



DIABETES MELLITUS: THE POSSIBLE RELATIONSHIP WITH THE EARLY WEANING

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DIABETES MELLITUS: LA POSIBLE RELACIÓN CON EL DESTETE PRECOZ

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ABSTRACT

Objective: to verify the relationship early weaning and the consequent exposure to breast-milk substitutes before the six months of life with the development of diabetes mellitus type 1. **Method:** quantitative study, with parents of children and adolescents with diabetes mellitus type 1, registered in the Control Service of Hypertension, Diabetes and Obesity of the Municipal Health Secretary of Juiz de Fora, totaling a sample of 89 participants. The instrument for collecting was a questionnaire and then the data were tabulated, interpreted by the descriptive statistical analysis. The project was approved by the Committee of Ethics in Research, with the opinion paragraph 274/2007. **Results:** the data are presented relating to the characterization of the sample; occurrence or not of early weaning; duration of exclusive breastfeeding; diet offered after weaning and reasons that led to this occurrence. **Conclusion:** it is possible the relationship between early weaning, with the consequent introduction of breast-milk substitutes, and the development of diabetes mellitus type 1. **Descriptors:** Diabetes Mellitus; Breastfeeding; Nursing.

RESUMO

Objetivo: verificar a relação desmame precoce e a consequente exposição aos substitutos do leite materno antes dos seis meses de vida com o desenvolvimento do diabetes mellitus tipo 1. **Método:** estudo quantitativo, com pais de crianças e adolescentes com diabetes mellitus tipo 1, cadastrados no Serviço de Controle de Hipertensão, Diabetes e Obesidade da Secretaria Municipal de Saúde de Juiz de Fora, totalizando uma amostra de 89 participantes. O instrumento para coleta foi um questionário, em seguida os dados foram tabulados, interpretados pela análise estatística descritiva. O projeto foi aprovado pelo Comitê de Ética em Pesquisa, com o parecer nº 274/2007. **Resultados:** são apresentados dados referentes à caracterização da amostra; ocorrência ou não do desmame precoce; período do aleitamento materno exclusivo; dieta oferecida após o desmame e motivos que levaram a ocorrência deste. **Conclusão:** é possível a relação entre desmame precoce, com a consequente introdução de substitutos do leite materno, e o desenvolvimento do diabetes mellitus tipo 1. **Descritores:** Diabetes Mellitus; Aleitamento Materno; Enfermagem.

RESUMEN

Objetivo: verificar la relación destete precoz y la consecuente exposición a los substitutos de leche materna antes de los seis meses de vida con el desarrollo de la diabetes mellitus tipo 1. **Método:** estudio cuantitativo, con padres de niños y adolescentes con diabetes mellitus tipo 1, registrados en el Servicio de Control de la Hipertensión Arterial, Diabetes y Obesidad de la Secretaría Municipal de Salud de Juiz de Fora, totalizando una muestra de 89 participantes. El instrumento para la colecta fue un cuestionario y luego se tabularon los datos interpretados por el análisis estadístico descriptivo. El proyecto fue aprobado por el Comité de Ética en Investigación, con el parecer nº 274/2007. **Resultados:** se presentan datos relativos a la caracterización de la muestra; ocurrencia o no del destete precoz; período de la lactancia materna exclusiva; dieta ofrecida después de destete y motivos que han llevado a esta ocurrencia. **Conclusión:** es posible la relación entre el destete precoz, con la consecuente introducción de substitutos de la leche materna, y el desarrollo de la diabetes mellitus tipo 1. **Descritores:** Diabetes Mellitus; Lactancia Materna; Enfermería.

