María José Aguilar-Cordero[1]
Raquel Rodríguez-Blanque[2]
Antonio Sánchez-López[3]
Ximena Alejandra León-Ríos[4]
Manuela Expósito-Ruiz[5]
Norma Mur-Villar[6]

Assessment of the Technique of Breastfeeding in Babies with Down Syndrome*

Topic: Evidence based practice.

Contribution to the field of knowledge: This research highlights the importance of breastfeeding to enhance muscle strength in the mouth of children with Down Syndrome. By compensating the low muscle tone, it encourages mothers to learn to breastfeed more effectively. Nowadays, after a period of massive abandonment, it is necessary to develop politics focused on promoting breastfeeding instead of formula feeding, moreover in children with developmental disorders. The assessments performed from the results obtained allow us to affirm that a correct orientation in the first days of life can promote an adequate and durable breastfeeding in these patients.

ABSTRACT

Objective: To evaluate the technique and duration of breastfeeding in healthy children and children with Down Syndrome (DS) using *the breastfeeding observation form*. **Materials and methods:** An observational study of a prospective cohort was carried out at the Clinical Hospital of Granada during 2015. The Study Group consisted of 40 children with DS and the control group was formed by each new-born with DS and a healthy new-born with the same characteristics of weight and gestational age was selected. The new-borns evaluated shared housing with the mother where the technique was valued during the first 5 days postpartum by a health professional. A bivariable analysis was performed to compare the groups using Student's "T" test for numerical variables and chi-square for categorical variables. **Results:** Lactogenesis onset was earlier in the DS group (92.5 % in the first 24 hours vs 20 %; $p < 0.001$). It was observed that 60 % of the healthy children were breastfed for more than three months while in the group of babies with DS this time period was 47.5 %. **Conclusions:** The results of this study reveal that the breastfeeding technique presented at the beginning more difficulties in mothers of children with DS and it has been shown that technical errors influence the onset and duration of breastfeeding in mothers of these children.

DOI: 10.5294/aqui.2019.19.4.6

To reference this article / Para citar este artículo / Para citar este artigo
Aguilar-Cordero MJ, Rodriguez-Blanque R, Sánchez-López AM, Leon-Rios XA, Exposito-Ruiz M, Mur-Villar N. Assessment of the Technique of Breastfeeding in Babies with Down Syndrome. Aquichan 2019;19(4):e1946. DOI: https://doi.org/10.5294/aqui.2019.19.4.6

1 ✉ https://orcid.org/0000-0002-6268-0975. Complejo Hospitalario Universidad de Granada, España. mariajoseaguilar@ugr.es

2 https://orcid.org/0000-0003-2086-1222. Complejo Hospitalario Universidad de Granada, España. rarobla@ugr.es

3 https://orcid.org/0000-0001-5482-226X. Universidad de Sevilla, España. asanchez47@us.es

4 https://orcid.org/0000-0002-3494-331X. Universidad de Granada, España. ximenalr@correo.ugr.es

5 https://orcid.org/0000-0003-2789-9442. Instituto de Investigación Biosanitaria y Fundación para la Investigación Biosanitaria de Andalucía Oriental (FIBAO), España. mexposito@fibao.es

6 https://orcid.org/0000-0002-0205-7460. Facultad de Ciencias Médicas, Universidad de Ciencias Médicas de Cienfuegos, Cuba. normamur@jagua.cfg.sld.cu

* Study performed by the research group CTS-367. "Humanization of the health care. Nursing diagnoses, children with health conditions, nutrition, pain." Universidad de Granada.

Received: 06/05/2019
Sent to peers: 10/07/2019
Approved by peers: 19/11/2019
Accepted: 19/11/2019

KEYWORDS (Source: DeCS)

Breastfeeding; Down Syndrome; child; community health nursing; infant care.

*Valoración de la técnica de amamantamiento en bebés con síndrome de Down**

RESUMEN

Objetivo: evaluar la técnica y la duración de la lactancia materna (LM) en niños sanos y en niños con síndrome de Down (SD), a través del *Formulario de observación del amamantamiento*. **Materiales y métodos:** se realizó un estudio observacional de cohorte prospectivo en el Hospital Clínico de Granada, a finales de 2015. El grupo de estudio estuvo constituido por cuarenta pacientes con SD, y el grupo control se conformó por niños recién nacidos con dicha alteración y, en la misma cantidad, por niños sanos, con las mismas características de peso y edad gestacional. Los recién nacidos evaluados estuvieron en una habitación conjunta con la madre, donde el personal sanitario valoró la técnica durante los primeros cinco días posparto. Se realizó un análisis bivariante para comparar los grupos, utilizando el test *t* de Student para las variables numéricas, y el chi-cuadrado, para las categóricas. **Resultados:** la lactogénesis se produjo primero en el grupo sin SD (92,5 % en las primeras 24 horas vs 20 %; $p<0,001$). Se observó que el 60 % de los niños sanos mantuvieron la LM por más de tres meses, mientras que el grupo de bebés con SD logró en este tiempo el 47,5%. **Conclusiones:** la LM presentó, al inicio, más dificultades en las madres de niños con SD. Los errores técnicos influyen en el inicio y en el mantenimiento de la LM en las madres de estos niños.

