
Effect of Immediate Mother and Newborn Skin –to - Skin Contact on Maternal and Neonatal Health

Aml Abd Rabou Hewedy¹, Prof. Nagaat Salah Shalaby², Assist.Prof. Elsayada Hamdy Nasr³, Assist.Prof. Shymaa Abdel Rahman Osman Abd-El Haleem⁴
Clinical Instructor, Al-Hayat Port Foaad Institutue, General Authority Of Health Care
Port Said¹

professor of Maternity, Gynecology and Obstetrics Nursing ²

Assistant professor of Maternity, Gynecology and Obstetrics Nursing³

Assistant professor of Maternity, Gynecology and Obstetrics Nursing ⁴

ABSTRACT

Background: Maternal newborn skin to skin contact (SSC), is a significant strategy for improving breastfeeding initiation, duration, and exclusivity during childbirth. Ensuring evidence based maternity policies that facilitate “no separation” is an essential responsibility for all birth attendants to ensure optimum level of health for mothers and their children. **Aim:** The study aimed to evaluate the effect of mother and newborn immediate SSC after delivery on maternal and newborn health. **Study design:** A quasi-experimental research design was used. **Setting:** This study was conducted at labor and delivery unit of Women Health Hospital in Port Said city. **Sample:** Purposive sampling technique was used to select 200 women (100 women for study group and 100 women for control group) during the study period (6 months). **Tools:** Three tools were used for collection of data, maternal assessment sheet, newborn assessment sheet and maternal satisfaction scale. **Results:** There is a highly positive statistically significant relationship between maternal and newborn immediate SSC regarding initiation of first breast feeding and its duration among studied women compared to control group at $p \leq 0.001$. Most of studied group have highly maternal satisfaction compared with control group. **Conclusion:** Women who practice SSC have a shorter duration of placental expulsion, less blood loss, early initiation of first breast feeding and highly satisfaction compared to control women. **Recommendation:** It is necessary at the hospital managerial level, to enhance facilities for applying SSC through department protocols and scientific guidelines, posters, and written instructions in the delivery room and to be included in policy and procedures.

Keyword: Mother, Newborn, Skin –to - Skin Contact, Maternal and Newborn Health.

INTRODUCTION

Early skin-to-skin contact (SSC) is an aspect of child rearing which might look simple and uncomplicated to some, but it is considered an art to experienced mothers. SSC or also known as kangaroo mother care, is defined as placing the naked newborn on the mother's bare abdomen or chest right between the breasts instantly for less than 10 minutes after birth or soon afterwards (Ekholuenetale M, Onikan A &Ekholuenetale, C. 2020).. This is a natural transition for the mother and newborn, facilitating the adjustment from intrauterine to extra-uterine life, and it should be recommended to all mothers, regardless of their preference for infant feeding (Deys, Wilson, & Meedyaa., 2021).

Skin-to-skin care can start at different times. In research studies, there are 3 main types of early skin-to-skin care for healthy term infants; Birth or immediate skin-to-skin care starts during the first minute after birth. Very early skin-to-skin care begins 30-40 minutes post-birth and early skin-to-skin is any skin-to-skin time that takes place during the first 24 hours (Thompson &Maeder, 2021).

Santos, et al. (2021) reported that there is a growing body of evidence that skin to skin contact after the birth helps babies and their mothers. The evidence supporting the practice of skin-to-skin contact after birth is robust, indicating multiple benefits for both mother and baby. Firstly, benefits for the mother include earlier expulsion of the placenta, reduced bleeding, increased breastfeeding self-efficacy and lowered maternal stress levels. It has been suggested that the rise in the mother's oxytocin during the first hour after birth is related to the establishment of mother–infant bonding. Furthermore, when a mother holds her baby in skin-to-skin contact after birth, it initiates strong instinctive behaviors in both. The mother will experience a surge of maternal hormones and begin to smell, stroke and engage with her baby (Kuamoto, Bueno, & Riesco, 2021).

On the other side, benefits for the baby include a decrease of the negative consequences of the 'stress of being born' more optimal thermoregulation, continuing even in the first days and less crying. Skin-to-skin contact has been shown to increase breastfeeding initiation and exclusive breastfeeding while reducing formula supplementation in hospital, leading to an earlier successful first breastfeed, as well as more optimal suckling (Abdulghani, Cooklin, Edvardsson, & Amir, 2021).

Moreover, during the initial days following birth, SSC can also maintain parenting behaviors. The mother's mental health, as well as the newborn's development and ability to adapt throughout life, are all significantly influenced by the nature of their interaction in the first few minutes after delivery. The infant is most likely to begin exhibiting behaviors including lip movements, finger to mouth movements, and vocal cues during the first two hours following delivery. When kept together in direct SSC, this time offers moms and babies a good chance to establish a mutually beneficial attachment (Crenshaw J., 2014).

In along similar lines, SSC is a cheap and a very simple method for making post-delivery care better, increasing the duration of breastfeeding, and encouraging exclusive breastfeeding (Young, 2013). Therefore, applying SSC techniques also allow mothers to take full use of this window of opportunity for breastfeeding. Additionally, breastfeeding and SSC at birth may be preventative for the occurrence and severity of postnatal hemorrhage (PPH). Moreover, PPH rates that are lower have the potential to lower maternal morbidity and mortality globally (Abdulghani , Edvardsson& Amir, 2018).

