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Effect of Early Maternal-Newborn Skin Contact during Third Stage of Labor on Child birth Outcomes

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Abstract: The present study aimed to evaluate the effect of early maternal-newborn skin contact during third stage of labor on childbirth outcomes. **Design:** A quasi experimental research design was used. **Setting:** This study was conducted at Labor and Delivery Unit at Obstetrics and Gynecology Department in Mansoura University Hospitals, Egypt. **Subjects:** This study included 180 parturient women who were selected by purposive sampling technique and were divided into 90 parturient women who received skin to skin contact (SSC) during third stage of labor and 90 parturient women who received routine hospital care according to the inclusion criteria. **Tools:** Five tools were used for data collection; namely (structured interviewing schedule, APGAR Newborn Scoring Chart, The newborn body temperature chart, Observational checklist for assessment of first breastfeeding and Lickert Scale for assessment of maternal satisfaction). **Results:** The duration of third stage of labor was shorter, the amount of blood loss was lower and maternal satisfaction and preference were higher in the study than control group ($p < 0.05$). Newborns in the study group initiated their first breastfeeding earlier and have slightly higher temperature but within normal than control group ($p < 0.05$). **Conclusion:** Maternal-newborn skin contact had positive effect on shortening duration of third stage of labor, less blood loss, early initiation of breast feeding, better newborn body temperature and more satisfaction. **The study recommended that** the maternity hospitals should encourage obstetricians and maternity nurses to increase awareness of women about the benefits of practicing early maternal-newborn skin contact during third stage of labor on childbirth outcomes.

Key terms: Childbirth Outcomes, Early maternal-newborn skin contact, Third Stage of Labor

INTRODUCTION

The third stage of labor starts with the delivery of the newborn and completed with the expulsion of the placenta. The third stage of labor is considered to be the most important part of childbirth as it is the period during which the first complete newborn separation from the mother and beginning care of the mother occur and the relationship between both is developed (Impey & Child, 2012; Malhotra et al., 2012; Gibbs, & Engebretson, 2013; Margot and De Sevo., 2017).

There are several advantages of practicing immediate skin to skin contact (SSC) between mother and newborn. It prevents heat loss effectively and increases body temperature in full term healthy newborns more than in newborns who are carefully dressed or wrapped and placed under radiant warmer (Dalbye et al 2011; Rodgers 2013).

Newborns with hypo and hyperthermia can maintain their body temperature when they are in direct SSC with their mothers. The metabolic adjustment becomes more rapid and blood glucose levels become higher in the newborns during SSC and they show less crying compared to newborns who are in cradles. Also, it decreases the hypoglycemia incidence through normalizing the newborn's glucose levels especially when born to mothers with diabetes (Dalbye et al 2011; Phillips, 2013).

Skin to skin contact causes surge of maternal oxytocin through the effect of touch, odor and warmth. The temperature of the mother's breast skin increases under the effect of oxytocin thus providing the newborn with warmth. The flight- fight effect is antagonized by oxytocin thus the maternal anxiety and stress will be reduced providing relaxation and social responsiveness. Throughout the initial hours following delivery, oxytocin can also promote parenting behaviors (Buckley 2014).

The mother's mental health and the development of the newborn's well-being and adaptation during life are greatly affected by the quality of the relationship between both in the initial minutes following delivery (Johnson, 2013). Recent researches showed that newborns can form memories that remain in their subconscious thoughts for long life (Thukral et al 2012; Chamberlain, 2013; Young, 2013).

Newborns are in a maximum alertness state in the early hour following delivery. When a healthy, unmedicated, dried, naked newborn is putted in SSC prone on the mother's bare chest at birth, it uses its senses, especially olfaction to find and attach to the breast. A surge of oxytocin causes uterine contraction, decreases bleeding which is a significant complication during this period that is a leading cause of maternal mortality. Oxytocin also results in flowing of the

mother's colostrum easily, decreases maternal and newborn pain and cortisol levels and promotes feelings of love and attachment (Uvnas-Moberg, 2012, 2013; Saxton *et al*, 2014; Coutin 2015).

The first two hours after birth is the most suitable time for the newborn to start breastfeeding showing behaviors like mouthing, lip smacking movements, hand to mouth activity, vocal cues, etc. This period gives good opportunity for mothers and newborns to develop a reciprocal relationship when kept together in direct SSC. Maximum benefit of this period for successful breastfeeding can be achieved by applying skin to skin care (SSC) method (Cantrill *et al* 2014; Holmberg *et al* 2014; Ludington-Hoe 2014; Essa *et al* 2015; Suplee *et al* 2016).