PALABRAS CLAVE (Fuente: DeCS)

Lactancia materna; síndrome de Down; niño; enfermería en salud comunitaria; cuidado del lactante.

* Producto de investigación realizado por el grupo de investigación CTS-367, "Grupo de humanización de los cuidados. Diagnósticos de Enfermería, niños con problemas de salud, nutrición, dolor." De la Universidad de Granada.

*Avaliação da técnica de amamentação em bebês com síndrome de Down**

RESUMO

Objetivo: avaliar a técnica e a duração do aleitamento materno em crianças saudáveis e crianças com síndrome de Down (SD), com a utilização do formulário de observação do aleitamento materno. **Materiais e métodos:** estudo de coorte prospectivo observacional, realizado no Hospital Clínico de Granada, em 2015. O grupo de estudo foi composto por 40 pacientes com SD e o grupo controle formado por recém-nascidos com essa alteração e com crianças saudáveis, considerando as mesmas características de peso e idade gestacional. Os recém-nascidos avaliados estavam em um quarto conjunto com a mãe, onde a técnica foi avaliada durante os primeiros cinco dias pós-parto pela equipe médica. Uma análise bivariada foi realizada para comparar os grupos, utilizando o teste t de Student para as variáveis numéricas e o qui-quadrado para as variáveis categóricas. **Resultados:** a lactogênese ocorreu primeiramente no grupo sem SD (92,5 % nas primeiras 24 horas vs 20 %; p <0,001). Tornou-se evidente que 60 % das crianças saudáveis mantiveram a amamentação por mais de três meses, enquanto no grupo de bebês com SD, esse tempo foi de 47,5 %. **Conclusões:** os resultados deste estudo revelam que a técnica de amamentação apresentou no início mais dificuldades em mães de crianças com SD e demonstrou que erros técnicos influenciam o início e a manutenção do aleitamento materno em mães dessas crianças.

PALAVRAS-CHAVE (Fonte: DeCS)

Aleitamento materno; síndrome de Down; criança; Enfermagem em Saúde Comunitária; Cuidado do Lactent.

* Produto de pesquisa realizado pelo grupo de pesquisa CTS-367, Grupo de humanização dos cuidados. Diagnósticos de Enfermagem, crianças com problemas de saúde, nutrição, dor da Universidad de Granada.

Introduction

Breastfeeding (BF) is the only food source that provides the baby with all the nutrients necessary for his optimal development in the first months of life. Epidemiological research has shown that it provides with a variety of benefits for the health, the growth and the development of the child at the same time that significatively decreases the risk of a large number of acute and chronic diseases such as obesity (1, 2).

Besides being the best feeding option for the human being in the first six months of life (other authors recommend it until completing two years of life), BF is also beneficial for the mother. It is considered to be an effective method to prevent breast cancer and hypertension in the medium and long - term (2, 3).

Human milk provides a large amount of polyamines which are helpful for the process of intestinal development (3). Human milk composition changes depending on the different stages of breastfeeding and throughout the 24 hours of the day (4). In the initial stage of colostrum secretion, the amount of nitrogen is total, and the proteins increase in the nocturnal sample with respect to the daytime hours. This study has evidenced the circadian variability of human milk (3, 4).

In order to analyse the aspects associated to the significant decrease in the BF, it is necessary to emphasize the technical aspects, particularly, the suction mechanism. Breastfeeding on a breast is different than feeding from a bottle: milk flows from the mother to the child by combining a passive expulsion (ejection reflex or rising of the milk) and an active extraction by the baby (suction). The technical literature states that the oxytocic hormone is responsible for driving milk secreted by the galactophorus ducts to finally reach the nipple. Oxytocin production is stimulated by suction since it is a reflex mechanism (4, 5).

Another aspect reported in the literature is the position in which the mother places the child towards the breast. Several authors believe that when this position is incorrect, the child's mouth does not cover the entire nipple and, therefore, he cannot adequately extract the milk being this the reason why the child is forced to suck in the vacuum. The early detection of problems in the application of the suction technique avoids problems like this, among other factors such as cracks, mastitis and hypogalactia, main causes of abandonment of BF (6, 7).

It is appropriate to emphasize that an adequate beginning is important for a good relationship between the mother and her child. In order to establish a good suction technique from the beginning, it is essential to avoid problems. Repeatable mistakes in the first BF hours can determine the failure, which has been repeatedly demonstrated in the specialized literature on this subject (7, 8).

In recent years, BF has decreased significantly. This fact has implied serious consequences in the health of the children, particularly in developing countries and among children with Down syndrome (DS). There is a belief that hypotonia and the decrease of some reflexes can prevent the children with DS to breastfeed, but actually, it is only a myth (8, 9).

It is true that some of the characteristics of the new-born with DS, such as hypotonia and sucking and swallowing impediments, make a little more difficult this feeding technique which can lead to the abandonment of the BF before the desired time (9-11). However, many of the problems stem from insecurity and ignorance of the BF techniques as well as separation of the child from the mother during the first days of life.

