Original article

CONDITION OF NEWBORN INFANTS AT BIRTH AND ANTHROPOMETRIC MEASURES IN BABY FRIENDLY PROGRAM

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Mother's breast milk is the best source of nutrition that the newborn infant could be fed with. It contains appropriate amounts of nutritious matters necessary for growth and progress of the newborn infants, ideally adapted for the baby. This is not only the food. It provides the support for protection against infections.

The aim of the investigation was to establish whether the condition the newborn infant right after the birth and anthropometric measures affected entering the baby friendly program.

The study was conducted during 2003 in the Clinic of Gynecology and Obstetrics, Clinical Center Kragujevac, and involved 216 newborn infants included in the baby friendly program and 216 newborn infants outside the program.

The following parameters in newborn infants were observed: Apgar score, body mass, body length, head circumference.

Significantly most often in both examined groups (73 up to 75%), the value of Apgar score of the newborn infants was in the interval 9 – 10 and it did not affect the selection into baby friendly program.

Newborn infants from baby friendly program statistically had significantly greater weight than the infants outside the program - on average for about 80 g. The greater weight positively affected entering the baby friendly program.

Body length and infant head circumference did not statistically significantly differ between the examined groups.

Statistically important difference in body mass can be justified by higher surveillance of pregnant women from the program. The treatment should be reflected in controlled nourishment, avoidance of all harmful causes like consumption of cigarettes and alcoholic drinks, which are proven risks for the newborn infants from such pregnancies to have smaller body mass. The advantage of greater body mass lies in the fact that after the childbirth, the relative loss of the body weight is smaller compared to the newborn infants outside the program. *Acta Medica Medianae 2008;47(1):37-40.*

Key words: *Baby friendly program, newborn condition, anthropometric measures*

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Introduction

„BABY FRIENDLY INITIATIVE PROGRAM" is a global program of the World Health Organisation (WHO) and the United Nations Children's Fund (UNICEF), as well as of health care institutions that have put in place policies and practices to enable parents to make informed choices about how to take best possible care and how to feed their babies, exclusively by breastfeeding in the first months by lactating mothers (1,2,3,4).

Breast milk is the best source of nutrition for infants. It provides an ideal proportion of nutrients necessary for a baby's growth and development. Breast milk is not only the food.It is also the protection against infections (5,6).

As their infants get ill less often, breastfeeding mothers are less absent from their work, so that medical costs are lower and both family and community can benefit from it. Physical contact between the mother and infant can help in better psychosocial developmant of infants (7,8,9).

Aim

The aim of the study was to establish if the baby's condition at birth and anthropometric measures influence the baby friendly program involvement.

Material and methods

The study was conducted in the Clinic of Gynecology and Obstetrics in Kragujevac during 2003. A special questionnaire was used. The study

group enrolled 216 newborn infants in baby friendly program. The control group also included 216 newborn infants that were not in the program.

The following parameters in newborn infants were observed: Apgar score, body mass, body length, head circumference.

Analysis of parameters was done by PC and other specifically made programs. Statistical analysis was done by a standard procedure for calculating probability of occurence of certain parameters, variability within data, mean values, measures for interdependence by determining the level of correlation or contingency. Determination of validity in differences between some parameters and their probabilities was performed by appropriate tests, such as: Student's t-test, (t), c^2 test and Kolmogorov - Smirnov test. As for the level of reliability, values up to 5% or p<0,05 were taken.

Results

The trial enrolled 432 newborn infants (216 in the baby friendly program and 216 outside the program).

Apgar score obtained at birth reflects objective vitality of the newborn. The results of probability of distribution of mean Apgar score are shown in Table 1. It can be seen that in both examined groups (75 to 73% cases) Apgar score of 9 and 10 was significantly most often present.

Table 1. Apgar score

Apgar score	Baby friendly		No baby friendly	
	N	%	N	%
< 7	0	0.0	5	2.3
7-8	54	25.0	53	24.5
9-10	162	75.0	158	73.2
Total	216	100.0	216	100.0

The result is obvious and there is no need to show it statistically. In this trial group Apgar score was not below 7. Vitality of newborn infants was similar, regardless their involvement in the program.

Body masses of newborn infants in the study group, as well as in the control group, were analyzed according to the results from Table 2 and Graph 2. Applying the K-S and χ^2 tests and according to the accepted level of reliability, it was proved that there was no significant difference in the distribution of probability of body masses in infants (Diz=0.0837, χ^2iz=3.000 za DF=2). Body masses were similarly distributed and significantly the greatest probability was from 3000 to 3500 grams (50.0% in the study group and 45.4 % in the control group) (t=3.051 p<0.05).