Significance of the Study:

World Health Organization (WHO) and UNICEF (2012) recommended that all newborns should have access to immediate SSC after vaginal delivery. In addition, the American Academy of Pediatrics (AAP) recommended that "direct SSC must be applied between mothers and their healthy newborns immediately following birth until the first feeding is completed. Skin to skin contact is an inexpensive and simple method for making the care after birth better, prolonging the breastfeeding duration and encouraging exclusive breastfeeding. Breastfeeding and early initiation of SSC in the initial hour following delivery can result in twenty two percentage decrease in infant's mortality in the first twenty eight days of life (Young 2013; Essa *et al*, 2015).

Early skin to skin contact during third stage of labor has a positive effect on its duration, completeness of placental separation, immediate uterine contraction, uterine position, the amount of blood loss and woman satisfaction and preference in future delivery. Moreover, SSC at birth along with the breastfeeding process may be protective against both the incidence and severity of PPH. Lower rates of PPH have the potential to decrease maternity morbidity and mortality across the world (Narvaez 2013; Trevathan 2013; Say *et al*. 2014). However, SSC has been proven to be supported by evidence, it is not applied at Egyptian hospitals (Nahidi, 2010; Essa, 2015). There is no researches address this practice and its effect at Mansoura University Hospitals so this study was conducted to encourage the application of such practice and to evaluate the effect of early maternal-newborn skin contact during third stage of labor on childbirth outcomes.

Aim of the Study:

The present study aimed to evaluate the effect of early maternal-newborn skin contact during third stage of labor on childbirth outcomes.

Study Hypotheses:

1. Women who will be subjected to early maternal-newborn skin contact will experience shorter duration of placental expulsion, less blood loss and more satisfaction than those who won't.
2. Women who will be subjected to early maternal-newborn skin contact will experience better newborn

body temperature and early initiation of breastfeeding than those who won't.

Operational Definition:

Early maternal-newborn skin contact is defined as holding of the newborn undressed in a prone position against the mother's naked chest and abdomen while the baby back is covered with a light linen at the first moments of birth.

SUBJECTS AND METHOD

Study Design:

A quasi experimental research design was used.

Study Setting:

The present study was conducted at labor and delivery unit of obstetrics and gynecology department in Mansoura University Hospitals, Mansoura city, Dakahlia governorate, Egypt. Dakahlia governorate is located in the North Eastern Region of Delta, Egypt.

Mansoura University Hospital is a university hospital which provides free services to parturient women during pregnancy, labor and postpartum period. Labor and delivery unit is an emergency unit receives cases 24 hours daily in hot days (Sunday, Tuesday and Thursday). Labor and delivery unit consists of labor room, delivery room, examination room and postpartum room.

Study Sample:

This study included 180 parturient women who were selected by purposive sampling technique based on the following criteria:

- Primipara
- Gestational age: 38 to 42 weeks.
- Single viable fetus in cephalic presentation.
- Vaginal birth
- Healthy newborns.
- Free from any obstetrical or medical complications.

Eligibility of the Subjects:

The study subjects were divided into 2 groups; study group consisted of 90 parturient women and control group consisted of 90 parturient women.

Sample Size Estimation:

The present study was constructed to evaluate the effect of early maternal- newborn skin contact during third stage of labor on childbirth outcomes. A previous study reported the duration of third stage in the group of early skin contact was 2.8 ± 0.857 (Essa *et al*, 2015). Considering level of significance of 5%, and power of study of 80%, the sample size can be calculated using the following formula:

$$n = \frac{[(Z\alpha/2 + Z\beta) \cdot 2 \times \{2(\sigma)^2\}]}{(\mu_1 - \mu_2)^2}$$

where

n = sample size required in each group,

μ_1 = mean change in duration of third stage in study group = 5,

μ_2 = mean change in duration of third stage in control group = 4.5,

$M_1 - \mu_2$ = clinically significant difference = 0.5

σ =standard deviation=1.195

$Z_{\alpha/2}$: This depends on level of significance, for 5 % this is 1.96

Z_{β} : This depends on power, for 80% this is 0.84

In this study, a sample size was 180 women 90 in each group. The study group received skin to skin contact (SSC) during third stage of labor and the control group received routine hospital care.

Tools for Data Collection:

Five tools were used for collection of data; namely, structured interviewing schedule, APGAR newborn scoring chart, the newborn body temperature chart, observational checklist for assessment of first breastfeeding and Likert scale for assessment of maternal satisfaction.

Tool I: Structured Interviewing Schedule

It was designed by the researcher based on reviewing the related scientific literature and consisted of four parts:

Part (1): General characteristics for parturient women such as age, occupation educational level, residence and marital status.

Part (2): Obstetrical history of parturient women such as gestational age, gravida, number of abortion and intrauterine fetal death.