Some studies have evidenced the advantages of this form of feeding for the babies, and especially for those who suffer DS, being this the reason why the early abandonment of BF in children with DS should be avoided. Along with the family, it is necessary to reduce the potential obstacles and difficulties that mothers will encounter through breastfeeding, such as the weaker suction, the hypotonia itself, the slower swallowing and the position (12, 13).

Biopsychosocial necessities of the mothers of babies with DS must be approached from the very moment of birth, facilitating in the delivery room the skin-to-skin contact and breastfeeding (14, 15).

Objective

To assess the technique and duration of breastfeeding in healthy children and children with DS, using the breastfeeding observation form.

Material and methods

We performed an observational prospective cohort study in a group of new-borns with DS and in another one without DS at

the University Clinical Hospital San Cecilio of Granada in the last half of 2015. The first group of study was comprised of children with DS (n= 40), and the second group (control group) was comprised of new-borns with DS and healthy new-borns (one healthy child per DS new-born), with the same characteristics of weight and gestational age. The children who participated in the study were selected using a convenience sampling technique. Using this technique, it was chosen a sample of the accessible population considering that the children were hospitalized sharing room with the mothers. All participating mothers signed the informed consent to participate in the study. The project has the approval of the committee of ethics of the University Clinical Hospital San Cecilio of Granada, with the number PI0397/08.

The inclusion criteria were babies with DS and healthy babies, admitted to the hospital with no serious pathologies, whose parents gave in writing informed consent. Midwiferies, adequately trained by the research team, evaluated the technique during the first five days postpartum. The follow-up of BF after the hospital discharge was performed among the controls of the Healthy Child program, in the corresponding health centres.

For the assessment of the BF, the *breastfeeding observation form* was used (16). This questionnaire evaluates the following items: Position of the body, the observed response of the child, the manifested affective bond, the anatomy of the breasts, the type of suction and the duration of breastfeeding. If a sign was recognized, a mark was placed in the box next to the sign. Then, marks were summed and the result were classified as good, fair or poor. Same applied for the quality of BF.

The Spanish Association of Paediatrics accepts this form as an instrument to evaluate the breastfeeding of healthy children and those with developmental disorders. It is validated by the World Health Organization and by the United Nations Children's Fund, since 1998, through its publication "*Breastfeeding counselling: a training course*". The questionnaire evaluates the BF being this correct or difficult. Following the recommendations of the European Commission, Public Health Management and Control of Risks, different hospitals use this questionnaire (17, 18).

Other recollected data were the academic profile of the mothers, their birthplace, the ethnic group, the weight of the child at delivery, the type of delivery (eutocic or dystocic) and days of hospital stay.

Statistical analysis

A descriptive analysis of the variables of the study was performed. For those of numerical nature, the mean and standard deviation were calculated; for qualitative variables, the absolute and relative frequencies were calculated. Subsequently, the analysis was completed, through a bivariate analysis of the differences between the groups of study. For qualitative variables, the Pearson or Fisher chi-square test was used in those cases where the applicability criteria were not met. For quantitative ones, we used the *t*-test of Student. Odds ratios were calculated and their confidence intervals to 95 %. The level of significance considered for the analyses was 0.05. Data were analysed with the statistical software IBM SPSS Statistics 19.

Results

Eighty new-borns were included in the study: Forty of them with DS and forty without DS. The age of the mothers was significantly higher in the group of children with DS: 31.85 +/− 4.58 vs 25.83 +/− 4.39, ($p < 0.001$). No differences were found regarding to academic profile or birthplace being most of them of Caucasian origin (80 and 90 % respectively). Regarding to smoking, the rate of smoker women was higher in the group of children with DS: 40 % vs. 12.5 %, in the group of children without DS ($p = 0.005$). The weeks of gestation were similar in both groups: over 37 weeks of gestation in the 72.5 % of mothers of the group of children without DS, and 77.5 % of the women in the group with DS. No significant differences were found in the type of delivery: 60 % in the group without DS, and 50 % in the group with DS were eutocic deliveries. With respect to the birthweight, it was also very similar in both groups: 72.5 % of children without DS, and 77.5 % of those of the group with DS weighed above 2500 g (Table 1).

In the outcome variables, there were statistically significant differences with respect to the come in of the breast milk; this comes in earlier (in the first 24 hours) in the group of the mothers with children without DS (92.5 % of cases) than among mothers with children with DS (20 %) ($p < 0.001$). Mothers of the latter had a milk release accompanied by symptoms of breast engorgement, which was manifested with breast filling and breast heaviness feelings, breast pain and temperature increase. Regarding the assessment of the intake, it was good in 45 % of mothers with children without DS, compared with 25 % of mothers in the group with DS ($p = 0,005$). The quality of the breast positioning was good in the 65 % of mothers of the

group without DS versus 40 % of mothers of the group with DS ($p = 0.025$). This was the worst result obtained for the assessment of the feeding. Difficulties were found in the position of the mothers: the head of the new-born was not lined with the body of the mother and the baby was separated of the chest in the 60 % of children with DS. The main problems encountered related to the technique were difficulties in the posture of the mother and poor grip. In the duration of lactation, no statistically significant differences between groups were found: In 60 % of the mothers of the group without DS and 47.5 of mothers of the group with DS duration was less than 3 months ($p = 0.262$) (Table 2).