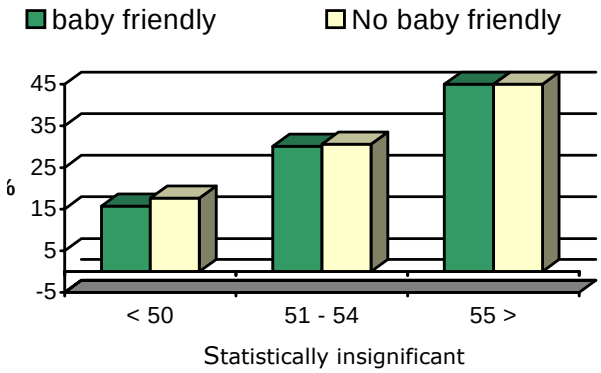
By conducting a more precise analysis, the following results were obtained: the mean value of body mass in the study group was Xsr= 3377.3 gr Sd=378.42, and in the control group Xsr=3300.2 gr, Sd=372.1. Student's t-test and ANOVA packet tests used to determine variances showed that the variances were similar. The newborn infants from baby friendly program had significant difference in higher body mass index for about 80 gr (tiz= 2.05 p<0.05).

Table 2. Body weight of newborns

Body weight of newborn infants	Baby friendly		No baby friendly	
	N	%	N	%
< 2500	2	0.9	6	2.8
2501 - 3000	28	13.0	42	19.4
3001 - 3500	108	**50.0**	98	**45.4**
3501 - 4000	68	31.5	63	29.2
4001 >	10	4.6	7	3.2
TOTAL	216	100.0	216	100.0

BF Xsr = 3377.3 gr; Sd = 378.42; **tiz= 2.05 p<0.05**
Van BF Xsr = 3300.2 gr, Sd = 372.1

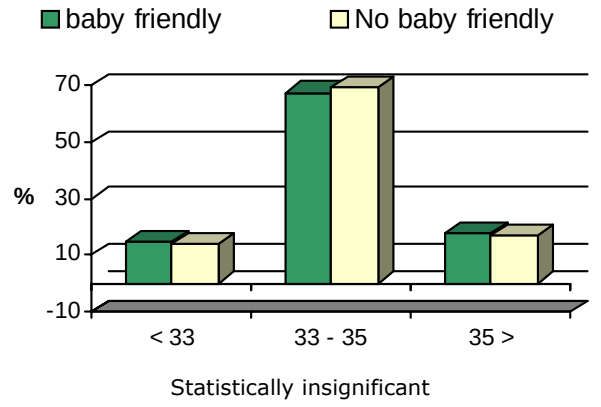
Body length in newborn infants in both examined groups was similar, (χ^2iz=0.339 for DF=2). Significantly greatest probability in body lengths in newborn infants in both groups was 55 cm and more (tiz=4.02 and 3.53, p<0.05), (Graph 3).



Graph 3. Body length in newborn infants (cm)

Similarities in body length in newborn infants indicated that this parameter did not affect the selection into the baby friendly program.

The probability of distribution for the head circumference in newborn infants was similar in both groups (χ^2iz=0.173 za DF = 2) and was not different from that of the general population.



Graph 4. Head circumference in newborn infants (cm))

Head circumference in newborn infants was, with significantly high probability, in both groups 33 to 35 cm, (67 do 69 %), (tiz=9.471 p<0.05), (Graph 4). According to distribution of probability of this parameter, newborn infants were similar in both groups and this parameter did not affect the selection into baby friendly program.

Discussion

In both examined groups, three quarters of newborn infants had Apgar score between 9 and 10 at birth. The probabilities of other, lower scores were equally distributed between the groups. In the study group, the Apgar score was not below 7, since the newborn infants with such a score were not included in the program. Vitality in newborn infants at birth was similar, regardless of determination to enter the program.

In both examined groups significantly highest probability in the newborn infant body mass at birth was from 3000 to 3500 g (47.2% in the study group and 42.2% in the control group). Further analasyis between the groups showed that newborn infants from the baby friendly program had greater body mass for about 80 gr, which was significantly different. This difference in body mass can be explained by higher surveillance of pregnant women from the program. The treatman involved controlled nutrition, avoidance of harmful factors, such as smoking and alcohol drinking which are proved risk factors for low weight at birth in infants from such pregnancies. The advantage of greater body mass is that immediately after the delivery the loss of weight is relatively lower compared to newborn infants outside the program with better perspective of further development.

The analysis of other anthropometric parameters (body length and head circumference in newborn infants) showed that there were no statistically significant differences in these parameters, nor in their distribution between the observed groups. Body length and head circumference in newborn infants were within normal limits in both groups.

Some authors proved that newborn infants with body weight below 2500 g, body length below 50 cm and head circumference below 30 cm, as well as babies with Apgar score lower than 7 at birth had less chances to enter baby friendly program. (10,11,12,13).

Conclusion

Apgar score did not differ between newborn infants in baby friendly program and newborn infants outside the program. Three quarters of newborn infants in both groups had Apgar score in interval 9 - 10.

- The greatest probability of body mass in newborn infants ranged from 3000 to 3500 g (47.2% in the study group and 42.2 % in the control one).
- With a significant difference, newborn infants from baby friendly program had greater mean body mass for about 80 g.
- There was no statistically significant difference in body length and head circumference among newborn infants in baby friendly program and outside it.