Part (3): Assessment of the third stage of labor

It was designed by the researcher for assessment of characteristics of the uterus (consistency- level of fundus-position of the uterus), placental examination and third stage duration.

Part (4): Assessment of blood loss volume

Mothers were assessed for the amount of blood loss on two phases, first phase started by collecting the blood drained after newborn delivery until the end of suturing in a special calibrated container and weighting perineal towels pre and post use in delivery field and subtract both values and again add the difference to pre-determined drained blood volume. Second phase for assessment of blood loss was started by weighing perineal pads and under buttocks towels before and after using during fourth stage of labor by scale and take the difference.

Newborn Assessment Sheet Included the Following:

Tool II: APGAR Newborn Scoring Chart:

The Apgar score was adopted from **Virginia Apgar 1952** to evaluate the newborn's physical condition at first and fifth minute. Five acronyms were used to evaluate the baby's condition and each factor is scored on a scale of 0 to 2, with 2 being the best score:

1. Activity (muscle tone)
2. Pulse (heart rate)
3. Grimace (response to catheter in nostril)
4. Appearance (skin color)
5. Respiratory effort (breathing)

Scoring System

Total score of 10 is the best possible condition: 7 - 10 is considered normal. Scores of 4-6 indicate moderate difficulty and may require resuscitation. Scores of 0 -3

indicate severe distress and require immediate resuscitation/ medical attention and life saving measures.

Tool III: The Newborn Body Temperature Chart:

The newborn's temperature was measured rectally after five, ten, fifteen and thirty minutes.

Tool IV: Observational Checklist for Assessment of First Breastfeeding

It was adopted from **Mathews 1988** for assessing the duration between baby delivery and the initial breastfeeding, period of breastfeeding, does the baby hold and suck the nipple without any assistance etc.

Tool V: Likert Scale for Assessment of Maternal Satisfaction (Likert, Rensis 1932).

This scale was used to assess maternal satisfaction with early maternal-newborn skin contact during third stage of labor. It consisted of three points responses. Total score ranged from 1 to 3

Scoring System

Total score ranged from 1 to 3. Satisfied scored 3, to some degree scored 2, not satisfied scored 1. The higher score indicates higher level of women satisfaction.

Reliability of the Tool IV

The reliability was managed by observing 18 parturient women in a pilot study in which Kapa coefficient was 0.92 and hence the questionnaire was found to be highly reliable.

Validity of the Tools

For the purpose of conducting the current study, content validity was done with assistance of specialists consisted of three professors (one medical gynecologist, two professors specialized in women health and midwifery nursing). These instruments were also reviewed by an expert in medical statistics. According to expert's suggestions, the tools were modified.

Pilot Study:

The study tools were applied on 10% of the study subjects (18 parturient women) before starting the data collection. The purposes of the pilot study were to assess the validity of the study tools, to determine the feasibility, practicability and understandability of the data collection procedure and to detect any problems prior to data collection. Also, to estimate the time needed to complete each tool. According to the analysis of the pilot study, the time required for completing the procedure and observing the outcomes was two hours postpartum. The women included in the pilot study were excluded from the total sample.

Field Work

- An official letter from Faculty of Nursing, Mansoura University was sent to the director of Mansoura University Hospitals and Head of Obstetrics and Gynecology Department to obtain official permission to accomplish the study after explanation of its aim.
- The researcher attended the study setting three days weekly from 9 am to 2 pm in hot days (Sunday, Tuesday and Thursday) until the calculated sample size was obtained.

- The researcher introduced herself to each parturient woman, checked her legibility for the study by filling the structured interviewing questionnaire and obtained the consent to participate in the study after explaining the aim.
- The first 90 parturient women attended Labor and Delivery room were assigned to control group and the second 90 parturient women acted as study group. Newborns in both groups had received the immediate baby care after delivery. Secretions were suctioned, newborns were dried and Apgar score was applied. The routine care including physical assessment, vitamin K, measurements (i.e., weight, height, head and chest circumferences) was done but in the control group the immediate and routine care were done under warmer device then neonate was dressed. The mother's placental delivery and episiotomy repair were done at the same time. Finally, neonate was transferred to the postnatal room and was allowed to suck mother's breast.
- Newborns in the study group received the immediate care while being in direct skin contact with their mothers immediately after cutting the umbilical cord. They were placed undressed in a prone position between the mother's bare chest and abdomen before placental expulsion with the newborn's head in lateral position to keep breathing of the newborn. At this time immediate newborn care was done. The newborn was covered with light linen over both mother and baby and was allowed to suck the mother's breast. The routine care was delayed until the end of the third stage.
- In this research, neonates were assessed for the consumed time to start breastfeeding (in minutes) and presence of neonatal hypothermia by evaluating neonatal temperature at 4 points; specifically at 5th, 10th, 15th

and 30th postpartum minutes by using rectal thermometer to attentively ensure anal patency.

