Original Article

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Association between time of neonatal discharge with mode of delivery

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ABSTRACT

BACKGROUND AND OBJECTIVE: Early discharge requires the close follow-up of outpatients in the clinic or at home within 48 hours after discharge. Given the importance of follow-up after early discharge of infants and also lack of accurate statistics on the rate of early discharge in our country, this study aimed to determine the rate of early discharge of newborns in Babol-Clinic Hospital from March 2013 to March 2014.

METHODS: This cross-sectional study was conducted on all the neonates born in Babol Clinic Hospital in Mazandaran, Iran in 2013. Newborns were selected via census sampling. In addition, a questionnaire was used to collect the data on the length of hospital stay, mode of delivery, gender, birth weight, Apgar scores, gestational age, method of anesthesia, need for resuscitation, and maternal diseases for each infant. Early discharge and very early discharge were defined in newborns released before 48 and 24 hours after birth, respectively. Data analysis was performed in SPSS V.20 using T-test, Chi-square, Fisher's exact test, and Cox regression analysis, and $p<0.05$ was considered significant.

FINDINGS: In total, 2,562 infants born in Babol Clinic Hospital were enrolled in this study, 2,451 of whom (96%) were discharged before 48 hours, and 1,829 newborns (71.5%) were discharged before 24 hours after birth.

In normal delivery method groups, 9 (4.25%) neonates routine discharged, 36 (16.98%) neonates early discharged and 167 (78.77%) neonates were very early discharged. Elective and emergency cesarean group, 68 (3.9%) neonates and 34 (5.62%) neonates normal discharge, 428 (24.53%) neonates and 158 (26.12%) neonates early discharged and 1 249 (71.58) neonates and 413(68.26%) neonates were very early discharged respectively ($p=0.02$). 92% of deliveries were by Caesarean section and 8% were the normal vaginal delivery.

CONCLUSION: According to the results of this study, almost all the neonates born in Babol Clinic Hospital had early or very early discharge, and only a few cases (4%) were hospitalized for more than 48 hours. Therefore implement of close follow-up or home visitis recommended.

KEY WORDS: *Early discharge, Newborns, Very early discharge*.

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Introduction

Due to the concerns about hospital costs and willingness of parents for discharge, uncomplicated newborns are normally discharged within less than 48 hours after birth (1). On the other hand, prolonged hospitalization of infants may limit the number of available hospital beds for new admissions (2).

Very early discharge is referred to the discharge of newborns within less than 24 hours after birth, while discharge before 48 hours after birth is known as early discharge (1). Early discharge requires the close follow-up of outpatients by a physician or nurse at home or in the clinic within 48 hours after discharge (3). Since some neonatal diseases may not appear earlier than 2-3 days after birth, early discharge and lack of readmission of neonates by their parents could complicate the diagnosis of these diseases. Therefore, if the newborn is discharged before 24 hours after birth, neonatal examinations are required within 72 hours after birth (on the third day of birth). In addition, newborns discharged within 24-48 hours after birth require neonatal examinations by a physician on the fourth day (96 hours) of birth (1).

Early discharge of newborns is associated with several complications, including lack of time for maternal education and training on successful breastfeeding, increased risk of hypernatremic dehydration and hypoglycemia in low-birth-weight and premature infants, reduction of exclusive breastfeeding, delayed diagnosis of neonatal infections (e.g., sepsis), jaundice, and maternal postpartum complications (e.g., infections and hemorrhage) (4).

According to one study in Sweden, mothers who were discharged early and received postpartum care at home felt more secure during the first week after delivery. However, rate of negative excitement for breastfeeding was higher in these women compared to the control group. Moreover, breastfeeding rates at three months were reported to be 74% and 93% in the early discharge and control groups, respectively. In other words, rate of breastfeeding was lower in neonates with early discharge, while no significant difference was observed in the level of infant-parent attachment between the study groups (5).

Given the importance of follow-up after early discharge of newborns (less than 48 hours after birth) and due to the lack of accurate statistics on the rate of early discharge in Iran, this study aimed to determine the rate of early discharge in the infants born in Babol Clinic Hospital in 2013.

Method

This cross-sectional study was conducted on all the neonates born in Babol Clinic Hospital of Mazandaran, Iran in 2013. Newborns were selected via census sampling, and the exclusion criteria were death, hospitalization, and transfer to other hospitals. A questionnaire was used to collect neonatal data on the length of hospital stay, mode of delivery, gender, birth weight, Apgar scores, gestational age, method of anesthesia, need for resuscitation, and maternal diseases (e.g., diabetes and hypertension).

