Nutrición, ganancia de peso y estado de estancia hospitalaria de los lactantes de la Unidad de Cuidados Intensivos Neonatales que sin ser colocados en brazos de sus madres

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Resumen

Fundamentos: La mayoría de las muertes neonatales en el mundo ocurren en países de bajos y medianos ingresos. Es posible prevenir al menos dos tercios de estas muertes con los enfoques correctos y la leche materna. El objetivo fue examinar la nutrición, el estado de aumento de peso y la duración de la estancia de los bebés transferidos a la UCIN sin ser colocados en brazos de sus madres hasta el alta**.**
Métodos: Un total de 100 bebés, 59% hombres y 41% mujeres, participaron en el estudio. Estos bebés fueron hospitalizados en la Unidad de Cuidados Intensivos Neonatales sin ser colocados en brazos de sus madres**.**
Resultados: Mientras que el 54% de los pacientes fueron alimentados solo con leche materna, el 42% fueron alimentados con una combinación de leche materna y fórmula, el 4% de los pacientes que no tenían leche materna fueron alimentados solo con fórmula. El peso medio al alta fue de 3201,5±406,8g y el tiempo medio de hospitalización fue de 4,07±1,76 días**.**
Conclusiones: Los embarazos en edad temprana y avanzada, y los partos por cesárea en todos los grupos de edad lamentablemente aumentan el riesgo de complicaciones que pueden presentarse en la madre y el bebé después del parto. El rápido aumento de peso del bebé con alimentos de fórmula no es un indicador de salud. La sociedad debe ser educada sobre la edad adecuada, la dieta adecuada y la superioridad indiscutible de la leche materna.

Palabras clave: Leche Materna; Recién Nacido; Seguimiento Peso; Leche de Formula; Unidad de Cuidados Del Recién Nacido.

Nutrition, weight gain and length of stay satatus of the Newborn Intensive Care Unit infants who without being placed in the arms of theirs mothers

Summary

Background: Most neonatal deaths in the world occur in low- and middle-income countries. It is possible to prevent at least two thirds of these deaths with the right approaches and breast milk. The aim was to examine the nutrition, weight gain status and length of stay of the infants transferred to the NICU without being placed in their mothers' arms until discharge**.**
Methods: A total of 100 infants, 59% male and 41% female, participated in the study. These babies were hospitalized in the Newborn Intensive Care Unit without being placed on their mothers' arms**.**
Results: While 54% of the patients were fed only with breast milk, 42% were mixed fed with a combination of breast milk and formula, 4% of the patients who did not have mother's milk were fed only with formula. Mean discharge weight was found to 3201.5±406.8g and mean hospitalization period was determined as 4.07 ± 1.76 days**.**
Conclusions: Early and advanced age pregnancies and cesarean births in all age groups unfortunately increase the risk of complications that may occur in the mother and baby after birth. The rapid weight gain of the baby with formula foods is not a health indicator. The society should be educated on the right age, the right diet and the indisputable superiority of breast milk**.**

Key words: Breast milk; Newborn; Weight Tracking; Formula Food; Newborn Intensive Care.

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Introduction

The neonatal period covers the first 28 days of life. This first 28-day period is the period when the risk of death in children is highest. Neonatal deaths account for 45% of all under-five deaths worldwide. This means 2.7 million deaths every year (1).

Most neonatal deaths in the world occur in low- and middle-income countries. Improving the survival and health of the newborns. It is possible to provide both prenatal and postnatal care for both mother and baby. It is possible to prevent at least two thirds of these deaths with the right approaches and breast milk (2).

Every term born baby loses extracellular fluid after birth and its weight decreases by 4-7%, this value should not exceed 10-12%. It is easy to encourage breast milk and to control the baby's weight in healthy babies who are given to the lap of their mothers after birth. However, babies who are transferred to the neonatal intensive care unit (NICU) without being placed in the lap of their mother due to health problems constitute a more difficult group in terms of nutrition and weight gain. In addition, breast milk affects the general health of the baby and the length of stay in the NICU (3).

The aim of this study is to examine the nutrition, weight gain status and length of stay of the infants transferred to the NICU without being placed in the arms of theirs mothers until discharge.

Materials and methods

Setting and sampling

The research was conducted between January 1, 2018 and December 31, 2020, between 35-42. A total of 100 infants, 59 (59%) male and 41 (41%) female, participated in the study. These babies were patients who were hospitalized in the Newborn Intensive Care Unit of Kırklareli Training and Research Hospital (Turkey) without being placed in the arms of theirs mothers. The information is presented by following each baby's feeding method, food intake - residue amount and anthropometric measurements.