- Mothers were assessed for three childbirth outcomes; particularly 1) the amount of blood loss on two phases. 2) Duration of third stage of labor was determined by identifying the time of baby's delivery and the time of placental delivery and subtract both in minutes. Finally, and before discharge 3) mother's satisfaction and preference of the procedure were assessed by asking two questions; are you satisfied by the time of contacting your newborn? Are you prefer the same post-delivery skin contact in the future?

Statistical Analysis

The collected data was coded, tabulated and analyzed using Statistical Package of Social Science (SPSS) version 20.

Ethical Considerations

- Ethical approval was obtained from Research Ethics Committee at the Faculty of Nursing-Mansoura University as well as from the head of Obstetrics and Gynecology department.
- An informed consent was obtained from each participant after explaining the study aim.
- Participation in the study was voluntary and each participant had the right to withdraw from the study at any time without any consequences.
- Confidentiality of the collected data was maintained.
- Privacy and safety were absolutely assured.
- The results were used as a component of the necessary research for doctoral study as well as for future publications and education.

RESULTS

Table 1. The General Characteristics among the Study and Control Groups

Items	Study group (n=90)		Control group (n=90)		Chi square test	
	N	%	N	%	X ²	P
Age (years)						
18-23	30	33.3	41	45.6	4.021	0.134
24-29	45	50.0	41	45.6		
30-35	15	16.7	8	8.9		
Mean ± SD	26.0±4.5		25.1±3.6		1.482*	0.140
Educational level						
Illiterate	8	8.9	8	8.9	0.425	0.809
Middle education	68	75.6	71	78.9		
High education	14	15.6	11	12.2		
Occupational status						
Housewife	79	87.8	85	94.4	2.470	0.116
Working	11	12.2	5	5.6		
Residence						
Rural	65	72.2	57	63.3	1.628	0.202
Urban	25	27.8	33	36.7		
Marital status						
Married	90	100.0	90	100.0	0	1.000

*t value, Student's t test

Table one shows that, there were no statistical significant differences regarding the general characteristics among both

groups ($p > 0.05$). It was found that the highest percentage of the control and the study group's age ranged from 24 -29

years old which constituted (45.6 %, 50% respectively). Concerning educational level of the studied groups, it was clear that the middle education was the highly distributed among the study and control groups (75.6%, 78.9% respectively).

As regards occupation, the housewives were more than working women in the study and control groups (87.8%, 94.4% respectively). Also, women from rural origin were more than those from urban origin (72.2% versus 63.3% respectively) among both groups. In addition, all women were married (100%) in both groups.

Table 2. The Obstetrical History among the Study and Control Groups

Items	Study group (n=90)		Control group (n=90)		Chi square test	
	N	%	N	%	X ₂	P
Gestational age (weeks) (mea n± SD)	39.4±0.9		39.6±0.9		1.821*	0.070
Gravida						
1	54	60	49	54.4	0.975	0.614
2	23	25.6	29	32.2		
3	13	14.4	12	13.3		
Abortion						
No	55	61.1	53	58.9	2.188	0.335
1	22	24.4	29	32.2		
2	13	14.4	8	8.9		
Intrauterine fetal death						
No	90	100.0	90	100.0	0	1.000

*t value, Student's t test

Table two describes that, there were no statistical significant differences regarding the obstetrical history among the study and control groups (p > 0.05). It was clear that the study and control groups were slightly similar as regards the mean of gestational age (39.4 ± 0.9, 39.6 ± 0.9 respectively). Women

with gravida one were the highly distributed percentage in the study and the control groups (60%, 54.4% respectively).

As regards the history of abortion, 61.1% of the study group has no history of abortion compared to 58.9% in the control group. No history of intrauterine fetal death was recorded in both groups (100%).