Additionally, early maternal newborn skin-to-skin contact during the third stage of labor has a positive impact on its length, the extent of placental separation, the mother's satisfaction, the quantity of bleeding, the location of the uterus, and her preference for future deliveries (Ibrahim, 2015). From this point of view, Public agencies, CDC (2013), UNICEF(2020) and WHO (2019) recommend that breast feeding should begin in the first hour after giving birth and advocate it as the only feeding method for the first 6 months of life. The American College of Nurse-Midwives (2019) also recommends that “healthy infants should be placed and remain in direct SSC with their mothers immediately after delivery until the first feeding is accomplished”.

So, Nurses play a crucial role in promoting the practice of SSC to address newborn development in healthcare practice because they are routinely positioned to care for mothers and newborns admitted at healthcare facilities. Therefore, the enhancement of their knowledge and skills are very vital aspects. Through training staff, subsequent reinforcement by periodic demonstration and consolidation by constant constructive interdepartmental dialogue are imperative to ensure the sustainability of this SSC practice (Negussie, Hailu and Megenta. 2016). Moreover, to achieve his role, it requires nurses to

maintain and adhere to quality standards, which are supported by higher management authorities. Although, the principles are extensively recognized in hospitals, but their application into specific policies and practices involves challenges (Maniago, Frimw, Fisqua, Almazan, &Albougami., 2020).

Significance of the Study:

Cadwell, Brimdyr & Philips, (2018) recommended that all newborns should have access to immediate SSC after vaginal delivery. In addition, the American College of Nurse-Midwives (2019) recommended that “direct SSC must be applied between mothers and their healthy newborns immediately following birth until the first feeding is completed”. Additionally, studies have shown that implementing such a strategy will lessen the prevalence of breastfeeding challenges, which have been demonstrated to have a detrimental effect on children's health (Bolling , Grant , & Hamlyn, 2019). According to Abdelmenem, Ahmed, & Belal, (2019) who stated that although maternal newborn skin to skin contact has been established to be supported by evidence, it is still not yet generally applied at Egyptian hospitals. There are no enough researches that address SSC practice and its effect at University Hospitals. So, this study was conducted to evaluate the effect of mother and newborn immediate skin-to-skin contact after delivery on maternal and neonate health.

AIM OF THE STUDY:

The study aimed to evaluate the effect of mother and newborn immediate skin-to-skin contact after delivery on maternal and neonate health.

Research objectives

1. Determine the effect of immediate skin-to-skin contact after delivery on maternal health.
2. Determine the effect of immediate skin-to-skin contact after delivery on newborn health.
3. Assess the level of women satisfaction after applying maternal and newborn immediate skin-to-skin contact.

Research Hypothesis:

1. In comparison to the control group, mothers who engage in early newborn skin-to-skin contact after delivery are more likely to experience having shorter third stage of labour.
2. Compared to the control group, mothers who engage in early newborn skin-to-skin contact after delivery are more likely to initiate breastfeeding successfully and exclusively.

Operational definition

- ✓ **Maternal health** refers to the health of women during childbirth, whereas “no separation” is considered as an essential responsibility for all birth attendants to ensure optimum level of health for mothers and their children.
- ✓ **Newborn health** refers to the health of newborn infant. It ensures that every birth is attended by skilled personnel and making hospital care available for emergencies. It is crucial that early essential newborn care is provided, including immediate and prolonged skin-to-skin contact and early and exclusive breastfeeding, to improve chances of survival and to lay the foundations for a healthy life.

SUBJECT AND METHOD:**A. Technical design:**

The technical design for the study includes four main categories, study design, setting, subjects and tools for data collection.

Study Design:

A quasi-experimental research design (study- control group) was used.

Study Setting:

This study was conducted at labor and delivery unit of obstetrics and gynecology department in Port Said city at Women Health Hospital (previously named Specialized Women and Obstetrics Hospital (affiliated to General Authority of Health Care).

Study Subjects:

This study included all parturient women who were attended the previous pre-mentioned setting and fulfill the following criteria:

Inclusion criteria:

- Gestational age 37- 42 weeks
- Vaginal birth newborn\ cesarean section (with spinal anesthesia)
- Women without any obstetrical or medical complications.

Sample Procedure:

Purposive sampling technique was used to select the subjects for the study.

The sample was divided into two groups:

- a) Control group: women who were received routine labor care.
- b) Study group: Women who were received routine labor care plus maternal-newborn direct skin contact

Sample Size:

The total flow rate of admission women for cesarean section (with spinal anesthesia) and normal labor regarding the first six months of 2017 is obtained from patients' affairs of Specialized Women and Obstetrics hospital was three hundred and fifty (350) women. A previous study reported the duration of third stage of labor in the group which practiced early skin contact was $2.8+0.857$ (Essa & Ismail, 2015). Considering level of significance of 5%, and power of study of 80%, A sample size of two hundred (200) parturient women was selected according to Krejcie and Morgan's formula for determining sample size for a definite population (**Krejcie & Morgan, 1970**).

