



## ORIGINAL ARTICLE

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## The influence of the type of birth and the mother's diet on the breastfeeding period.

**Abstract:** Prenatal aspects may influence the duration of breastfeeding for newborns. When reduced, it affects their cranio and oro-facial development. The aim of this study was to correlate delivery types and the mother's diet with breastfeeding duration. This was a descriptive study based on the records of the clinical history from 820 pairs of mothers and newborns attending the Baby Clinic from University Extension. The results were analyzed considering a significance level of 5%. The absence of pregnancy complications was a positive factor for the occurrence of vaginal delivery in 94% of the sample ( $p < 0.001$ ). It was found a high percentage of cesarean delivery (43%). The number of cesarean sections in women with cariogenic diet was higher than in women with a non-cariogenic diet. Women who had a non-cariogenic diet had a tendency to breastfeed their children for more than six months ( $p < 0.01$ ). Also, there was an association between vaginal delivery and breastfeeding for more than six months ( $p < 0.001$ ). In the analyzed sample, the mode of delivery and the mother's diet influenced the duration of breastfeeding.

**Keywords:** *breastfeeding, child-birth, cariogenic diet.*

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### INTRODUCTION.

Breastmilk is the most complete food for the newborns. Besides being nutritious, it protects the child providing antibodies against various diseases<sup>1</sup>. Several studies have demonstrated the protective effect associated with diseases such as measles, allergies, otitis media, diarrhea, meningitis, cardiovascular diseases, diabetes and osteoporosis in adulthood<sup>2,3</sup>. Moreover, there is evidence that breastfed children have a right early motor development and the longer the breastfeeding period, the better cognitive development they have<sup>4,5</sup>.

Through breastfeeding, the growth and development of the oro-facial structures and dental occlusion is stimulated. The oro-facial functions provide a nasal breathing pattern, proper positioning of the tongue and lip closure, which are associated with the suction mechanism. These actions play a role in the proper development of speech organs and in

sound articulation, later<sup>6-8</sup>.

Breastfeeding stimulates the development of facial muscles<sup>8</sup> guiding the growth of the maxillary sinus<sup>7</sup>, temporomandibular joint<sup>3</sup> and the jaw itself<sup>9</sup>. Therefore, early weaning causes changes in the oral motor system<sup>10</sup> in newborns who also have a higher chance of occlusal alterations. The introduction and constant use of bottle stimulates the buccinator muscle which can cause narrow arches and lack of space for the teeth and tongue<sup>11</sup>.

Also, breastfeeding has benefits for mothers like protection against breast cancer, contraception and it reduces excess weight gain during pregnancy<sup>12</sup>. While breastfeeding, women have fewer diseases such as ovarian cancer, bone fractures due to osteoporosis and a lower risk of rheumatoid arthritis<sup>13</sup>. Besides, uterine involution occurs more rapidly due to an increased release of oxytocin. There is less uterine bleeding after delivery and a faster return to pre-pregnancy

weight as well<sup>14</sup>. Besides the benefits for the mother's and the child's health, breastfeeding stimulates the bond between the dyad, which should take place in the newborn's first hours<sup>15</sup>.

Considering promotion, protection and prevention of breastfeeding actions is part of care during pregnancy and in the peri and postnatal period<sup>16</sup>. Regarding oral health, pregnancy is a period in which there is a demand for foods with sugar, so it is associated with increased consumption of such foods, giving priority to a cariogenic diet among pregnant women<sup>17,18</sup>. Also, behaviors related to delivery are shown as risk factors. In literature, there is evidence that breastfeeding characteristics are associated with the type of delivery<sup>15,19</sup>.

Given the above, the purpose of this study was to correlate the type of delivery, the mother's diet and the duration of breastfeeding in dyads attending the Faculty of Dentistry at the Federal University of Rio Grande do Sul (FO-UFRGS) for their children's dental care in the Baby Clinic.

## MATERIAL AND METHODS.

A descriptive study based on the records of 820 clinical histories from patients attending the care program at the Baby Clinic for five years was performed. The research protocol was approved by the Dentistry Research Committee from the Faculty of Dentistry of the Universidad Federal de Rio Grande do Sul (UFRGS-FD) and the Research Ethics Committee from UFRGS, with protocol number 10.113.

Mothers' and newborns' medical records from five years

were included; and those records which were incomplete or illegible for specific variables in this study were excluded. Recording of the analyzed medical histories was performed by a previously authorized investigator and supervised by the extension coordinator.