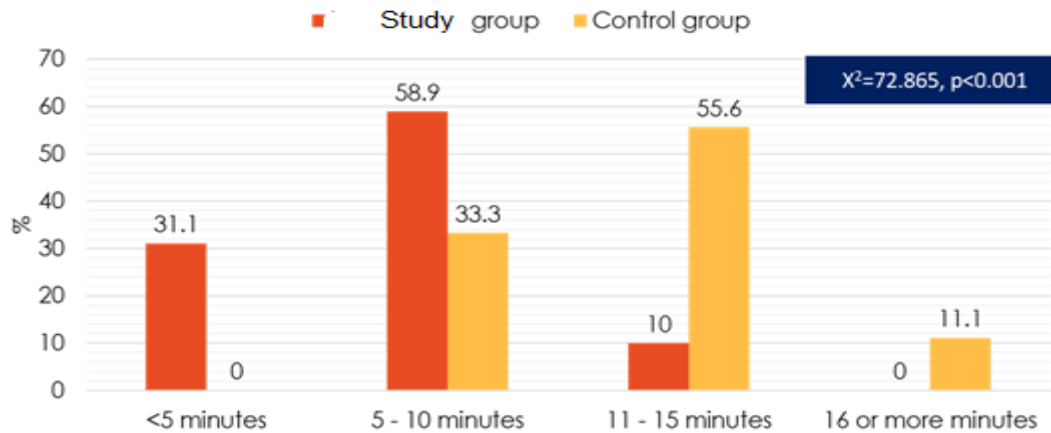


Figure 1. The Duration of Third Stage of Labor among the Study and Control Groups

Figure one shows that, the duration of the third stage of labor between five and ten minutes was higher in the study than control group (58.9%, 33.3% respectively) while the third stage duration between eleven and fifteen minutes was higher in the control than study group (55.6%, 10% respectively). There were statistically significant differences between both groups regarding the duration of third stage of labor (p < 0.001).

Table 3. Comparison of the Characteristics of the Uterus between the Study and Control Groups

Items	Study group (n=90)		Control group (n=90)		Chi square test	
	N	%	N	%	X ₂	P
Level of the fundus					4.556	0.102
Above umbilicus	11	12.2	7	7.8		
at umbilicus	47	52.2	61	67.8		
Below umbilicus	32	35.6	22	24.4		
Consistency						
Soft	1	1.1	1	1.1	0	1.000
Firm	89	98.9	89	98.9		
Position of uterus						
Central	44	48.9	43	47.8	0.022	0.881
Shift to the right	46	51.1	47	52.2		

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Table three describes that, the level of the fundus at the umbilical level was the highly distributed among both the study and control groups (52.2% versus 67.8% respectively). The consistency of the uterus was similar in both study and control groups, 1.1% were soft compared to

98.9% were firm (P= 1.000). The shifted to the right position of uterus was slightly similar in both groups (51.1%, 52.2% respectively). Differences observed between the two groups were not statistically significant (p>0.05).

Table 4. The Amount of Blood Loss among the Study and Control Groups

Items	Study group	Control group	Test of significance	
	Mean ±SD	Mean ±SD	t test	P
Amount of blood loss immediately after delivery	244.6 ±27.4	315.1 ±45.3	12.642*	<0.001
Amount of blood loss during the first two hours after delivery (the immediate postpartum period)	95.8 ± 34.7	106.4 ±25.8	2.326*	0.012*

*t value, Student's t test

Table four describes that, the mean amount of blood loss immediately after delivery and during the first two hours after delivery was lower in the study than the control group

(244.6 ±27.4 and 95.8 ±34.7 versus 315.1 ±45.3 and 106.4 ±25.8 respectively). Differences observed were statistically significant among both groups (p<0.05).

Table 5. The Newborn Characteristics among the Study and Control Groups

Items	Study group (n=90)		Control group (n=90)		Chi square test	
	N	%	N	%	X ²	P
Apgar score 1st minute						
0-3	0	0	0	0	0	1.000
4-6	0	0	0	0		
7-10	90	100	90	100		
Comment 1st minute						
Sever asphyxia	0	0	0	0	0	1.000
Mild to mode rate asphyxia	0	0	0	0		
Normal	90	100.0	90	100.0		
Apgar score 5th minute						
0-3	0	0	0	0	0	1.000
4-6	0	0	0	0		
7-10	90	100.0	90	100.0		
Comment 5th minute						
Sever asphyxia	0	0	0	0	0	1.000
Mild to mode rate asphyxia	0	0	0	0		
Normal	90	100.0	90	100.0		

Table five presents that, there were no statistical significant differences regarding the APGAR score at the first and fifth minute among the study and control groups (p > 0.05).