When calculating the odds ratio and their confidence interval for the assessment and the quality of the intake, it was observed that children with DS had a higher risk of having a poor or regular result 2.40 [0.76-7.51] and a worst breastfeeding 3.30 [1.07-10.17], regardless of the mother's age (Table 3).

Table 1. Base characteristics of both groups

	Non-DS Children 40 (50 %)	DS Children 40 (50 %)	p
Maternal age	25.83+/–4.39	31.85+/–4.58	<0.001
Academic status Primary and technical studies Universitary	 28(70) 12(30)	 23(27.5) 17(42.5)	0.245
Birth place Caucasian Other	 32(80) 8(20)	 36(90) 4(10)	0.210
Smoker	5(12.5)	16(40)	0.005
Week of gestation >37	29(72.5)	31(77.5)	0.606
Type of delivery Eutocic Dystocic	 24(60) 16(40)	 20(50) 20(50)	0.369
Birth weight <2500 gr >2500 gr	 11(27.5) 29(72.5)	 9(22.5) 31(77.5)	0.606

Source: Own elaboration.

Table 2. Comparison between outcome variables of both groups

	Non-SD children 40(50 %)	SD children 40(50 %)	p
Lactogenesis <24 hours >24 hours	 37(92.5) 3(7.5)	 8(20) 32(80)	<0.001
Quality of the milk intake Good Average Bad	 18(45) 17(42.5) 5(12.5)	 10(25) 12(30) 18(45)	0.005
Breast positioning quality Good Average/bad	 26(65) 14(35)	 16(40) 24(60)	0.025
Duration of BF < 3 months >3 months	 16(40) 24(60)	 21(52.5) 19(47.5)	0.262

Source: Own elaboration.

Table 3. Crude Odds ratio and Adjusted Odds ratio for the assessment of BF.

	OR crude			OR adjusted for maternal age and smoking		
	OR	IC 95 %	p	OR	IC 95 %	p
Assessment bad/average (of the intake)	2.45	0.95-6.34	0.064	2.74	0.83-8.97	0.097
Assessment bad/average (of breast positioning)	2.79	1.125-6.90	0.027	3.86	1.19-12.53	0.024

Notes: DS group vs non -DS group. OR: Odds Ratio.

Source: Own elaboration.

Discussion

Among healthy children the intake was considered good in 65 % of cases. However, new-borns with DS only received the same rating in the 25 % of cases.

These results are in line with reports of several authors who claim that babies with DS are less likely to be breastfed. They point that one reason for this is the hospital admission due to the syndrome. They also evidence that the separation of mother-child interferes with the BF along with the weaker motor function of the mouth, generalized muscular hypotonia and maternal age (19).

Pisacane *et al.,* consider that the babies admitted in the hospital, with good advice to the parents, can improve the breastfeeding rate, especially if mother-child separation is avoided. They also point that depression and low self-confidence of the mothers after the birth of a baby with DS are associated to early abandonment. The training of health professionals and support for mothers during the first weeks after delivery is associated with the extension of the BF (19-21).

This form of feeding provides relevant benefits for the health of the children with DS. Therefore, it is suggested that the hospital admission policy should be carefully reviewed. If the hospitalization of the mother is necessary, breastfeeding should be an important aspect to support, as it has been recognized by most of the participants of the qualitative study, with the aim of understanding the cultural factors that affect the decision of a mother to breastfeed or to use feeding formula (21, 22).

A retrospective study shows that breastfeeding babies with DS represents a real challenge. Many of the participants expressed a high level of difficulty and disappointment because they were not able to breastfeed as they would have liked. One study identified that 84.6 % of children with DS experienced some impediment to suction. This study was conducted through a survey, years after the birth, and some mothers did not remember how breastfeeding had been. According to this author, there is currently no consensus among health professionals regarding the ability of children with DS to be breastfed (23, 24).

Most of the mothers of children with DS can breastfeed their children, and this practice is very important. However, in some babies there are deep obstacles to overcome to make BF a success. Professionals should be prepared to detect these cases and advise mothers about the steps to follow. In the statements of the mother it was observed the importance of training professionals to address the suffering and frustration surrounding the birth of a child with disabilities. It is also important the ability of the professionals to act adequately according to the information, guidance and support of the BF (25).

It has been observed that lactogenesis occurred < 24 hours in 92.5 % of the mothers of healthy children while it occurred > 24 hours in the 80 % of the mothers of children with DS. Filling and heaviness of the breasts as well as breast pain and temperature increase, were manifested. This fact also hinders breastfeeding itself, so mothers requires stronger advice by health professionals.