In order to avoid intra-observer and inter-observer differences, the measurements were taken with a single method (infantometer, food measuring cup, etc.) and averaged twice by a single researcher.

Statistical analyses

The data obtained in the research were analyzed in computer environment and using the "SPSS 22 (Statistical Package for the Social Science for Windows" package program).

Descriptive statistics are given as median, minimum and maximum values for data that is not normally distributed. The normality of the data was tested. Mann-Whitney U Test was applied for two independent groups that were not normally distributed. Kruskal Wallis Test was applied for more than two independent groups that were not normally distributed. The relationship of the variables was tested with the Spearman Correlation Method. The level of significance was taken as 0.05 in the analyzes made.

Results

When the patients admitted to the Neonatal Intensive Care Unit were examined in terms of gender, it was seen that 41% of the babies were girls and 59% were boys (n=100). It was determined that 1% of the births were premature births within the 35^{th} week, and 13% of them were premature births within the 36^{th} week. As for term births, it was obtained that 40% of them were at 37 weeks, 33% at 38 weeks, 9% at 39 weeks, 3% at 40 weeks, and 1% were at 41 weeks. It was determined that 9% of the mothers of babies

admitted to the Neonatal Intensive Care Unit were adolescent mothers under the age of 18, 52% were between the ages of 19-34 and 39% were over the age of 35.

47% of births were in the form of normal spontaneous delivery and 53% of them were in the form of cesarean delivery. 7% of the babies were found to be between 1500-2500 g, 86% between 2500-4000 g and 7% over 4000 g 4% of babies' heights were between 47 - 48 cm, 15% were between 48 - 49 cm, 42% were between 49 - 50 cm, 19% were between 50 - 51 cm, 16% were between 51 - 52 cm between 52 and 53 cm, 3%, and 1% between 53 and 54 cm (Table 1).

Table 1. Distribution of Participants and their Birth Characteristics.

Features	Frequencys (n)	(Percentage %)
Gender		
Girl	41	41.0
Boy	59	59.0
In Which Week of Birth Occurred		
In 35th week	1	1.0
In 36th week	13	13.0
In 37th week	40	40.0
In 38th week	33	33.0
In 39th week	9	9.0
In 40th week	3	3.0
In 41th week	1	1.0
Mother`s age		
<18	9	9.0
19-34	52	52.0
>35	39	39.0
Type of delivery		
Normal spontaneous birth	47	47.0
Cesarean birth	53	53.0
Birth Weight		
1500-2500 g	7	7.0
2500-4000 g	86	86.0
>4000 gr	7	7.0
Height at Birth		
From 47 to 48 cm	4	4.0
From 48 to 49 cm	15	15.0
From 49 to 50 cm	42	42.0
From 50 to 51 cm	19	19.0
From 51 to 52 cm	16	16.0
From 52 to 53 cm	3	3.0
From 53 to 54 cm	1	1.0

It was seen that 54% of the reasons for infants to be hospitalized in the NICU without being placed in the arms of theirs mothers were neonatal transient tachypnea, 22% meconium aspiration, 17% asphyxia and 7% respiratory distress.

The discharge weight of the patients was determined as a minimum of 2430 g and a maximum of 4360 g. The mean discharge weight was found to be 3201.50 ± 406.88 g.

While 54% of the patients were fed only with breast milk, 42% were mixed fed with a combination of breast milk and formula, 4% of the patients who did not have mother's milk were fed only with formula. None of the patients had an indication to prevent feeding.

Regarding the mean hospitalization period of the patients, it was determined that is was as 4.07 ± 1.76 days. During the hospitalization period, the mean height of the patients was found to be 49.79 ± 1.13 cm (Table 2).

Table 2. Distribution of Characteristics of the Neonatal Intensive Care Unit (NICU) During and After Hospitalization.