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INTRODUCTION

The discussion on breastfeeding has been showing in relation to its importance, its fulfillment and factors of influence in the decision and duration. According to the recommended by the World Health Organization (WHO), exclusive breastfeeding until the sixth month of baby's life, completed with other foods until the two years of life, is the ideal and helps to reduce the risk of malnutrition and anemia of children, among other health problems.¹

It evidences from experimental and epidemiological studies show that environmental factors occupy a prominent place in the emergence of diabetes mellitus type 1, whose etiology was traditionally linked to genetic factors, with scarce possibilities to prevent its emergence. These studies seek to show that, with the new knowledge about the diabetes pathogenesis of type 1, it may be possible to prevent its emergence, and the opportunity to reduce substantially their deleterious effects on those who are carriers of the disease.²

The diet is important in the pathogenesis of diabetes mellitus type 1, studies indicate a strong association between early exposure to cow's milk and the occurrence of this pathology. Thus, children exposed early to cow's milk have a greater chance of acquiring the disease when compared to those who received exclusive breastfeeding until at least four months after the birth.² So breast milk is a protective factor for diabetes mellitus type 1, due to anti-infective properties of this type of milk, or by the fact that breastfeeding within would avoid that children could be prematurely exposed to other etiologic agents contained in breast-milk substitutes.³

In addition to these physical benefits, the act of breastfeeding is important also for affective relations between mother and son. However, according to the WHO, the prevalence of breastfeeding is low, its duration is short and exclusive breastfeeding until the sixth month of life is rare, thus, complementary feeding stuffs are early introduced to a vast majority of children. These foods are often deficient in energy content and nutrients. In many families, they are prepared in unfavorable conditions of hygiene, sometimes stored at room temperature for prolonged time, and almost universally are offered by bottle, especially in the first year of life.¹

There are many advantages that breastfeeding provides to breastfeeding, being that, in biological perspective, every

woman is capable of producing milk in quantity and quality required for the proper development of her child since hormone levels are adequate and there is an efficient removal of breast milk. Reinforcing the actions in favor of breastfeeding, the benefits to the woman are evidenced through this practice, such as the reduction of postpartum bleeding, through the uterine contraction; the contraception, as long as it is practiced exclusive breastfeeding on demand; and decreased due to anemia, due to menstrual delay and reduction of breast and ovarian cancer risk.⁴

Given the above, the realization of this study was delimited, which aims:

- To check the relationship early weaning and the consequent exposure to breast-milk substitutes before the six months of life with the development of diabetes mellitus type 1.

METHOD

Quantitative study^{5,6}, which had as its subject the parents of children and adolescents with diabetes mellitus type 1, registered in the Control Service of Hypertension, Diabetes and Obesity of the Municipal Health Secretary of Juiz de Fora.

This project had as its first stage the request for authorization of the Municipal Secretary of Health (MSH) in the municipality of Juiz de Fora, for the realization of data collection and routing to the Research Ethics Committee of the Federal University of Juiz de Fora, for proper approval, having met the Standards for Realization of the Research on Human Beings, resolution 196/96, of the National Health Council of 10/10/1996. It was approved by the Ethics Committee with the opinion paragraph 274/2007.

Soon after, it was held a setting in the Pole of the Child and Teenager Insulin Dependent Control Service of Hypertension, Diabetes and Obesity (CSHDO) of the Municipal Health Secretariat of Juiz de Fora. The CSHDO is a secondary service, responsible for assisting patients from Basic Health Units of the municipality, with the following inclusion criteria: diagnosis of hypertension stage 3, group C; difficult to control hypertension, diabetes mellitus type 1, diabetes mellitus type 2 with complications, obesity degree 3.

After the setting with the service, the pilot study began which served as indicative of the changes that were necessary in order to facilitate the application of research tool. After the reformulation of the instrument it was continued the data collection phase

which was preceded by the signing of an Informed Consent Form.

The instrument used for collecting data was a structured questionnaire, applied to parents of children and adolescents with diabetes mellitus type 1, registered in the CSHDO; of both sexes and all races, totaling a sample of 89 participants. It should be noted that the source of the research are the service users with DM type 1, however only the parents or guardians were respondents.

