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ORIGINAL RESEARCH

Breastfeeding Influence on Vaginal Bleeding in Late Labor: A Comparative Study

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ABSTRACT

Background: Losing blood in the labour's 3rd stage is the primary factor that impacts maternal health. Immediate breastfeeding could be considered a saving factor in the life of mothers. Since it could naturally spread the oxytocin to stimulate the uterine contraction, dislodging the placenta by such contractions would be easier, reducing bleeding in the labour's 3rd stage.
Objectives: To determine the relationship of breastfeeding early initiation on the extent of vaginal bleeding in the labour's 3rd stage.
Methodology: A quasi-experimental study was conducted at the Maternity Teaching Hospital in Sulaimaniyah/ Iraq. Participants were Three hundred pregnant women in 3rd stage of labour in the labour ward who were divided equally into an experimental group that applied early initiation of breastfeeding and a control group that followed routine hospital care and was under investigation for more than five months from 26th February 2020 to 30th July 2021. The probability simple randomization technique was used to ensure that all participants had an equal chance of being selected to participate in the study by the record sheet of structured observation, in which the measure of vaginal bleeding of women in 2 groups was assessed. Descriptive and inferential statistics were used for data analysis.
Results: Based on the vaginal bleeding measure in the groups of control and experimental, it is revealed that the extent of vaginal bleeding in the control group was significantly higher than in the experimental group.
Conclusion: Breastfeeding immediately following birth is beneficial for reducing the measure of vaginal blood loss.

Keywords: Early breastfeeding, Third stage of labour, Vaginal blood loss.

INTRODUCTION

Postpartum hemorrhage (PPH) is a very prevalent and important factor in the mortality and morbidity of mothers, especially in developing countries. It is defined as extreme bleeding, which happens during giving birth. Every day, about 800 women lose their lives to PPH; they are mostly living in developing countries [1].

PPH is only 6% spread worldwide, although there were some improvements in obstetric care [2]. PPH is approximately deadly because of its sudden and fast development, as well as its severity and difficulty in controlling the amount of bleeding. When on the first day of delivery, the amount of vaginal blood is from 500 to 1000 ml, PPH is considered mild, and more than that, it would be considered severe PPH [3].

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The primary and most significant presence of mother to baby is her milk. Human milk can provide all of the necessary nutrition for the baby while also improving the immune defences of the suckling infant and protecting it from various diseases. The terms "breastfeeding" and "nursing" are all used interchangeably to refer to feeding a baby or an infant with milk by holding the baby to the woman's breast [4].

To prevent HPP effectively, particular attention should be paid to the third stage of the delivery. Proper management of the third stage of work plays a significant role in preventing PPH. There are two approaches to care during the third phase of work: Active management consists of three components: administration of prophylactic medication, tightening of the cord, and controlled tension of the cord. In the case of physiological care, the intervention is only carried out if a clinical need is felt. Immediate breastfeeding is an additional procedure that reduces bleeding in the third stage of labour (Farrar et al., 2019).

The uterine muscles contract sharply during the third stage of labour (TSoL), and the placenta begins to separate from the uterine wall. This can happen either actively or passively, depending on the interaction of humans. Regardless of the used version, the procedure is related to a particular extent of bleeding. The measure of lost blood is greatly dependent on the separating process time. Accordingly, defects in the uterus's muscle contractions may cause the uterine tonus to lack, preventing it from fully contracting. Such contraction and lack would deter blood vessels from full constriction and would lead to severe bleeding [5]. Any sudden and unchecked blood loss in this third stage may lead to putting the mother's health in a risky situation or even affect mortality. Expert midwives observed that there would be less bleeding in general when the mother breastfeeds, and appropriate active management is prepared during this period [5].

The breastfeeding interactions lead to oxytocin being released in the mother, which causes her uterus to contract. This contraction may help reduce the amount of blood lost during childbirth and shorten the period [6, 7].

Since it assists in reducing labour bleeding, accelerates the placenta separation, and establishes a bond between the baby and the mother. People believe that immediately after delivery, giving the infant to the mother for breastfeeding could be considered a proper idea. In such a condition, professionals mostly agreed that injecting syntometrine for stimulating womb contractions seems not to be essential [6]. To our knowledge, this research is the first research in Kurdistan of Iraq that was conducted to evaluate the sufficiency of immediate breastfeeding in reducing vaginal blood loss in the last stage of pregnancy.

AIMS OF THE STUDY

To determine the relationship of breastfeeding early initiation on the extent of vaginal bleeding in the labour's 3rd stage.