According to the estimated sample size was 183 women. After adjustment for a drop-out rate of 10%, the sample size was increased to 200 subjects. The study group included 100 women; the control group included 100 women, the study group received SSC during third stage of labor and the control group received routine hospital care.

Tools for data collection:

Three tools were used for collection of data and tested for reliability and validity:

TOOL (I): Maternal Assessment Record

This tool was adapted from (**Fouad, 2017**) and modified by the researcher. It is written in Arabic language, composed of three parts to assess the following:

- **Part (I): General characteristics of parturient women:** It included data about demographic characteristics such as age, occupation educational level, residence, and marital status.... etc.).
- **Part (II): Obstetric history:** It included data about obstetric history such as gestational age, gravida, number of abortions, and antenatal care.... etc.).

- **Part (III): Assessment of the Third Stage of Labor:** It included data about third stage of labor such as mode of delivery, drug used, completion of placenta, characteristics of the uterus (consistency- level of fundus- position of the uterus) and blood loss volume.... etc.).

TOOL II: Newborn Assessment Record

This tool consists of three main parts:

Part (I): APGAR Newborn Scoring Chart:

The Apgar score was adopted from Virginia Apgar (1952). It is used to evaluate the newborn's physical condition at first and fifth minute. It consists of five (5) acronyms including activity (muscle tone), pulse, grimace (response to catheter in nostril, appearance (skin color), and respiratory effort. This tool was translated into Arabic and re-translated into English by the researcher and a language expert; and tested for its validity and reliability.

Scoring System:

Each factor of the Apgar assessment scored on a scale from 0 to 2. Total score of 7-10 is considered normal. While total Scores of 4-6 indicate moderate difficulty and may require resuscitation and total Scores of 0-3 indicate severe distress and required immediate resuscitation, medical attention and lifesaving measures.

Part (II): Newborn's Body Temperature Chart:

Newborn's body temperature is assessed rectally after 5 minute, after 10 minute, after 15 minute, after 30 minutes.

Part (III): Observational Checklist of starting Breast feeding:

This tool was adopted from Mathews 1988 for assessing the duration between baby delivery and the starting of breastfeeding. It is translated into Arabic and re-translated into English by the researcher and a language expert. It consists of five (5) questions such as period of breastfeeding; does the baby hold and suck the nipple without any assistance? And termination of breast feeding by himself or not.

TOOL III: Assessment of Maternal Satisfaction Scale

This tool was adopted from Nahidi, Dorri & Ravari, (2010) to measure the maternal satisfaction. This tool was translated into Arabic and re-translated into English by the

researcher and a language expert; and tested for its validity and reliability. It consists of 30 statements enrolled at three domains: Quality of care provided (8 items) (Q1-8), Women personal attributes (8 items) (Q9 -16), Stress experienced (14 items) (Q17-30).

Scoring System

Each statement was assigned a score according to mothers' responses were satisfied, to some degree, not satisfied, and were scored 3, 2 and 1 respectively. The scoring was reversed for negative statements; the scores of the items were summed up and were converted into a percentage score

It is classified into 3 categories:

- Satisfied if score $\geq 70\%$, to some degree if score 50 to 70%, Unsatisfied if score $< 50\%$.

B. Operational design:

The operational design included preparatory phase, content validity, reliability, pilot study and field work.

Preparatory phase:

It included reviewing of relevant literature as Namnabati, Talakoub, Mohammadizadeh, Mousaviasl , (2016); Chan, (2017) and Stevens (2018), different studies and theoretical knowledge of various aspects of the problems using books, research articles, internet, periodicals and magazines.

Content validity:

It was ascertained by a group of nine (9) experts in medical and nursing in obstetrics and pediatrics. Their opinions elicited regarding the format, layout, consistency, accuracy, and relevancy of the tools and some modifications are accepted and done in the first and fourth tools.

Reliability:

Reliability the pretest was carried out to test the reliability: Cronbach's Alpha 1st tool= .862 that is measured statistical expert, Cronbach's Alpha 2nd tool= .870 it is measured by Mathews 1988, Cronbach's Alpha 3rd tool= .901 that is measured by Nahidi, Dorri and Ravari, (2010).

Pilot study:

The study tools were applied on 10% of the study subjects (20 parturient women) before starting the data collection. The purpose of the pilot study was to test the validity of the study tool to determine the feasibility, applicability, clarity and relevance of the study tools to detect any problems prior to data collection, and then data collection tools were modified accordingly. 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 final total subjects of the study.

