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Original Article

Risk factors for early weaning

Fatores de risco para o desmame precoce

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Objective: to determine the risk factors for early weaning. **Methods**: cohort study with 300 mothers/babies couples, carried out in two hospitals. The Edinburgh Scale was used to verify the existence of depressive tendencies in mothers with four months babies. **Results**: the risk factors for exclusive breastfeeding at 2 and 3 months were the score of Edinburgh (p=0.048 and p=0.000), not Child-Friendly Hospital (p=0.002 and p=0.001) and mother working outside the home (p=0.013 and p=0.007). Maternal education was a risk factor only at 2 months (p=0.004). There 38.0% of mothers with depressive tendency with their children hospitalized in the not Child-Friendly Hospital. **Conclusion**: not Child-Friendly Hospital, a mother who works outside the home and score Edinburgh proved as risk factors for exclusive breastfeeding at 2 and 3 months of baby´s life, and women with depressive tendencies had a predisposition to weaning.
Descriptors: Breast Feeding; Weaning; Depression Postpartum.

Objetivo: determinar os fatores de risco para o desmame precoce. **Métodos**: estudo de coorte, com 300 binômios mãe/bebê, realizado em dois hospitais. Utilizou-se a escala de Edimburgo para verificar existência de tendências depressivas nas mães aos quatro meses de vida dos bebês. **Resultados**: os fatores de risco para a amamentação exclusiva aos 2 e 3 meses foram o escore de Edimburgo (p=0,048 e p=0,000), hospital não Amigo da Criança (p=0,002 e p=0,001) e mãe que trabalha fora do lar (p=0,013 e p=0,007). A escolaridade materna foi fator de risco apenas aos 2 meses (p=0,004). Dentre as mães que apresentaram tendência depressiva, 38,0% tiveram seus filhos no hospital não Amigo da Criança. **Conclusão**: hospital não Amigo da Criança, mãe que trabalha fora do lar e escore de Edimburgo se mostraram como fatores de risco para amamentação exclusiva aos 2 e 3 meses de vida do bebê, e mulheres com tendências depressivas tiveram predisposição ao desmame.
Descritores: Aleitamento Materno; Desmame; Depressão Pós-Parto.

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Introduction

Offering the child another food than breast milk for the fourth month of life is unnecessary, and the child could be more vulnerable to diarrhea, respiratory infections, and malnutrition, thus, leading to impaired growth and development[1].

The adequate availability of nutrients contained in breast milk is emphasized, helping the infant physiological maturity, and preventing diarrhea and colds. It is noteworthy also the protective factors of breast milk against diseases, make it an ideal food, and able to meet the nutritional needs, especially in the first two years of life[2].

The most often factors associated with early weaning practice before six months of the baby´s life were the mother´s working outside the home, the puerperal care made in the private service and primiparity[3]. Among the positive factors related to the duration of exclusive breastfeeding, there are age, education level and previous experience with mother breastfeeding. The negative factors are cesarean delivery, the difficulties encountered during breastfeeding, lack of family support and mother´s inclusion in the labor market[4].

Factors for risk of self-efficacy in exclusive breastfeeding were the type of cesarean delivery, the first pregnancy, the hospital not accredited as a Child-Friendly Hospital and low maternal education of up to eight years of study[5].

The prevalence rates of breastfeeding until the fourth month of the baby´s life had progressed from 2002 to 2008, from 21.0% to 33.8%. Higher prevalence of breastfeeding was associated with older mothers with and higher education, which enjoyed maternity leave and had more than one child. The introduction of artificial teats was also associated with early weaning[6].

The protection factors of exclusive breastfeeding in infants at four months of life surveyed in eighteen cities of Pernambuco were the maternal education of nine years or more, the mother´s age between 20 and 35 years old, the home located in the metropolitan region of Recife and the child being female[7].

The World Health Organization and the United Nations Fund have developed a set of practices and behaviors, entitled Ten Steps to Successful Breastfeeding, and proposed the Baby Friendly Hospital Initiative. The institutions that suit the recommendations receive the title of the Baby Friendly Hospital[8]. Children´s births in the hospitals with the title of Child-Friendly, in general, increase the likelihood of them staying in exclusive breastfeeding for longer[9].

Prenatal care reduces mortality through detection and treatment of maternal diseases being performed as early as possible so that any complications can be detected and treated. Also, the prenatal care can help nursing mothers to improve breastfeeding, avoiding difficulties, since the guidelines strengthen confidence and maternal ability to breastfeed[10].

Women have increased the risk of early introduction of different foods than breast milk, especially cow's milk because of the labor market. The imminence of the return to work makes the inexorable decision to include another type of milk early in their diet for the child, constraining the success of complementary breastfeeding and increasing the median duration of mixed feeding[5,7,9].