After collection, the data were tabulated and categorized systematically, held the

interpretation by descriptive statistical analysis.⁷

RESULTS AND DISCUSSION

As results data regarding the characterization of the sample are presented; occurrence or not of early weaning; duration of exclusive breastfeeding; diet offered after weaning and reasons that led to this occurrence.

Table 1. Characteristics of the Sample

Description	Age (year)	Birth weight (kg)
Average	13,35	2,95
Weight Deficit	5,09	0,71
Minimum	4	1,0
Maxium	27	4,2

Table I shows that, in relation to age, there was a variation of 4 to 27 years old, with an average of 13.35 years old. It is appropriate to clarify that the individual with 27 years old was included in the study due to be user of

the service since its infancy. As for the birth weight of individuals source of the research, it was observed a variation of 1.0 kg to 4.2 kg, with an average of 2.95 kg.

Table 2. Level of Education of Parents

Description	n	%
1 st grade complete	7	8
1 st grade incomplete	55	62
1 st grade in progress	1	1
2 nd grade complete	18	20
2 nd grade in progress	1	1
3 rd grade complete	3	4
3 rd grade incomplete	2	2
PG	2	2
Total	89	100,0

In relation to the level of education among the 89 respondents, 55(62%) did not have the first grade complete and only 3(4%) possessed the third grade. Diabetes education is an essential part of patient care, associated with the appropriate metabolic control, physical activity and diet. An improvement in the quality of life is closely related to the greater level of knowledge about the disease and its complications. Enlightenment leads to reduction in the number of hypoglycemia, fewer hospitalizations, better metabolic control and greater acceptance of the disease.⁸ The level of education can be an important facilitator of the process of health education.

With respect to family income, of 89 families, 45 (51%) of them live with a family income of up to three minimum wages; 32 (36%) live with an income of up to one minimum wage; 10 (11%) of the families had an income of up to five minimum wages and 2

(2%) of the families had an income of more than ten minimum wages. This is data that cannot be evaluated separately, when family income is discussed it is important to make the relationship with the number of dependents.

Studies show that there is a close association between family income and diabetes control, the lower the income the greater the difficulty in managing the disease.⁹ This is a considerable fact in our study, since a large proportion of respondents has family income of up to three minimum wages. Such relationship may interfere with obtaining, use of instruments and equipment for control of the disease. Because it is a chronic disease, its treatment involves spending extended time with materials, medicines, specialized care, among others.

Table 3. Early weaning

Description	n	%
Yes	61	68
No	22	25
Did not know	6	7
Total	89	100,0

For the considered sample, early weaning was found in 61 individuals who correspond to 68% of the sample, and 22 (25%) of children research source, according to the parents report, received exclusive breastfeeding until the sixth month of life, six (7%) of the participants did not know about the duration of exclusive breastfeeding.

It is appropriate to point out that in the present study, early weaning was established in accordance with the guidelines of the Health Ministry, i.e., the child would have suffered early weaning if not more receive, exclusively, breast milk, before six months.¹⁰ This data reports the importance of breastfeeding, especially exclusive breastfeeding since a high percentage of children, users of that service, has the occurrence of early weaning in their history. This allows us to demonstrate a significant relationship between early weaning and the consequent exposure to breast-milk substitutes before the six months of life, with the development of diabetes mellitus type 1.

Studies point breast milk and cow's milk, respectively, as protection and risk factor for diabetes mellitus type 1.³ Early exposure to

cow's milk can be an important determinant of this pathology. Many cases could be prevented if children up to 3 months do not receive cow's milk, as there is evidence of the relationship between the early introduction of complementary feeding with the development of atopic diseases.¹¹

When the early exposure of child's organism is avoided to the components of cow's milk, it can also be avoided the favorable conditions to the emergence of diabetes mellitus, type 1.¹² This disease can be triggered by the early intake of formulas based on cow's milk, because bovine serum albumin (BSA) is responsible for the destruction of pancreatic cells, leading to conditions of developing the disease. In this sense, the correct introduction of foods should be more emphasized in programs to encourage breastfeeding, especially among younger mothers and belonging to the most disadvantaged socioeconomic groups.¹³