Length of hospital stay for each newborn was considered as the period from birth until discharge from the hospital, which was calculated in hours. In this study, delivery modes were natural vaginal, elective cesarean section, and emergency cesarean section. In infants born via cesarean section, data on the type of anesthesia (general or spinal) were recorded, and gestational age was determined using the Ballard scale (1). Early discharge and very early discharge were defined in newborns released before 48 and 24 hours after birth, respectively (1).

Data analysis was performed in SPSS V.20 using T-test, Chi-square, Fisher's exact test, and Cox regression analysis, and P value of less than 0.05 was considered significant.

Results

In total, 2,562 infants born in Babol Clinic Hospital in 2013 were enrolled in this study, 2,451 of whom (96%) were discharged before 48 hours after birth. Among these newborns, 1,829 cases (71.5%) were considered to have early discharge (Table 1). With regard to the mode of delivery, 8% of the neonates

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were born via natural delivery, and others were born via caesarean section.

According to our findings, rate of very early discharge was slightly higher in female neonates compared to male neonates. Moreover, this rate was slightly higher in neonates born via natural delivery, as well as the patients without underlying diseases (Table 2).

In this study, we used multiple regression analysis to evaluate the contributing factors for length of hospital stay in the newborns, and the results indicated that the studied maternal and neonatal variables had no significant effect on this parameter (Table 3).

Table 1. Distribution of Different Parameters of Neonates Born in Babol Clinic Hospital in 2013

N (%)	Variable	
1296 (51)	Female	Gender
1266 (49)	Male	
212 (8)	Natural	Mode of Delivery
1745 (68)	Elective Caesarian Section	
605 (23)	Emergency Caesarian Section	
1171 (69)	No	Need for Resuscitation
791 (31)	Yes	
396 (15)	Yes	Prematurity
2166 (84)	No	
158 (6.2)	Yes	Low Birth Weight
2404 (93.8)	No	
242 (10)	Yes	Maternal Underlying Diseases
2320 (90)	No	
1829 (71.5)	Very Early	Discharge Status
622 (24.5)	Early	
111 (4)	Normal	

Table 2. Discharge status of newborns in babol clinic hospital based on maternal and neonatal variables

Discharge Variable		Normal N(%)	Early N(%)	Very Early N(%)	P-value
Gender	Female	53(4.58)	325(23.46)	918(71.96)	0.56
	Male	58(4.09)	297(25.08)	911(70.83)	
Mode of Delivery	Natural	9(4.25)	36(16.98)	167(78.77)	0.026
	Elective Caesarian Section	68(3.9)	428(24.53)	1249(71.58)	
	Emergency Caesarian Section	34(5.62)	158(26.12)	413(68.26)	
Need for Resuscitation	No	79(4.46)	430(24.28)	1262(71.26)	0.891
	Yes	32(4.05)	192(24.27)	567(71.68)	
Prematurity	Yes	17(4.29)	87(21.97)	292(73.74)	0.499
	No	94(4.34)	535(24.7)	1537(70.96)	
Low Birth Weight	Yes	5(3.2)	35(22.2)	118(74.7)	0.577
	No	106(4.4)	578(24.4)	1711(71.2)	
Maternal Underlying Diseases	Yes	32(4.55)	192(27.79)	567(70.66)	0.962
	No	79(4.31)	430(24.22)	1262(71.41)	

Table 3. Contributing Factors for Length of Hospital Stay in Infants Born in Babol Clinic Hospital Based on Cox Multiple Regression Analysis

		Hazard Ratio	Confidence Interval (95%)
Mode of Delivery	Natural	-	-
	Elective Caesarian Section	1.313	1.12-1.53
	Emergency Caesarian Section	1.086	0.98-1.19
Gender (Female)		1.011	0.93-1.09
Need for Resuscitation		1.021	0.93-1.11
Maternal Diseases		1.041	0.91-1.18
Prematurity		0.998	0.88-1.12
Low Birth Weight		14.1	0.96-1.36

Discussion

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According to the results of the present study, 96% of the infants born in Babol Clinic Hospital were discharged earlier than 48 hours after birth, and rate of very early discharge in these newborns was estimated at 71.5%. Early discharge has been recommended by some experts due to the economic challenges and tensions caused by hospitalization in newborns and their families (6). Accordingly, early discharge is a safe approach to reduce hospital costs and duration of hospital care, as well as to promote family bonds and increase the satisfaction of the families of newborns (7, 8). However, medical professionals remain concerned about the possible complications associated with the early discharge of newborns, such as the high rate of readmission, early cessation of breastfeeding, and increased parental stress and anxiety (8).