Features	Frequency (n)	Percentage (%)
Reason for Admission to NICU without being placed in mother's arms		
ASPHICKS	17	17.0
MECONIUM ASPIRATION	22	22.0
RESPIRATORY DIFFICULTY	7	7.0
Transient tachypnea of the newborn	54	54.0
Weight at NICU admission		
1500-2500 gr	6	6.0
2500-4000 gr	87	87.0
>4000 gr	7	7.0
Number of days spent in NICU		
1 Day	2	2.0
2 Days	19	19.0
3 Days	29	29.0
4 Days	5	5.0
5 Days	27	27.0
6 Days	1	1.0
7 Days	17	17.0
Nutritional Status in NICU		
Breast milk only	54	54.0
Breast milk and formula food	42	42.0
Formula food only	4	4.0
Whether You Have a Condition That Prevents Nutrition		
Yes	0	0
No	100	100.0
Weight of Discharge from NICU		
1500-2500 gr	5	5.0
2500-4000 gr	89	89.0
>4000 gr	6	6.0
Baby`s Height at the Time of Discharge from the NICU		
From 47 to 48 cm	4	4.0
From 48 to 49 cm	15	15.0
From 49 to 50 cm	41	41.0
From 50 to 51 cm	20	20.0
From 51 to 52 cm	16	16.0

The Wilcoxon Signed Rank Test was preferred instead of the Dependent Sample t-test, since the assumption of normality was not provided in order to determine the difference between the weights of infants at admission to the NICU and the weights of their discharge from the NICU. As a result of Wilcoxon Reverse Ranks, a statistically significant difference was found between the weight of the babies when they were admitted to the NICU and the weights at the time of discharge from the NICU (z=-4.917, p=0.000). Accordingly, a statistically significant increase in weight was observed in infants who received NICU without being placed in the lap of his mother (Table 3).

Table 3. Comparison of the NICU hospitalization weights and NICU discharge weights of infants.

Ariables	Average weight	Standard Deviation	Rank Status	Number	Rank Mean	Rank Total	Z	p
NICU hospitalization weight (gr)	3108,30	390,11	T< Y	34	26.54	902.50		
NICU discharge weight (gr)	3201,50	406,88	T > Y	59	58.79	3468.50	-4.917	0.000
			T=7	7				

The Mann-Whitney test was preferred instead of the independent sample t-test, since the normality assumption was not provided for the relationship between breastfeeding status and the weight differences of the infants in the NICU. Because of the Mann-Whitney Test, there was no statistically significant difference between the weight differences and rank averages of the babies according to the status of breastfeeding in the NICU. (U=108.5, p=0.142). In other words, breastfeeding status in the NICU was no effect on the weight differences (g) of the babies (Table 4).

The discharge times of babies who are breastfed in the NICU were significantly higher than those who did not receive breastmilk. In other words, breastfeeding status in the NICU was found to be effective on the length of time that infants were hospitalized in the NICU (U=62, $p < 0.05$) (Table 4).

Table 4. The relationship of breastfeeding status in the NICU with the weight differences (gr) of the babies.

	Category	N	Mean	Standard Deviation	Rank Average	Rank Total	Mann-Whitney U	p
Difference in weight	Breast fed*	96	97.60	164.71	51.37	4931.50	108.5	0.142
	Not Breast fed	4	-12.50	42.72	29.63	118.50		
Hospitalized time	Breast fed*	96	4.15	1.75	51.85	4978	62	0.019
	Not Breast fed	4	2.25	0.50	18.00	72		

* Breastmilk only or Breastmilk + Formula

Discussion

Due to insufficient uterine blood supply in adolescent pregnancies, LBW (Low Birth Weight) poses risks such as mortality in terms of infant health (4-7). In this study, when the distribution of mothers by age categories was analyzed, it was determined that 9% of them were under the age of 18. This rate was determined as 5.3% in the TDHS 2018 data (8).

There is a relationship between the mode of delivery and the baby's first intake of breastfed. In normal births, the rate of breastfeeding as the first food is higher than the rate of formula feeding (9).

Reasons such as advanced gestational age, fears of mothers about normal delivery, increased demands for cesarean section to evaluate fetal well-being, and medical developments in the evaluation of fetal well-being play an important role in the increase in cesarean section rate. Cesarean section is the most common surgical operation in the world (10).

Selection of anesthesia type in the Obstetric Anesthesia Guidelines of the American Society of Anesthesiology (ASA); It should be done according to the fetal need and the preference of the mother or the anesthetist. In the study of Akıcı et al., it was seen that spinal anesthesia was preferred with a rate of 51.9% and general anesthesia with a rate of 48.1% (11).