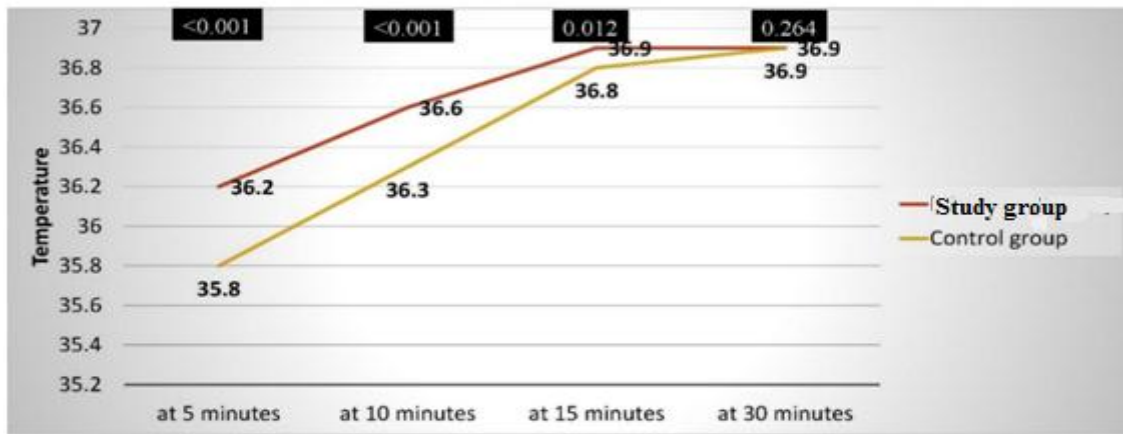


Figure 2. The Newborns Body Temperature among the Study and Control Groups

Figure two illustrates that, the newborn temperature at five and ten minutes were slightly higher in the study than control group (36.2, 35.8 °C versus 36.6, 36.3 °C

respectively). There were statistically significant differences regarding newborn temperature at five, ten and fifteen minutes among both groups ($p < 0.05$).

Table 6. Assessment of the First Breastfeeding among the Study and Control Groups

Items	Study group (n=90)		Control group(n=90)		Chi square test	
	N	%	N	%	X ²	P
Type of nipple					3.882	0.1444
Protruded	68	75.6	70	77.8		
Flat	19	21.1	12	13.3		
Inverted	3	3.3	8	8.9		
Time between delivery and first breastfeeding					87.836	<math><0.001^*</math>
30 minutes	52	57.8	0	0.0		
More than 30 minutes	35	38.9	48	53.3		
More than 2 hours	3	3.3	42	46.7		
Duration of first breastfeeding (minutes)	11.4	±6.6	9.5	±5.5	2.098	0.037*
Newborn attach to the nipple by himself	69	76.7	68	75.6	0.031	0.861
Newborn end the first breastfeeding by himself	90	100.0	87	96.7	3.051	0.081

Table six illustrates that, there were no statistical significant differences regarding the type of nipple, the newborn attach to the nipple and end the first breastfeeding by himself among the study and control groups ($p > 0.05$).

More than half in the study group initiated their first breastfeeding after 30 minutes (57.8%) compared to nearly half in the control group initiated their first breastfeeding

after more than 2 hours (46.7%). As regards the duration of first breastfeeding, the mean duration of first breastfeeding was higher in the study than the control group (11.4 ±6.6 versus 9.5 ± 5.5). There were statistically significant differences regarding time between delivery and first breastfeeding and duration of first breastfeeding among both the study and control groups ($p < 0.05$).

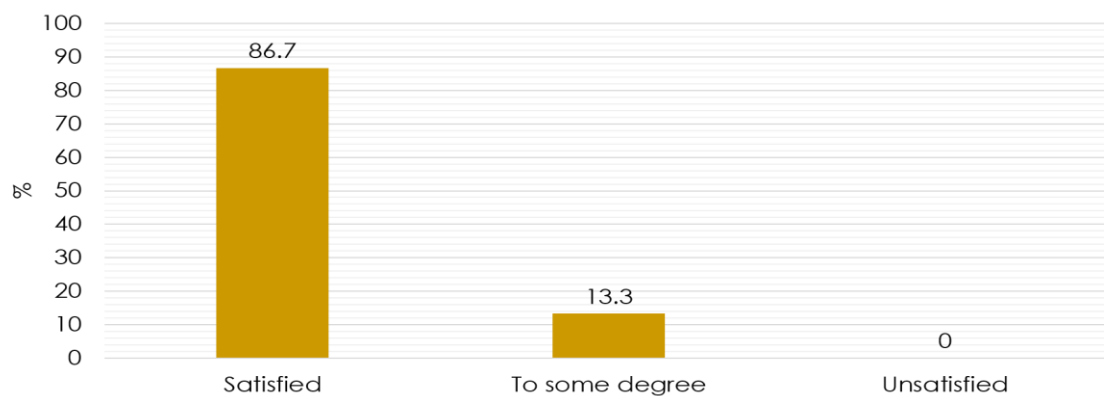


Figure 3. The State of Maternal Satisfaction with the Skin Contact

Figure three describes that, after experiencing the practice of maternal-newborn skin contact, the majority of women (86.7%) were satisfied with this practice.

Table 7. The State of Maternal Preference of the Skin Contact Practice

Item	Study group (n=90)	
	N	%
Prefer same post-delivery skin contact practice in the future	90	100%

Table seven describes that, after experiencing the practice of maternal-newborn skin contact, all of women preferred the same post-delivery skin contact in the future (100%).