METHODOLOGY

Study Design

A quasi-experimental study was conducted in the Maternity Teaching Hospital in Sulaimaniyah City, Iraq.

Study sample

The probability simple randomization technique was applied to select participants with equal chances to participate. Approximately 700 - 800 women are admitted to the "normal" delivery room each month, and approximately 300 uncomplicated primi and multi-parturient women deliver in the labour room each month. Approximately 25 to 35 births are performed in the labour room daily. According to this information from the hospitals, the sample size collected during the morning shift for seven months was 300 women split into two groups. The selected parturient was randomly assigned to two groups. The

first 150 subjects became the control group, and the next 150 were included in the experimental group. This was performed to avoid sample contamination.

The control group comprised 150 samples who received routine care, which included active management such as oxytocin drugs, uterine message, immediate cord clamping, and controlled cord traction, and 150 samples for the experimental group who received active management with additional intervention, which is early breastfeeding during third stages of labour.

Study duration

This research was carried out from 26th February 2021 to 30th July 2021.

Inclusion criteria

Inclusion factors for selecting pregnant women, in addition to being from 38th to 42nd weeks of gestation, were singleton pregnancy, a live fetus, being undergoing vaginal delivery without or with an episiotomy, newborn with an Apgar score above 7/10, mothers without any complication during an antenatal and intra-natal period and mother that did not receive the pain relief and desire to breastfeed.

Exclusion criteria

Women with any underlying disease such as pregnancy-induced hypertension, diabetes mellitus or cardiovascular disease, grand multiparty, women with prolonged labour, multiple pregnancies and preterm labour, mothers who had inverted nipple and uncooperative, and newborns with complications (such as Clift lip and palate, intrauterine growth retard (IUGR).

Ethical Approval

This study was performed following the Declaration of Helsinki. It was approved by the ethics committee of the University of Sulaimani, College of Nursing, and by the ethics review committee of the Maternity Teaching Hospital with approval number UNIVSUL-NUR-2019-A19. Interviews were applied to collect the data for this study. Participants in the study were verbally asked before participating.

Data collection

Interviews with the study participants, as a data collection tool for this research, were carried out. In this regard, a questionnaire was constructed to investigate the socio-demographic characteristics, previous obstetric history, characteristics of the labour, the 3rd stage of labour duration, and estimated bleeding in the 3rd stage of labour duration.

Data collection procedure

The sampling method was applied to choosing all survey participants. Later, participants were divided into two control and experimental groups for every 150 participants. At the end of the labour's 2nd stage, the extent of bleeding for every pregnant woman is measured by operators. The extent of bleeding was measured by weighing the perennial pad with an identical sensitive scale for weighing after and before applying that. The distinction between the two measured amounts was calculated by giving the bleeding extent in grams. It is estimated that 1.0 g of pad weight distinction is nearly identical to 1.0 mL of blood.

One minute after the child's delivery, the Apgar scale was examined. After cleaning the face of the infant, they were wrapped in a cloth of sterilized linen and put into the breast of their mother. To help the infant reach the nipple, accurate suckling was ensured in the entire TSoL. After completing the separation of the placenta, the amount of bleeding was measured and recorded.

Statistical analysis

After collecting the labour and survey data, they were transferred to an Excel spreadsheet and analyzed through the SPSS software (version 25). For evaluation, the nominal distribution of data, the "Chi-square test of association," was applied. Fisher's exact test was utilized in cases where the expected count of>20% of the Excel cells collectively achieved a score of < 5. A student's t-test of 2 independent samples was applied to compare two means. Moreover, Binary logistic regression analysis was utilized to present the independent impact of

breastfeeding. A p-value of ≤ 0.05 was regarded as statistically important.

RESULTS

Table 1 shows that the highest proportion (53.3%) of the participants was between 20 and 29 years old, and only 3% were aged ≥ 40 years old. Participants in the control group were older than the women in the other group, as around 60% were aged 30 years or older, compared to 19.3% of women in the experimental group ($p < 0.001$). The average age of the women in the control group (30.77 years) was significantly ($p < 0.001$) higher than the mean age of the experimental group (24.52 years). The findings show no statistically significant variations between the groups regarding educational level and residency.

Table 2 shows that the majority of the control group (72.7%) was multiparous women, which was significantly higher than the proportion (52.7%) among the experimental group ($p < 0.001$). One-third of the women in the sample (33.7%) have a history of breastfeeding, but the difference was insignificant between the two groups ($p = 0.112$). The gestational age at delivery was 38 - 40 weeks for the majority of the women (96.3%), but the difference was not significant between the two study groups ($p = 0.357$). Regarding the mode of delivery, it was normal vaginal delivery in the majority (97.7%) of the women, and there was no significant difference between the two groups ($p > 0.999$).