On the other hand, some researchers have not discovered an association between the rate of readmission and early discharge of newborns (9, 10). In one study conducted by Farhat et al., rate of early discharge (less than 48 hours after birth) was reported to be 64.2% (11), which was less than the results of the present study.

In another research, Gupta et al. estimated the rate of early discharge (less than 48 hours after birth) at 76.2% (12), which is also less than the results of the current study. In another study, Galbraith et al. evaluated 2,828 infants born in California (U.S.A) considering early discharge for neonates released before 24 hours after natural delivery and those discharged earlier than 72 hours after cesarean section. According to their findings, rate of early discharge among these infants was 49.9% (13). This difference could be due to the variable definition of early discharge in the present study.

According to the findings of the current study, neonatal and maternal factors, such as underlying diseases, birth weight and gestational age, had no effect on the length of hospital stay in the newborns. This could be due to the fact that the majority of the studied infants in our study were discharged early. Closer evaluation of this issue requires further investigation through case-control studies consisting of larger groups of infants with normal discharge. In the study by Gupta et al., contributing factors for early discharge of newborns were reported to be natural delivery, no history of maternal underlying diseases, and birth weight of more than 2500 grams (12). One of the limitations of the present study was the cross-sectional design, and due to the lack of follow-up of the newborns, we were not able to compare readmission rates in the neonates with early or very early discharge.

In conclusion, results of the present study indicated that almost all the neonates born in Babol Clinic Hospital had early or very early discharge, and only 4% of the newborns remained in the hospital for more than 48 hours. Early discharge of newborns is associated with increased risk of readmission due to complications such as hyperbilirubinemia, neonatal sepsis, dehydration and undiagnosed congenital anomalies. Therefore, close follow-up or home visit implement recommended.

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References

1.Richard JM, Fracp. Avroy AF, Michele C W, Md, Fanaroff and martin's Neonatalperinatal Medicine. 10th ed. USA: Sunday; 2015.

2.Hong J, Hani A, Xi-Kuan C, Cheng Q, Darren G. All-cause readmission to acute care for cancer patients. Health Care Q. 2012;15(3):14-6.

3.Behrman RE, Kliegman RM, Jenson HB. Disorders of the conjunctiva. 18th ed. Philadelphia: WB.Saunders; 2015.

4.Tomashek KM, Shapiro-Mendoza CK, Weiss J, Kotelchuck M, Barfield W, Evans S, Naninni A, Declercq E. Early discharge among late preterm and term newborns and risk of neonatal morbidity. Semin Perinatol. 2006;30(2):61-8.

5.Askelsdottir B, Lam-de Jonge W, Edman G, Wiklund I. Home care after early discharge: impact on healthy mothers and newborns. Midwifery. 2013;29(8):927-34.

6.Seki K, Iwasaki S, An H, Horiguchi H, Mori M, Nishimaki S, et al. Early discharge from a neonatal intensive care unit and rates of readmission. Pediatr Int. 2011;53(1):7-12.

7.Ellberg L, Hogberg U, Lundman B, Kallen K, Hakansson S, Lindh V. Maternity care options influence readmission of newborns. Acta Paediatr. 2008; 97(5):579-83.

8.Gupta P, Malhotra S, Singh D, Dua T. Length of postnatal stay in healthy newborns and re-hospitalization following their early discharge. Ind J Ped. 2006; 73(10):897-900.

9.Oddie SJ, Hammal D, Richmond SLP, Oddie SJ. Early discharge and readmission to hospital in the first month of life in the Northern Region of the UK during 1998: A case cohort study. Arch Dis Child. 2005;90(2):119-24.

10.Scott-Jupp R. Readmission of neonates. Arch Dis Child. 2005;90(2):111-2.

11.Farhat R, Rajab M. Length of postnatal hospital stay in healthy newborns and re-hospitalization following early discharge. N Am J Med Sci. 2011;3(3):146-51.

12.Gupta P, Malhotra S, Singh DK, Dua T. Length of postnatal stay in healthy newborns and re-hospitalization following their early discharge. Ind J Pediatr. 2006;73(10):897-900.

13.Galbraith AA, Egerter SA, Marchi KS, Chavez G, Braveman PA. Newborn early discharge revisited: are California newborns receiving recommended postnatal services? Pediatrics. 2003; 111(2):364-71.

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