Table 4. Age to be weaned

Description	n	%
Before 1 month	24	39
Up to 1 month	7	11
Up to 2 months	8	13
Up to 3 months	9	15
Up to 4 months	2	3
Up to 5 months	1	2
Up to 6 months	4	7
More than months	6	10
Total	61	100,00

Only 6(10%) children were breastfed for more than 6 months. The other, totaling 61(68%) children were weaned prematurely. Of these, 24 (39%) were weaned before completing the 1st month of life, and the time of exclusive breastfeeding of children ranged from a day of breastfeeding up to five months of live.

Considering the high percentage of children who were weaned prematurely, it realizes the importance of the first month of life in breastfeeding success and shows the relevance of the study, since the early history of these kids, today with diabetes mellitus type 1, shows that they did not have an exclusive breastfeeding until the sixth month of life. It is worth noting that in addition to

the evidence of early weaning, it was also observed a deficit in the entire process of breastfeeding, because this could have been maintained until the two years of life, complemented with other foods, what did not happen.

Studies show the relationship of early weaning and the consequent introduction of breast milk substitutes with the development of diabetes mellitus type 1.^{14,16} Therefore, health professionals should create strategies that contribute to the effectiveness of breastfeeding in this period, since the recommended is that breastfeeding is exclusive until 6 months and complemented with other types of food until 2 years old or more.

Table 5. Diet offered after weaning

Description	n
Whole cow's milk	41
Industrialized milk	24
Cow's diluted milk	17
Goat's milk	2
Porridge	4
Others	3

According to table 5, the foods most frequently used after weaning were whole cow's milk, followed by the industrialized milk, diluted cow milk and outnumbered the goat milk and porridge, respectively. Among other answers, it is emphasized that some mothers have reported the creamed corn as children food after weaning, oats and family food.

In the middle of 19th Century, surveys were seeking a replacement for breast milk to be used during the weaning period, the result of these surveys, many directed by the interests of the food industry, led to the establishment of artificial feeding. The health professionals considered that, when offering milk substitutes, would be providing a better nutrition for children. This practice has been accepted by many mothers, resulting in a change in the behavior of these women, by the loss of self-confidence began to prefer the milk powder modified.¹⁷ Understanding that although mistaken, it seems to resonate in the practice of breastfeeding until the present day.

When studying the duration of breastfeeding after the introduction of milk in infant feeding, it is observed that cow's milk, fluid or powder, formulated or not, is a competitor of breast milk and its introduction marks the beginning of the weaning process. The introduction of milk after breastfeeding is well consolidated, as in the case of older children, seems to have less influence in reducing the duration of breastfeeding.¹⁸ Therefore, it seems licit to infer that, the latter are introduced other foods, for longer the mother tends to breastfeed her child.

In relation to the reason of weaning, 28 (32%) reported that it occurred under the wishes of their own mother, 19 (21%) reported being by ceasing of milk production; 14 (16%) related with maternal medical conditions; 11 (12%) clinical conditions of children; nine (10%) justified the weaning by the fact of having weak milk; five (6%) report professional occupations and three (3%) reported breast injury as the reason for early weaning.

It is observed in the results that the will of the mother was prevalent in the weaning process. In this sense it must be postulated

that there are socially constructed cultural factors that represent obstacles to the extension of exclusive breastfeeding, which must be overcome due to the relevance of this act, both for the child and for the mother, who often do not know how much is also being benefited through practice.

One of the findings that deserve to be clarified is the fact that the participants have assigned the weaning to weak milk production, it should be noted that this is a myth, because physiologically this possibility does not exist. Finally, whereas the occurrence of weaning is associated with cultural and educational issues, the nurse plays an important role in the promotion and maintenance of breastfeeding.