Field work:

- The researcher attended the study setting three days weekly in the hot days (Saturday, Monday and Thursday) until the calculated sample size was obtained. This study was carried out in the period from April 2019 to October 2019.
- The researcher introduced herself to each parturient woman, checked her legibility for the study by filling the maternal assessment sheet and obtained the consent to participate in the study after explaining the aim.
- The first 100 parturient women attended labor and delivery room was assigned to control group and the second 100 parturient women assigned as the study group. Newborns in both groups had received the immediate baby care after delivery. Secretions were suctioned, newborns were dried and Apgar score was measured. The routine care including physical assessment (activity (muscle tone), pulse, grimace (response to catheter in nostril, appearance (skin color), and respiratory effort in the first minute and fifth minute to evaluate if the newborn is normal or require medical attention and neonatal resuscitation ; vitamin K injection , physical measurements (i.e., weight, height, heads and chest circumferences) was done but in the control group the immediate and routine care were done under warmer device then newborn was dressed. The mother's placental delivery was done at the same time. Finally, newborn was transferred to the postpartum room.
- Newborns in the study group received the immediate care while being in direct skin to skin contact with their mothers immediately after cutting the umbilical cord. The naked newborn was placed undressed in a prone position between the mother's bare chest and abdomen before placental expulsion with the newborn's head is covered with dry cap and a warm blanket across his back and head in lateral position to keep breathing of the newborn and allow eye to eye contact between mother and newborn. The newborn was

allowed to suck the mother's breast to start initial breastfeeding. The routine care was delayed until end of third stage of labor.

- Newborns were assessed for the consumed time to start breastfeeding (in minutes) and the 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 the amount of blood loss on two phases, duration of third stage of labor and finally before discharge the mother's satisfaction and experience of the labor.
- Assessment for blood loss on two phases, first phase was started by collecting the blood drained after newborn delivery until the end of suturing in a special calibrated container. Second phase for assessment of blood loss was started by weighing perineal pads and under buttocks towels pre and post use in delivery field and subtract both values and again add the difference to pre-determined drained blood.

C. Administrative design

For conducting the study, an official letter from the Dean of the Faculty of Nursing, Port-said University was issued to the administrative authority of study setting to obtain permission and cooperation to conduct the study after explaining the aim of the study.

Ethical Considerations:

- Ethical approval was obtained from Research Ethics Committee at the Faculty of Nursing – Port Said University as well as from the Head of Obstetrics and Gynecology Nursing Department **Code: NUR/17/12/2018(2)**.
- An informed verbal 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.
- Ensuring the confidentiality of the information collected and anonymity is guaranteed.
- The process of data collection will not disturb the harmony of the work of the above-mentioned setting

RESULT:

Table (1): shows distribution of demographic characteristics of studied women (control & study groups). It was revealed that the highest percentage in both groups age ranged between 20 to less than 30 years old, more than half of the two groups (control

& study groups) (58.0% & 55.0% respectively) had secondary education, and the largest proportion of women were living in urban areas. Also, more than three quarter of studied women for the control and study groups (81.0% & 78.0% respectively) were housewife and highest percentage of them in both groups had insufficient family income. Finally, majority of women (90.0% & 87.0%) in both groups had period of married ranged between 1 to less than 10 years.

Table (2): reveals distribution of the studied women (control and study groups) related to mode of delivery and characteristics of placenta. It was noticed that more than half of the study and control groups (62.0%, 64.0% respectively) delivered per C.S (spinal). Majority of sample in study and control groups had delivered placenta completely with statistically insignificant differences between control and study groups.

Table (3): presents distribution of the Apgar score among the study and control groups. It was showed that the great majority (92.0% & 91.0%) of the studied newborn at 1st minute had normal Apgar score in study and control group respectively with no statistically significant difference between control and study group. On the other hand, the majority (98.0%) of the studied sample in study group had normal Apgar score after 5 minutes with statistically significant difference between control and study group at p value (<0.05*)

Table (4): reveals distribution of the body temperature of neonate among the control and study groups, it was indicated that mean normal body temperature for both groups (control & study group) with mean \pm SD (37.33 \pm 0.21 & 37.50 \pm 0.11) respectively after 45 minutes. There was statistically significant difference between control and study group regarding their body temperature at p value (<0.05*)

Table (5): reflects assessment of the first breastfeeding among the control and study groups. It was indicated that there was statistically significant difference between control and study groups regarding beginning of the first breastfeeding. Near to three quarters of the studied study groups (70.0%) start breast feeding within 15- 30 min after delivery of placenta. Finally, (100.0% & 98.0%) of them Newborn end the first breastfeeding by himself. Additionally, it was observed that there was high statistically significant

difference between control and study group regarding time between delivery and first breastfeeding & duration of first breastfeeding (minutes).

Table (6): shows that educational level was the most predictor for total satisfaction of mothers related to application of SSC (p value .020*).

Figure (1): reveals distribution of the studied women (control and study groups) related to time taken for delivery of placenta. It was obvious that (97.0%, 72.0% respectively) of them take time for delivery of placenta less than 10 minutes of third stage of labor with high statistically significant differences between control and study groups at p value (<0.001**).

Figure (2): reveals distribution of studied women according to total level of satisfaction of labor experience among the control and study group. It was revealed that most of study group (81.0%) were satisfied regarding total satisfaction level compared to those of control group (16.0%) at p value (<0.01**).