Resuscitation at birth is an approach used in the absence or cessation of respiratory or cardiac functions (12). In the study of Sütçüoğlu et al., the number of patients who underwent resuscitation at birth was 5.46%

(13). In the present study, postnatal resuscitation was applied to 15% of the patients who were hospitalized in the Neonatal Intensive Care Unit without being placed on the lap of their mothers, while resuscitation was not required for 85%. In the study of Sütçüoğlu et al., it was seen that most of the patients who underwent resuscitation were premature and had low birth rate (LBR) (13). In the Newborn Resuscitation guide of the World Health Organization, it is stated that approximately 25% of all neonatal deaths are caused by birth asphyxia (14). In the present study, 60% of the patients who underwent resuscitation were diagnosed with meconium aspiration (n=9), approximately 26% with asphyxia (n=4) and approximately 13% with the diagnosis of neonatal transient tachypnea (n=4). It was observed that he was admitted to the Neonatal Intensive Care Unit.

When the diagnoses of the patients admitted to the Neonatal Intensive Care Unit were examined, 17% (n=17) had asphyxia, 22% (n=22) had meconium aspiration, 7% (n=7) had respiratory distress, 54% had neonatal temporary. It was observed that he had transient tachypnea of the newborn (TTN). In the study of Helvacı et al., when the indications for hospitalization were examined, it was seen that 76.7% of them had respiratory distress and 2% of them had asphyxia. It was observed that 95.6% of the patients hospitalized with the diagnosis of respiratory distress had TTN (15). In the study, it was seen that 42% of the hospitalizations in the NICU were due to prematurity and 11% due to LBW (16). In the study of Horn et al., while hyperbilirubinemia was 37.1%, neonatal sepsis was 31.2%, asphyxia was 6.6%, meconium aspiration was 4.6% (17). The reason why the rate of respiratory problems was so high in the present study is that the babies that were included were only taken to the NICU without being placed in the arms of theirs mothers, and this was only seen in the case of respiratory problems. In the study of Emran Yakar, it is seen that 92% of the patients who were admitted to the NICU were hospitalized directly from birth due to respiratory problems and as in this study (18).

When the relationship between the weight of the babies at the time of admission to the NICU (g), and the weight of the babies to be discharged from the NICU was examined, it was observed that there was a statistically significant relationship between the weight of the babies at the time of admission to the NICU and the weight of the discharge from the NICU ($r_s(100)=0.844$, $p<0.05$). In Aydın's study, no statistically significant increase was observed between the admission and discharge weights of the patients admitted to the NICU (19), while in the study of Rodrigo et al., there was a significant difference between the weights of admission and discharge from the NICU (20). In the study of Namiiro et al., it was stated that discharge occurred without catching birth weight, as in Aydın's study (21).

When the relationship between the weight differences (g) of babies who received only breast milk or only formula in the nutrition type categories in the NICU was examined, no statistically significant difference was found between the rank averages of the weight differences of the babies according to the type of feeding in the NICU ($H(2)=2.211$, $p=0.331$). Weight gain of breast milk and formula is similar.

When the relationship between the duration (days) of the babies were hospitalized in the NICU according to their Breastfeeding Status in the NICU, a statistically significant difference was found between the rank averages of the time (days) the babies were

hospitalized in the NICU according to the status of receiving breast milk in the NICU (p <0.05). Breast milk prolongs hospital stay. The reason for this is that effective breastfeeding in the Newborn Intensive Care Unit of Kırklareli Training and Research Hospital.

Conclusions

Early and advanced age pregnancies and cesarean births in all age groups unfortunately increase the risk of complications that may occur in the mother and baby after birth. The rapid weight gain of the baby with formula foods is not a health indicator. The society should be educated on the right age, the right diet and the indisputable superiority of breast milk.

References

1 2020, August 24. World Health Organization: https://www.who.int/news-room/fact-sheets/detail/infant-and-young-child-feeding (Accessed June 5 2021)

2 .(2018, May). World Health Organization:https://www.who.int/maternal_child_adolescent/newborns/every-newborn/en/ (Accessed June 5 2021).

3. Okumuş, N., Önal, E. E., Türkyılmaz, C., Demirci, S., Koç, E., Atalay, Y., Ergenekon, E., Günaydın , B. (2009). Doğum Şekli ve Anneye Uygulanan Anestezi Tipinin Postnatal Erken Dönemde Yenidoğanlarda Görülen Tartı Kaybına Etkileri. Türkiye Çocuk Hastalıkları Dergisi, 31-40

4. Hoekelman, R. (1993). Teenage Pregnancy-One Of Our Nation's. Pediatr Ann, 81-82.

5. Amini, S., Catalano, P., Dierker , L., & Mann, L. (1996). Births To Teenagers: Trends And Obstetric Outcomes. Obstet, 668-674.