The onset of labour was spontaneous in the majority (96%) of the cases, as presented in Table 3, which shows no significant difference between the two groups regarding the onset of labour ($p = 0.239$). The rates of the following characteristics of labour and delivery were as follows: augmentation (99%), amniotomy (67%), episiotomy (57.7%), and active management (97.7%). The placenta was delivered to all the women. All the differences between the two groups regarding the mentioned rates were insignificant ($p = 0.247$, $p = 0.110$, $p > 0.999$, $p = 0.199$, $p = 0.813$, and $p = 0.448$, respectively).

The amount of blood loss during the 3rd stage of labour was significantly higher in the control group, where it is evident that the amount of blood loss was 151 - 200 mL and 201 - 250 Ml among 40% and 30% of the women in the control group, respectively, compared with 20% and 3.3% of the women in the experimental group ($p < 0.001$) (Table 4).

Generally, the more the Duration of the 3rd stage of labour, the more blood loss. Where it is evident in Table 5 that the majority (90%) of the women with a longer duration of the third stage of labour (14 - 16 minutes) have lost more than 150 ml of blood, while only 7.8% of the women with short Duration of 3rd stage of labour (5 - 7 minutes) have lost more than 150 ml of blood ($p < 0.001$).

According to Table 6, the probability of losing a high amount of blood during the 3rd stage of labour was significantly higher in the control group compared with the experimental group (OR = 11.078; 95% CI = 3.303 - 37.155), and it was significantly and positively associated with the Duration of the 3rd stage of labour ($B = 0.855$, $p < 0.001$).

DISCUSSION:

Three hundred women participated in this research. They were placed either in the control group (n=150), who were not breastfeeding their infants in labour, or in the experimental group (n=150), who were breastfeeding their infants in the TSoL.

In the current study, 66.7% of the women in the experimental group were between 20 and 29 years old, mostly housewives (88.7%). There is a consistency in this distribution with Vimala and Parimala's study in Chennai, which showed that 73.3% of the women were housewives, and approximately half were in the age group of 21 to 25 years [7]. However, Cantrill et al., in their observational study, concluded that the most prevalent age of pregnant participants was between 30 and 34 years old; besides, participants of this research were mostly employed [8].

The results of the current study revealed that there was not an important correlation between residency, educational level, and immediate breastfeeding. In the same way, Dashti et al. concluded that no correlation exists between the start point of breastfeeding and any of the demographic characteristics evaluated [9]. On the contrary, another study in Turkey in 2016 reported a correlation between the participants' residential status, educational level, and immediate breastfeeding [10].

In the current research, 52.7% of participants in the experimental group had multigravida, and 47.3% had primigravida. One-third of the participants from all samples (33.7%) had a history of breastfeeding, and (77.3%) of them had mixed feeding previously. In the experimental group, the subjects were mostly in the 38th – 40th weeks of gestation, and approximately all parturient women (n = 147, 98%) had a normal vaginal delivery. There is a consistency in these results with the findings of many similar types of research [11].

The results of our research showed that approximately all participants were provided with active labour intervention in the TSoL among two groups with n= 148 (98.7%) and n= 145 (96.7), respectively. On the other hand, quantitative research was carried out in the Vijaya Hospital in Salem and Sri Gokulam Hospital, in which 60 pregnant women were chosen and divided into two groups of 30 participants (experimental and control); at the same time, no one was provided with active management in the TSoL [12].

In the aspects of delivery kind, 96% of women had a spontaneous delivery, and approximately all cases were augmented in labour. About 57.7% of participants had episiotomy in labour, and more than half of them had artificial membrane ruptured. This outcome revealed that all participants delivered the placenta (100%). These outcomes are compatible with those of Reshma et al., who investigated the impact of early skin-to-skin contact between the infant and the mother on the length of TSoL, the body temperature levels of the baby, and the promptness of breastfeeding [11].

Additionally, we revealed that most participants spontaneously delivered the augmented placenta in delivery, and more than half of the participants had episiotomy; besides, all participants in the experimental group delivered the placenta completely. This result was not compatible with the conclusion of research carried out by other researchers [13].