Table (1): Distribution of the demographic characteristics of the studied women
(Control & study group) (N=200)

Items	Control N=100	Study N=100	Test	P value
	N (%)	N (%)		
Age:				
20 – 25 years	33	29	X ² = 1.166	0.074
>25 – 30 years	40	42		
>30 – 35 years	27	29		
Mean± SD	28.78 ± 4.70	27.96 ± 5.11	t= 1.209	0.169
Education level:				
Don't read and write	6	5	X ² = 1.008	0.082
Read and write	14	15		
Basic education	20	22		
Secondary/diploma education	58	55		
University/Higher education	2	3		
Residence:				
Rural	21	19	X ² = 1.335	0.069
Urban	79	81		
Working Status:				
Working	19	22	X ² = 1.232	0.072
Housewife	81	78		
Family income:				
Sufficient and save	6	4	X ² = 3.909	0.046*
Sufficient	37	45		
Insufficient	57	51		
Period of marriage:				
1 – 5 years	57	52	X ² = 1.099	0.079
5 - 10 years	33	35		
10 – 15 years	10	13		

*significance at $P \leq 0.05$

Table (2): Distribution of the studied women (control and study groups) related to mode of delivery and characteristics of placenta (N=200)

Items	Control N=100 N (%)	Study N=100 N (%)	Chi square test X ²	P value
Mode of delivery				
C.S (spinal)	62	64	1.229	0.073
Vaginal delivery	38	36		
Drug used				
Methergin	31	29	1.303	0.065
syntocinon	19	22		
Methergin plus syntocinon	50	49		
Placenta delivered completely				
Yes	96	97	1.221	0.662
No	4	3		

Table (3): Distribution of the studied women (control and study groups) related to the Apgar score of their neonates (N=200)

Items	Control N=100 N (%)	Study N=100 N (%)	Chi square test X ²	P value
1st minute				
Normal (7 – 10)	91	92	1.007	0.082
Moderate depressed (4 – 6)	9	8		
Severe depressed (0 – 3)	0	0		
5th minute				
Normal (7 – 10)	89	98	4.267	0.036*
Moderate depressed (4 – 6)	10	2		
Severe depressed (0 – 3)	1	0		

*significance at $P \leq 0.05$

Table (4): Distribution of the studied women (control and study groups) related to body temperature of their neonates (N=200)

Items	Control group	Study group	Chi square test X ²	P value
	Mean ±SD	Mean ±SD		
Temperature				
After 15 minutes	37.10 ±0.14 Min 36.7 Max 37.19	37.22 ±0.13 Min 36.9 Max 37.32	2.988	0.048*
After 30 minutes	37.21±0.19 Min 37.1 Max 37.35	37.41 ±0.10 Min 37.35 Max 37.5	3.101	0.037*
After 45 minutes	37.33 ±0.21 Min 37.2 Max 37.39	37.50 ±0.11 Min 37.39 Max 37.57	3.566	0.031*
After 60 minutes	37.25 ±0.18 Min 37.19 Max 37.38	37.50 ±0.10 Min 37.40 Max 37.57	4.101	0.025*
After 2 hours	37.30 ±0.19 Min 37.21 Max 37.40	37.49 ±0.15 Min 37.40 Max 37.56	3.800	0.027*

*significance at $P \leq 0.05$ **Table (5):** Assessment of breastfeeding start time among the control and study groups (n=200)

Items	Control N=100 N (%)	Study N=100 N (%)	Chi square test	
			X ²	P
Time between delivery and first breastfeeding				
Immediately	0	10	19.002	0.000**
15 min -30 min	30	70		
More than 30-120 min	70	20		
Duration of starting breastfeeding (minutes)	36.90±8.7	9.13 ± 5.67	18.770	0.000**
Newborn attach to the nipple by himself	70	72	0.803	0.092
Newborn end the first breastfeeding by himself	98	100	0.875	0.097