6. Taner, C., Kırmızı, D., İriş, A., & Başoğul, Ö. (2012). Adölesan Gebeliklerin Sonuçları. Göztepe Tıp Dergisi, 6-10.(

7. Chen, X.-K., Wen, S., Fleming, N., Demissie, K., Rhoads, G., & Walker, M. (2007). Teenage Pregnancy And Adverse Birth Outcomes: A Large Population Based Retrospective Cohort Study. International Journal of Epidemiology, 368-373.

8. Türkiye Nüfus ve Sağlık Araştırması. (2018). Türkiye Nüfus ve Sağlık Araştırması 2018. Ankara: Türkiye Bilimsel ve Teknolojik Araştırma Kurumu (TÜBİTAK).

9. Akyüz, A., Kaya, T., & Şenel, N. (2007). Annenin Emzirme Davranışının Ve Emzirmeyi Etkileyen Durumların Belirlenmesi. TSK Koruyucu Hekimlik Bülteni, 6(5), 331-335.

10. Souza, J., Betran , A., Dumont, B., Mucio, B., Pickens , C., Sullivan , E., Vogel , J.,Gülmezoğlu A., (2015). A Global Reference For Caesarean Section Rates (C-Model): A Multicountry Cross-Sectional Study. Royal College of Obstetricians and Gynaecologists, 427-426.

11. Çetin Akıcı, Ö., Doğan Baakı, E., Büyükermen, E., & Gül Sıvacı, R. (2019). Sezaryen Uygulanan Gebelerde Genel ve Spinal Anesteziden Memnuniyetin Değerlendirilmesi. Kocatepe Tıp Dergisi, 217-224.

12. Sarıkaya Karabudak, S. (2016). Neonatal Resutriasion. Turkey Clinics, 67-70.

13. Sütçüoğlu, S., Tümer , M., Meydan, E., Tellioğlu, M., Dilek, M., İşeri, B., Umay, F., Işın, Y., (2003). Yenidoğanlarda Duğum Odası Resüsitasyon Uygulamaları ve Etkileyen Risk Faktörleri. SSK Tepecik Hastanesi Dergisi, 163-169.

14. World Helath Organization. (2012, January 1). BASIC NEWBORN RESUSCITATION.

15 Helvacı , H., Bozgül, A., Onursal Helvacı, Y., & Tatlı Güneş , B. (2014). Geç Preterm Bebeklerde Yenidoğan Yoğun Bakım Ünitesi'ne Yatışı Gerektiren Erken Neonatal Sorunlar. İzmir Dr. Behçet Uz Çocuk Hastalıkları Dergisi, 44-50.

16 .Konukbay, D., & Arslan , F. (2011). Yenidoğan Yoğun Bakım Ünitesinde Yatan Yenidoğan Ailelerinin Yaşadıkları Güçlüklerin Belirlenmesi. Anadolu Hemşirelik ve Sağlık Bilimleri Dergisi, 14(2), 16-22.

17. Horn, A., Kirsten, G ., Kroon, S., Henning, P ., Möller, G., Pieper, C., Adhikari M., Cooper, P.,

Hoek, B., Delport, S., Nazo, M., Mawela, B. (2006). Phototherapy And Exchange Transfusion For Neonatal Hyperbilirubinaemia: Neonatal Academic Hospitals' Consensus Guidelines For South African Hospitals And Primary Care Facilities. S Afr Med, 819-824.

18. Emren Yakar , F. (2020). Yenidoğan Yoğun Bakım Ünitesinde Yatarak İzlenen Prematüre Bebeklerde Anne Sütü ile Beslenme Oranları ve Anne Sütü Alımı Üzerine Etkisi. Sivas: Sivas Cumhuriyet Üniversitesi Tıp Fakültesi Çocuk Sağlığı ve Hastalıkları Anabilim Dalı.

19. Aydın, D. (2006). Yenidoğan Yoğun Bakım Ünitesinde Yatan Pretermlere Dinletilen Klasik Müziğin, Bebeklerin Stres Belirtileri, Büyümesi. İstanbul: İstanbul Üniversitesi Sağlık Bilimleri Enstitüsü.

20. Muñoz Rodrigo, F., Aloy, J., Santana, P., & Alix, A. (2017). Postnatal Growth At Hospital Discharge In Extremely Premature Newborns In Spain. Anales de Pediatria, 301-310.

21 .Namiiro, F., Mugalu , J., McAdams , R., & Ndeezi, G. (2012). Poor Birth Weight Recovery Among Low Birth Weight/Preterm Infants Following Hospital Discharge In Kampala, Uganda. BMC Pregnancy Childbirth.