References

1. Merten S, Dratva J, Ackermann-Liebrich U. Do baby-friendly hospitals influence breastfeeding duration on a national level? Pediatrics. 2005; 116(5): 702-8.
2. Horvath A, Koletzko B, Kalisz M, Szajewska H. The Effect of Supplemental Fluids or Feedings During the First Days of Life on the Success and Duration of Breastfeeding: A Systematic Review of Randomized Controlled Trials. Arch Pediatr Adolesc Med, Jun 2005;159:597-8.
3. Cattaneo A, Buzzetti R. Effect on rates of breastfeeding of training for the Baby Friendly Hospital Initiative. BMJ. 2001;323:1358–62.
4. Jovanovic B, Djordjevic M, Djordjevic G, Pantovic V. Promena stava o baby friendliy programu. Acta Medica Medianae 2007;46(4):31-33.
5. Maria Beatriz Reinert. Breastfeeding the Premature Infant: Experience of a Baby-Friendly Hospital in Brazil. Journal of Human Lactation 2005;21(1):47-52.
6. Aidam AB, Pérez-Escamilla R, Lartey A. Lactation Counseling Increases Exclusive Breast-Feeding Rates in Ghana. J. Nutr. 2005;135:1691-5.
7. Pisacane A, Continisio GI, Aldinucci M, D'Amora S, Continisio P. A Controlled Trial of the Father's Role in Breastfeeding Promotion. PEDIATRICS 2005; 116(4):494-8.
8. Filiz E, Okyay P, Atasoylu G, Beser E. Nutritional status and risk factors of chronic malnutrition in children under five years of age in Aydın, a western city of Turkey. The Turkish Journal of Pediatrics 2007;49:283-9.
9. Kugyelka GJ, Rasmussen MK, Frongillo AE. Maternal Obesity is Negatively Associated with Breastfeeding Success among Hispanic but Not Black Women. J. Nutr. 2004;134:1746–53.
10. Lvoff MN, Lvoff V, Klaus HM. Effect of the Baby-Friendly Initiative on Infant Abandonment in a Russian Hospital. Arch Pediatr Adolesc Med. 2000;154:474-7.
11. Van Dommelen P, van Wouwe PJ, Breuning-Boers M J, van Buuren S, Verkerk HP. Reference chart for relative weight change to detect hypernatraemic dehydration. Archives of Disease in Childhood 2007;92:490-4.
12. Khalil MKM, Al-i Ghamd YS, Al-Yahia OA, Subah A Barmad R. Feeding practice outcome for preterm infants in two neonatology units in Buraidah, Saudi Arabia Health Journal. 2004; 10(3): 283-8.
13. Chien L, Tai C, Chu K, Ko Y, Chiu Y. The number of Baby Friendly hospital practices experienced by mothers is positively associated with breastfeeding: A questionnaire survey. International Journal of Nursing Studies 2007;44(7):1138–46.

STANJE PLODA NA ROĐENJU I ANTROPOMETRIJSKE MERE U BABY FRIENDLY PROGRAMU

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Majčino mleko je najbolji proizvod kojim se može hraniti novorođenče. Ono sadrži hranljive materije koje su neophodne u razvoju novorođenčadi. U sebi sadrži idealan odnos hranljivih materija. Ono nije samo hrana, jer mu obezbeđuje i potporu za zaštitu od infekcija.

Cilj istraživanja je da uvidimo da li stanje ploda na rođenju i antropometrijske mere utiču na ulazak u baby friendly program.

Studija je sprovedena tokom 2003. god. u Ginekološko-akušerskoj klinici u Kragujevcu kod 216 novorođenčadi koja su bila u baby friendly programu i 216 novorođenčadi van programa.

Ispitivani su sledeći parametri kod novorođenčadi: Apgar skor, telesna masa, telesna dužina, obim glavice.

Signifikantno najčešće u obe ispitivane grupe (73 do 75%) Apgar scor novorođenčadi se kretao u intervalu 9 – 10 i on nije uticao na selekciju za baby friendly program.

Novorođenčad iz baby friendly programa statististički značajno su teža od novorođenčadi van programa u proseku za oko 80 g. Veća težina pozitivno utiče na ulazak u baby friendly program.

Telesna dužina i obim glavice ploda nije se statistički značajno razlikovala među ispitivanim grupama.

Statistički značajna razlika u telesnoj masi može se objasniti povećanim nadzorom nad trudnoćama iz programa. Tretman bi se ogledao u kontrolisanoj ishrani, izbegavanjem svih štetnih uzroka, kao što je konzumiranje duvana i alkohola, koji su dokazani rizici da novorođenčad iz takvih trudnoća budu manje telesne mase. Prednost veće telesne mase je i u tome da je nakon porođaja manji relativni gubitak telesne težine u odnosu na novorođenčad van programa. *Acta Medica Medianae 2008;47(1):37-40.*

Ključne reči: *Baby friendly program, stanje ploda, antropometrijske mere*