** Highly significance at $p \leq 0.001$

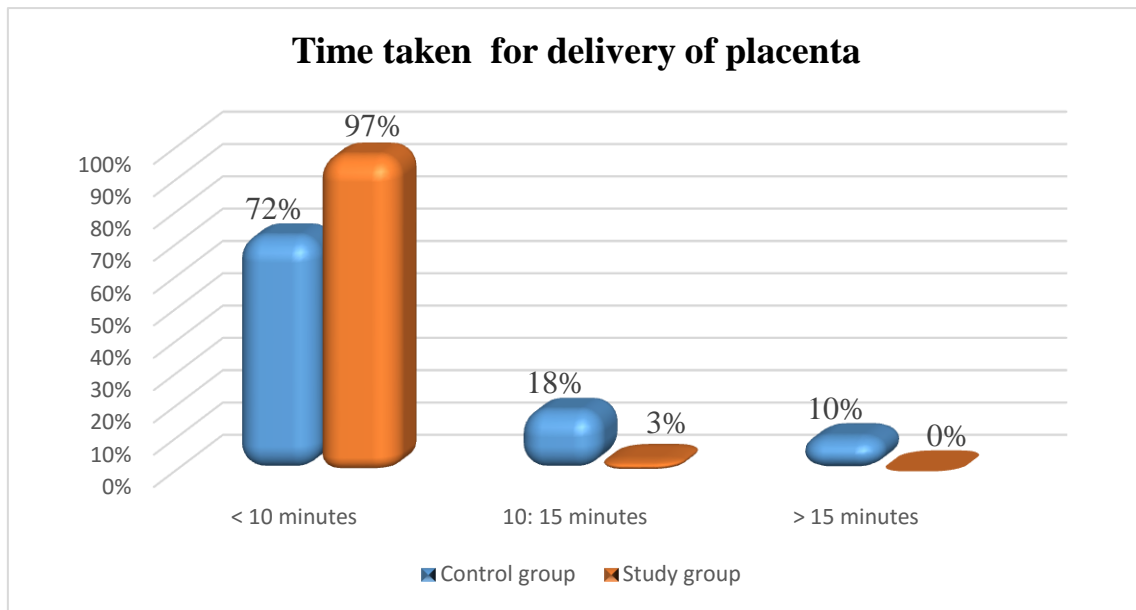


Figure (1): Distribution of the studied women (control and study groups) related to time taken for delivery of placenta (N=200)

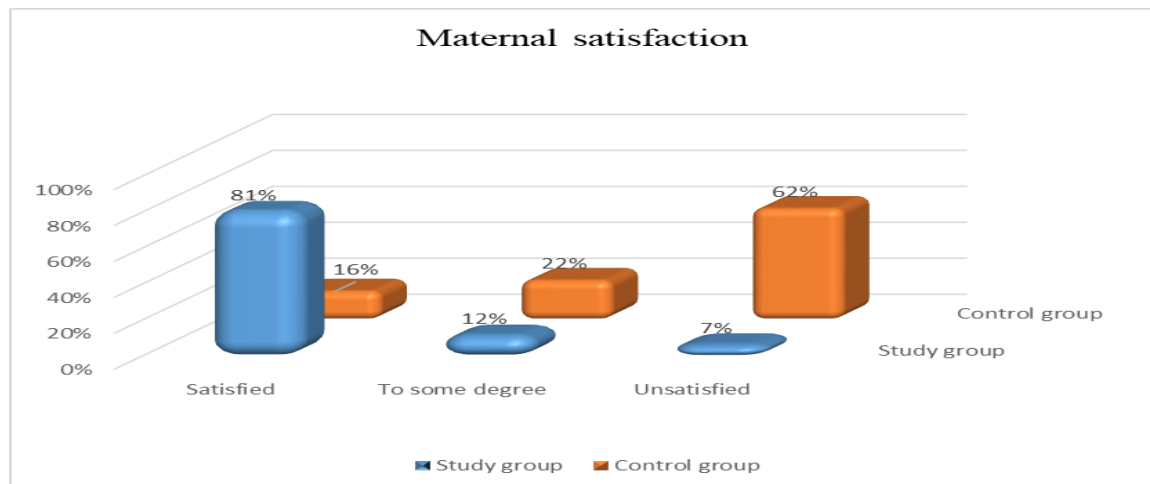


Figure (2) : Distribution of studied women (control and study groups) related to total level satisfaction of labor experience (N=200)

DISCUSSION

Maternal newborn skin to skin contact, is an important strategy for improving breastfeeding initiation, duration, and exclusivity during childbirth (Abdelmenem, Ahmed, & Belal, 2019). Hence this study aimed to evaluate the effect of mother and newborn immediate skin-to-skin contact after delivery on maternal and newborn health at Specialized Women and Obstetrics Hospital.

Regarding to characteristics of placenta after birth, the present study illustrated that the majority of study group had delivered placenta completely, and highest percentage of study group reported 5 to less than 10 minutes related to time of third stage. This finding matched with a study of Widström, Brimdyr, Svensson, Cadwell, and Nissen (2019) who proved that skin-to-skin significantly decreases the duration of the third stage of labour. On the same line, Reshma, Sulochana, and Jessy (2020) conducted a study entitled "Effectiveness of skin-to-skin contact between mother and baby at birth on maternal and neonatal outcomes among parturients" and reported that there was a significant difference in post test scores of maternal outcomes regarding time of third stage of labor. This finding is also, matched with Sumithra, Radha and Mangai, (2019) who concluded that early suckling was effective in reducing the duration of the third stage of labor and blood loss.

Comparable findings were obtained in a study conducted by Mejbél & Ali, (2015) in Baghdad, Iraq, to examine the efficiency of skin-to-skin contact on the duration of the third stage of labor. In the same context, the mean duration of the third stage of labor in the skin-to-skin contact group was shorter than the routine care group in an Egyptian study of low-risk primiparous women who received either skin-to-skin contact or normal hospital care. This can be explained that the placement of the newborn infant skin-to-skin increases uterine contraction immediately after birth, increases the completeness of the delivered placenta, decreases uterine atony, and leading to shorter time of third stage of labor, reflected the positive effect of skin-to-skin contact intervention on improving mothers' outcomes (Essa & Ismail, 2015)

Concerning the Apgar Score among the study and control groups, the present study showed that majority of the studied newborn at 1 minute had normal Apgar Score in both groups with no statistical scientific difference between control and study group regarding their Apgar Score at p value ($<0.05^*$). The present findings matched

with findings by Lau et al., (2018) who conducted a study about effect of kin-to-skin contact and proved that there was no statistical difference between the study and control groups regarding Apgar score. Regarding to comparison of the body temperature of neonate among the study and control groups, it was indicated that skin to skin contact among study group had stabilized vital signs parameters more than control group. In this context, Moore, Bergman, Anderson, & Medley (2016) reported that skin-to-skin contact infants had more stabilized vital signs parameters than control infants who were separated from their mothers with significant difference between two groups at ($p > .05$).