CONCLUSION

The advantages of breastfeeding are multiple and already quite recognized, either in the short or long term, existing a global consensus that its exclusive practice is the best way to feed the children up to six months of life. From the results of this study, we can mention that important aspects indicate that breastfeeding may also contribute to the prevention of diabetes mellitus type 1, as it was evidenced a possible relationship between early weaning and the consequent exposure to breast-milk substitutes, before six months of life, with the development of this pathology.

The practice of exclusive breastfeeding until the sixth month of the child's life, wins propulsion and its promotion must be prioritized in activities of nurses and other health professionals. An important strategy of encouraging this practice is the imposition of milk banks. The Brazilian Network of Human Milk Banks (HMB) has the following functions: to promote, to protect and support breastfeeding; collect and distribute quality certified human milk; to contribute to the reduction of child mortality; to add efforts to the National Pact for the Reduction of Maternal and Neonatal Mortality. In this sense, the Network conducts activities to assist women-mothers during the period of breastfeeding, having qualified professionals to also guide about the health of the child.

Some women, when they are breast-feeding, produce a volume of milk in addition to the need of the baby, which makes it possible to be a donor of a Bank of Human Milk. According to the legislation that regulates the functioning of the Milk Banks in Brazil (Collegiate Board Resolution nº. of 171, September 4, 2006) the donor, in addition to presenting lactic secretion superior to the demands of her son, should be healthy and having milking and donating the excess.

Breast milk is unquestionably the best food for the newborn, for its nutritionally balanced composition, adequate temperature, to be sterile, to have variable composition according to the maturation of breast and of child gastric capacity, enabling a mother/child harmonious relationship and provide almost no allergic reactions. In addition, it has advantages of economic order. Thus ensuring optimal nutrition for the baby, as it ensures a healthy growth and development, reducing the incidence and severity of disease. Therefore, the nurse and other health professionals have an important role in the promotion of breastfeeding, and may encourage these through campaigns, education act directly with the population, work in educational groups and, mainly, helping mothers in the development of the practice of lactate.

In this education process, it is important to involve the whole family and to avoid the use of language and communication rigid, because many times the messages addressed to women, with regard to the value and importance of breastfeeding, have a superficial approach, appealing to the feelings and maternal instincts, not seeming to meet or comply with the needs and uniqueness of each one.

In the messages of the campaigns, the possible complications and difficulties of breastfeeding are generally not addressed, highlighted only biological and emotional importance to the mother, and especially for the newborn. This does not constitute a guarantee for the success of breastfeeding. It is the responsibility of the health care professional to stick to these facts in order to provide clarification and support for the woman.

Nurses and other health professionals should be imbued to convert the danger of early weaning on lactation stimulation, and thus to achieve the goal envisioned by the WHO, since, even with the Encouragement National Program of Breastfeeding, the rate of exclusive breastfeeding until the sixth month is still low in the Country.

The data from this study corroborate this assertion, since most source of research subjects suffered early weaning with exclusive breastfeeding only up to 1 month in most cases. Such statistic shows how significant the relationship between diabetes mellitus type 1 and early weaning.

With this results, it becomes apparent the importance of conducting other studies, because what it is desired is to encourage debate and reflect on the results that proved important in the present study, demanding the achievement of more research with this theme, especially using control group. An important exception is that, as the children studied are older than 1 year, being 13 years the average age, this may have interfered in the precision of the results in relation to the long time elapsed since weaning until the current questioning.

To end the search, it is sparked the importance of discussion about breastfeeding with regard to its compliance and factors that influence the decision to breastfeed or not, as well as the need to work harder to promote breast-feeding, in free demand, until the first six months of the child's life, because it is believed that, with the implementation of this act, it is possible to avoid the early introduction of other foods on infant feeding, which, as it was evidenced in this study, can be associated with the emergence of diabetes mellitus type 1 and other diseases.

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