the Health of the Newborn in the First Six Months of Life; SD: Standard Deviation; BF: Breastfeeding. Statistical tests: ¹ Chi-square; ² Mann-Whitney; ³ Fisher Exact. *The n of each variable varied according to the valid answers and follow-up interviews carried out.

Table 3. Complementary feeding between primiparous and multiparous women (IVAPSA, Porto Alegre).

Complementary feeding (n=116)	Primiparous n (%) [*]	Multiparous n (%) [*]	P
Cereals			
Never	13 (25.0)	16 (25.0)	0.497 ¹
≤ 4 months	13 (25.0)	22 (34.4)	
5-6 months	26 (50.0)	26 (40.6)	
Vegetables			
Never	17 (32.7)	29 (45.3)	0.372 ¹
≤ 4 months	10 (19.2)	11 (17.2)	
5-6 months	25 (48.1)	24 (37.5)	
Fruits			
Never	5 (9.6)	15 (23.4)	0.084 ¹
≤ 4 months	18 (34.6)	24 (37.5)	
5-6 months	29 (55.8)	25 (39.1)	
Milk and dairy products			
Never	20 (38.5)	23 (35.9)	0.566 ¹
≤ 4 months	21 (40.4)	22 (34.4)	
5-6 months	11 (21.2)	25 (39.1)	
Meat			
Never	22 (42.3)	33 (51.6)	0.382 ¹
≤ 4 months	9 (17.3)	6 (9.4)	
5-6 months	21 (40.4)	25 (39.1)	
Legumes			
Never	20 (38.5)	34 (53.1)	0.287 ¹
≤ 4 months	6 (11.5)	6 (9.4)	
5-6 months	26 (50.0)	24 (37.5)	
Sugary foods			
Never	15 (28.8)	19 (29.7)	0.937 ¹
≤ 4 months	25 (48.1)	32 (50.0)	
5-6 months	12 (23.1)	13 (20.3)	
Other			
Never	38 (73.1)	52 (81.3)	0.572 ¹
≤ 4 months	5 (9.6)	4 (6.3)	
5-6 months	9 (17.3)	8 (12.5)	

IVAPSA: Impact of Perinatal Environment Variations on the Health of the Newborn in the First Six Months of Life. Statistical tests: ¹ Chi-square.

first attempt, compared to 25% of those who had a planned vaginal or cesarean delivery. Both planned and emergency cesarean sections were characterized as being more likely to discontinue breastfeeding before the infant is four months of age.

Analyzing the maternal covariates, the mean age of primiparous women was lower than that

of the multiparous women. The same result was found by Oliveira et al.³, who described an association between young puerperae and a shorter duration of BF. The authors suggested that this could be related to a lower level of maternal schooling, lower purchasing power and non-steady marital status. Conversely, in this study, there was no significant difference regarding marital status, and multiparous mothers had lower income than primiparous mothers. Regarding the influence of family economic power, Victora et al.¹⁵ showed that women with lower purchasing power tend to breastfeed longer than those with a higher power, especially in middle-income countries.

The primiparous mothers showed a more significant number of visits during their gestation. This finding was consistent with the literature, in which multiparity is associated with delayed onset of prenatal visits, resulting in a lower number of visits during pregnancy¹⁶. Publication *Caderno de Atenção Básica* (PHC Report), Nº 23 of the Ministry of Health¹⁷, emphasizes the importance of prenatal care, regardless of parity.

Another critical outcome related to parity is obesity. A study conducted in 2015 in Brazil¹⁸ has shown that this is more prevalent among women who already have children, increasing exponentially in women with more than two children. In this study, these findings were confirmed, since the highest median of pre-gestational BMI was observed in multiparous women. Considering the influence of obesity on BF, it is assumed that puerperae with high BMI suffer greater social discomfort in breastfeeding outdoors. Thus, the length of breastfeeding differs strongly among women with different BMIs¹⁹. Also, a previously published study by the IVAPSA²⁰ group showed that pre-gestational or overweight mothers had late onset of breastfeeding in the immediate postpartum period.

The relevance of breastfeeding soon after delivery has been well established. In this study, the mean time ranged from 30 to 60 minutes after birth, above the Brazilian mean. The prevalence of EBF before the six months of the child's life in the Second Survey of Prevalence of Breastfeeding in the Brazilian Capitals and Federal District²¹ was 41%. In the current research, no child has reached six months with EBF, which may have occurred due to the large supply of infant formula and complementary foods. The median duration of total BF in the capitals was 54.1 days, which is lower than that found in this study. Notably, the Southern Region of Brazil showed

the highest prevalence of pacifier use by children, thus contributing to the shorter duration of BF. The increasing dissemination and sale of milk formulas also seem to influence the prevalence of BF. The BM replacement industry is large and growing, and its advertisement weakens efforts to improve breastfeeding²².