Abandonment incidence of exclusive breastfeeding among mothers with depressive symptoms are noticeably higher than those without symptoms. This result is explained by the fact that depression has typical symptoms that can harm the maintenance of breastfeeding and its development[11]. If the mother is depressed, she cannot notice the signs that the baby does. Depression is one of the important aspects to be considered in the exercise of maternal function during the baby´s first year of life. This baby can have a major impact on child development. Therefore, it is important of following maternal emotional states in the post-partum period[12].

Given the above, the objective of this study was to determine the risk factors for early weaning.

Methods

The study has a cohort design composed of a group of mothers and their babies followed from birth to 4 months of life, born in a hospital accredited as a Baby Friendly Hospital, located in Chapecó, Santa Catarina, Brazil, and in another accredited hospital as a general hospital, not accredited as Child Friendly Hospital, located in Porto Alegre, Rio Grande do Sul, Brazil.

The critical value of the sample size calculation was associated with the sample confidence level of 90.0% and the formula for calculating the sample size for a reliable estimate of the population proportion had unknown p and q: $n=Z^2_{x/2}.pq/E^2$.

In the sample calculation, there was an increase of 10.0%, considering the losses that could occur during the monitoring. The study was conducted on a sample population of 300 mothers and their babies.

For the establishment of the participants to the study, the selection of mothers was made continuously, simultaneously and randomly in two hospitals, as births happened in the obstetric center, in 2012 and 2013.

The inclusion criteria were children with birth weight >2,500 g, normal birth and cesarean section, gestational age of 36 weeks and residents in urban areas.

The exclusion criteria were being twins, births with complications, infants born to HIV-positive mothers to the human immunodeficiency virus, congenital malformation, for adoption or living in rural areas.

In the first stage, the mothers were addressed in the maternity ward at the time of hospital discharge. Those who agreed to participate in the project were informed about the research: goals, why they are selected, the risks and benefits related to participation. If they agreed to participate, they completed a socioeconomic and obstetric form. Gestational age and the number of prenatal consultations, pregnancies and abortions were collected from medical records.

The second stage occurred after hospital discharge, keeping contact with the mothers by phone, every 30 days, when the baby is completing one, two, three and four months or until the interruption of exclusive breastfeeding if it occurs before.

Two questions were asked on the phone: (1) If she was still only and exclusively breastfeeding the baby; and (2) if she had already begun to offer juices, waters, teas, any other infant formula and had already given the baby some food, such as "baby food", both savory or sweet, baby zest fruit, broths or slurries of fruits. The second question eliminated doubts as to the first question. If the answer to the second question was yes, it was considered as non-exclusive breastfeeding and the child was no longer part of the exclusive breastfeeding group, going to the breastfeeding group.

Home visits occurred if there was difficulty in contacting the mother by phone.

At 4 months postpartum by telephone and the two questions that were done, the Depression Scale Postpartum Edinburgh was also applied. The scale of Edinburgh measured the presence and intensity of depressive symptoms in the last seven days before the day of application. It consists of a self-registering instrument with ten utterances, whose options are scored from zero to three, according to the presence or the intensity of the symptom. Its items address psychiatric symptoms such as depressed mood (feeling of sadness, self-deprecation and feelings of guilt, and of death or suicidal thoughts), loss of pleasure in activities previously considered pleasant, fatigue, decreased ability to think, concentrate or make decisions, and physiological symptoms (insomnia or hypersomnia) and behavioral changes (crying crisis). The sum of the points has a maximum score of 30, considered the value ≥12 as depressive symptoms[13].

The data were analyzed in three groups: Exclusive Breastfeeding for infants who received only breast milk as their only source of hydration and

nutrition, no other liquid or solid, except for vitamin supplements or medications; breastfeeding for children who received other sources of hydration and food such as teas, juices, broths, popes and other types of milk in addition to breast milk; Weaning of children that exclusive breastfeeding was stopped before the fourth month of life.

The variables studied were gestational age, the hospital not accredited as Child-Friendly Hospital, type of birth, maternal age, mother working outside the home, first pregnancy, score of the Edinburgh scale, maternal education, breastfeeding at 30, 60, 90 and 120 months.

For descriptive analysis, data were presented by simple frequency, percentage and odds ratio, according to the symmetry of the variables. The relationship between the variable of the type of food outcome at the fourth month of the child´s life and potential risk factors for exclusive breastfeeding was assessed using logistic regression, both in bivariate, as in multivariate analyses. The Wald test was used to test the significance of each variable in the model. For the multivariable model, it was initially considered all covariates with p values <0.10. The following procedure was the exclusion, individually, the covariates that presented critical values of p (small and non-significant values). This procedure was repeated until all variables in the model presented values of p <0.05. All tests were double directed, and differences were considered significant at p <0.05.

To avoid loss of mothers/babies during the monitoring by not localizing their address, changes of address or emigration, some steps were taken, such as asking to inform all the phone numbers of people living with postpartum women and relatives living nearby.