DISCUSSION

The present study aimed to evaluate the effect of early maternal- newborn skin contact during third stage on childbirth outcomes. The aim has been achieved through answering the study hypotheses that were women who were subjected to early maternal- newborn skin contact experienced shorter duration of third stage of labor, less blood loss, more satisfaction, better newborn body temperature and early initiation of breastfeeding than those who didn't. So the research hypotheses were accepted. The study subjects were divided into 2 groups; study group consisted of 90 parturient women and control group consisted of 90 parturient women.

The present study indicated that the duration of third stage was shorter in the study than in the control group. It was higher between five to ten minutes in the study group versus eleven to fifteen minutes in the control group. This result may be due to SSC stimulates the oxytocin's release from the mother that strengthen the uterine contractions thus helping detach the placenta.

This finding agreed with the study of **Essa et al. (2015)** which examined the effect of early skin to skin contact (SSC) on duration of placental expulsion stage and breastfeeding initiation at a labor and delivery unit of National Medical Institution in Damanhour, Egypt. They revealed that the average duration of placental expulsion stage was shorter in the SSC group than the control group.

Similarly, this finding was coinciding with the study of **Mejbel and Ali. (2012)** about the effect of applying SSC on labor's 3rdstage duration in Baghdad Teaching Hospital. They reflected the decrease of time in placental separation between the control and the experimental groups that used skin contact procedure.

Parallel with the present study findings, **Gabriel et al. (2010)** who examined the impact of applying early SSC on mothers and their newborns in Madrid, Spain. It was indicated that the placental expulsion's time was short in women who applied skin contact procedure more than in control women. **Mejbel and Ali (2012)** indicated that SSC affects positively during the third stage of labor considering some factors such as complete placental separation.

Regarding the amount of blood loss among the study and control groups, the results of the present study indicated that, the mean amount of blood loss immediately after delivery and during the first two hours after delivery was lower in the study than the control group. This is probably due to when the neonate touches the mother's abdomen, the

knees and legs cause pressure on her abdomen in a massage that promotes uterine contractions. In other words, the risk of postpartum bleeding is decreased as well as surge of oxytocin as a result of nipples' stimulation has a great role in this. Moreover, there is a sense of fear when the newborn is separated from his mother after birth. This fear causes blocking of oxytocin uptake at the myometrium resulting in atony (**Coad and Dunstall, 2011; Saxton et al., 2014**).

In accordance with these findings, **Field (2009)** study about the postpartum hemorrhage rates in Australia. The study concluded that when pronurturance (skin to skin contact and breast feeding) had occurred, there is nearly 75% decrease in the risk of primary PPH. **Catling- Paull et al. (2013)** study about home births in Australia: a review of maternal and newborn outcomes over six years and **Saxton et al. (2014)** study about the effects of SSC and breastfeeding at birth on the incidence of PPH stated that, without applying skin to skin contact, the rates of PPH risk become higher.

Moreover, **Dordevic. (2008)** studied the advantages of an early SSC between the mothers and their newborns. He concluded that anemia measured by the hemoglobin values and by the number of erythrocytes was less in SSC mothers after birth and they consumed less number of the sanitary pads.

Results of the present study revealed that after experiencing the practice of maternal- newborn SSC, the majority of women were satisfied with this practice and all of women preferred the same post-delivery SSC in the future. SSC causes a greater feeling of maternal competence, promotes bonding and physical contact between the mother and the newborn. The mothers experienced feelings of being natural through SSC between them and their newborns (**Gabriel 2010; Young 2013; Feldman 2014; Cooijmans 2017**).

The present study findings agreed with the study of **Essa et al. (2015)** who revealed that an early SSC between the mother and the newborn was related to a greater maternal satisfaction level with this practice in the study than control group. **Srivastava et al. (2014)** studied the influence of early SSC on successful breastfeeding and prevention of early neonates' hypothermia and it was found that there was a satisfaction with SSC.

In agreement with these findings, **Dalbye et al. (2011)** study about the relation between SSC and being healthy child in Sweden showed that both the mother and the baby expressed feelings of wellbeing through SSC. Also, **Aghdas et al. (2014)** studied the effect of SSC on the self-efficacy of breastfeeding women in Omolbanin obstetrics hospital, Mashhad, Iran. Results reflected the higher levels of maternal satisfaction and mothers' confidence due to SSC.