Studies reveal that a delay in the lactogenesis has implications for the nutrition of the child because it affects his behaviour towards breastfeeding. Elevated cortisol levels at delivery and postpartum are risk factors for the delay of the lactogenesis. Cortisol concentrations increase in the first hours after the birth and after 17 hours of labour they decrease. In women with high levels of stress, this decrease of the cortisol levels is not present. This study has important implications for the public health because women experiencing stress of psychosocial and biological source related to labour and birth have higher probabilities of experiencing a delay in the lactogenesis (26).

Against any stressful situation, neuroendocrine and hormonal systems activate. The hypothalamus is the control centre of these systems. When the person suffers from stress, there is a release of various hormones namely vasopressin and corticotropin (CRH), having all of them stimulating effects on the brain. Said hormones are transported from the pituitary gland where the release of adrenocorticotropic hormone (ACTH) occurs. This hormone stimulates the adrenal glands which produce cortisol which mobilizes the energy in response to stress (24, 27).

Mothers who breastfeed have less perceived stress than those fed their babies with formulae, and this is corroborated by the fact that breastfeeding betters the mood (the results confirm it). It seems to be attributable to the physiological effects of breastfeeding and not to the individual differences between nursing and non-nursing mothers (28).

The stress produced during childbirth and high glucose levels in the umbilical cord are risk factors for the delay of lactogenesis. Stress hormones levels were measured and detailed data were collected about the behaviour of the early feeding. Four markers of lactogenesis were assessed of which two (casein presence and lactose concentration) were biochemical markers. The third measured the volume of milk of the fifth day after birth and the fourth was a subjective assessment by the mother (breast fullness) (28). In our study, all mothers of the babies with DS had their lactogenesis delayed.

In relation to the duration of the BF, we observed in our study that 60 % of healthy children kept the BF by more than three months, while in the group of babies with DS, only the 47.5 % of the babies managed to achieve this time. These data indicate that the guidance given in the first days postpartum were effective in order to increase the BF among the babies affected by DS.

In a study conducted in Jerusalem during ten years, it was observed that, despite common perinatal complications, such as respiratory failure or need for oxygen supplements (present in 32 % of participants), in children with DS, around 84 % of them were fed with human milk. Of these, two thirds were fed exclusively with breast milk, and one remaining third was fed with infant formula (29).

The review of the literature reports that in the United States, the real rate of initiation to breastfeeding is 73.4 %. The duration of breastfeeding up to six months is 56 %, and more than six months is 42 %. These data confirm that, despite some challenges such as DS, breastfeeding is the most suitable way of feeding for the family (30).

Another study showed that BF in children with DS was especially shorter if the new-born had to be admitted in the hospital or if he was firstborn. According to the authors, BF is more dependent on the mother and the social structure than being diagnosed with DS. In this study, more than 70 % of the participants said that, when their babies were diagnosed with DS, they did not change their intentions to BF their children. A high percentage of the mothers felt that BF was a major advantage for their children and for themselves. DS babies who have been breastfed have a lower incidence of atopic dermatitis, otitis media, childhood asthma, gastroenteritis, obesity, diabetes type 1 and childhood leukaemia (31-33).

It was observed that toxic habits are related to premature new-borns, both in children with DS and in healthy children. This information allows us to confirm the negative effects on maternal and child health.

Studies performed in Canada show that among smoker mothers the risk of having a preterm baby is four times higher than among mother not exposed to smoking habits. This particular study showed a strong significance when the mother smoked more than ten cigarettes a day, compared with the non-smokers. Alcohol consumption was present in 13.3 % of the smokers and 18.3 % consumed other substances during pregnancy. More than 75 % of the preterm births corresponded to women under 30 years old. Women between 35 and 39 years old were who had the lowest smoking rate (33).

The adverse effects of smoking on BF implies a physiological effect of nicotine on the mother's hormonal system and also directly on the milk. It has been demonstrated that breastfed babies of smoker mothers show more irritable behaviour. The mechanism consists on a decrease on the prolactin levels due to the effect of the nicotine, especially in the short term. It is also associated with the reduction of the blood flow in the breasts by the effect of nicotine, resulting in a reduction of oxytocin and a decrease in milk ejection (33, 34).

As it has been observed in this study, most of the children with DS, according to the ethnicity of the mother, are Caucasian. It is important to point that no reports of DS new-borns were present among gipsy mothers.

A research conducted in 2009 in the United States studied the prevalence of DS according to the ethnicity and showed that the birth was more frequent among non-Hispanic whites than among black people. Regarding to the sex, male births were significantly higher (35).

The results of the prevalence of DS according to the age of the mother made possible to certificate that as the age of the mothers increases, the number of births of children suffering from DS also increases.

In the United States, studies have revealed that the prevalence of births of children with DS has increased in the recent years. Similarly, the prevalence of these births among older mothers is higher and the births of these babies among younger mothers have decreased (35, 36).

Conclusions

The results of this study showed that the breastfeeding technique presented more difficulties in mothers of children with DS at the beginning of the breastfeeding and it was observed that technical errors influence on the onset and the keeping of BF.

The analysis of the scientific literature shows the importance of the information related to the technical aspects of breastfeeding in order to extend it over time.