Data obtained from the records took into account variables related to:

- Sociodemographic characteristics.
- Type of delivery: vaginal or cesarean.
- Type of pregnancy: (with or without complications). Certain changes mentioned by mothers during pregnancy, such as hypertension, diabetes and pre-clampsia among others, were considered as complications.
- Mother's diet: cariogenic and non-cariogenic. It was considered a cariogenic diet when the mother's sucrose intake was greater than or equal to five times a day<sup>20</sup>.
- Breastfeeding duration: up to six months and more than six months, as recommended by the World Health Organization<sup>21</sup>.

The obtained data were analyzed using the Statistical Package for Social Sciences (SPSS) v.11.5 for Windows. The absolute and relative frequencies for the studied variables (type of delivery, type of gestation, mother's diet, and breastfeeding duration) were obtained. Comparison between variables was analyzed using Chi-square test. A significance level of 5% was used.

## RESULTS.

Regarding the sociodemographic characteristics of the study population, 74% lived in Porto Alegre and 87.2% of babies were accompanied by their mothers. Regarding

**Table 1.** Relationship between mode of delivery, the mother's diet and the duration of breastfeeding in children attending Baby Clinic at FD-UFRGS.

| Duration of Breastfeeding | TYPE OF DELIVERY N(%) |             | *p     | MOTHER'S DIET N(%) |                | *p    |
|---------------------------|-----------------------|-------------|--------|--------------------|----------------|-------|
|                           | Vaginal               | Cesarean    |        | Cariogenic         | Non-Cariogenic |       |
| < 6 months                | 184 (39.3%)           | 212 (60.2%) |        | 160 (58%)          | 236 (43.4%)    |       |
| ≥ 6 months                | 284 (60.7%)           | 140 (39.8%) | <0,001 | 116 (42%)          | 308 (56.6%)    | <0,01 |
| Total                     | 468 (57%)             | 352 (43%)   |        | 276 (34%)          | 544 (66%)      |       |

\*Chi-square

the mothers' education level, 47.8% of them had secondary education, 30.3% primary and 21.9% tertiary level.

In the analysis of the mode of delivery, it was observed that 468 (57%) were vaginal compared with 352 (43%) cesarean deliveries. An uncomplicated pregnancy, which was present in 720 mothers (88%) was a positive factor for the occurrence of vaginal delivery in 94% of the sample ( $p < 0.001$ ). Despite reporting a normal pregnancy, however, 280 (39%) women had cesarean deliveries. Nevertheless, when pregnancy did not proceed normally, the cesarean section prevalence was predominant (72%).

Considering the 820 records, 276 (34%) of the patients had a cariogenic diet and 544 (66%) of them, a non-cariogenic one. The prevalence of the type of delivery (60%) was vaginal ( $n=328$ ) compared with cesarean delivery ( $n=216$ ) with non-cariogenic diet. In 276 women with cariogenic diet, vaginal delivery ( $n=140$ ) was similar to cesarean delivery ( $n=136$ ). Data on breastfeeding, taking into account the mode of delivery and the mother's diet, are described in Table 1.

## DISCUSSION.

Considering the analysis of the results, there was a high rate of cesarean section, although vaginal delivery is more frequent in the studied sample. Cesarean rate has increased significantly in recent years, but vaginal delivery remains the most common<sup>22,23</sup>. Some of the factors responsible for the increase in caesarean sections are economic and demographic factors, reduced parity and pregnant women's increasing age<sup>24</sup>.

The study shows that when there were complications during pregnancy, cesarean delivery occurred in 72% of cases. In the presence of risks for the mother and the newborn, the need for cesarean delivery is evaluated because the risks of this procedure are eventually outweighed by the benefits<sup>25,26</sup>. Furthermore, in the absence of risk, vaginal delivery is always the first indication<sup>27</sup>.

In the present study, the duration of breastfeeding is related to the type of delivery. Literature indicates women with vaginal deliveries breastfeed for a significantly

longer period than those who have a planned or an emergency caesarean<sup>19</sup>. Also, women who underwent vaginal delivery had a lower risk of total breastfeeding cessation in the first month of life<sup>15</sup>. By the end of pregnancy, there is an increase in oxytocin levels, the hormone responsible for uterine contractions to induce labor and promote bonding between mother and baby, which helps in the breastfeeding process<sup>28,29</sup>. The World Health Organization recommends that breastfeeding is practiced in the first hour after delivery<sup>30</sup>, because the contact between the mother and newborn after delivery is essential. It is known, however, that this practice is hampered when delivery is not vaginal.

Through breastfeeding, the mother and the newborn have a greater chance of emotional interplay and emotional depth and there is a reduction of the traumatic effects of separation caused by childbirth. Emotions affect breast-feeding through specific psychosomatic mechanisms, such as calm and confidence promote good nutrition. On the other hand, the mother's fear, depression, stress, pain, fatigue and anxiety tend to cause poor breastfeeding. Therefore, breastfeeding is not only a physiological process but involves the moment of greatest psychosocial communication between the mother and newborn<sup>30,31</sup>.