The study complied with the formal requirements contained in the national and international regulatory standards of research involving human beings.

Results

Three hundred mothers with their children were enrolled in this study. There were no losses during the research.

In the general sample, the average age of mothers was 26 years old, the mean gestational age was 39 weeks, 61.0% had 7-13 prenatal consultations, most births were vaginal deliveries (55.0%), male (53.0%) and 52.0% of all births were performed in the Child-Friendly Hospital. Most mothers were in active labor situation (57.0%), single (13.0%), with up to eight years of education (34.0%), and first pregnancy (51.0%). As for the scale of Edinburgh Postpartum Depression, 36.0% had depressive tendencies. In the exclusive breastfeeding, there was a sharp reduction observed from the first to the fourth month of life (86.0% to 49.0%), and in second pregnancy or multi-pregnancies, there were 96.0% o them offering prior breastfeeding.

Table 1 shows that during the second and third months, the hospital variable not Child Friendly increased the odds ratio for exclusive breastfeeding, with p=0.002 and p=0.001, respectively, the score of postpartum Edinburgh depression (with depressive tendencies) increased in the second month (p=0.048) and the third month (p=0.000), the mother who works outside the home, also showed the reason for increased chance in the second month (p=0.013) and in the third month (p=0.007), education up to eight years of study increased the odds ratio just the first two months (p=0.004) and the other variables were not risk factors for exclusive breastfeeding.

In Table 2, when the questionnaire of Edinburgh was applied in the fourth month of life of children, it was found that mothers with depressive tendency were 36.4% of the sample. Of this total, 38.0% were prone to postpartum depression and were mothers who had their children in the not Child-Friendly hospital, compared with 34.9% of those who had babies in the Child-Friendly Hospital.

Table 1 - Association between exclusive breastfeeding at 2, 3 and 4 months and their potential risk factors evaluated in two hospitals

Predictor variable	2 months			3 months			4 months		
	Odds ratio	CI95%**	p	Odds ratio	CI95%**	p	Odds ratio	CI95%**	p
No Child Friendly Hospital	2.000	1.290-3.110	0.00*	1.855	1.299-2.648	0.00*	1.193	0.950-1.498	0.129
Maternal age (years)	1.000	0.973-1.037	0.789	0.982	0.956-1.000	0.184	0.981	0.963-0.999	0.039
First pregnancy	0.860	0.567-1.305	0.480	0.969	0.618-1.220	0.417	0.961	0.765-1.206	0.729
Type of delivery (cesarean)	1.043	0.689-1.579	0.843	0.993	0.707-1.394	0.968	0.949	0.672-1.072	0.168
Gestational age (weeks)	0.909	0.799-1.034	0.147	0.963	0.862-1.076	0.507	0.987	0.912-1.077	0.743
Education (up to 8 years of study)	1.543	1.148-2.073	0.00*	0.967	0.600-1.253	0.446	0.917	0.716-1.1174	0.480
Edimburg score (with depressive tendency)	1.548	1.016-2.358	0.04*	1.872	1.324-2.649	0.000*	1.095	0.869-1.379	0.442
Mother Who works	1.700	1.120-2.581	0.01*	1.588	1.132-2.228	0.007*	1.197	0.955-1.499	0.119

*p<0,05; **Confidence interval

Table 2 - Edinburgh Scale collected at 4 months of the baby´s life, according to hospital type of accreditation (Child-Friendly or not)

Type of Hospital	No tendency to Postpartum Depression	With tendency to Postpartum Depression	Total
	n(%)	n(%)	n(%)
Child Friendly	196(65.1)	104(34.9)	300(100.0)
Not accredited	186(62.0)	114(38.0)	300(100.0)

Table 3 - Edinburgh scale applied to four months, according to the three categories of breastfeeding

Edinburgh scale	Exclusive breastfeeding	breast-feeding	Weaning	Total
	n(%)	n(%)	n(%)	n(%)
No tendency to post-partum depression	154(51.3)	122(40.7)	24(8.0)	300(100.0)
With post-partum depression	141(46.7)	93(30.8)	68(22.5)	300(100.0)

The scale of Edinburgh verified in the fourth month of babies´ lives, showed that mothers who had depressive tendencies weaned more (22.5%) when compared with mothers who had no trends (8.0%) and showed the percentage of lower exclusive breastfeeding (46.7%) and breastfeeding (30.8%) compared with mothers without depressive tendencies, with 51.3% of exclusive breastfeeding and 40.7% of breastfeeding, as demonstrated by the table 3.