The assessments performed from the results of this study allowed us to suggest that an appropriate guidance to the mother in the early days of the life of her son about the advantages of

BF and the technical problems associated can improve its practice. Moreover, the hospital admission of a child is more tolerable the closer he is to the mother. In addition, if the mother is correctly informed, an adequate BF technique could be promoted, using the breastfeeding observation form as a verifier.

It has been found that forms of promotion including technical aspects, support for the mothers and promotion of the mother and child bond are needed. Likewise, it is important, especially in these babies and their parents, to promote skin-to-skin contact as much as possible to strengthen the bond and the feeling of self-confidence of the parents.

Ethical approval and informed consent: All participating mothers signed the informed consent to be included in the study. The project has the approval of the committee of ethics to the University Clinical Hospital of Granada San Cecilio of Granada, with the number PI0397 / 08.

Competing interests: None declared.

References

1. Witt AM, Witt R, Lasko L, Flocke S. Translating team- based breastfeeding support into primary care practice. J Am Board Fam Med [Internet]. 2019 nov.-dic.32(6):818-826. DOI: https://doi.org/10.3122/jabfm.2019.06.190118
2. Resolución WHA65.6. Plan integral de aplicación sobre nutrición de la madre, el lactante y el niño pequeño. 65.ª Asamblea Mundial de la Salud, 2012 my. 21-26. Ginebra [PDF]. Resoluciones y decisiones, anexos. Ginebra: Organización Mundial de la Salud; 2012. 12-13. Disponible en: http://www.who.int/nutrition/topics/WHA65.6_resolution_sp.pdf
3. Sly JR, Miller SJ, Thelemaque L, Yazdanie F, Sperling R, Sasan F, Howell EA, Loudon H, Jandorf L. Knowledge of the relationship between breastfeeding and breast cancer risk among racial and ethnic minority women. J Cancer Educ [Internet]. 2019 jul. 23. DOI: https://doi.org/10.1007/s13187-019-01580-9
4. Maessen SE, Derraik JGB, Binia A, Cutfield WS. Perspective: Human milk oligosaccharides: Fuel for childhood obesity prevention? Adv Nutr [Internet]. 2019 sept. 5. pii: nmz093. [Epub ahead of print]. DOI: https://doi.org/10.1093/advances/nmz093
5. Victora CG, Bahl R, Barros AJD, et al. Breastfeeding in the 21st century: Epidemiology, mechanisms, and lifelong effect. Lancet [Internet] 2016;387(10017):475-90. DOI: https://doi.org/10.1016/S0140-6736(15)01024-7
6. Quah PL, Cheng TS, Cheung YB, Yap F, Saw SM, Godfrey KM, Gluckman PD, Chong YS, Chong MF. Maternal and infant correlates of maternal feeding beliefs and practices in a multi-ethnic Asian population: The GUSTO (Growing Up in Singapore Towards Healthy Outcomes) Study. Public Health Nutr [Internet]. 2016 oct. 19(15):2789-98. DOI: https://doi.org/10.1017/S1368980016000744
7. Brown JVE, Walsh V, McGuire W. Formula versus maternal breast milk for feeding preterm or low birth weight infants. Cochrane Database Syst Rev [Internet]. 2019 Ag. 12;8:CD002972. DOI: https://doi.org/10.1002/14651858.CD002972.pub3
8. Avalos González MM, Mariño Membribes ER, González Hidalgo JA. Factores asociados con la lactancia materna exclusiva. Rev Cubana Med Gen Integr [Internet]. 2016 jun. [citado 20 Jul 2017];32(2):170-177. Disponible en: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S0864-21252016000200004&lng=es
9. Cocchi G, Gualdi S et al. International trends of Down syndrome 1993-2004: Births in relation to maternal age and terminations of pregnancies. Birth Defects Res A Clin Mol Teratol [Internet]. 2010 jun. 88(6):474-9. DOI: https://doi.org/10.1002/bdra.20666
10. Glivetic T, Rodin U, Milosevic M, Mayer D, Filipovic-Grcic B, Seferovic S. Prevalence, prenatal screening and neonatal features in children with Down syndrome: A registry-based national study. Italian Journal of Pediatrics [Internet]. 2015;41(1). DOI: https://doi.org/10.1186/s13052-015-0192-9
11. Peres KG, Cascaes AM, Nascimento GG, et al. Effect of breastfeeding on malocclusions: A systematic review and meta-analysis. Acta Paediatr [Internet]. 2015;104:54–61. DOI: https://doi.org/10.1111/apa.13103

12. Marques LS, Alcântara CE, Pereira LJ, Ramos-Jorge ML. Down syndrome: A risk factor for malocclusion severity? Braz Oral Res [Internet]. 2015;29:44. DOI: https://doi.org/10.1590/1807-3107BOR-2015.vol29.0044

13. Anil MA Shabnam S, Narayanan S. Feeding and swallowing difficulties in children with Down syndrome. J Intellect Disabil Res [Internet]. 2019 Aug;63(8):992-1014. DOI: https://doi.org/10.1111/jir.12617