In along similar line, this result is congruent with study by Gupta, Deierl, Hills, and Banerjee (2021) who presented that there that early SSC stabilized neonatal vital signs parameters. Also, Lee, Parikka, Lehtonen, and Soukka (2021) who stated that parent–infant skin-to-skin contact reduces the electrical activity of the diaphragm and stabilizes respiratory function in preterm infants. Also, Mohamed, and Aboelmagd, (2020) conducted a study in Minia General Hospital, Minia, Egypt and found that there was statistically significant difference between the study and control groups regarding of auxiliary temperature of neonates in the study group were increasing (within normal range) than those in the control group with ($p = \text{value} < 0.0001$). This was because of thermal response of maternal skin temperature (mediated by oxytocin) in reaction to skin-to-skin contact with their newborns.

As regard to breastfeeding start time, the present study indicated that there was statistically significant difference between control and study groups regarding beginning of the first breastfeeding. Near to three quarters of the studied study groups start breast feeding within 15- 30 min after delivery of placenta. This may be explained by the fact that the baby is most able to commence breastfeeding during the first two hours after delivery by engaging in behaviors such mouthing, lip-smacking, hand-to-mouth activity, and verbal signaling. When the mother and infant are kept close and in close skin-to-skin contact, this time period also presents a wonderful chance for the development of a reciprocal attachment.

This outcome was in the same line with Aghdas, Talat and Sepideh (2014) who conducted study about effect of immediate and continuous mother–infant skin-to-skin contact on breastfeeding self-efficacy of primiparous women and showed that time to initiate first feed was 21.98 ± 9.10 SD min in SSC group vs. 66.55 ± 20.76 min in routine

care group ($p < 0.001$). These results agreed with Reshma, Sulochana and Jessy (2020) who found that skin to skin contact between mother and baby at birth had positive effects on neonatal outcomes. Similar results were reported by Parikh, Agrawal, Vyas, Shah and Joshi (2018) who revealed that breastfeeding was initiated within 30 minutes of birth among the majority of women in the study group. This result can be interpreted as during skin-to-skin contact, mothers provide tactile and verbal stimulation to their newborn infants and this practice improves breastfeeding behaviors of healthy infant.

Also, these findings were in a line with Safari, Saeed, Hasan and Moghaddam-Banaem (2018) who noticed that mothers received skin-to-skin contact had successful breastfeeding. According to the American College of Nurse-Midwives, skin-to-skin contact aids newborns with smelling and finding the nipple, allowing them to commence breastfeeding more quickly and successfully (American College of Nurse-Midwives, 2019). This is due to the high amounts of catecholamine in the infant's nose shortly after birth, which renders the olfactory bulbs very sensitive to odor cues (Righard and Alade, 2020).

Results of the current study had proved that statistically significant differences were found between both groups regarding to success of breastfeeding. Breastfeeding at an early age stimulates breast milk production, provides antibody protection for the newborn, and determines the success of breastfeeding establishment, duration, and neonatal mortality risk (Takahashi, Ganchimeg, Ota, Vogel, Souza & Laopaiboon, 2017). This was related to immediate skin-to-skin contact may increase the success rate of breastfeeding initiation, decrease time to the first breastfeeding, prevent the use of formulas for neonatal feeding, enhance bonding and maternal well-being (Stevens, Schmied, Burns, & Dahlen, 2014).

Similarly, Redshaw, Hennegan and Kruske, (2014) who stated that early contact appeared beneficial, women who held their infant within five minutes of birth were more likely to initiate breastfeeding and to be breastfeeding at facility discharge. This could be explained by the fact that the first two hours after birth are the best period for the baby to start nursing, exhibiting behaviors including mouthing, lip-smacking, hand-to-mouth motions, and verbal cues. When maintained together in close skin-to-skin contact, this time also presents a fantastic opportunity for the mother and her child to form a mutually beneficial relationship.

Dissimilar to this finding, the study of Carfoot, Williamson and Dickson (2005) revealed that no significant difference in the success of subsequent breastfeeding before discharge was found between both groups. Explanation by Carfoot for this finding was the existence of a research assistant in the delivery room. This may have prompted the midwife to offer extra help to the mothers in both groups equally.

With reference to maternal satisfaction during delivery among the control and study groups, it was noticed that majority of studied sample in study group had satisfaction during delivery toward quality of care provided, women personal attributes, and stress experienced with high statistically scientific difference between control and study group regarding maternal satisfaction during delivery at p value ($<0.01^{**}$). This result consistent with a study of Mocumbi et al., (2019) who revealed that most of studied mothers reported being satisfied with quality of care during childbirth because of interventions which help to improve the interaction with providers and the mother and adequate emotional support.