In regards to vaginal bleeding, the current study's findings presented that the extent of vaginal bleeding in the control group was greater compared with the experimental group, which was not relatively high, and their difference was statistically important. The results of our study are compatible with research that was carried out by Dashtinejad et al. [9].

This study's outcome showed that the participants with moderate bleeding (500–1000 mL) in the control group was approximately two times of the breast stimulation group; nevertheless, considering the extent of blood loss in these groups in the labour's 3rd stage, there was not an important distinction. Niroomanesh et al.'s results in the study agree with the current research, in which 100 participants in the labor's third stage receive active management, and 120 participants are assigned to breastfeeding after delivery or breast stimulation. Outcomes revealed that the sanitary pad number (10.5 vs. 11.72) in the breastfeeding groups was significantly low [14].

On the other hand, another study by Narenji et al. (2012), which involved three groups of women, measured the effect of breastfeeding on the Duration of the third stage of labor and vaginal bleeding immediately following childbirth. The results showed no significant difference between the three groups in the average length of the third stage of labour and the postpartum bleeding.

This research showed that greater time in the labour's 3rd stage caused more bleeding. Most of the women (90%) with the longest time in the labour's 3rd stage (14 - 16 minutes) have lost more than 150 mL

of blood; the possibility of losing a higher measure of blood in the labour's 3rd stage was importantly greater in the control group comparing with the experimental group (OR = 11.078; 95% CI = 3.303-37.155), and it was positively and significantly related to the time in the labour's third stage.

The current study's findings agree with those of Helmy et al., who investigated the length of the TSoL by using ROC curves for optimal management in the 3rd stage of preventing PPH. They concluded that 18 minutes greater times on the labor's 3rd stage enhanced the happening of vaginal bleeding. Other research evaluated the PPH risk in deliveries more and less than 30 minutes [15]. This research presented revealed that 30 minutes cutoff could be an optimal interval for placental delivery to prevent vaginal bleeding. Recently, Frolova et al., in their modern cohort research over 7121 deliveries, showed that the time most predictive of an impending PPH was 20 minutes [16]. Moreover, Magann et al. [17] and [18] recommended removing placentas not delivered in 18 minutes to reduce the PPH.

Generally, based on these researches, there are common distinctions among them, and it is essential to breastfeed infants exactly after birth to decrease vaginal bleeding; however, more evidence or research to prove the correctness of this claim is needed.

CONCLUSIONS:

Breastfeeding early initiation in the labour's 3rd stage declines the extent of vaginal bleeding, as could be observed in the comparison of findings of the control and experimental groups of the current research. Thus, early suckling is concluded here to be effective in decreasing the extent of vaginal blood loss in parturient women.

Strength Limitation of the Study

This research was conducted to create a standardized or normative guideline for breastfeeding efficacy used in low-income countries due to a lack of training and/or lack of injectable uterotonic agents. Self-administered therapies or prevention techniques are important to find a cost-effective intervention and promote an intervention that can be conducted at home.

The topic of the study was not a common topic. It was novel for the participants and even health care staff and challenging for the researcher, who faced some barriers and difficulties mentioned as follows:

1. Collecting blood in the women's pad was the difficulty felt during the study.
2. Lack of facilities for measuring the amount of blood loss, such (as calibrated drape, a graded jar)
3. The researcher sometimes was independent in dealing with the mothers.
4. This study was conducted on a small sample size, which prevents the research from drawing results from generalization.

Disclosure

There are no financial disclosures to be made and no conflict of interest in this research study.

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TABLES:

Table (1): Distribution of socio-demographic characteristics between control and experimental groups.

Socio-Demographic Characteristics		Study Group		Control Group		Total		p-value
		No.	(%)	No.	(%)	No.	(%)	
Age	< 20	21	(14.0)	1	(0.7)	22	(7.3)	< 0.001*
	20-29	100	(66.7)	60	(40.0)	160	(53.3)	
	30-39	29	(19.3)	80	(53.3)	109	(36.3)	
	≥ 40	0	(0.0)	9	(6.0)	9	(3.0)	
	Mean (±SD)	24.52	(±4.76)	30.77	(±5.45)			< 0.001†
Education	Illiterate	7	(4.7)	7	(4.7)	14	(4.7)	0.090**
	Read and write	6	(4.0)	12	(8.0)	18	(6.0)	
	Primary	35	(23.3)	42	(28.0)	77	(25.7)	
	Secondary	66	(44.0)	44	(29.3)	110	(36.7)	
	Institute and college	36	(24.0)	45	(30.0)	81	(27.0)	
Occupation	Housewife	133	(88.7)	123	(82.0)	256	(85.3)	< 0.001*
	Employed	3	(2.0)	20	(13.3)	23	(7.7)	
	Free work	4	(2.7)	5	(3.3)	9	(3.0)	
	Student	10	(6.7)	2	(1.3)	12	(4.0)	
Residency	Urban	89	(59.3)	91	(60.7)	180	(60.0)	0.814
	Rural	61	(40.7)	59	(39.3)	120	(40.0)	

***Fisher's exact test, **Chi-square test, †t-test.**

Table (2): Distribution of Past obstetrical history among experimental and control groups.