14. Carneiro NCR et al. Hábitos de succión oral entre niños con síndrome de Down y parálisis cerebral. Dentista de cuidado de Spec [Internet]. 2017 Jul; 37 (4): 176-180. DOI: https://doi.org/10.1111/scd.12231

15. Thomas J, Marinelli KA, Brodribb W, Noble L, Brent N, Bunik M, et al. ABM Clinical Protocol #16: Breastfeeding the Hypotonic Infant, Revision 2016. Breastfeeding Medicine [Internet]. 2016;11(6):271-6. DOI: https://doi.org/10.1089/bfm.2016.29014.jat

16. Organización Mundial de la Salud. Consejería en lactancia materna. Curso de capacitación. España. Edición revisada: Agosto, 1998. (WHO / CDR / 93.5 - UNICEF / NUT / 93.3)

17. Tomico del Río M. Taller de lactancia materna. En AEPap ed. Curso de Actualización Pediatría 2015. Madrid: Lúa Ediciones 3.0; 2015. p. 393-406. Disponible en: https://www.aepap.org/sites/default/files/4t2.15_taller_avanzado_de_lactancia_materna.pdf

18. Comisión Europea, Dirección Pública de Salud y Control de Riesgos. Alimentación de los lactantes y de los niños pequeños: Normas recomendadas por la Unión Europea. 2006.

19. Pisacane A, Toscano P, Pirri I, Continisio P, Andria G, Zoli B, Strisciuglio P, Concolino D, Piccione M, Lo Giudice C. Down syndrome and breastfeeding. Acta Paedistric [Internet]. 2003; 92:1479-1481. DOI: https://doi.org/10.1080/08035250310007024

20. UNICEF Publications. From the First Hour of Life: Making the case for improved infant and young child feeding everywhere. 2016. Disponible en: https://www.unicef.org/publications/index_93027.html

21. Balogun OO, Dagvadorj A, Yourkavitch J da Silva Lopes K, Suto M, Takemoto Y, Mori R, Rayco-Solon P, Ota E. Health facility staff training for improving breastfeeding outcome: A systematic review for step 2 of the baby-friendly hospital initiative. Breastfeed Med [Internet]. 2017 nov. 12(9):537-546. DOI: https://doi.org/10.1089/bfm.2017.0040. Epub 2017 sept. 20

22. Fischer TP et al. A qualitative study to understand cultural factors affecting a mother's decision to breast or formula feed. J Hum Lact [Internet]. 2014 my.30(2):209-16. DOI: https://doi.org/10.1177/0890334413508338

23. Glivetic T, Rodin U, Milosevic M, Mayer D, Filipovic-Grcic B, Seferovic Saric M. Prevalence, prenatal screening and neonatal features in children with Down syndrome: A registry-based national study. Ital J Pediatr [Internet]. 2015;41:81. DOI: https://doi.org/10.1186/s13052-015-0192-9

24. Stanley MA, Shepherd N, Duvall N, Jenkinson SB, Jalou HE, Givan DC, Steele GH, Davis C, Bull MJ, Watkins DU, Roper RJ. Clinical identification of feeding and swallowing disorders in 0-6 month old infants with Down syndrome. Am J Med Genet A [Internet]. 2019 Feb;179(2):177-182. DOI: https://doi.org/10.1002/ajmg.a.11

25. Erickson EN, Carter CS, Emeis CL. Oxytocin, vasopressin and prolactin in new breastfeeding mothers: Relationship to clinical characteristics and infant weight loss. J Hum Lact [Internet]. 2019 abr. 29:890334419838225. DOI: https://doi.org/10.1177/0890334419838225

26. Barros da Silva R, Barbieri-Figueiredo MDC, Van Riper M. Breastfeeding experiences of mothers of children with down syndrome. Compr Child Adolesc Nurs [Internet]. 2019 dic. 42(4):250-264. DOI: https://doi.org/10.1080/24694193.2018.1496493

27. L Mok WK, Wong WH, Mok GT, et al. Validation and application of health utilities index in Chinese subjects with Down syndrome. Health Qual Life Outcomes [Internet]. 2014;12:144. DOI: https://doi.org/10.1186/s12955-014-0144-x

28. Génova L, Cerda J, Correa C, Vergara N, Lizama M. Good health indicators in children with Down syndrome: High frequency of exclusive breastfeeding at 6 months. Rev Chil Pediatr [Internet]. 2018 febr. 89(1):32-41. DOI: https://doi.org/10.4067/S0370-41062018000100032

29. Ergaz-Shaltiel Z, Engel O, Erlichman I, Naveh Y, Schimmel MS, Tenenbaum A Neonatal characteristics and perinatal complications in neonates with Down síndrome. Am J Med Genet A [Internet]. 2017 my. 173(5):1279-1286. DOI: https://doi.org/10.1002/ajmg.a.38165

30. Chen CL, Gilbert TJ, Daling JR. Maternal smoking and Down syndrome: The confounding effect of maternal age. Am J Epidemiol [Internet]. 1999 mzo. 1;149(5):442-6. DOI: https://doi.org/10.1093/oxfordjournals.aje.a009831