The very early introduction of water, teas, other kinds of milk, salty food and fruits is known to influence breastfeeding negatively and is widely used in the Southern Region of Brazil²¹. These data corroborate with this study, in which more than half of the puerperae interviewed in the first month postpartum, regardless of parity, already provided other foods than BM, and at four months of life, massive consumption of several food groups was noted. It is noteworthy that some puerperae interviewed did not understand that the supply of other liquids is not EBF. These results, as well as those found at the national level, show that goals proposed by MS¹⁷ and the World Health Organization (WHO)²³ are still far from being met.

Regarding CF, in this study, both the primiparous and the multiparous mothers gave food to children at an early stage, even before four months of life. The multivariate logistic regression adjusted for maternal covariates did not show a relationship between parity and early CF, which may have occurred due to the negligible sample size. Corroborating these findings, a survey conducted recently in Paraná, Curitiba, with 80 children between six and 24 months, found that for 35% of children were submitted to CF before six months of life, and 16% of them received cow's milk, and only 13.7% of the children were exclusively breastfed at six months. The main baby food was started at 5-6 months, and meat was introduced at nine months only. This showed that mothers are not yet aware of how and when food should be started²⁴.

In Ethiopia, when 422 multiparous mothers were observed, the main foods provided in the introduction of CF were liquids based on children's cereals, followed by cow's milk, infant formula and family food²⁵. This same study showed that multiparous women with higher schooling gave CF at the right time, which can be explained by their greater understanding of the demands and benefits of this introduction from six months onwards, as well as an ability to withstand external pressures and interference to include food earlier.

Among the limitations of this study is that sample was selected only in public hospitals that provide care through the Unified Health System

(SUS), the follow-up of the mother-child dyad until the sixth month only, and therefore data on BF and CF by the end of the first year of life was not available. The prevalence of BF and the timing of implementation of CF and its quality may not be representative of the population in general, but of the population from which the sample was extracted.

The main strengths are the quality of the work team for data collection and analysis and the use of questionnaires that allowed the detailed characterization of the sample, a fundamental aspect for the identification of factors that may interfere in the feeding of infants less than six months old. Also, of the six sessions of the interviews and evaluation, four occurred in the first month of life, facilitating the identification of possible food variations in a critical and early period and, therefore, conducive to intervention.

Conclusion

Maternal parity influenced first breastfeeding offer soon after delivery. Multiparous mothers appear to be easier to manage breastfeeding, but do not show differences in complementary feeding when compared to primiparous mothers. More attention is required from health professionals about breastfeeding and the introduction of complementary feeding in prenatal care and during childcare so that puerperae know how to provide their children with quality and timely diet. Thus, the consolidation of public policies in maternal and child health will facilitate the prevention of chronic noncommunicable diseases in the country. The authors stated that there was no conflict of interest.

Collaborations

MZ Goldani, CH Silva and VL Bosa worked on the research design. RO Neves and JR Bernardi worked on data collection. RO Neves worked on writing the article. CH Silva, VL Bosa and JR Bernardi worked on revising the article.