Moreover, the study of **Mahmood et al. (2011)** about the effect of SSC on breast feeding status, Department of

Obstetrics of Pakistan institute of medical sciences. Results reflected very high levels of maternal satisfaction with SSC compared to control group. Similarly, maternal preference of the same care was high in SSC group compared to control group. In agreement with the present study **Essa et al. (2015)** and **Moore et al. (2012)** studies had concluded that, almost all the experimental group indicated their tendency to SSC in the future compared to the control group.

Concerning the newborns body temperature, results of the present study revealed that the mean newborn temperature after five and ten minutes was slightly higher but within normal in the study than control group. This is due to the transfer of the temperature from the mother to the baby. Many researchers indicated that the mothers' temperature increases during SSC so heat is transferred from the mother with higher body temperature to the infant with lower temperature.

Similarly in **Gabriel et al. (2010)** study, the increase in temperature in newborns who practiced SSC was found in the first minutes after birth. **Bystrova et al. (2003)** observed that due to exposing infants to SSC, the axillary temperature increased between thirty and one hundred twenty minutes following birth.

The present study finding revealed that more than half in the study group initiated their first breastfeeding after 30 minutes compared to nearly half in the control group initiated their first breastfeeding after more than 2 hours. Regarding the duration of first breastfeeding, the mean duration of first breastfeeding was higher in the study than in the control group. This may be due to during SSC, mothers provides their newborns tactile and verbal stimulation and this improves breastfeeding behaviors of healthy newborns.

In accordance with the study findings, **Moore and Anderson (2007)** study about early SSC between mothers and their healthy infants in USA and **Khadivzadeh and Karimi (2009)** study in Iran to examine the effects of SSC on breastfeeding, also another study was conducted in Pakistan by **Mahmood et al. (2011)** all indicated that there was a positive effect of SSC on initiation of breastfeeding and prolongation of its duration. In addition, the **American College of Nurse- Midwives. (2013)**. indicated that, the newborn can find the nipple through smelling during SSC so the newborn can initiate breastfeeding more rapidly and successfully.

Parallel with these findings, **Essa et al. (2015)** indicated that the period to start the initial breastfeeding following birth was approximately twenty nine minutes in the study group compared to nearly two hours in the control group. In addition, the duration of the initial breastfeeding in the study group was twenty minutes which means that it was more than the control group with three times. **Khadivzadeh and Karimi. (2009)** showed that practicing early and continuous SSC in the initial 2 hours following delivery facilitates successful first breastfeeding and develops successful breastfeeding in the future. Therefore, immediate maternal-newborn SSC is highly recommended. Similarly, **Mahmood et al. (2011)** and **Moore et al. (2012)** indicated that "the period to start the initial breastfeeding was longer in the

control group than the SSC group thus increasing the likelihood of future success".

In contrary with the present study finding, **Moore and Anderson (2007)** reported that there was no real difference between the experimental and the control groups regarding the time to start breastfeeding. The difference may be due to the neonates were given to their mothers directly after birth to breastfeed but in the present study, the first contact between mothers and their newborns as well as the initial feeding were delayed till the newborn routine care was finished in the control group. Newborns were generally given to relatives during repair of the mother's episiotomy before breastfeeding was offered.

In contrast with the present study finding, **Gabriel et al. (2010)** concluded that SSC babies presented a better proportion of exclusive breastfeeding at hospital discharge. However, a longer breastfeeding duration in this group was not observed.

Bramson et al. (2010) study about sociodemographic characteristics and early maternal-newborn SSC throughout the initial three hours after delivery. The study concluded that, early mother - newborn SSC led to increase the probability of exclusive breastfeeding during the hospital stay. **Moore and colleagues (2007)** concluded that early SSC positively influences the duration of breastfeeding.

Aghdas et al. (2014) and **Mahmood et al. (2011)** supported the present study finding in their study which was about the relation between SSC and primiparous mother's breastfeeding self-efficacy. They concluded that time to start initial breastfeeding was shorter in the SSC group.

CONCLUSION

In the light of the present study findings, it is concluded that:

According to the findings of the present study, mothers who practiced early maternal/ newborn skin contact during third stage of labor experienced shorter duration of the third stage of labor, less blood loss, more satisfaction, exhibited early initiation of breastfeeding in addition to better newborn body temperature than those who didn't perform skin to skin contact

RECOMMENDATIONS

Based on the present study findings, the researcher recommends the following:

1. Encouraging families to include this practice in their birthing plans and share that information with their medical providers
2. Continuous educational and training programs for all midwives in delivery rooms as well as the other health care providers about the implementation of skin to skin contact method for all mothers is very important.
3. Skin to skin contact method should be a basic part of the protocol of care at labor and delivery unit to promote maternal- newborn bonding.

FURTHER RESEARCH

Further researches are needed especially to apply skin to skin contact in

- Preterm nurseries.
- During the puerperium and its relation with maternal infant attachment.

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