Also, this result agreed with Bitew, Ayichiluhm, and Yimam, (2015) who conducted study about maternal satisfaction on delivery service and its associated factors among mothers who gave birth in public health facilities of Debre Markos town, Northwest Ethiopia" and displayed that overall satisfaction on delivery service was 81.7% of the studied mother satisfaction. Moreover, a study done by Bose, Rath, and Nayak, (2021) who revealed that the early skin to- skin contact has significant impact on maternal satisfaction level. Many studies to date have found that women satisfied with skin-to-skin contact when it is offered (Aghdas, Talat & Sepideh, 2014) which reflects the importance of applying skin-to-skin contact on women and their neonates during childbirth.

It was obvious from the results of this study that educational level was the most predictor for total satisfaction of mothers related to application of SSC (p value .020*). This agreed with Yılmaz, Atay, Arıkan, and Tekeli Güler (2016) who conducted a study in Turkey and reported higher level of satisfaction among the mothers with primary education level showed an inverse relation between satisfaction and education.

Regarding relation between maternal satisfaction and duration of third stage of labor, that there was a significant statistical relation between satisfaction and duration of third stage of labor among control group and study groups at p value <0.05 . Other published studies have shown a significant relation between patient satisfaction and the duration of

labor; women who have had longer labors report being less satisfied (Soriano-Vidal et al.,2016). This can be clarified that immediate mother and newborn skin –to - skin contact after delivery resulting in shorter time of third stage of labor which lead to more maternal satisfaction regarding birth.So, WHO (2019) had emphasized the importance of skin-to-skin contactbetween the mother and the newborn immediatelyafter birth, as well as the initiation ofbreastfeeding within the first hour of birth.

CONCLUSION

Based on the results of this study, the following conclusions were formulated:the studied women who practice maternal and newborn immediate skin-to-skin contact experience a short duration of placental expulsionreflecting the positive effect of skin-to-skin contact intervention on improving mothers' outcomes. In addition, there is a highly positive statistically significant relationship between maternaland newborn immediate skin-to-skin contact regarding initiation of first breastfeeding and its duration among study women compared to control group at $p \leq 0.001$. Most of study group of mothers had highly satisfaction compared with control group.

RECOMMENDATION

Based on the findings and conclusion of this study, the following recommendations suggested:

- SSC must be included in labor and delivery units' standard immediate post-delivery care. If possible, routine newborn care should be postponed until the first breastfeeding attempt is successful.
- It is necessary at the hospital managerial level, to enhance facilities for applying SSC through department protocols and scientific guidelines, posters, and written instructions in the delivery room and to be included in policy and procedures of unit.
- Necessity ofcontinuous educational and training program for all nurses about the implementation of SSC after delivery.

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أثر الإتصال الجلدى المباشر بين الأم وحديثى الولادة على صحة الأم والمولود

أمل عبدربه هويدى¹، أ.د / نجاة صلاح شلبي²، ا.د/ السيدة حمدي نصر³، د/ شيماء عبد الرحمن عثمان⁴

مدرسة بمعهد مستشفى الحياة بورفؤاد- بورسعيد¹ - أستاذ تمريض الأمومة والنساء والتوليد - كلية التمريض -

جامعة بورسعيد² - أستاذ مساعد تمريض الأمومة والنساء والتوليد - كلية التمريض - جامعة بورسعيد³

أستاذ مساعد تمريض الأمومة والنساء والتوليد - كلية التمريض- جامعة بورسعيد⁴

الخلاصة

يعتبر الإتصال الجلدى المباشر بين الام والمولود هام للغاية خلال فترة مابعد الولادة أو أثناء الساعات الاولى من الولادة . و يتم ذلك من خلال وضع حديثى الولادة على صدر الام عاريا من أجل الأرتباط و النمو العاطفى. وتهدف الرسالة الحالية إلى دراسة أثر الإتصال الجلدى المباشر بين الأم وحديثى الولادة بعد الولادة على صحة الام والمولود، وقد نفذت هذه الرسالة فى قسم النساء والولادة بمستشفى دار صحة المرأة ببورسعيد. وقد جمعت المعلومات الخاصة بالرسالة عن طريق استبيان تقييم الأم، استمارة تقييم المولود، واستمارة تقييم رضا الأمهات تجاه الإتصال الجلدى المباشر. وقد أظهرت نتائج الدراسة أن 81% من الأمهات لديهم مستوى عالى من الرضا و 98% من حديثى الولادة لديهم مقياس أيجارسكور طبيعى بعد الدقيقة الخامسة من الولادة فى المجموعة محل الدراسة مقارنة بالمجموعة الضابطة. وقد تخلصت الدراسة أن الأمهات اللاتى مارسن الإتصال الجلدى المباشر لديهم وقت ولادة المشيمة أقصر، الدم المفقود أقل، البدء المبكر فى أول رضاعة طبيعية ومستوى أعلى من الرضا مقارنة بالمجموعة الضابطة. و لقد أوصت الرسالة بضرورة تطبيق البرامج التعليمية للتمريض للتغلب على المعوقات ورفع معلوماتهم بأهمية دورهم فى تطبيق الإتصال الجلدى وأثره على صحة الأم والمولود.

الكلمات المرشدة: الأم والمولود، الإتصال الجلدى ، الولادة ، صحة الأم والمولود