References

1. Vasconcelos MGL, Lira PIC, Lima, MC. Duração e fatores associados ao aleitamento materno em crianças menores de 24 meses de idade no estado de Pernambuco. *Rev Bras Saude Mater Infant* 2006; 6(1):99-105.
2. Hobbs AJ, Mannion CA, McDonald SW, Brockway M, Tough SC. The impact of caesarean section on breastfeeding initiation, duration and difficulties in the first four months postpartum. *BMC Pregnancy Childbirth* 2016; 16:90.
3. Oliveira JS, Joventino ES, Dodt RCM, Veras JEGLE, Ximenes LB. Fatores associados ao desmame precoce entre múltiparas. *Revista da Rede de Enfermagem do Nordeste. Rev Rene* 2010; 11(4):95-102.
4. Lee, HMH, Durham J, Booth J, Sychareun V. A qualitative study on the breastfeeding experiences of first-time mothers in Vientiane, Lao PDR. *BMC Pregnancy Childbirth* 2013; 13:223.
5. Oribe M, Lertxundi A, Basterrechea M, Begiristain H, Marina LS, Villar M, Dorronsoro M, Amiano P, Ibarluzea J. Prevalence of factors associated with the duration of exclusive breastfeeding during the first 6 months of life in the INMA birth cohort in Gipuzkoa. *Gac Sanit* 2015; 29(1):4-9.
6. Salustiano LPQ, Diniz ALD, Abdallah VOS, Pinto RMC. Fatores associados à duração do aleitamento materno em crianças menores de seis meses. *Rev Bras Ginecol Obstet* 2012; 34(1):28-33.
7. Brasil. Ministério da Saúde (MS). *Dez passos para uma alimentação saudável para crianças brasileiras menores de dois anos*. Brasília: MS; 2010.
8. Brasil Ministério da Saúde (MS). *Dez passos para uma alimentação saudável - Guia alimentar para crianças menores de dois anos*. Brasília: MS; 2013.
9. Fewtrell M, Bronsky J, Campoy C, Domellöf M, Embleton N, Mis NE, Hojsak I, Hulst JM, Indrio F, Lapillonne A, Molgaard C. Complementary feeding: a position paper by the European Society for Paediatric Gastroenterology, Hepatology, and Nutrition (ESPGHAN) Committee on Nutrition. *J Pediatr Gastroenterol Nutr* 2017; 64(1):119-132.
10. World Health Organization (WHO). *Indicators for assessing infant and young child feeding practices*. Geneva: WHO; 2008.
11. Schiess S, Grote V, Scaglioni S, Luque V, Martin F, Stolarczyk A, Vecchi F, Koletzko B, European Childhood Obesity Project. Introduction of Complementary Feeding in 5 European Countries. *J Pediatr Gastroenterol Nutr* 2010; 50(1):92-98.
12. Bernardi, JR, Ferreira CF, Nunes M, Silva CH, Bosa VL, Silveira PP, Goldani MZ. Impact of perinatal different intrauterine environments on child growth and development in the first six months of life - IVAPSA birth cohort: rationale, design, and methods. *BMC Pregnancy Childbirth* 2012; 12:25.
13. Dachew BA, Biftu BB. Breastfeeding practice and associated factors among female nurses and midwives at North Gondar Zone, Northwest Ethiopia: a cross-sectional institution based study. *Int Breastfeed J* 2014; 9:11.
14. França GVA, Brunken GS, Silva SM, Escuder MM, Venancio SI. Determinantes da amamentação no primeiro ano de vida em Cuiabá, Mato Grosso. *Rev Saude Publica* 2007; 41(5):711-718.
15. Victora CG, Bahl R, Barros AJD, França GVA, Horton S, Krasevec J, Murch S, Sankar MJ, Walker N, Rollins NC, Lancet Breastfeeding Series Group. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. *Lancet* 2016; 387(10017):475-490.
16. Aung TZ, Oo WM, Khaing W, Lwin N, Dar HT. Late initiation of antenatal care and its determinants: a hospital based cross-sectional study. *Int J Community Med Public Health* 2016; 3(4):900-905.
17. Brasil. Ministério da Saúde (MS). *Caderno de Atenção Básica, número 23*. Brasília: MS; 2015.
18. Ferreira RAB, Benício MHDA. Obesidade em mulheres brasileiras: associação com paridade e nível socioeconômico. *Rev Panam Salud Publica* 2015; 37(4/5):337-342.
19. Newby RM, Davies PSW. Antenatal breastfeeding intention, confidence and comfort in obese and non-obese primiparous Australian women: associations with breastfeeding duration. *Eur J Clin Nutr* 2016; 70(8):935-940.
20. Pinheiro TV, Goldani MZ, grupo IVAPSA. Maternal pre-pregnancy overweight/obesity and gestational diabetes interaction on delayed breastfeeding initiation. *PLoS One* 2018; 13(6):e0194879.
21. Brasil. Ministério da Saúde (MS). *II Pesquisa de Prevalência de Aleitamento Materno nas Capitais Brasileiras e Distrito Federal*. Brasília: MS; 2009.
22. Rollins NC, Bhandari N, Hajeebhoy N, Horton S, Lutter CK, Martines JC, Piwoz EG, Richter LM, Victora CG, Lancet Breastfeeding Series Group. Why invest, and what it will take to improve breastfeeding practices? *Lancet* 2016; 387(10017):491-504.
23. World Health Organization (WHO). *The optimal duration of exclusive breastfeeding*. Geneva: WHO; 2001.
24. Gurmini J, Porello EB, Belleza MSS, Silva KN, Kusma SZ. Análise da Alimentação Complementar em Crianças Entre 0 e 2 Anos de Escolas Públicas. *Rev Med UFPR* 2017; 4(2):55-60.
25. Shumey A, Demissie M, Berhane Y. Timely initiation of complementary feeding and associated factors among children aged 6 to 12 months in Northern Ethiopia: an institution-based cross-sectional study. *BMC Public Health* 2013; 13:1050.

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