31. Schieve LA, Boulet, SL, Boyle C, Rasmussen SA, Schendel D. Health of Children 3 to 17 years of age with down syndrome in the 1997-2005 National Health Interview Survey. Pediatrics [Internet]. 2009, *123*(2), E253-E260. DOI: https://doi.org/10.1542/peds.2008-1440

32. Walters DD, Phan LTH, Mathisen R. The cost of not breastfeeding: Global results from a new tool. Health Policy Plan [Internet]. 2019 jul. 1;34(6):407-417. DOI: https://doi.org/10.1093/heapol/czz050

33. Emma J. Glasson E, Jacques A, Wong K, Bourke J, Leonard H. Improved Survival in Down syndrome over the last 60 years and the impact of perinatal factors in recent decades. J Pediatr [Internet]. 2016; 169:214-20. DOI: https://doi.org/10.1016/j.jpeds.2015.10.083

34. Timur Taşhan S, Hotun Sahin N, Omaç Sönmez M. Maternal smoking and newborn sex, birth weight and breastfeeding: A population-based study. J Matern Fetal Neonatal Med [Internet]. 2017 nov. 30(21):2545-2550. DOI: https://doi.org/10.1080/14767058.2016.1256986

35. De Graaf G., Buckley F., Skotko B. G. Estimation of the number of people with Down syndrome in the United States. Genetics in Medicine [Internet]. 2017 (19): 439-447. DOI: https://doi.org/10.1038/gim.2016.127

36. Organización Mundial de la Salud. Metas mundiales de nutrición 2025: documento normativo sobre lactancia materna [Global nutrition targets 2025: breastfeeding policy brief]. Ginebra: Organización Mundial de la Salud; 2017.

Spanish version of the breastfeeding observation form

FICHA DE OBSERVACIÓN DEL AMAMANTAMIENTO

Nombre de la madre:..... Fecha:.....

Nombre del bebé: ..... Edad del bebé:.....

(Los signos entre paréntesis se refieren al recién nacido, no a bebés mayores.)

SIGNOS DE QUE LA LACTANCIA FUNCIONA BIEN	
	POSICIÓN DEL CUERPO
	Madre relajada y cómoda.
	Cuerpo del bebé cerca, de frente al pecho.
	Cabeza y cuerpo del bebé alineados.
	(Nalgas del bebé apoyadas.)
	RESPUESTAS
	(El bebé busca el pecho.)
	El bebé explora el pecho con la lengua.
	Bebé tranquilo y alerta mientras mama.
	El bebé permanece agarrado al pecho.
	Signos de eyección de leche (chorros, entuertos.)
	VÍNCULO AFECTIVO
	Lo sostiene segura y confiadamente.
	La madre mira al bebé cara a cara.
	Mucho contacto de la madre.
	La madre acaricia el bebé.
	ANATOMÍA
	Pechos blandos después de la mamada.
	Pezones protráctiles.
	Piel de apariencia sana.
	Pechos redondeados mientras el bebé mama.
	SUCCIÓN
	Más areola sobre la boca del bebé.
	Boca bien abierta.
	Labios inferior y superior evertidos.
	El mentón del bebé toca el pecho.
	Mejillas redondeadas.
	Mamadas lentas y profundas, a veces con pausas.
	Se puede ver u oír al bebé deglutiendo.
	TIEMPO
	El bebé suelta el pecho espontáneamente.

SIGNOS DE POSIBLE DIFICULTAD	
	POSICIÓN DEL CUERPO
	Hombros tensos, se inclina sobre el bebé.
	Cuerpo del bebé separado de la madre.
	Cuello del bebé torcido.
	(Sólo apoyados la cabeza o los hombros.)
	RESPUESTAS
	(No se observa búsqueda.)
	El bebé no se muestra interesado en el pecho.
	Bebé inquieto o llorando.
	El bebé se suelta del pecho.
	No hay signos de eyección de leche.
	VÍNCULO AFECTIVO
	Lo sostiene nerviosamente y con torpeza.
	La madre no mira al bebé a los ojos.
	Lo toca poco, no hay casi contacto físico.
	La madre lo sacude.
	ANATOMÍA
	Pechos ingurgitados (pletóricos).
	Pezones planos o invertidos.
	Piel roja o con fisuras.
	Pechos estirados.
	SUCCIÓN
	Más areola por debajo de la boca del bebé.
	Boca no está bien abierta.
	Labio inferior invertido.
	El mentón del bebé no toca el pecho.
	Mejillas tensas o chupadas hacia adentro.
	Sólo mamadas rápidas.
	Se oye al bebé chasqueando.
	TIEMPO
	La madre retira al bebé del pecho.

El bebé mamó durante.....minutos

NOTAS: .....

.....

Source: World Health Organization (Adapted document from Aguilar Cordero M.J. 1995. *Lactancia Materna*. Elsevier. España. Original Source: *World Health Organization, indicators for assessing health facility practices that affect breastfeeding, Ginebra, WHO, 1993.)*