Past obstetrical history		Study Group		Control Group		Total		p-value
		No.	(%)	No.	(%)	No.	(%)	
Parity	Nulliparous	71	(47.3)	41	(27.3)	112	(37.3)	< 0.001†
	Multiparous	79	(52.7)	109	(72.7)	188	(62.7)	
Previous breastfeeding	Yes	44	(29.3)	57	(38.0)	101	(33.7)	0.112†
	No	106	(70.7)	93	(62.0)	199	(66.3)	
If no	Formula feeding	9	(26.5)	11	(20.4)	20	(22.7)	0.506†
	Mixed feeding	25	(73.5)	43	(79.6)	68	(77.3)	
Gestational age	38-40	146	(97.3)	143	(95.3)	289	(96.3)	0.357†
	> 40	4	(2.7)	7	(4.7)	11	(3.7)	
Mode of delivery	NVD with or without episiotomy	147	(98.0)	146	(97.3)	293	(97.7)	>0.999*
	Instrumental delivery	3	(2.0)	4	(2.7)	7	(2.3)	
	Total	**150**	**(100.0)**	**150**	**(100.0)**	**300**	**(100.0)**	

***Fisher's exact test, †the Chi-square test.**

Table (3): Characteristics of the participant's labour and delivery

	Experimental		Control		Total		
	No.	(%)	No.	(%)	No.	(%)	p-value
Onset of labour							
Spontaneous	146	-97.3	142	-94.7	288	-96	
Induced	4	-2.7	8	-5.3	12	-4	0.239†
Augmented							
Yes	150	-100	147	-98	297	-99	
No	0	0	3	-2	3	-1	0.247*
Amniotomy							
Yes	107	-71.3	94	-62.7	201	-67	
No	43	-28.7	56	-37.3	99	-33	0.110†
Episiotomy							
Yes	92	-61.3	81	-54	173	-57.7	
No	58	-38.7	69	-46	127	-42.3	0.199†
Active management							
Yes	148	-98.7	145	-96.7	293	-97.7	
No	2	-1.3	5	-3.3	7	-2.3	0.448*
Placenta							
Delivered	150	-100	150	-100	300	-100	NA
Total	150	-100	150	-100	300	-100	

Table (4): Associations of blood loss during the 3rd stage of labour between control and experimental groups. The P-value was calculated from the Chi-square test.

	Duration of the 3rd stage of labor (minute)				
Approximate blood loss during 3rd stage of labour (mL)	**5-7**	**8-10**	**11-13**	**14-16**	**P. Value**
	No. (%)	**No. (%)**	**No. (%)**	**No. (%)**	
100 - 150	47(92.2)	60(87.0)	7(35.0)	1(10.0)	<0.001*
151 - 200	4(7.8)	9(13.0)	11(55.0)	6(60.0)	
201 - 250	0(0.0)	0(0.0)	2(10.0)	3(30.0)	
Total	51(100.0)	69(100.0)	20(100.0)	10(100.0)	

Table (5): Estimated blood loss by the Duration of the 3rd stage.

Approximate blood losses during 3rd stage of labour (mL)							
	Experimental		Control		Total		p-value
	No.	(%)	No.	(%)	No.	(%)	
100-150	115	-76.7	45	-30	160	-53.3	<0.001
151-200	30	-20	60	-40	90	-30	
201-250	5	-3.3	45	-30	50	-16.7	
Total	150	-100	150	-100	300	-100	

Table (6): In the binary logistic regression model, the dependent variable is a large amount of blood loss (201-250 mL) during the third stage of labour.

				95% CI for OR	
Group	B	p	OR	Lower	Upper
Control	2.405	< 0.001	11.078	3.303	37.155
Experimental (reference)					
Total Duration of 3rd stage of labour (minutes)	0.855	< 0.001	2.351	1.820	3.037
Constant	-13.316	0.000	0.000		

B = regression coefficient, OR = Odds ratio, CI = Confidence interval.