It is known that breastfeeding is a rich source of food nutrients necessary for the baby's healthy development and for promoting his/her physical and mental health. The Brazilian Ministry of Health recommends exclusive breastfeeding for six months and, after that time, breastfeeding should be supplemented with other foods until the baby is two years old, the age currently recommended for weaning. The efforts of various national and international organizations favored the increase of this practice in the past 25 years, and our findings showed the results of this initiative. It was found that almost 50% of treated infants had exclusive breastfeeding until six months age<sup>32</sup>.

As already mentioned, pregnancy is a favorable period for a cariogenic diet<sup>17,18</sup>. Several studies have reported

increased alcohol drinking and this intake is preferably taken between meals, especially in pregnant adolescents<sup>33,34</sup>. The cariogenic potential of sugar is known to favor bacteria colonization and increase the viscosity of the biofilm which allow attachment to the dental tissue<sup>35</sup>. Therefore, the most common oral disease during pregnancy is dental caries<sup>36</sup>. Due to unfavorable foods for pregnant women's oral and general health, a nutritional assessment is recommended in early pregnancy for prenatal care<sup>37</sup>.

In this study, it was reported that 34% of mothers have a cariogenic diet with a sucrose intake exceeding five times a day. Literature highlights the association between frequency of sugar consumption, especially sucrose, and increased caries<sup>38</sup>. Excessive demineralization of enamel and dentin leads to dental caries. This demineralization begins when the pH of saliva decreases from 7.5 to 5 after having sugar or fermentable carbohydrates. The remineralization process is slower and occurs if the pH of the mouth is kept high. If frequency of sugar intake is high, there is no time for the pH of the oral cavity to increase and the process of demineralization will rule, making enamel become more porous to form carious lesions<sup>39</sup>.

Accordingly, a direct relationship between poor dietary habits and lack of oral hygiene with tooth decay, consistent with previous research, was found<sup>40</sup>. Therefore, it is essential that mothers who are already in prenatal period have adequate knowledge about healthy attitudes for oral health and are responsible for the health of the newborn. They must

understand this relationship and begin to introduce positive changes for their oral health and their child's from birth.

From the results of this study, a significant association between the mother's cariogenic diet and duration of breastfeeding was observed. However, no other study making this relationship was found to discuss data. There is a lack of national and international literature to allow a comparison of results with other similar studies. Clearly, there is a need for greater quality scientific production of initiatives focusing on prevention and health promotion, and on pregnancy and breastfeeding issues in the field of dentistry for pregnant women and newborns as well.

Finally, we emphasize the importance of an interdisciplinary extension activity which has been consolidated for 18 years at the institution. It offers undergraduate students a complete education with regard not only to the training of future professionals to meet newborns and infants' care, but also as actors to promote the perspective of health promotion.

## CONCLUSION.

Women who had vaginal delivery and reported a non-cariogenic diet breastfed their children for a longer period of time.

It is also important to note that pregnant women should be encouraged by the professional members of the health team to have a natural birth and a healthy diet during breastfeeding as this will encourage the child's development and growth.

## La influencia del tipo de nacimiento y dieta materna en el período de lactancia.

**Resumen:** Los aspectos prenatales pueden influir en la duración de la lactancia materna de los recién nacidos y cuando ésta se reduce puede alterar el desarrollo cráneo-orofacial. El objetivo de esta investigación fue correlacionar el tipo de parto y la dieta materna con el tiempo de duración de la lactancia materna. Se realizó un estudio descriptivo sobre la base de los registros de las historias clínicas de 820 binomios madres-recién nacidos asisten-

tes a la Clínica del Bebé de Extensión Universitaria. Se analizaron los resultados, considerando un nivel de significación del 5%. La ausencia de complicaciones durante el embarazo fue un punto positivo para la ocurrencia de parto vaginal en el 94% de la muestra ( $p < 0,001$ ). Se encontró un alto porcentaje de partos por cesárea (43%). El número de cesáreas en mujeres con dieta cariogénica fue mayor que en las mujeres con la dieta no cariogénica. Las mujeres que tienen una dieta no cariogénica tenían una tendencia a amamantar a sus hijos durante más de

6 meses ( $p < 0,01$ ). Também hubo una asociación entre el parto vaginal y mayor período de 6 meses de lactancia materna ( $p < 0,001$ ). En la muestra analizada el tipo de

parto y la dieta materna influyen la duración de la lactancia materna.

**Palabras clave:** *lactancia materna, parto, dieta cariogénica.*

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