Discussion

The prevalence of exclusive breastfeeding in children under six months was 41.0%. However, it is interesting to note that the behavior of this indicator is very heterogeneous among regions and state capitals: the Northern Region showed the highest prevalence of this practice (45.9%) and the Northeast had the worst situation (37.0%)[14]. The results of this study on the

prevalence of exclusive breastfeeding at four months (49.0%) are similar to the findings of the Ministry of Health of Brazil. In this work, unlike the findings of another study[6], there was a sharp drop in likelihood of children being exclusively breastfed from birth to four months of life, in which, at the time of hospital discharge, all children were in exclusive breastfeeding (100.0%), but over the period, at 4 months of life, there was the fall of this percentage to less than half (49.0%).

Most studies show that breastfeeding is effective in higher education women[4-7,10]. In this study, the findings regarding the education (eight years of study) showed risk factors for exclusive breastfeeding at 2 months old, but no significant association in the first and 3 and 4 months. It is understood that women with no education or with little education are unaware of the importance of exclusive breastfeeding for the growth and development of children[4,6,7,10].

In this study, be born in a hospital accredited as Child-Friendly hospitals was a protective factor for exclusive breastfeeding. Although the child was born in a hospital accredited as a Child-Friendly Hospital, which institutionally supports breastfeeding in several steps from the entrance to the hospital to his mother´s discharge with the child, that fact did not cooperate with exclusive breastfeeding in the first month and after 4 months of life. This information differed from other studies[2-3,5-6], showing that mothers of babies coming from the Child-Friendly Hospital are breastfed more when compared to mothers coming from other hospitals. This study found no statistical difference as to whether the child was born in Child-Friendly Hospital, that is, it was not as a potential protective factor for exclusive breastfeeding at 4 months of the baby´s life like the literature found[9]. It is necessary a review of the practices adopted, especially in the prenatal period and immediately after delivery so that the women become more self-confident and extend longer exclusive breastfeeding.

The number of post-partum depression shown in the research to women who had children in the hospital not accredited as Child Friendly (38.0%) and for women who have had children in the hospital accredited as Child Friendly (34.9%) was above the margin often found in the literature, which has varied between 15 and 29.0%[13,15-17]. However, the number found here is within the margin, compared to international studies[15], as Chile (35.2%), Vietnam (33.0%) and Pakistan (30.9%).

The score of the Edinburgh scale showed a risk factor for exclusive breastfeeding at 2 and 3 months of baby's life in this sample. Research reports the experience of stress about child care, with a significant difference between women with and without depressive tendencies about the perception of at least one type of stress in child care[16]. It was no different in our findings, there were differences between women with and without depressive tendencies regarding the abandonment of exclusive breastfeeding and breastfeeding, having a negative effect on child development.

When analyzed the scores of the Edinburgh scale and the categories of breastfeeding, depression scores were the best predictors of duration of exclusive breastfeeding. Weaning incidence among mothers with depressive symptoms was noticeably higher than those without symptoms of postpartum depression, 22.5% and 8.0%, respectively. In the fourth month after delivery, 51.3% of mothers without depressive symptoms were exclusively breastfeeding their children, compared with only 46.7% of those with depressive symptoms. In our findings, exclusive breastfeeding appeared to be significantly lower among depressed women, like in other studies[18-19]. The use of the scale of Edinburgh may show depressive tendencies displayed by the mother and help in the diagnosis and treatment, minimizing possible deleterious effects on the mother[18], exclusive breastfeeding and hence on growth and development of children.

The limitations that could be recorded in this

study were minimal. Although a random sample of individuals was not used, the possibility of selection bias is decreased, since the features are similar between individuals, and all children born in the pre-established period had the same chance to participate. There is minimal chance of memory bias occurred because the questions were performed every 30 days. The values explaining depressive tendencies may be underestimated due to the mothers do not admit incriminating answers. Information on changes in the food of the child scheme may at some point have been distorted and have promoted the classification also distorted categories. This fact may be by clear rules that have been set for the classification of exposure and outcome. It should be noted that if this occurred, exposure groups must have been struck indiscriminately, diluting the influence of the classification error as the outcome.

Conclusion

The birth in a not accredited as Child Friendly hospital, with a scale Edinburgh ≥13 points and mother who works outside the home is shown as risk factors for exclusive breastfeeding to the second and third months of the child´s life, and maternal education up to eight years of study showed a risk factor only in the first two months of the baby´s life. Mothers developing postpartum depression were those who had children in the not Child-Friendly Hospital. Women with depressive tendencies to 4 months of life were more prone to early weaning when compared to women without depressive tendencies.

Physical and sexual recovery of the mother and the care of the newborn remain central in assisting women in the postpartum period. Thus, mental suffering symptoms unrecognized biased to postpartum depression and not valued can worsen and lead to immediate and long-term consequences for the woman and the child, as early weaning.

Collaborations

Margotti E contributed to the project design, collection, analysis and interpretation of data, article writing and final approval of the version to be published. Matielo R contributed to critical review of the intellectual content and data analysis.

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